DICOM Conformance Statement

Veradius Unity

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PHILIPS

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1. DICOM Conformance Statement Overview

This DICOM Conformance Statement is applicable to VERADIUS UNITY R2.1 SW4.1.x .
The VERADIUS UNITY is a surgery mobile C-arm X-ray image generation systems, later referred to as Mobile C-Arm.

The Mobile C-Arm implements a worklist management function to communicate with a RIS/HIS, an export function to transfer image data from the local system to a remote system, and an allocated function to print image data from the local system. The Mobile C-Arm can be configured with one the following option:

- The integrated ViewForum surgical workstation offers an additional viewing function for images from the local system, images retrieved from remote systems, and images read from DVD or CD. Viewed images can be written to DVD or CD.

Thus the Mobile C-Arm provides the following DICOM data exchange features:

- Print images from the local database on a DICOM printer (Standard DICOM package).
- Export images from the local database to a remote database (Standard DICOM package).
- Creates and Sends Radiation Dose Structure Reports (RDSRs).
- Automatically send a storage commitment request (Advanced DICOM package).
- Query an information system for a modality worklist (Advanced DICOM package).
- Send Modality Performed Procedure Step details to an information system (Advanced DICOM package).
- Query and retrieve images from a remote database (ViewForum Surgical Workstation).
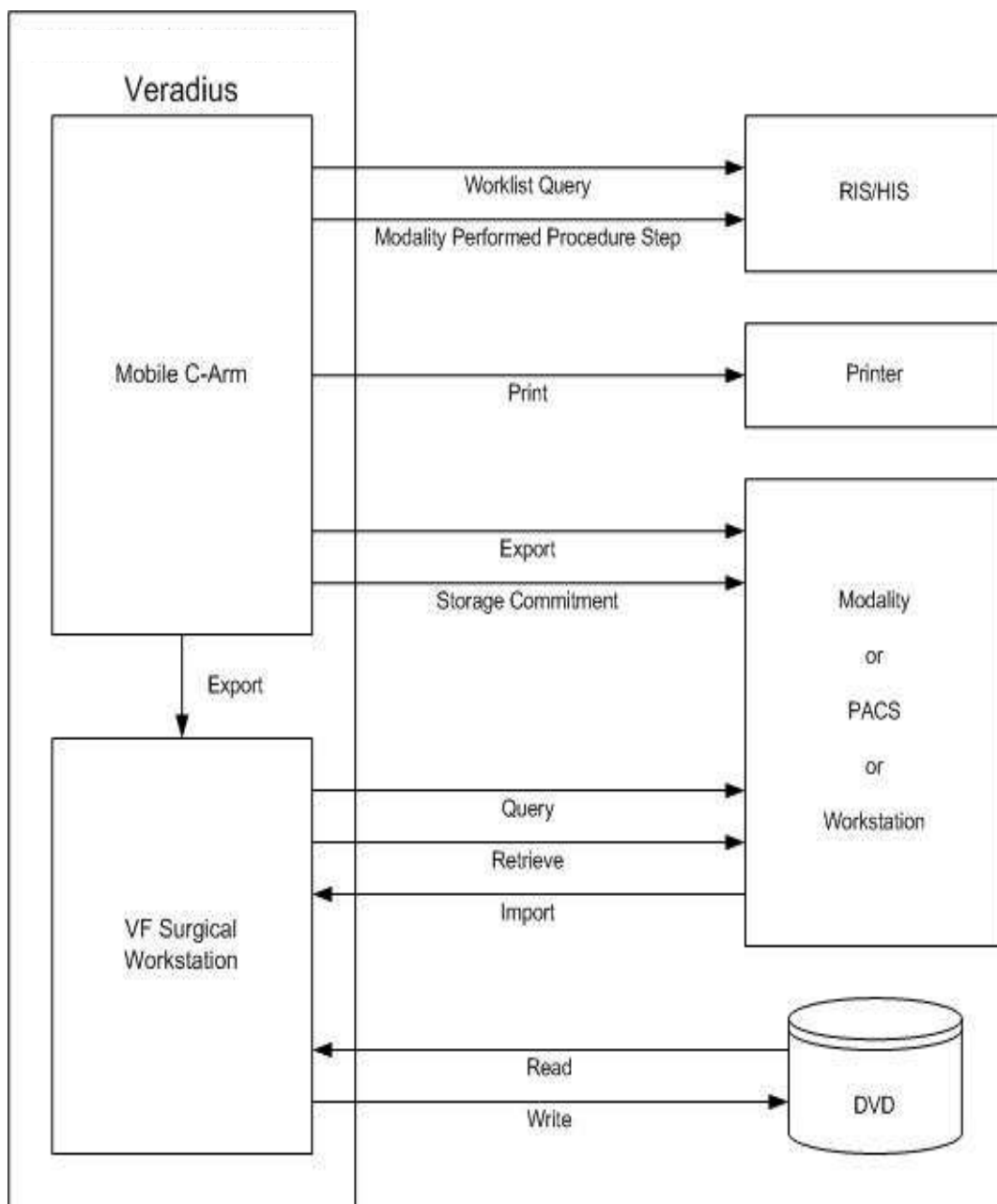- Read and Write DICOM media (ViewForum Surgical Workstation).

Figure 1: System Overview of Mobile C-Arm with integrated ViewForum Surgical Workstation

The following table provides an overview of all network services as provided by the Mobile C-Arm.

Table 1: Network Services

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Other			
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	**UID**		
Print Management			
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Query/Retrieve			
Patient Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
PatientStudy Only QR Info. Model - FIND SOP Class (Retired)	1.2.840.10008.5.1.4.1.2.3.1	Yes	No
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
PatientStudy Only QR Info. Model - MOVE SOP Class (Retired)	1.2.840.10008.5.1.4.1.2.3.2	Yes	No
Transfer			
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	No
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	No	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	No	Yes
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	No	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	No	Yes
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	No	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	No	Yes
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Philips Private X-Ray Image Storage	1.3.46.670589.2.3.1.1	No	Yes
Philips Private Reconstructed X-ray Storage	1.3.46.670589.2.4.1.1	No	Yes
Philips Private ViewForum 3D Volume New Storage	1.3.46.670589.5.0.1.1	No	Yes
Philips Private ViewForum MR Synthetic Image Storage	1.3.46.670589.5.0.10	No	Yes
Philips Private ViewForum MR Cardio Analysis New Storage	1.3.46.670589.5.0.11.1	No	Yes
Philips Private ViewForum CX Synthetic Image Storage	1.3.46.670589.5.0.12	No	Yes
Philips Private ViewForum Perfusion Storage	1.3.46.670589.5.0.13	No	Yes
Philips Private ViewForum Perfusion Analysis Storage	1.3.46.670589.5.0.14	No	Yes
Philips Private ViewForum 3D Volume Object New Storage	1.3.46.670589.5.0.2.1	No	Yes
Philips Private ViewForum Surface New Storage	1.3.46.670589.5.0.3.1	No	Yes
Philips Private ViewForum MR Cardio New Storage	1.3.46.670589.5.0.8.1	No	Yes
Philips Private ViewForum CT Synthetic Image Storage	1.3.46.670589.5.0.9	No	Yes
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	No
Workflow Management			
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No

The Transfer SCU (X-Ray Angiographic and Secondary Capture Image Storage) and Print Management SCU services are part of the Standard DICOM package. (Note that this package is optional but required for DICOM functionality.)

The optional Workflow Management SCU services are part of the Advanced DICOM package.

The optional integrated ViewForum Surgical Workstation includes Transfer SCP and Query/Retrieve SCU services.

The following table provides an overview of all media services as provided by the VERADIUS UNITY.

Note: After data is written to DVD, the DVD is finalized; the finalized DVD can now be read on almost every DVD reader. Currently the BV Family supports the FSC service for CD-R(W) and DVD+R(W) media; and the FSR service accepts for DVD both DVD+R(W) and DVD-R(W) media and CD-R(W). Not supported is the Media DVD-R/-RW.
Media services are provided only when ViewForum Workstation option is present.

<div align="center">

Table 2: Media Services

</div>

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	Yes	Yes
DVD			
General Purpose DVD Interchange with JPEG	Yes	No	Yes
USB			
General Purpose USB Media Interchange with JPEG	Yes	Yes	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	03-January-2014	Proposal	Initial version
01	24-January-2014	Proposal	Final
02	27-August-2014	Approved	Final

3.2.   Audience

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

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

3.3.   Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.
This DICOM Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**
  Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into an IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.
  It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.

- **Validation**
  Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
  Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- **New versions of the DICOM Standard**
  The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery. The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

3.4.   Definitions, Terms and Abbreviations

Table 4: Definitions, Terms and Abbreviations

Abbreviations/ Terms	Explanation
AE	Application Entity
AP	Application Profile
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 Communication in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
EBE	Explicit VR Big Endian
ELE	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	Implicit VR Little Endian
IOD	Information Object Definition
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association
NM	Nuclear Medicine
PDU	Protocol Data Unit
RDSR	Radiation Dose Structure Report
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
SR	Structure Report(s)
TCP/IP	Transmission Control Protocol/ Internet Protocol
UID	Unique Identifier
US	Ultrasound
SR	Structure Report(s)

Abbreviations/ Terms	Explanation
WLM	Worklist Management
XA	X-Ray Angiographic

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 18 (NEMA PS 3.1- PS 3.18),
National Electrical Manufacturers Association (NEMA)
Publication Sales 1300 N. 17th Street, Suite 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 2011) plus all the supplements and correction items that have been approved as Final Text.

[IHE]   Integrating the Healthcare Enterprise Technical Framework Revision 5.4 Radiological Society of North America (RSNA), Inc.820 Jorie Boulevard, Oak Brook, IL, United States of America.

[VFRB]   Release Bulletin ViewForum Surgical Workstation, PMSN.

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

For the Mobile C-Arm two application entities may be distinguished: the Mobile C-Arm AE and the ViewForum Surgical Workstation AE.

The **Mobile C-Arm AE** is responsible for all networking functionality concerning acquisitions by the Mobile C-Arm. It consists of two packages (ref. Section 1): the (optional) Standard DICOM package, and the Advanced DICOM package as an optional extension to the Standard DICOM package. Using both packages the Mobile C-Arm AE offers the following functionality.

The operator can send a worklist query. (Get Worklist)

The operator can select and perform an examination (may be scheduled per worklist), resulting in an MPPS record. Then the operator can export the acquisition images; the images in the examination may be exported as separate Secondary Capture images, as XA images, or as print job. If applicable, the Mobile C-Arm AE automatically sends a Storage Commitment request for those images. When the examination is closed, (optionally) an RDSR is automatically generated (Export).

In service mode the service operator can verify application level communication. (Check)

The **ViewForum Surgical Workstation AE** is intended to view images. Those images may be exported from the Mobile C-Arm AE, or from a foreign storage SCU. (Query/Retrieve Image)

The ViewForum Surgical Workstation AE can also be used to store images on DICOM media. (Media Interchange)

The Mobile C-Arm can work both on-line and off-line. Therefore MPPS data, acquired images and dose reports that have to be transferred by the Mobile C-Arm AE are put in a queue (so only for RWA (Export)). If during queuing the Mobile C-Arm is connected to the network, they are transferred immediately and deleted from the queue.

If the Mobile C-Arm is disconnected from the network, then Query/Retrieve and Worklist Queries are disabled. MPPS, storage, and print jobs will stay in the queue. When the system is re-connected to the network, transfer of the queued items is resumed on explicit user request.

The networking application data flow is shown in the following figures.
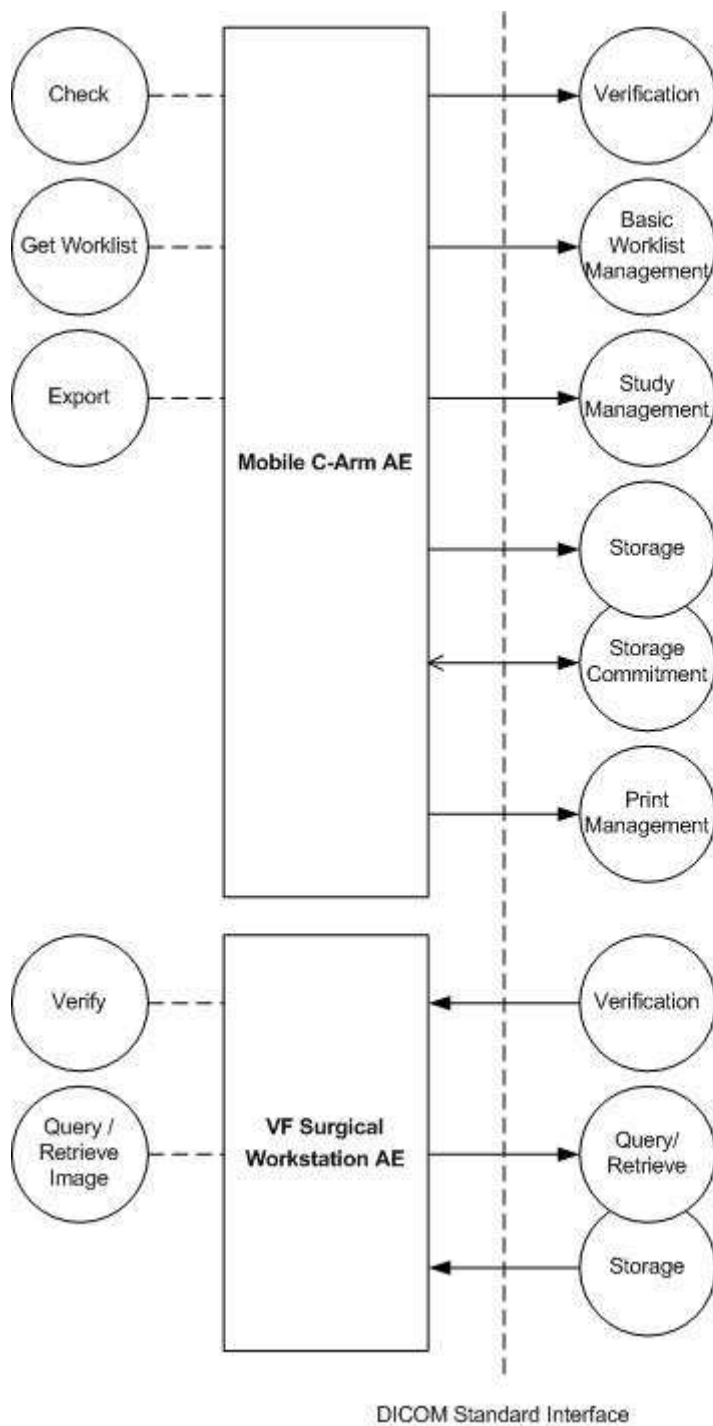
Figure 2: Application Data Flow Diagram Mobile C-Arm AE with integrated ViewForum Workstation AE

4.1.2.   Functional Definition of AE's

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

4.1.2.1.   Functional Definition of Mobile C-Arm AE

The Mobile C-Arm AE has no SCP implementation, and will act as SCU for Verification (Check), for Basic Worklist Management (Get Worklist), and for Study Management, Storage and Storage Commitment, and Print Management (Export). Initiated by the operator the Mobile C-Arm AE will propose the required presentation contexts for an association with the peer SCP. For Storage Commitment the Mobile C-Arm AE may accept associations for asynchronous event reports (Export).

4.1.2.2.   Functional Definition of ViewForum Surgical Workstation AE

The ViewForum Surgical Workstation AE can retrieve and view images from a foreign storage SCU (Query/Retrieve Image). The operator initiates a query request and selects examinations from the query response. The operator initiates a retrieve request for the selected images. The ViewForum Surgical Workstation AE as storage SCP waits for an association to import the requested images (Query/Retrieve Image).

4.1.3.   Sequencing of Real World Activities

The following figures describe the sequencing constraints of some typical acquisitions per scheduled procedure step.
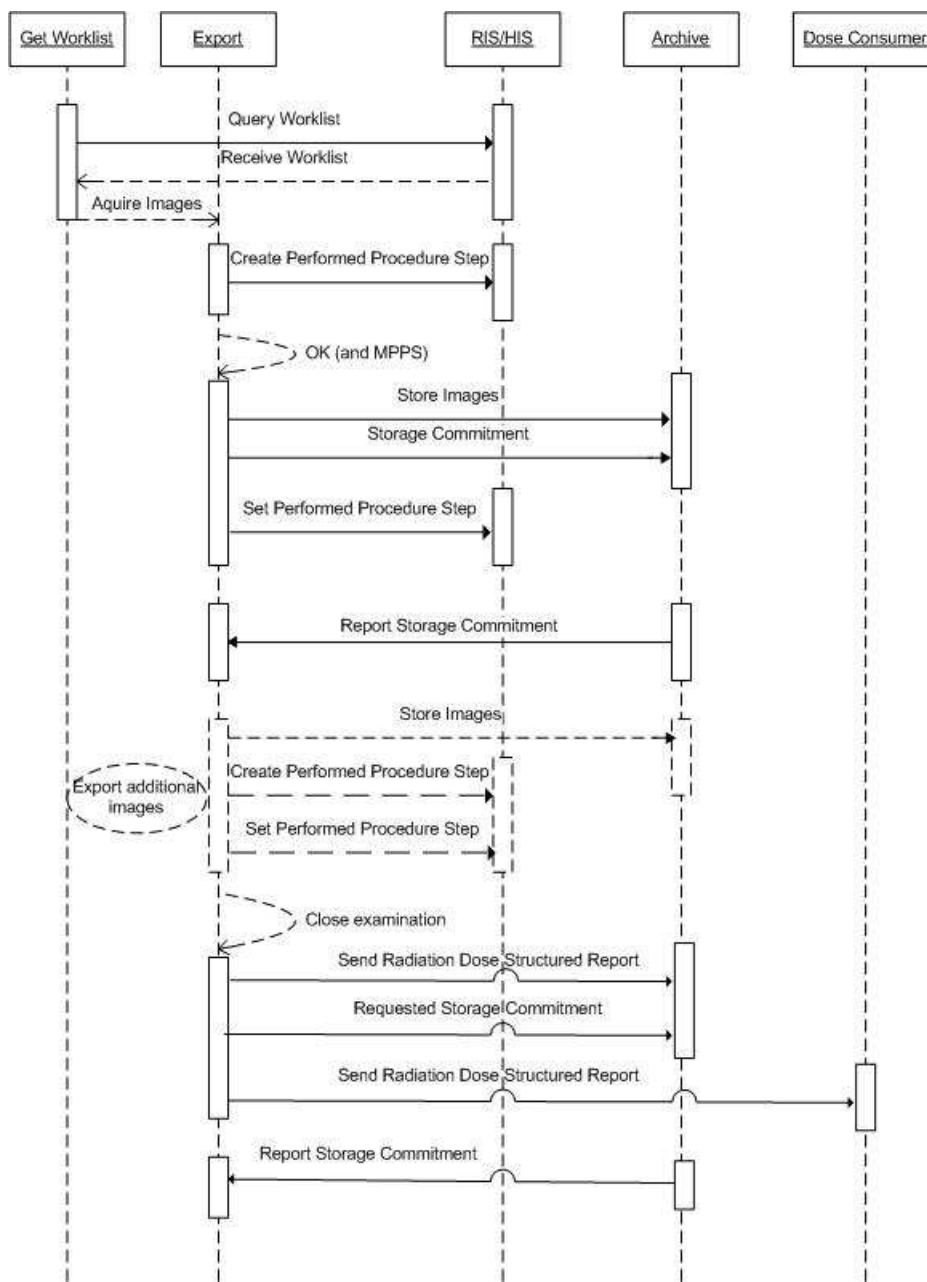
Figure 3: Typical Acquisition Archive Storage Sequencing Constraint.
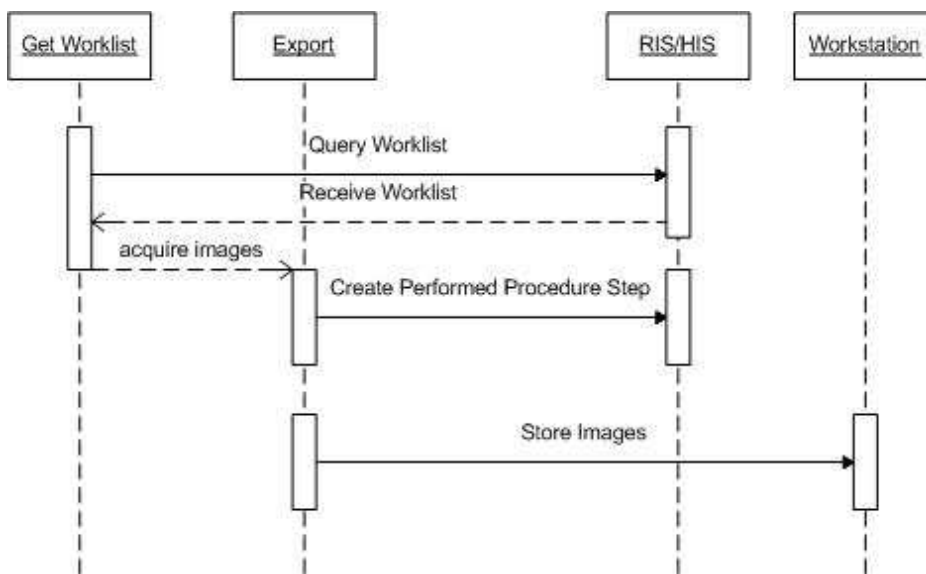
Figure 4: Typical Acquisition Workstation Storage Sequencing Constraint
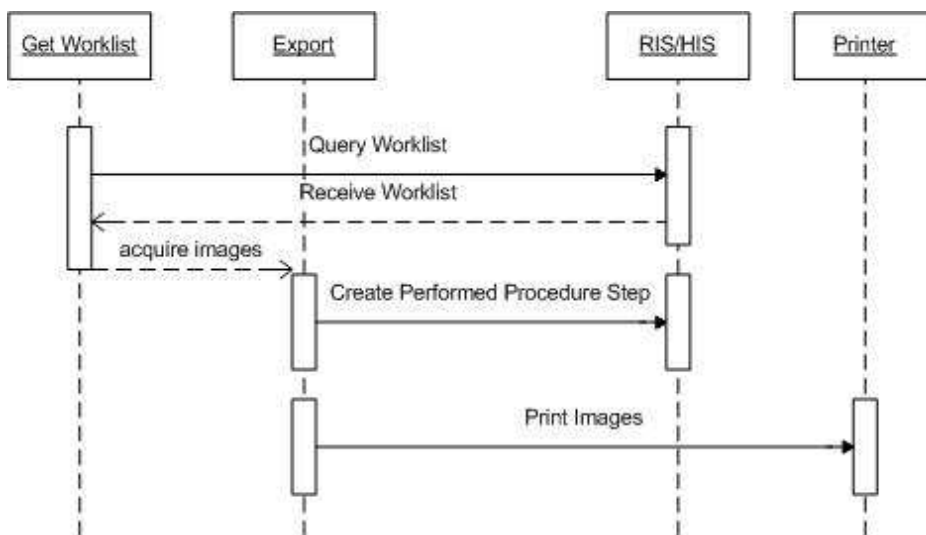
Figure 5: Typical Acquistion Print sequencing constraint

Note that an acquisition may also be started manually, i.e. without using a worklist.

The following figure describes the sequencing constraints of a typical Query/Retrieve action.
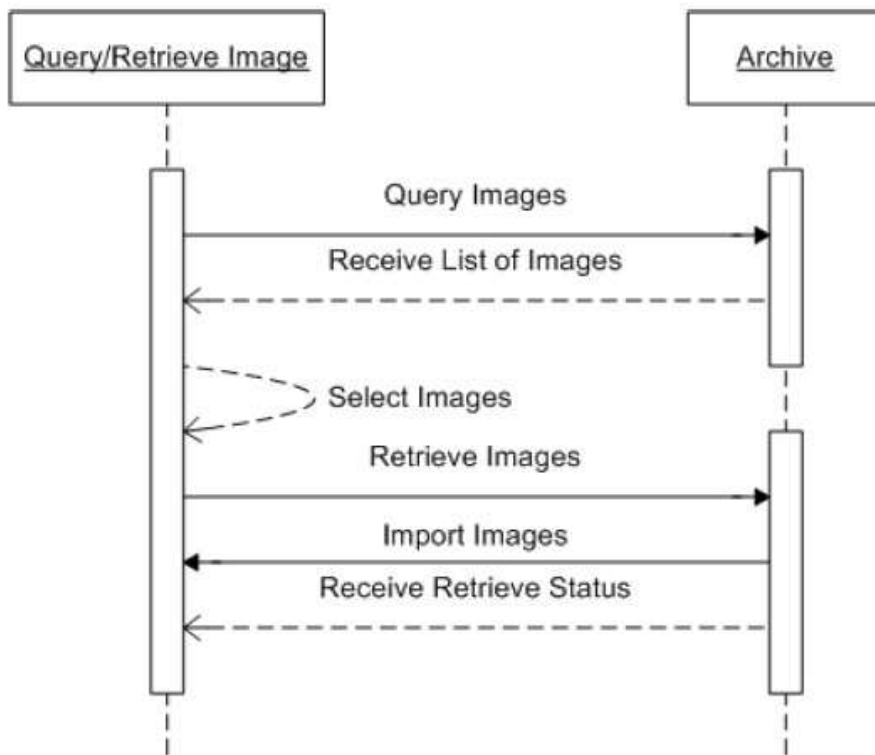
Figure 6:　Typical Query/Retrieve Sequencing Constraint

Note that Import Images will be using a separate association.

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.   Mobile C-Arm 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 Mobile C-Arm AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	No
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
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Yes	No
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	No
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	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 Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No

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

4.2.1.2.   Association Policies

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

4.2.1.2.1.   General

The DICOM standard application context name for DICOM 3.0 is always proposed.

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 a Initiator or Acceptor is specified.

The Mobile C-Arm AE may initiate and accept one association simultaneously.

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

Description	Value
Maximum number of simultaneous associations	1

Table 8: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	1

4.2.1.2.3.　Asynchronous Nature

The Mobile C-Arm AE only supports asynchronous operations for Storage Commitment report. It will not perform asynchronous window negotiation.

4.2.1.2.4.　Implementation Identifying Information

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

Table 9: DICOM Implementation Class and Version for Mobile C-Arm AE

Implementation Class UID	1.3.46.670589.7.70.4.1
Implementation Version Name	PH Mobile C R4.1

4.2.1.2.5.　Communication Failure Handling

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

Table 10: Communication Failure Behavior

Exception	Behavior
General	In the DFI the error is logged including a description of the problem. Those are the standard notifications when an association cannot be established.
Not connected	MC_NETWORK_SHUTDOWN is logged e.g. ARTIM Timeout

4.2.1.3.　Association Initiation Policy

This describes the conditions under which the AE will initiate an association.
The behavior of the AE during DICOM communication failure is summarized in the below table.

Table 11: DICOM Command Communication Failure Behavior

Exception	Behavior
Association setup failure	The association is aborted and the command marked as failed. The reason is logged and reported in the log file.
Network timeout behavior	See section 4.4.2 for corresponding configurable time to wait parameters.

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

4.2.1.3.1.1.　Description and Sequencing of Activities

In service mode the Mobile C-Arm AE can send a verification request (C-ECHO) to verify application level communication. This verification is initiated on a separate service system by using the "Check" function of the BV Scope program.
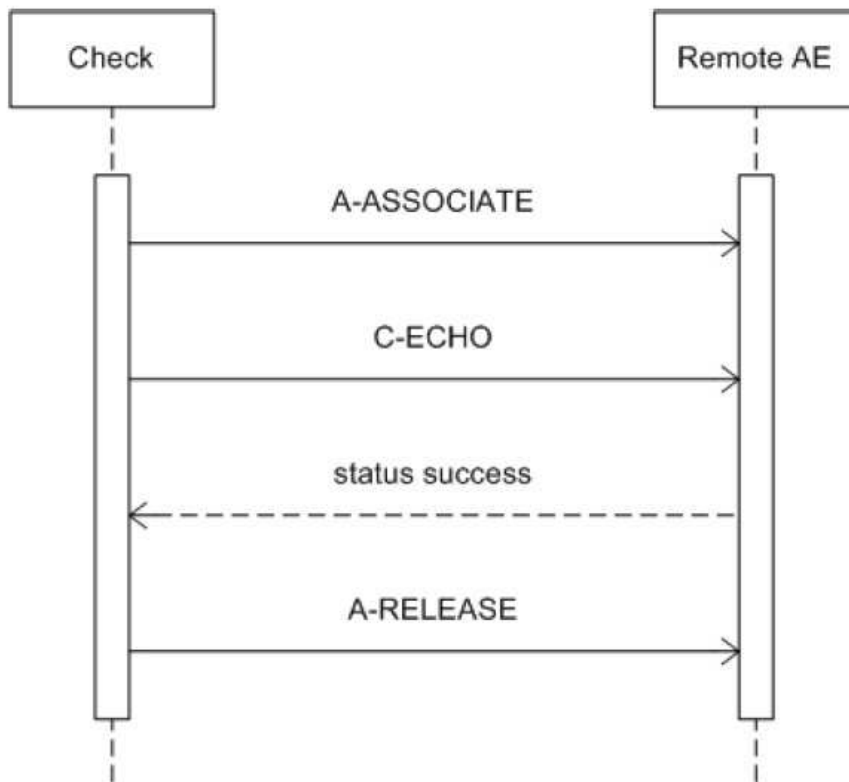
Figure 7: Sequencing of RWA Check

4.2.1.3.1.2.   Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 12: 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	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.1.3.1.3.   SOP Specific Conformance for Verification SOP Class

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

The Mobile C-Arm AE provides standard conformance to the Verification service class.

4.2.1.3.1.3.1.   Dataset Specific Conformance for Verification C-ECHO SCU

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

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

Table 13: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Confirmation	The SCP has successfully returned a verification response.

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

4.2.1.3.2.1.   Description and Sequencing of Activities

The Mobile C-Arm AE can send a modality worklist query (C-FIND) to update the Mobile C-Arm worklist.
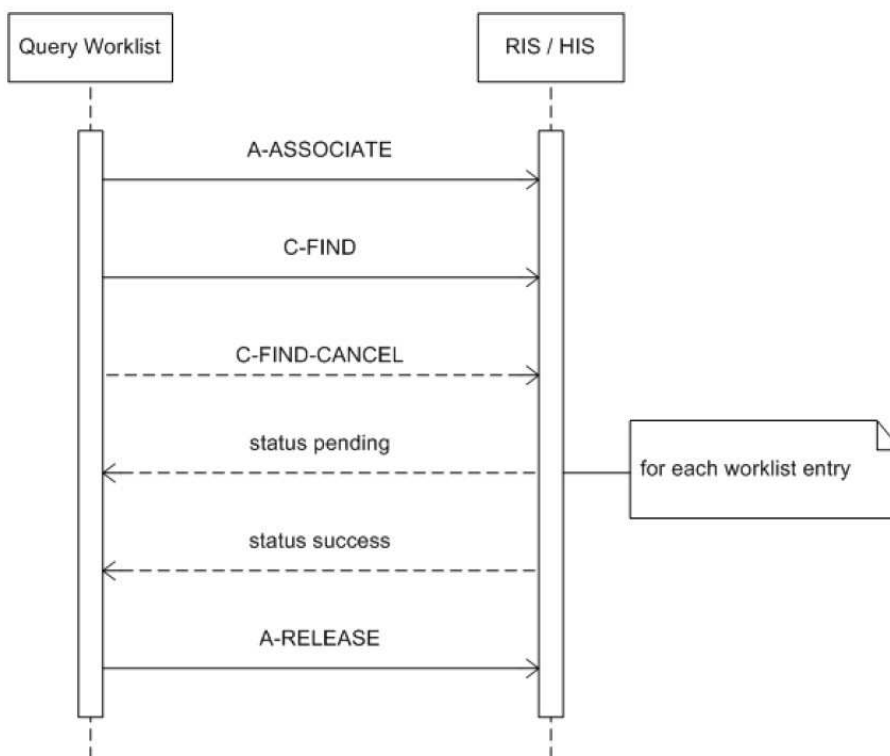
Figure 8: Sequencing of RWA Get Worklist

The worklist query is initiated by selecting "Get Worklist". Then the Mobile C-Arm AE opens an association and sends a modality worklist query. The BWLM SCP (RIS/HIS) returns the applicable worklist; a response with status Pending is received for each new entry, the final response has status Success. After the final response the Mobile C-Arm AE releases the association.

The contents of the received worklist are compared with the contents of the previous worklist. In case there are any changes, the Mobile C-Arm patient file is updated. A unique match of the following attributes identifies a worklist entry.

Table 14: Matching Criteria for Identifying Worklist Entries

Attribute Name	Tag
Scheduled Procedure Step ID	(0040,0009)
Accession Number	(0008,0050)
Requested Procedure ID	(0040,1001)

If none of these identification attributes is present then the received worklist entry is ignored.

4.2.1.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 15: Proposed Presentation Contexts for (Real-World) Activity – Modality worklist As SCU

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

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

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

The Mobile C-Arm AE provides standard conformance to the Modality Worklist SOP class.

The Mobile C-Arm AE can contain a number of 100 worklist entries. If the sum of current and new worklist entries exceeds 100 then not all new entries added before the Mobile C-Arm AE releases the association. The Mobile C-Arm AE will show a message stating that the maximum number of examinations was reached.

Mobile C-Arm provides a broad query with the following attributes:
• Scheduled Procedure Step Start Date
• Modality Type
• Scheduled Station AE Title
• Scheduled Station Name

These query attributes are fixed. These fixed attributes can be configured.

A patient specific worklist query is possible with the following attributes:
• Scheduled Procedure Step Start Date (configured value)
• Modality Type (configured value)
• Patient Name
• Patient ID
• Accession Number
• Requested Procedure ID

The table in the next section provides the list of query attributes, displayed attributes, required attributes, etc. The table also lists the type of matching for the query attributes.

4.2.1.3.2.3.1. Dataset Specific Conformance for Modality Worklist Information Model - FIND 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 to the user during a patient

	registration dialog.
IOD:	An "X" indicates that this Worklist attribute is included into all object Instances created during performance of the related Procedure Step.
Type of matching:	The following types of matching exists:
	Single Value Matching
	List of UID Matching
	Wild Card Matching
	Range Matching
	Sequence Matching
	Universal Matching

Table 16: Worklist Request Identifier

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Identification Module									
Other Patient IDs	0010,1000	LO		X			X	Universal	
Other Patient Names	0010,1001	PN		X		X	X	Universal	
Patient ID	0010,0020	LO		X	X	X	X	Single Value	
Patient's Name	0010,0010	PN		X	X	X	X	WildCard	
Patient Demographic Module									
Patient's Birth Date	0010,0030	DA		X		X	X	Universal	
Patient's Birth Time	0010,0032	TM		X			X	Universal	
Patient's Sex	0010,0040	CS		X		X	X	Universal	
Patient's Weight	0010,1030	DS		X		X	X	Universal	
Patient Medical Module									
Allergies	0010,2110	LO		X		X		Universal	
Medical Alerts	0010,2000	LO		X		X		Universal	
Special Needs	0038,0050	LO		X		X		Universal	
Visit Relationship Module									
Referenced Patient Sequence	0008,1120	SQ		X			X		
>Referenced SOP Class UID	0008,1150	UI		X			X	Universal	
>Referenced SOP Instance UID	0008,1155	UI		X			X	Universal	
SOP Common Module									
Specific Character Set	0008,0005	CS		X			X	Universal	Required if expanded/replacement character set used.
Scheduled Procedure Step Module									
Scheduled Procedure Step Sequence	0040,0100	SQ		X					
>Modality	0008,0060	CS		X	X	X	X	Single Value	
>Pre-Medication	0040,0012	LO		X		X		Universal	
>Requested Contrast Agent	0032,1070	LO		X		X		Universal	
>Scheduled Performing Physician's Name	0040,0006	PN		X		X	X	Universal	
>Scheduled Procedure Step Description	0040,0007	LO		X		X	X	Universal	
>Scheduled Procedure Step ID	0040,0009	SH		X			X	Universal	
>Scheduled Procedure Step Location	0040,0011	SH		X		X		Universal	
>Scheduled Procedure Step Start Date	0040,0002	DA		X	X	X	X	Range	
>Scheduled Procedure Step Start Time	0040,0003	TM		X		X	X	Universal	

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
>Scheduled Station AE Title	0040,0001	AE		X	X		X	Single Value	
>Scheduled Station Name	0040,0010	SH		X		X	X	Single Value	
>Scheduled Protocol Code Sequence	0040,0008	SQ		X			X		
>>Code Meaning	0008,0104	LO		X			X	Universal	
>>Code Value	0008,0100	SH		X			X	Universal	
>>Coding Scheme Designator	0008,0102	SH		X			X	Universal	
>>Coding Scheme Version	0008,0103	SH		X			X	Universal	
Requested Procedure Module									
Requested Procedure Description	0032,1060	LO		X		X	X	Universal	
Requested Procedure ID	0040,1001	SH		X	X	X	X	Single Value	
Study Instance UID	0020,000D	UI		X			X	Universal	
Referenced Study Sequence	0008,1110	SQ		X			X		
>Referenced SOP Class UID	0008,1150	UI		X			X	Universal	
>Referenced SOP Instance UID	0008,1155	UI		X			X	Universal	
Reason for the Requested Procedure	0040,1002	LO		X			X	Universal	
Reason for Requested Procedure Code Sequence	0040,100A	SQ		X			X	Universal	configurable
>Code Meaning	0008,0104	LO		X			X	Universal	configurable
>Code Value	0008,0100	SH		X			X	Universal	configurable
>Coding Scheme Designator	0008,0102	SH		X			X	Universal	configurable
>Coding Scheme Version	0008,0103	SH		X			X	Universal	configurable
Requested Procedure Code Sequence	0032,1064	SQ		X			X		
>Code Meaning	0008,0104	LO		X			X	Universal	
>Code Value	0008,0100	SH		X			X	Universal	
>Coding Scheme Designator	0008,0102	SH		X			X	Universal	
>Coding Scheme Version	0008,0103	SH		X			X	Universal	
Imaging Service Request Module									
Accession Number	0008,0050	SH		X	X	X	X	Single Value	
Referring Physician's Name	0008,0090	PN		X		X	X	Universal	
Placer Order Number / Imaging Service Request	0040,2016	LO		X			X	Universal	
Filler Order Number / Imaging Service Request	0040,2017	LO		X			X	Universal	
Visit Admission Module									
Admitting Diagnoses Description	0008,1080	LO		X			X	Universal	
Admitting Diagnoses Code Sequence	0008,1084	SQ		X			X	Universal	
>Code Meaning	0008,0104	LO		X			X	Universal	
>Code Value	0008,0100	SH		X			X	Universal	
>Coding Scheme Designator	0008,0102	SH		X			X	Universal	
>Coding Scheme Version	0008,0103	SH		X			X	Universal	

The default Query Configuration is set to Modality (OT) and Date (Today). Optionally, additional matching for the own AET and/or own Station Name is configurable.

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

Table 17: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete - No final identifier is supplied	The association is released and the matches are stored.
Failure	A700	Refused - Out of resources	Processing of the matches and the association is terminated. A message appears in the GUI.
	A900	Failed - Identifier does not match SOP class	The association is terminated and the status is logged into the system error log. A message appears in the GUI.
	Cxxx	Failed - Unable to process	Processing of the matches and the association is terminated. A message appears in the GUI.
Pending	FF00	Matches are continuing - Current match is supplied and any optional keys were supported in the same manner as required keys	Processing of the matches continues.
	FF01	Matches are continuing - Warning that one or more optional keys were not supported for existence for this identifier	Processing of the matches continues without any warnings or errors.

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

After an acquisition the Mobile C-Arm AE sends related MPPS data to a Study Management SCP (RIS/HIS). Then the acquired image is stored or printed according the settings as specified by the operator.
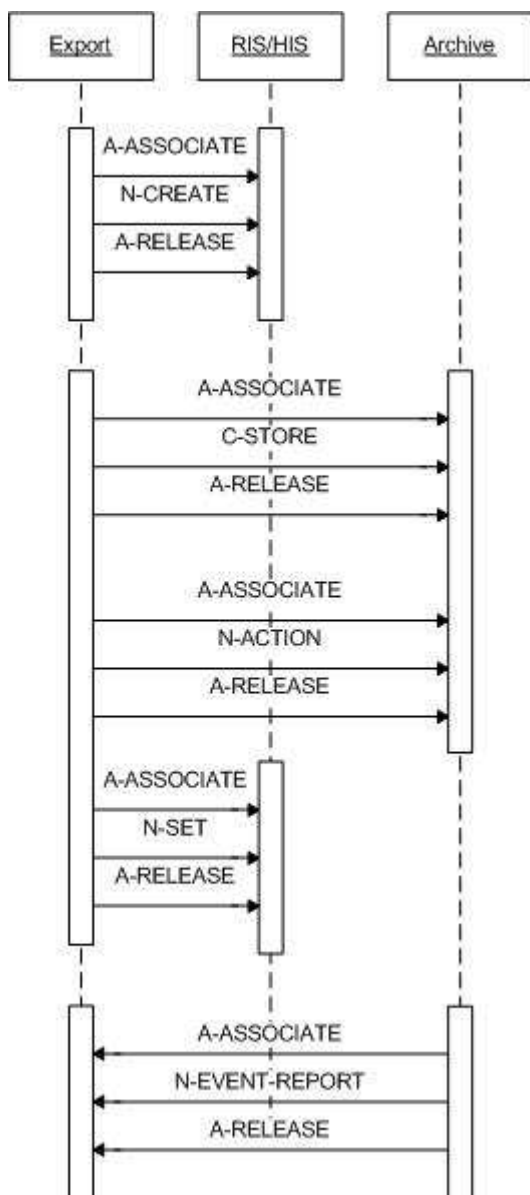
Figure 9: RWA - Modality Performed Procedure Step

The Modality Performed Procedure Step for a specific exam happens in two steps.

An examination is selected from Scheduled work list (or added new examination within the system).
Examination is started.
Acquisition is started. At this moment MPPS N-CREATE with status "IN PROGRESS" will be sent to RIS when first image is acquired within an examination.

When operator selects the acquired images and exports them to the DICOM network node that is configured to trigger MPPS, then after the images are exported, MPPS N-SET will be sent to RIS with status either COMPLETED or DISCONTINUED.

When additional images are selected and exported, then new instance of MPPS N-CREATE and N-SET will be created and sent to RIS. If at system configuration "Append MPPS for additional exported images" is no, then no new MPPS messages are sent to RIS.

4.2.1.3.3.2. Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 18: 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	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

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

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

The Mobile C-Arm AE provides standard conformance to the Modality Performed Procedure Step SOP class.

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 19: MPPS Request Identifiers for N-CREATE-RQ

Attribute Name	Tag	VR	Value	Comment
SOP Common Module				
Specific Character Set	0008,0005	CS	ISO_IR 100	Required if expanded/replacement character set used.
Performed Procedure Step Relationship Module				
Patient ID	0010,0020	LO		From WLM or entered by user.
Patient's Birth Date	0010,0030	DA		From WLM or entered by user.
Patient's Name	0010,0010	PN		From WLM or entered by user.
Patient's Sex	0010,0040	CS	F, M, O	From WLM or entered by user.
Referenced Patient Sequence	0008,1120	SQ		EMPTY or from WLM
>Referenced SOP Class UID	0008,1150	UI		From WLM
>Referenced SOP Instance UID	0008,1155	UI		From WLM
Scheduled Step Attributes Sequence	0040,0270	SQ		
>Accession Number	0008,0050	SH		From WLM or entered by User.
>Requested Procedure Description	0032,1060	LO		EMPTY or from WLM.
>Requested Procedure ID	0040,1001	SH		EMPTY or from WLM.
>Scheduled Procedure Step Description	0040,0007	LO		EMPTY or from WLM.
>Scheduled Procedure Step ID	0040,0009	SH		EMPTY or from WLM.
>Study Instance UID	0020,000D	UI		Newly generated or from WLM/
>Referenced Study Sequence	0008,1110	SQ		EMPTY or from WLM.
>>Referenced SOP Class UID	0008,1150	UI		From WLM.
>>Referenced SOP Instance UID	0008,1155	UI		From WLM.

Attribute Name	Tag	VR	Value	Comment
>Scheduled Protocol Code Sequence	0040,0008	SQ		EMPTY or from WLM
>>Code Meaning	0008,0104	LO		From WLM.
>>Code Value	0008,0100	SH		From WLM.
>>Coding Scheme Designator	0008,0102	SH		From WLM.
>>Coding Scheme Version	0008,0103	SH		From WLM.
Performed Procedure Step Information Module				
Performed Location	0040,0243	SH		EMPTY
Performed Procedure Step Description	0040,0254	LO		Copied from Requested Procedure Description (0032,1060) or Scheduled Procedure Step description (0040,0007) of MWL. If MWL is empty, then Examination Type is used.
Performed Procedure Step End Date	0040,0250	DA		EMPTY
Performed Procedure Step End Time	0040,0251	TM		EMPTY
Performed Procedure Step ID	0040,0253	SH		Running counter.
Performed Procedure Step Start Date	0040,0244	DA		Exam date, format: <yyyymmdd>
Performed Procedure Step Start Time	0040,0245	TM		Exam time, format: <hhmmss>
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS	
Performed Procedure Type Description	0040,0255	LO		EMPTY
Performed Station AE Title	0040,0241	AE		System AE Title.
Performed Station Name	0040,0242	SH		
Procedure Code Sequence	0008,1032	SQ		EMPTY or from WLM ->Requested Procedure Code Sequence.
>Code Meaning	0008,0104	LO		From WLM.
>Code Value	0008,0100	SH		From WLM.
>Coding Scheme Designator	0008,0102	SH		From WLM.
>Coding Scheme Version	0008,0103	SH		From WLM.
Image Acquisition Results Module				
Modality	0008,0060	CS		From WLM.
Study ID	0020,0010	SH		EMPTY or from WLM->Requested Procedure ID
Performed Protocol Code Sequence	0040,0260	SQ		EMPTY
Performed Series Sequence	0040,0340	SQ		EMPTY

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	Success	The SCP has completed the MPPS service request successfully.
Failure	0105	No such attribute	The association is aborted and the MPPS service request is marked as failed in the export queue.
Failure	0110	Processing failure - Performed procedure step object may no longer be updated	The association is aborted and the MPPS service request is marked as failed in the export queue.
Warning	0107	Attribute list error	The MPPS service request is considered successful.
Warning	0116	Attribute value out of range	The MPPS service request is considered successful.

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 21: 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		EMPTY
Performed Procedure Step End Date	0040,0250	DA		<yyyymmdd>
Performed Procedure Step End Time	0040,0251	TM		<hhmmss>
Performed Procedure Step Status	0040,0252	CS	COMPLETED, DISCONTINUED	
Performed Procedure Type Description	0040,0255	LO		EMPTY
Performed Procedure Step Discontinuation Reason Code Sequence	0040,0281	SQ		Present if Performed Procedure Step Status is DISCONTINUED
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
Image Acquisition Results Module				
Performed Series Sequence	0040,0340	SQ		
>Operators' Name	0008,1070	PN		Performing Technologist.
>Performing Physician's Name	0008,1050	PN		EMPTY or copied from Scheduled Performing Physician's name if provided by MWL, or can entered by operator.
>Protocol Name	0018,1030	LO		User selectable in MPPS panel.
>Retrieve AE Title	0008,0054	AE		EMPTY
>Series Description	0008,103E	LO		EMPTY
>Series Instance UID	0020,000E	UI		Reference to series.
>Referenced Image Sequence	0008,1140	SQ		Reference to all sent images.
>>Referenced SOP Class UID	0008,1150	UI		1.2.840.10008.5.1.4.1.1.12.1
>>Referenced SOP Instance UID	0008,1155	UI		
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		EMPTY.
Radiation Dose Module				
Entrance Dose	0040,0302	US		Attribute is sent with an appropriate value
Entrance Dose in mGy	0040,8302	DS		Attribute is sent with an appropriate value
Image and Fluoroscopy Area Dose Product	0018,115E	DS		Attribute is sent with an appropriate value
Total Number of Exposures	0040,0301	US		Attribute is sent with an appropriate value
Total Time of Fluoroscopy	0040,0300	US		Attribute is sent with an appropriate value

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

Table 22: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the MPPS service request successfully
Failure	0105	No such attribute	The association is aborted and the MPPS service request is marked as failed in the export queue
Failure	0110	Processing failure - Performed procedure step object may no longer be updated	The association is aborted and the MPPS service request is marked as failed in the export queue
Warning	0107	Attribute list error	The MPPS service request is considered successful.
Warning	0116	Attribute value out of range	The MPPS service request is considered successful.

4.2.1.3.4.   (Real-World) Activity – Instance Export

4.2.1.3.4.1.   Description and Sequencing of Activities

After selection of an instance file, the file will be sent when initiating the Send command. The Mobile C-Arm AE initiates one association to the preconfigured peer system and uses it to send the selected instance and runs via CSTORE requests (and receives the associated C-STORE responses). The association is released after successful transfer of the instances or when an error occurs.

The following instances are supported:
- Images
- RDSRs

The Mobile C-Arm AE handles each send request one after another.

Figure 10: RWA Export(C-STORE)

4.2.1.3.4.2.   Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 23: Proposed Presentation Contexts for (Real-World) Activity – Instance Export

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.1.3.4.3. SOP Specific Conformance for Storage SOP Classes

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

The Mobile C-Arm AE provides standard conformance to the Storage SOP classes.

The Mobile C-Arm administration is based on Examinations, where each Examination is mapped to one Study (for one Patient). An Examination consists of one or more Runs, where each Run is mapped to one Series.

Note that a Secondary Capture Series can contain one or more Secondary Capture Images, though an XA Series can contain only one multi-frame XA Image of one or more Frames.

Upon receiving a C-STORE response with status Error or Refused, the Mobile C-Arm AE will release the association. The transfer of all of the selected images of the examination will be considered failed. The operator may retry export jobs manually.

4.2.1.3.4.3.1. Dataset Specific Conformance for C-STORE-RQ

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

Table 24: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the Storage service request successfully.
Failure	A7xx	Refused - Out of Resources	Image transfer is considered failed. Images remain in queue. User can initiate retry. Status is logged in system file.
	A9xx	Error - Data Set does not match SOP Class	Image transfer is considered failed. Images remain in queue. User can initiate retry. Status is logged in system file.
	C000	Error - Cannot understand	Image transfer is considered failed. Images remain in queue. User can initiate retry. Status is logged in system file.
Warning	B000	Coercion of Data Elements	Image transfer is considered successful. Status is logged in system file.
	B007	Data Set does not match SOP Class	Image transfer is considered successful. Status is logged in system file.
	B006	Elements Discarded	Image transfer is considered successful. Status is logged in system file.

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

If the configured storage DICOM node is Archive, then Storage commitment is initiated by Mobile C-Arm. Mobile C-Arm supports asynchronous storage commitment.
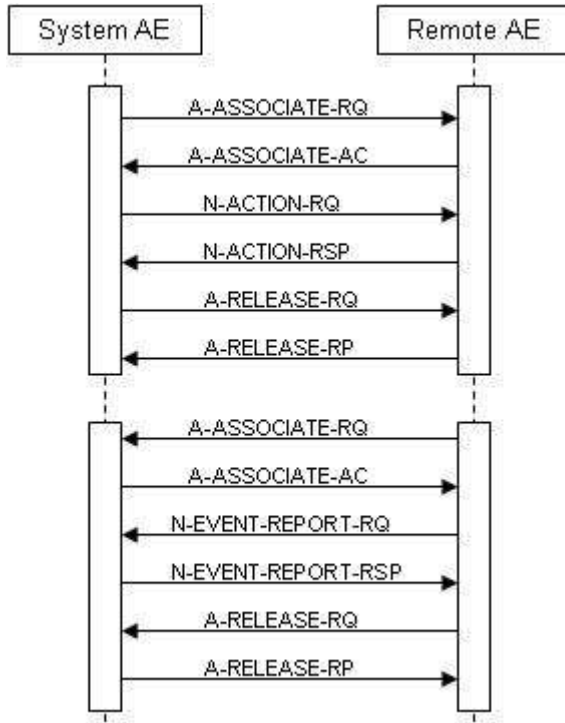
Figure 11: RWA Storage Commitment

4.2.1.3.5.2.   Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 25: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCU

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

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

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

The Mobile C-Arm AE provides standard conformance to the Storage Commitment Push Model SOP class for Asynchronous storage commitment.

4.2.1.3.5.3.1.   Dataset Specific Conformance for Storage Commitment Push Model N-ACTION SCU

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

Table 26: Storage Commitment Attribute for N-ACTION-RQ

Attribute Name	Tag	Comment
Storage Commitment Module		
Transaction UID	0008,1195	Generated Unique ID each transaction.
Referenced SOP Sequence	0008,1199	References to all images sent.
>Referenced SOP Class UID	0008,1150	References to send SOP Class.
>Referenced SOP Instance UID	0008,1155	References to all images sent.

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

Table 27: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has completed the Storage Commitment service request successfully.
Abort	xxxx	Any other status code	The association is aborted and the storage commitment is marked as failed.

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

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

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

Table 28: Storage Commitment - N-EVENT-REPORT Behavior

Event Type Name	Event Type ID	Behavior
Storage Commitment Request Successful	1	The Referenced SOP Instances under Referenced SOP Sequence (0008, 1199) are marked within the database as "Stored & Committed (SC)" to the value of Retrieve AE Title (0008, 0054).
Storage Commitment Request Complete - Failures Exist	2	In case of a "Failure Exist" situation (Referenced SOP Instances under Failed SOP Sequence (0008, 1198)), all of the stored SOP Instances for that examination are considered as failed for storage commitment. A send job that failed storage commitment will not be automatically restarted but can be resumed by the user.

Table 29: Storage Commitment N-EVENT-REPORT Failure Handling Behavior

Service Status	Error Code	Further Meaning	Description
Success	0000	Success	The Mobile C-Arm AE has completed the operation successfully.
Failure	*	Any other failure status code	The association is aborted and the storage commit NEVENT-REPORT is marked as failed

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

4.2.1.3.6.1.　　Description and Sequencing of Activities
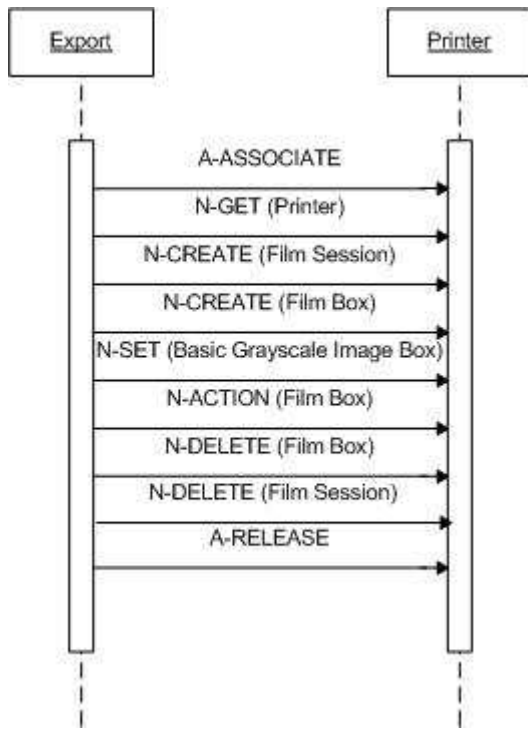
Figure 12: RWA - Print

Based on the selected layout, the Mobile C-Arm AE will create a Film Session containing a single Film Box. The content of the Image Box will be filled for the print request (Film Box level). Once the print session has completed the Film Session will be deleted. A new Film Box is created for each successive film within the Film Session.

The Mobile C-Arm AE is implemented to acquire grayscale images and thus to negotiate for Basic Grayscale Print Management. The processing of a print job can be cancelled at any time; then the Mobile C-Arm AE will abort the processing immediately.

Before a queued print job is actually started, the system will retrieve the printer status. Upon receiving a normalized service response (N-GET) containing a Failure or Warning status, the Mobile C-Arm AE does not start the export job.

Upon receiving a print command response with failure status, the Mobile C-Arm AE will release the association. The transfer of all of the selected images of the examination will be considered failed. The operator may retry export jobs manually.

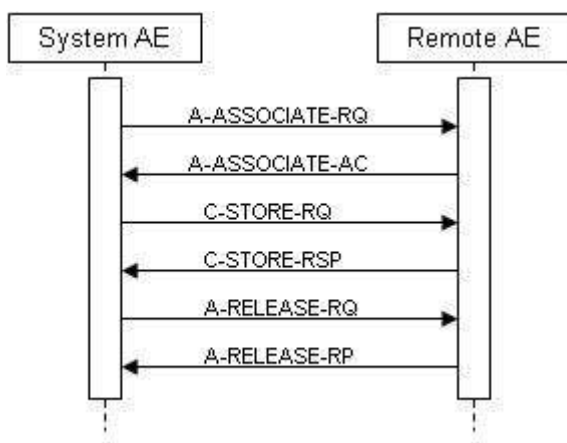#### 4.2.1.3.6.2.   Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 30: 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 Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

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

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

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

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

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

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

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

4.2.1.3.6.3.1.   Dataset Specific Conformance for Basic Film Session N-ACTION SCU

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

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

Table 31: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film accepted for printing	Normal completion
Warning	B6XX		Print Film Session considered successful. Status logged in system file.
Failure	C6XX		Print Film Session considered failed. Status logged in system file.

4.2.1.3.6.3.2.   Dataset Specific Conformance for Basic Film Session Presentation Module

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

Table 32: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	CONFIG	Integer (1-99)
Print Priority	2000,0020	CS	HIGH, LOW, MED	ALWAYS	CONFIG	
Medium Type	2000,0030	CS	BLUE FILM, CLEAR FILM, CURRENT, PAPER, TRANSPARENCY	ALWAYS	CONFIG	
Film Destination	2000,0040	CS	BIN_i (i=Integer), CURRENT, MAGAZINE, PROCESSOR	ALWAYS	CONFIG	(i=Integer)
Film Session Label	2000,0050	LO		ALWAYS	AUTO	Equal to Exam Type

Note: The default values are printer type dependent.

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

Table 33: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	Normal completion
Warning	B6XX		Print Film Session considered successful. Status logged in system file.
Failure	C6XX		Print Film Session considered failed. Status logged in system file.

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

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

4.2.1.3.6.4.1. Dataset Specific Conformance for Printer N-GET SCU

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

Table 34: Printer Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Printer Status	2110,0010	CS		ALWAYS	AUTO	Provided by printer
Printer Status Info	2110,0020	CS		ALWAYS	AUTO	Provided by printer

Note: Only in case that the printer responds with a Printer status of "NORMAL" or "WARNING" the Mobile C-Arm AE continues printing of the images.

4.2.1.3.6.4.2. Dataset Specific Conformance for Printer N-EVENT-REPORT SCU

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

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

Table 35: Printer - N-EVENT-REPORT Behavior

Event Type Name	Event Type ID	Behavior
NORMAL	1	When evaluated, the Mobile C-Arm AE sends response. The event is logged. The print job continues.
WARNING	2	When evaluated, the Mobile C-Arm AE sends response. The event is logged. The print job continues.
FAILURE	3	When evaluated, the Mobile C-Arm AE sends response. The event is logged. The print job gets aborted and is marked as failed.

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

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

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

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

Table 36: Status Response.

Service Status	Error Code	Further Meaning	Description
Success	0000	Successful operation.	The print job continues.
Failed	C602	Unable to create print job SOP instance – print queue is full.	The print job is marked as failed; the reason is reported and logged.
	C603	Image size is larger than image box size.	The print job is marked as failed; the reason is reported and logged.
	C613	Combined print image size is larger than image box size.	The print job is marked as failed; the reason is reported and logged.
Warning	B603	Film Box SOP instance hierarchy does not contain Image Box SOP instances.	The print job continues and the warning is reported and logged.
	B604	Image size is larger than image box size – the image has been Demagnetized.	The print job continues and the warning is reported and logged.
	B609	Image size is larger than image box size – the image has been cropped to fit	The print job continues and the warning is reported and logged.
	B60A	Image size or combined print image size is larger than image box size – the image or combined print image has been decimated to fit.	The print job continues and the warning is reported and logged.

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

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

Table 37: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST	STANDARD\1,1, STANDARD\1,2, STANDARD\2,2, STANDARD\2,3	ALWAYS	USER	
Film Orientation	2010,0040	CS	LANDSCAPE, PORTRAIT	ALWAYS	CONFIG	

Film Size ID	2010,0050	CS	10INX12IN, 10INX14IN, 11INX11IN, 11INX14IN, 11INX17IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM, 8_5INX11IN, 8INX10IN, A3, A4, CURRENT	ALWAYS	CONFIG	
Magnification Type	2010,0060	CS	BILINEAR, CUBIC, NONE, REPLICATE	ALWAYS	CONFIG	
Smoothing Type	2010,0080	CS	1, 10, 11, 12, 13, 14, 140, 15, 2, 3, 4, 5, 6, 7, 8, 9, ENHANCED, ENHANCED1, MEDIUM, NORMAL, SHARP, SMOOTH	ALWAYS	CONFIG	
Border Density	2010,0100	CS	BLACK, OD (integer), WHITE	ALWAYS	CONFIG	(i), integer range: 0..1000
Empty Image Density	2010,0110	CS	BLACK, WHITE	ALWAYS	CONFIG	
Min Density	2010,0120	US	0..1000	ALWAYS	CONFIG	
Max Density	2010,0130	US	0..1000	ALWAYS	CONFIG	
Trim	2010,0140	CS	NO, YES	ALWAYS	CONFIG	
Configuration Information	2010,0150	ST		ALWAYS	CONFIG	Printer configurable character string (max. 1024 char.)

Table 38: Basic Film Box Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Film Session Sequence	2010,0500	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.1.1	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Note: The default values and ranges are printer type dependent.

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

Table 39: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Box successfully created	Normal completion
Warning	B6XX		Print Film Session considered successful. Status logged in system file.
Failure	C6XX		Print Film Session considered failed. Status logged in system file.

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

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

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

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

Table 40: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US		ALWAYS	AUTO	Generated
Polarity	2020,0020	CS	NORMAL, REVERSE	ALWAYS	CONFIG	
Basic Grayscale Image Sequence	2020,0110	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	
>Rows	0028,0010	US	1024	ALWAYS	FIXED	
>Columns	0028,0011	US	1280	ALWAYS	FIXED	
>Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	
>Bits Stored	0028,0101	US	12	ALWAYS	FIXED	
>High Bit	0028,0102	US	11	ALWAYS	FIXED	
>Pixel Representation	0028,0103	US	0x0000	ALWAYS	FIXED	
>Pixel Data	7FE0,0010	OW/ OB		ALWAYS	AUTO	

Note: The default values are printer type dependent.

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

Table 41: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Image successfully stored in Image Box	Normal completion
Warning	B6XX		Print Film Session considered successful. Status logged in system file.
Failure	C6XX		Print Film Session considered failed. Status logged in system file.

4.2.1.4. Association Acceptance Policy

Not applicable.

4.2.2.   ViewForum Surgical Workstation AE

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

4.2.2.1.   SOP Classes

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

Table 42: SOP Classes for ViewForum Surgical Workstation AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	No	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	No	Yes
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	No	Yes
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	No	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	No	Yes
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	No	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	No	Yes
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	No	Yes
Patient Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
PatientStudy Only QR Info. Model - FIND SOP Class (Retired)	1.2.840.10008.5.1.4.1.2.3.1	Yes	No
PatientStudy Only QR Info. Model - MOVE SOP Class (Retired)	1.2.840.10008.5.1.4.1.2.3.2	Yes	No
Philips Private X-Ray Image Storage	1.3.46.670589.2.3.1.1	No	Yes
Philips Private Reconstructed X-ray Storage	1.3.46.670589.2.4.1.1	No	Yes
Philips Private ViewForum 3D Volume New Storage	1.3.46.670589.5.0.1.1	No	Yes
Philips Private ViewForum MR Synthetic Image Storage	1.3.46.670589.5.0.10	No	Yes
Philips Private ViewForum MR Cardio Analysis New Storage	1.3.46.670589.5.0.11.1	No	Yes
Philips Private ViewForum CX Synthetic Image Storage	1.3.46.670589.5.0.12	No	Yes
Philips Private ViewForum Perfusion Storage	1.3.46.670589.5.0.13	No	Yes
Philips Private ViewForum Perfusion Analysis Storage	1.3.46.670589.5.0.14	No	Yes
Philips Private ViewForum 3D Volume Object New Storage	1.3.46.670589.5.0.2.1	No	Yes
Philips Private ViewForum Surface New Storage	1.3.46.670589.5.0.3.1	No	Yes
Philips Private ViewForum MR Cardio New Storage	1.3.46.670589.5.0.8.1	No	Yes
Philips Private ViewForum CT Synthetic Image Storage	1.3.46.670589.5.0.9	No	Yes

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

4.2.2.2.   Association Policies

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

4.2.2.2.1.   General

The DICOM standard application context name for DICOM 3.0 is always proposed.

Table 43: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2. Number of Associations

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

The ViewForum Surgical Workstation AE may initiate and accept one association simultaneously.

Table 44: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	1

Table 45: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	configurable

4.2.2.2.3. Asynchronous Nature

The ViewForum Surgical Workstation AE does not support asynchronous operations and will not perform asynchronous window negotiation.

4.2.2.2.4. Implementation Identifying Information

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

Table 46: DICOM Implementation Class and Version for ViewForum Surgical Workstation AE

Implementation Class UID	1.3.46.670589.5.2.23
Implementation Version Name	ViewForum R6.3

4.2.2.2.5. Communication Failure Handling

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

Table 47: Communication Failure Behavior

Exception	Behavior
ARTIM Timeout	The job fails in case of association setup. The reason is logged and reported to the operator.
Reply Timeout	The job fails and the association is aborted. The reason is logged and reported to the operator.
Association Timeout	The association is released.
Association Aborted	The job fails. The reason is logged and reported to the operator.

4.2.2.3. Association Initiation Policy

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

Table 48: Association Rejection response

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

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

Table 49: Association Abort Handling

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

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

4.2.2.3.1.1.   Description and Sequencing of Activities

For viewing images, the operator can use the ViewForum Surgical Workstation AE to query a remote archive and select the images to retrieve. The ViewForum Surgical Workstation AE then sends a retrieve request and accepts the related images.
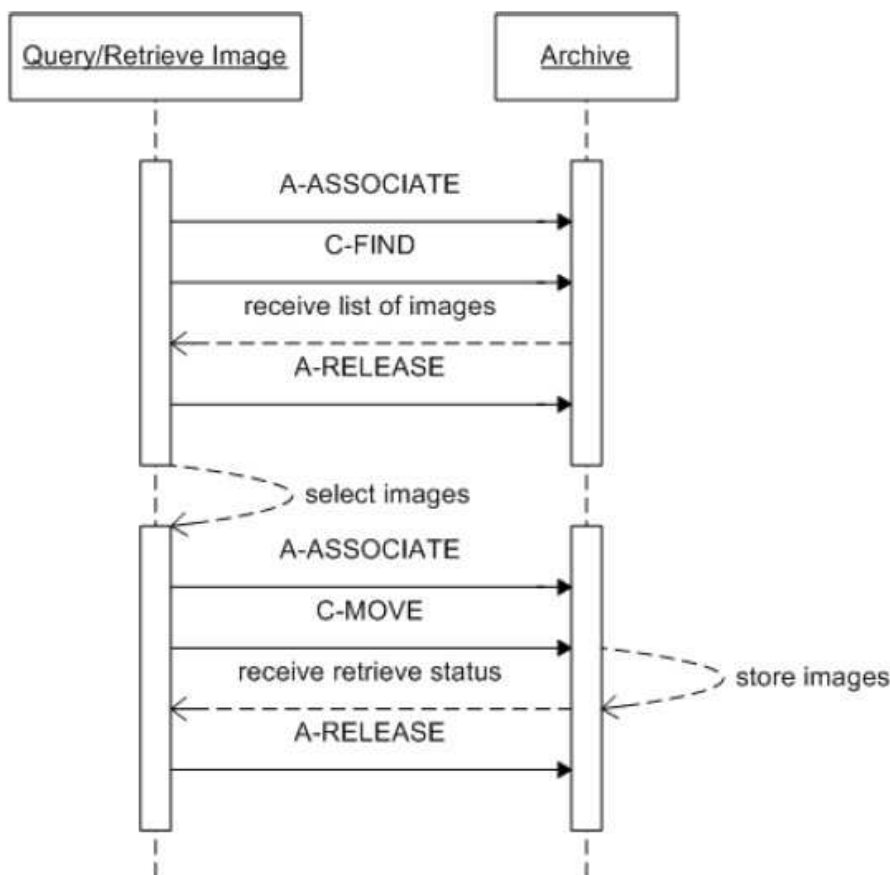
Figure 13: Sequencing of RWA Query/Retrieve Image

The operator queries a remote archive, using the query tool in the data handling facility. The ViewForum Surgical Workstation AE initiates an association to the selected peer entity (Archive) and uses it to send Query (C-FIND) requests and receive subsequent responses. The association is released when the execution of the query completes and the Query/Retrieve dialog on the GUI is closed. The matching images are then displayed in a patient folder for the remote archive.

The required images can now be selected for copying to the Mobile C-Arm, using the copy tool in the data handling facility. For each copy request the ViewForum Surgical Workstation AE initiates an association to the selected peer entity (Archive) and uses it to send Retrieve (C-MOVE) requests and receive subsequent responses; an examination may contain both images and presentation states. The association is released after the final Retrieve (C-MOVE) response for the related request has been received (no more pending).

4.2.2.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in next table.

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

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

Presentation Context Table						
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation	
Name	UID	Name List	UID List			
Model - FIND SOP Class		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Implicit VR Little Endian	1.2.840.10008.1.2			
PatientStudy Only QR Info. Model - FIND SOP Class (Retired)	1.2.840.10008.5.1.4.1.2.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None	
		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Implicit VR Little Endian	1.2.840.10008.1.2			

Note: For performance reasons the ELE transfer syntax is preferred.

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

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

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

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

The ViewForum Surgical Workstation AE will not generate queries containing optional keys.
The ViewForum Surgical Workstation AE will not generate relational queries.
In the following table the supported query keys for each query level are described.
Universal matching shall be supported as default.

Table 51: Supported Query Keys for Extended Dicom and Private attributes

Extended Dicom and Private attributes				
Attribute Name	Tag	VR	Type Of Matching	Comment
SOP Class UID	0008,0016	UI		Q/R Image Level
Content Date	0008,0023	DA		Q/R Image Level
Content Time	0008,0033	TM		Q/R Image Level
Station Name	0008,1010	SH		Q/R Series Level
Body Part Examined	0018,0015	CS		Q/R Series Level
Performed Procedure Step Start Date	0040,0244	DA		Q/R Series Level
Performed Procedure Step ID	0040,0253	SH		Q/R Series Level

Do note that the query results screen will display all patients that have an empty Patient ID as one patient entry.

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

Table 52: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The find results are displayed.
Failure	A700	Refused - Out of resources	No find results are displayed. The reason is logged.
	A900	Failed - Identifier does not match SOP class	No find results are displayed. The reason is logged.

Service Status	Error Code	Further Meaning	Behavior
	Cxxx	Failed - Unable to process	No find results are displayed. The reason is logged.
Cancel	FE00	Matching terminated due to Cancel Request	No find results are displayed. The reason is logged.
Pending	FF00	Matches are continuing - Current match is supplied and any optional keys were supported in the same manner as required keys	The find command continues.
	FF01	Matches are continuing - Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The find command continues.

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

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

4.2.2.3.1.4.1.   Dataset Specific Conformance for Study Root Q/R Information Model - FIND SOP Class SCU

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

The ViewForum Surgical Workstation AE will not generate queries containing optional keys.
 The ViewForum Surgical Workstation AE will not generate relational queries.

In the following table the supported query keys for each query level are described.

Universal matching shall be supported as default.

Table 53: Supported Query Keys for Extended Dicom and Private attributes

Extended Dicom and Private attributes				
Attribute Name	**Tag**	**VR**	**Type Of Matching**	**Comment**
SOP Class UID	0008,0016	UI		Q/R Image Level
Content Date	0008,0023	DA		Q/R Image Level
Content Time	0008,0033	TM		Q/R Image Level
Station Name	0008,1010	SH		Q/R Series Level
Body Part Examined	0018,0015	CS		Q/R Series Level
Performed Procedure Step Start Date	0040,0244	DA		Q/R Series Level
Performed Procedure Step ID	0040,0253	SH		Q/R Series Level

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

Table 54: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The find results are displayed.
Failure	A700	Refused - Out of resources	No find results are displayed. The reason is logged.
	A900	Failed - Identifier does not match SOP class	No find results are displayed. The reason is logged.
	Cxxx	Failed - Unable to process	No find results are displayed. The reason is logged.
Cancel	FE00	Matching terminated due to Cancel Request	No find results are displayed. The reason is logged.

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

4.2.2.3.1.5.　SOP Specific Conformance for PatientStudy Only QR Info. Model - FIND SOP Class (Retired)

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

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

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

The ViewForum Surgical Workstation AE will not generate queries containing optional keys.
The ViewForum Surgical Workstation AE will not generate relational queries.

In the following table the supported query keys for each query level are described.

Universal matching shall be supported as default.
Do note that the query results screen will display all patients that have an empty Patient ID as one patient entry.

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

Table 55: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The find results are displayed
Failure	A700	Refused - Out of resources	No find results are displayed. The reason is logged.
	A900	Failed - Identifier does not match SOP class	No find results are displayed. The reason is logged.
	Cxxx	Failed - Unable to process	No find results are displayed. The reason is logged.
Cancel	FE00	Matching terminated due to Cancel Request	No find results are displayed. The reason is logged.
Pending	FF00	Matches are continuing - Current match is supplied and any optional keys were supported in the same manner as required keys	The find command continues.
	FE01	Matches are continuing - Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The find command continues.

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

4.2.2.3.2.1.　Description and Sequencing of Activities

Refer to chapter 4.2.3.3.1.1 for the description and sequencing diagram.

4.2.2.3.2.2.　Proposed Presentation Contexts

The presentation contexts are defined in next table.

<div align="center">**Table 56: Proposed Presentation Contexts for (Real-World) Activity – MOVE As SCU**</div>

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
PatientStudy Only QR Info. Model - MOVE SOP Class (Retired)	1.2.840.10008.5.1.4.1.2.3.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: For performance reasons the ELE transfer is preferred.

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

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

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

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

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

<div align="center">**Table 57: Status Response**</div>

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete - No Failures	The move job is marked as completed. The association is released.
Error	A701	Refused - Out of Resources - Unable to calculate number of matches	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Failure	A702	Refused - Out of Resources - Unable to perform Sub-operations	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A801	Refused - Move Destination unknown	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A900	Failed - Identifier does not match SOP class	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	Cxxx	Failed - Unable to process	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Warning	B000	Sub-operations complete - One or more Failures	The move job is marked as completed. The association is released.
Pending	FF00	Sub-operations are continuing	The move job continues.

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

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

4.2.2.3.2.4.1.   Dataset Specific Conformance for Study Root Query/Retrieve Information Model - MOVE SOP Class SCU

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

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

Table 58: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete - No Failures	The move job is marked as completed. The association is released.
Failure	A701	Refused - Out of Resources - Unable to Calculate number of matches	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A702	Refused - Out of Resources - Unable to perform Sub-operations	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A801	Refused - Move Destination unknown	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A900	Failed - Identifier does not match SOP class	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	Cxxx	Failed - Unable to process	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Warning	B000	Sub-operations complete - One or more Failures	The move job is marked as completed. The association is released.
Pending	FF00	Sub-operations are continuing	The move job continues.

4.2.2.3.2.5.   SOP Specific Conformance for PatientStudy Only QR Info. Model - MOVE SOP Class (Retired)

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

4.2.2.3.2.5.1.   Dataset Specific Conformance for Patient/Study Only Q/R Information Model - MOVE SOP Class SCU

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

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

Table 59: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete - No Failures	The move job is marked as completed. The association is released.
Failure	A701	Refused - Out of Resources - Unable to Calculate number of matches	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A702	Refused - Out of Resources - Unable to perform Sub-operations	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	A801	Refused - Move Destination unknown	The move job is marked as failed. The association is released. The reason is logged and reported to the user.

Service Status	Error Code	Further Meaning	Behavior
	A900	Failed - Identifier does not match SOP class	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
	Cxxx	Failed - Unable to process	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Warning	B000	Sub-operations complete - One or more Failures	The move job is marked as completed. The association is released.
Pending	FF00	Sub-operations are continuing	The move job continues.

4.2.2.4.   Association Acceptance Policy

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

Table 60: Association Reject Reasons

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

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

Table 61: Association Abort Policies

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

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

4.2.2.4.1.1.   Description and Sequencing of Activities

The ViewForum Surgical Workstation AE can send a verification request (C-ECHO) to verify application level communication.
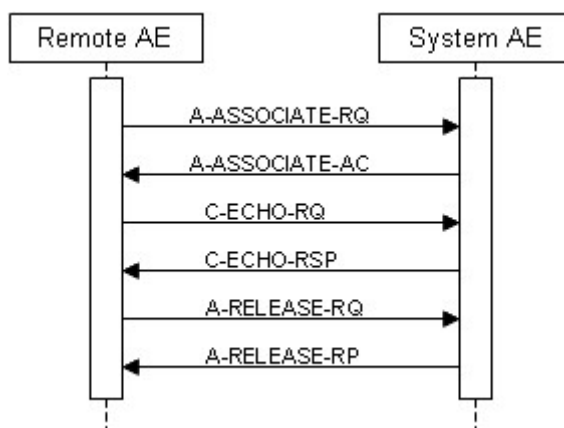
Figure 14: Sequencing of RWA Verification as SCP

4.2.2.4.1.2.   Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 62: 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		

4.2.2.4.1.3.   SOP Specific Conformance for Verification SOP Class

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

The ViewForum Surgical Workstation AE provides standard conformance to the Verification service class.

4.2.2.4.1.3.1.   Dataset Specific Conformance for Verification C-ECHO SCP

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

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

Table 63: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Confirmation	Standard verification response.

4.2.2.4.2.   (Real-World) Activity – Image Import

4.2.2.4.2.1.   Description and Sequencing of Activities

For viewing images, the ViewForum Surgical Workstation AE accepts the retrieved images.
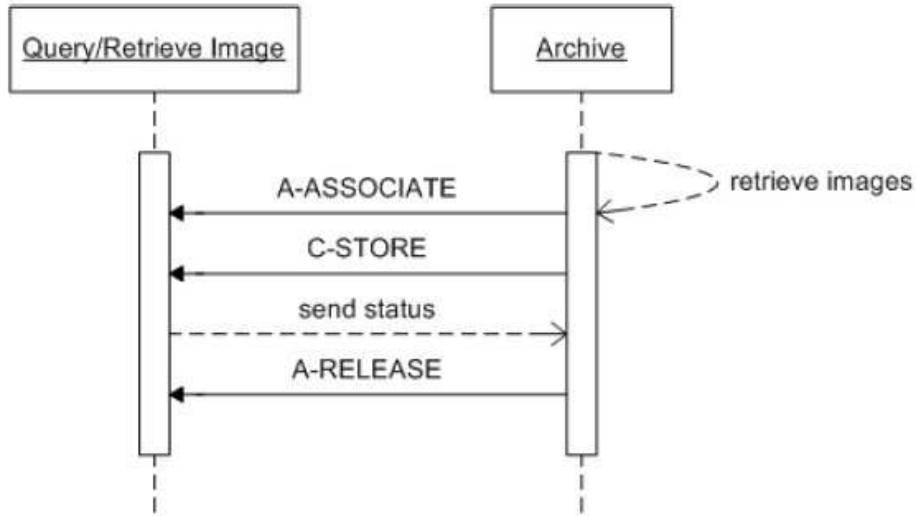
Figure 15: Sequencing of RWA Query/Retrieve Image

For each retrieve request (selected from query results) the ViewForum Surgical Workstation AE accepts an association from the selected peer entity (Archive) and uses it to receive image Storage (C-STORE) requests and send subsequent responses. On request of the Storage SCU (Archive) the association is released.

4.2.2.4.2.2.   Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 64: Acceptable Presentation Contexts for (Real-World) Activity – Image Import

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital Mammography X-Ray Image Storage - Pres. SOP	1.2.840.10008.5.1.4.1.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital Mammography X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital Intra-oral X-Ray Image Storage - Proc. SOP	1.2.840.10008.5.1.4.1.1.1.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private X-Ray Image Storage	1.3.46.670589.2.3.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private Reconstructed X-ray Storage	1.3.46.670589.2.4.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum 3D Volume New Storage	1.3.46.670589.5.0.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum MR Synthetic Image Storage	1.3.46.670589.5.0.10	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum MR Cardio Analysis New Storage	1.3.46.670589.5.0.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum CX Synthetic Image Storage	1.3.46.670589.5.0.12	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum Perfusion Storage	1.3.46.670589.5.0.13	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum Perfusion Analysis Storage	1.3.46.670589.5.0.14	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum 3D Volume Object New Storage	1.3.46.670589.5.0.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum Surface New Storage	1.3.46.670589.5.0.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum MR	1.3.46.670589.5.0.8.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Cardio New Storage		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Philips Private ViewForum CT Synthetic Image Storage	1.3.46.670589.5.0.9	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: For performance reasons the ELE transfer syntax is preferred and shall be chosen in case multiple transfer syntaxes are proposed in the association negotiation.

The ViewForum Surgical Workstation AE shall accept all contexts in the intersection of the proposed and acceptable presentation contexts. This means that the ViewForum Surgical Workstation AE accepts multiple proposed presentation contexts with the same SOP class but different transfer syntaxes. There is no check for duplicate contexts, and these will therefore be accepted.

4.2.2.4.2.3.   SOP Specific Conformance for Storage SOP Classes

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

The ViewForum Surgical Workstation AE provides standard level 1 (Base) conformance to the Storage service class.

If the ViewForum Surgical Workstation AE imports an image and during the association negotiation the presentation state SOP class was not negotiated, then the ViewForum Surgical Workstation AE creates a presentation state instance for the imported image.

The ViewForum Surgical Workstation AE standard supports the photometric interpretations MONOCHROME1, MONOCHROME2, and RGB.

4.2.2.4.2.3.1.   Dataset Specific Conformance for C-STORE-RSP

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

Table 65: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	The images are stored in the ViewForum Surgical Workstation AE database.
Failure	A7xx	Refused: Out of Resources	The ViewForum Surgical Workstation AE database is full - recovery from this condition is left to the SCU. The ViewForum Surgical Workstation AE sends a notification, log the condition, and abort the association.
	A9xx	Error: Data Set does not match SOP Class	The SOP class of the image(s) does not match the negotiated abstract syntax. The ViewForum Surgical Workstation AE sends a notification, log the condition, and abort the association.
	C000	Error: cannot understand	The image(s) cannot be parsed. The ViewForum Surgical Workstation AE sends a notification, log the condition, and abort the association.
Warning	B000	Coercion of Data Elements	N/A
	B007	Data Set does not match SOP Class	N/A
	B006	Elements Discarded	N/A

4.3.   Network Interfaces

4.3.1.   Physical Network Interfaces

The Mobile C-Arm provides DICOM 3.0 TCP/IP Network Communication Support as defined in [DICOM] PS 3.8.

For the Mobile C-Arm AE the TCP/IP stack is inherited from the VxWorks operating system.

For the ViewForum Surgical Workstation the TCP/IP stack is inherited from the Windows XP operating system.

The Mobile C-Arm supports Ethernet (ISO 8802-3) and IEEE 802.3 (10 / 100 BASE-T) for the printer and image interfaces.

The Mobile C-Arm supports radio communication according to IEEE 802.11b (DSSS) and IEEE 802.11g (OFDM) limited from 2412 to 2462 MHz according to FCC regulations.

4.3.2.   Additional Protocols

Not applicable

4.4.   Configuration

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

4.4.1.   AE Title/Presentation Address Mapping

Notes:
- The configuration of a Mobile C-Arm AE is done by means of a web-based service program called BV-Scope.
- The configuration of a ViewForum Surgical Workstation AE is done by means of a configuration program, which is accessible at start-up (password protected, intended to be used by Philips Customer Support Engineers only).

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

4.4.1.1.   Local AE Titles

Per default the Mobile C-Arm AE Application Entity Title is "No Name". At installation the Customer Support Engineer can change the host name. The Mobile C-Arm AE can be changed independently.

Table 66: AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
Mobile C-Arm AE	"No Name"	104
		8104 (Storage Commitment, fixed)
ViewForum Surgical Workstation AE	"VF1"	3010

4.4.1.2.   Remote AE Title/Presentation Address Mapping

Specified is here the configuration of the remote application.

Remote Association Initiators

The following information must be provided for all relevant remote applications that are able to initiate DICOM associations to the BV Family:
- The Application Entity Title.
- The host name/IP address on which the remote application resides

- The port number at which the remote application has to send association requests
- The SOP classes and transfer syntaxes for which the ViewForum Surgical Workstation AE accepts associations.

Remote Association Acceptors

The following information must be provided for all relevant remote applications that are able to accept DICOM associations from Mobile C-Arm AE:

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

4.4.2.   Parameters

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

 The configuration parameters of the Mobile C-Arm AE are given in the following table, categorized in the following sections:

- Local System Parameters
- Export Target(s) (Store) Parameters
- Export Target(s) (RDSR) Parameters
- Export Target(s) (Print) Parameters
- Worklist Management Target Parameters
- MPPS Target Parameters
- Storage commit (N-EVENT-REPORT) Parameters

Table 67: Configuration Parameters table for Mobile C-Arm AE

Parameter	Configurable	Default Value
AE Specific Parameters		
SOP Class support	Yes	MPPS Storage Commitment Printer
Local System Parameters		
AE Title	Yes	"No Name"
Host Name	Yes	"No Name"
IP Address	Yes	0.0.0.0
Subnet Mask	Yes	0.0.0.0
Default Gateway	Yes	0.0.0.0
Interpolation (on/off)	Yes	On
Max. PDU size	Yes	28672 (4..256 kb)
Receive Message Timeout	Yes	60 [s] (0..3600 s)
Association Close Timeout	Yes	1 [s] (0..3600 s)
Association Reply Timeout	Yes	60 [s] (0..3600 s)
Association Release Timeout	Yes	60 [s] (0..3600 s)
Network Write Timeout	Yes	60 [s] (0..3600 s)
Network Connect Timeout	Yes	60 [s] (0..3600 s)
Network Inactivity Timeout	Yes	60 [s] (0..3600 s)
Export Target(s) (Store) Parameters		
AE Title	Yes	"No Name"
Name	Yes	Max. 25 char. Unique
IP Address	Yes	0.0.0.0
Port number	Yes	104
Type	Yes	STORE
Storage Commit - AE Title	Yes	"No Name"

Parameter	Configurable	Default Value
Storage Commit - IP Address	Yes	0.0.0.0
Storage Commit - Port number	Yes	104
Export Triggers MPPS	Yes	"No"
Storage Commit - Enable/Disable	Yes	Disable
Export Target(s) (Print) Parameters		
AE Title	Yes	"No Name"
Name	Yes	Max. 25 char. Unique
IP Address	Yes	0.0.0.0
Port number	Yes	104
Type	Yes	PRINT
Printer type	Yes	Predefined List
Printer Priority	Yes	LOW
Film Destination	Yes	CURRENT
Film Orientation	Yes	PORTRAIT
Film Size	Yes	CURRENT
Border Density	Yes	BLACK
Border Density Value	Yes	1
Number of Copies	Yes	1
Magnification Type	No	Depending on Printer Type
Smoothing Type	No	Depending on Printer Type
Minimum Density	No	Depending on Printer Type
Maximum Density	No	Depending on Printer Type
Empty Image Density	No	Depending on Printer Type
Polarity	No	Depending on Printer Type
Trim	No	Depending on Printer Type
Configuration Information	No	Depending on Printer Type
Export Target(s) (X-Ray Radiation Dose) Parameters		
Enable DICOM Structured Dose Report	Yes	No
Target 1 configuration		
Name	Yes	"No name"
AE Title	Yes	"No name"
IP address	Yes	0.0.0.0
Port number	Yes	104
Storage Commit	Yes	Enable
SC AE Title	Yes	"No name"
SC IP address	Yes	0.0.0.0
SC Port Number	Yes	104
Target 2 configuration		
Name	Yes	"No name"
Enable	Yes	No
AE Title	Yes	"No name"
IP address	Yes	0.0.0.0
Port number	Yes	104
Target 3 configuration		
Name	Yes	"No name"
Enable	Yes	No
AE Title	Yes	"No name"
IP address	Yes	0.0.0.0
Port number	Yes	104

Parameter	Configurable	Default Value
Worklist Management Target Parameters		
AE Title	Yes	"No Name"
Name	Yes	Max. 25 char. Unique
IP Address	Yes	0.0.0.0
Port Number	Yes	104
Type	Yes	MWL
Select Query	Yes	Predefined Query List, maximum 4 items in the list
Define Query	Yes	Defines the queries that can be selected
MPPS Target Parameters		
AE Title	Yes	"No Name"
Name	Yes	Max. 25 char. Unique
IP Address	Yes	0.0.0.0
Port Number	Yes	104
Type	Yes	MPPS
Protocol Names	Yes	List of Protocol Names that can be selected in the MPPS panel
Enable Append Case	Yes	"Yes"
MPPS also for unscheduled cases	Yes	"Yes"
Storage commit (N-EVENT-REPORT) Parameters		
AE Title	Yes	Local System AE Title
IP Address	Yes	Local System IP address
Port Number	No	Fixed: 8104

Note: Parameters that are part of a specific DICOM IOD are specified in section 4 and 8.

Table 68: Configuration Parameters table for ViewForum Surgical Workstation AE

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	No	-
General DIMSE level time-out values	No	-
Time-out waiting for response to TCP/IP connect request. (Low-level timeout)	No	-
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	No	-
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)	No	-
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	-
Local Configurable AE Specific Parameters		
Size constraint in maximum object size	No	-
Maximum PDU size the AE can receive	Yes	0 (unlimited)
Maximum PDU size the AE can send	No	-
AE specific DIMSE level time-out values	No	-
Number of simultaneous Associations by Service and/or SOP Class	No	-
SOP Class support	Yes	-
Transfer Syntax support	Yes	-
Remote Configurable AE Specific Parameters		
Size constraint in maximum object size	No	-
Maximum PDU size the AE can receive	Yes	0 (unlimited)
Maximum PDU size the AE can send	No	-
AE specific DIMSE level time-out values	No	-

Parameter	Configurable	Default Value
Number of simultaneous Associations by Service and/or SOP Class	No	-
SOP Class support	Yes	-
Transfer Syntax support	Yes	-

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

5. Media Interchange

5.1. Implementation model

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

5.1.1. Application Data Flow Diagram

The DICOM media interchange implementation of the Mobile C-Arm is implemented in the ViewForum Surgical Workstation AE. The following figure shows the Media Interchange Application Data Flow as a functional overview of the ViewForum Surgical Workstation AE for CD and DVD.
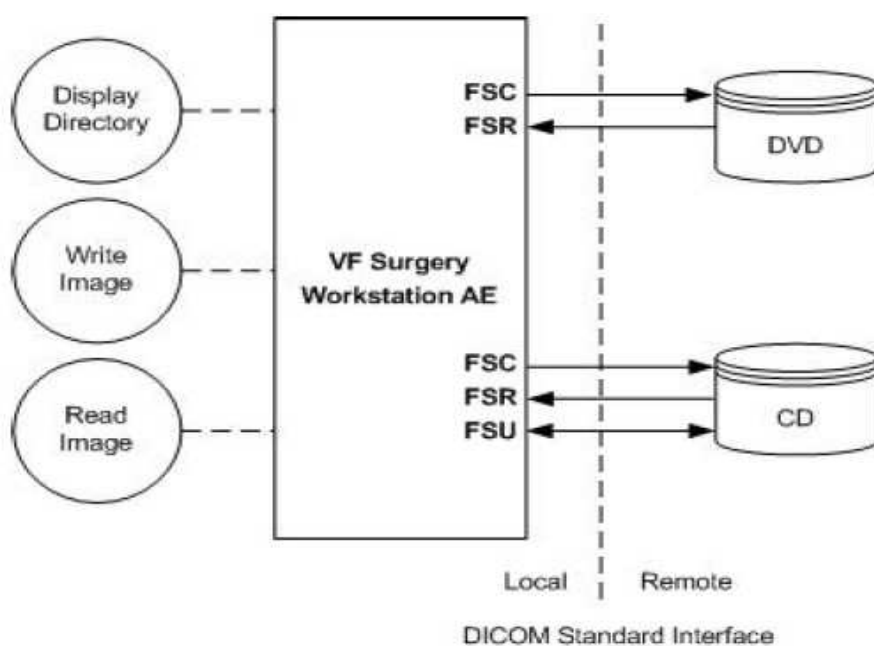
Figure 16: Application Data Flow Diagram (ViewForum Surgical Workstation)

The ViewForum Surgical Workstation AE will act as a FSR, for CD, DVD and USB media, when reading the directory of the medium. The ViewForum Surgical Workstation AE will act as a FSC / FSU for a CD and as FSC for DVD, when writing the selected images in a patient folder onto the medium.

The ViewForum Surgical Workstation AE supports the media profiles as shows in the table below.

Table 69: Media Profiles supported by ViewForum Surgical Workstation AE

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

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

Supported Photometric Interpretations:

The ViewForum Surgical Workstation AE supports images with the following DICOM Photometric Interpretations as shows in the table below.

Table 70: Photometric interpretations supported by ViewForum Surgical Workstation AE

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

Note: If the photometric interpretation YBR_FULL_422 is used in combination with transfer syntax JPEG-lossy then the pixel data is converted to RGB on import.

The ViewForum Surgical Workstation AE supports images with Lossy image compression via JPEG as described as shows in the table below.

Table 71: JPEG coding supported by ViewForum Surgical Workstation AE

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

Note: Lossy Compression is only supported for images with photometric interpretation RGB and YBR_FULL_422 and therefore ViewForum Surgical Workstation AE supports this only for Ultrasound Images.

5.1.2.   Functional Definitions of AE's

This section contains the functional definition of each individual local Media Application Entity.

The ViewForum Surgical Workstation AE implements the following functions for DICOM media.

DICOM Media Storage Service Class for CD, DVD and USB media:

The ViewForum Surgical Workstation AE can perform the CD DICOM Media Storage service as SCU, with capabilities for:
- RWA Display Directory (as FSR),
- RWA Write Images (as FSC / FSU), and
- RWA Read Images (as FSR).

The ViewForum Surgical Workstation AE can perform the DVD DICOM Media Storage service as SCU, with capabilities for:
- RWA Display Directory (as FSR),
- RWA Write Images (as FSC), and
- RWA Read Images (as FSR).

The ViewForum Surgical Workstation AE can perform the USB DICOM Media Storage service as SCU, with capabilities for:
- RWA Display Directory (as FSR),
- RWA Write Images (as FSC / FSU), and
- RWA Read Images (as FSR).

5.1.3.   Sequencing of Real World Activities

This section contains a description of sequencing of Real-World Activities that the Media Application Entities require.

Whenever DICOM Media (CD or DVD) has to be written, the ViewForum Surgical Workstation AE first tries to read the DICOMDIR. The ViewForum Surgical Workstation AE will compile the updated DICOMDIR and any required DICOM images into a CD or DVD session image; this session image will be written to the DICOM Media.
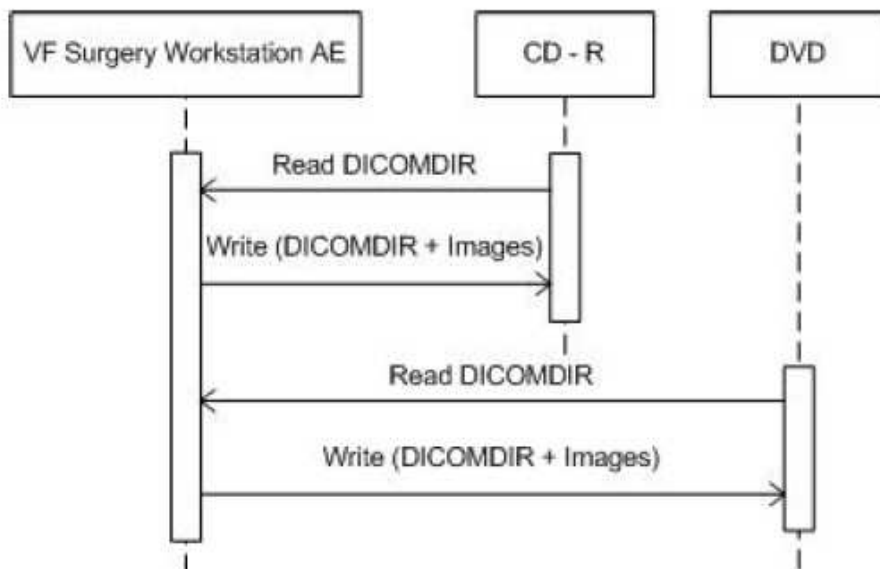
Figure 17: Sequencing of RWA Write Image

Note that after the DVD Media is written the DVD will be finalized by ViewForum Surgical Workstation AE to guarantee the readability on the most DVD reader.

5.2.   AE Specifications

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

5.2.1.   ViewForum Surgical Workstation AE Media - Specification

This section contains general policies that apply to all of the Application Entities described in subsequent section.

The ViewForum Surgical Workstation AE provides standard conformance to the DICOM interchange option of the Media Storage service class, and follows the specifications as defined in [DICOM] Media Storage and File Format for Data Interchange (PS 3.10) the Media Storage Application Profiles STD-GEN-CD, STD-GEN-USB-JPEG ([DICOM] PS 3.11) and the Media Storage Application Profiles STD-GEN-DVD-JPEG ([DICOM] PS 3.12) for Reading and Writing.

The ViewForum Surgical Workstation AE supports multi-patient and multi-session for CD/DVD, both for reading and writing. Supported media by ViewForum Surgical Workstation AE are:
- For CD: CDR / CD RW with the profile: STD-GEN-CD
- For DVD: DVD+R and DVD+RW with the profile STD-GEN-DVD-JPEG and the Transfer Syntax ELE uncompressed
- DVD-R and DVD-RW can be read only, but are not supported for writing

The Application Profiles and roles are listed below:

Table 72: AE ViewForum Surgical Workstation AE related Application Profiles, RWA activities and roles

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

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

5.2.1.1.   File Meta Information for the ViewForum Surgical Workstation AE

This section shall contain the values of the file Meta information that pertain to the Application Entity (see PS 3.10).

The Source Application Entity Title is configurable (ref. section 5.4).

Table 73: File Meta Information for the ViewForum Surgical Workstation AE

Implementation Class UID	1.3.46.670589.5.2.23
Implementation Version Name	ViewForum R6.3

5.2.1.2.   Real-World Activities

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

5.2.1.2.1.   RWA - Read File-set

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

Display Directory:
When a database Open action is initiated on DICOM media then the ViewForum Surgical Workstation AE acts as an FSR using the interchange option to read the DICOMDIR of the DICOM media. This will result in an overview of the patients, studies, series, and images on the GUI.

Read Image:
When an image transfer from DICOM media is initiated then the ViewForum Surgical Workstation AE acts as an FSR using the interchange option to import SOP instances from the DICOM media.

5.2.1.2.1.1.   Media Storage Application Profile

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

Display Directory:
The ViewForum Surgical Workstation AE supports the RWA Display Directory for STD-GEN-DVD-JPEG, STD-GEN-USB-JPEG and the STD-GEN-CD application profiles.

Read Image:
The ViewForum Surgical Workstation AE supports the RWA Read Image for STD-GEN-DVD-JPEG, STD-GEN-USB-JPEG and the STD-GEN-CD application profiles.

5.2.1.2.1.1.1.   Options

The options used in the Application Profile are specified in detail in this section.

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

Read Image:

The mandatory attributes of the DICOM images are required for the correct storage of the images in the local database. Optional attributes and retired/private attributes are stored too - if present; this is equivalent with the level 2 (Full) conformance for the Storage service class in the Network support.

5.2.1.2.2.　RWA - Create File-set

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

When an image transfer to DICOM media is initiated then the ViewForum Surgical Workstation AE acts as an FSC using the interchange option to write SOP instances on the DICOM media.

5.2.1.2.2.1.　Media Storage Application Profile

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

The ViewForum Surgical Workstation AE supports the RWA Write Image for STD-GEN-DVD-JPEG, STD-GEN-USB-JPEG and the STD-GEN-CD application profiles. However, the ViewForum Surgical Workstation AE only supports writing on DVD+R(W) media, not DVD-R(W) media.

5.2.1.2.2.1.1.　Options

The options used in the Application Profile are specified in detail in this section.

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

Implementation remarks and restrictions:

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

Table 74: Generated Keys

Key	Tag	Generated Value
Patient Keys		
Patient ID	0010,0020	At import the ViewForum Surgical Workstation AE each time creates a new value based on the Study Instance UID for each new study written to DICOM media (even if this study belongs to a patient recorded earlier). Otherwise the default generated value shall be a succession of "UNKNOWN", the Patient's Name, the Patient's Birth Date, and the Patient's Sex, concatenated by using underscore characters.
Study Keys		
Study Date	0008,0020	Current date
Study Time	0008,0030	Current time
Study ID	0020,0010	"UNKNOWN"
Series Keys		
Series Number	0020,0011	1
Image Keys		
Instance Number	0020,0013	1

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

The ViewForum Surgical Workstation AE can write volumes of the media to that media.

If multimedia is required then the ViewForum Surgical Workstation AE asks for a new media.

5.2.1.2.3.　RWA - Update File-set

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

5.2.1.2.3.1. Media Storage Application Profile

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

The ViewForum Surgical Workstation AE supports the RWA Update File-set for the STD-GEN-USB-JPEG and STD-GEN-CD application profiles.

5.2.1.2.3.1.1. Options

Not applicable.

5.3. Augmented and Private Application Profiles

This section is used for the description of Augmented and Private Application Profiles.

5.3.1. Augmented Application Profiles

None.

5.3.1.1. Augmented Application Profile AUG-GEN-DVD-JPEG

5.3.1.1.1. SOP Class Augmentations

As augmentation to the STD-GEN-DVD-JPEG application profile, also the SOP classes as per following table are supported.

Table 75: Additional SOP Classes supported by AUG-GEN-DVD-JPEG

SOP Class Name	SOP Class UID
X-Ray Specialization	1.3.46.670589.2.3.1.1
Stack of X-Ray	1.3.46.670589.2.4.1.1
Volume	1.3.46.670589.5.0.1.1
3D Volume Object	1.3.46.670589.5.0.2.1
Surface	1.3.46.670589.5.0.3.1
Cardio	1.3.46.670589.5.0.8.1
CT Synthetic Image	1.3.46.670589.5.0.9
MR Synthetic Image	1.3.46.670589.5.0.10
MR Cardio Analysis	1.3.46.670589.5.0.11.1
CX Synthetic Image	1.3.46.670589.5.0.12
Perfusion	1.3.46.670589.5.0.13
Perfusion Analysis	1.3.46.670589.5.0.14

5.3.1.1.2. Directory Augmentations

Not applicable.

5.3.1.1.3. Other Augmentations

Not applicable.

5.3.2. Private Application Profiles

Not applicable.

5.4. Media Configuration

Any configuration issues may be found in the Networking section 4.4.

6. Support of Character Sets

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

Table 76: Supported DICOM Character Sets

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

If a WLM query response includes a Person Name attribute containing character code 5C (i.e. BACKSLASH "\" in ISO-IR 6) then all characters behind the character code 5C will be omitted (at GUI and export, i.e. will still be present in MPPS).

Unsupported character sets will be accepted, though all characters will be displayed as per ISO_IR 100, not confirming the actual character set specification.

7. Security

7.1. Security Profiles

7.1.1. Security use Profiles

Not applicable

7.1.2. Security Transport Connection Profiles

Not applicable

7.1.3. Digital Signature Profiles

Not applicable

7.1.4. Media Storage Security Profiles

Not applicable

7.1.5. Attribute Confidentiality Profiles

The Mobile C-Arm AE 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.

The terms used to describe the replacement value in the anonymized patient data can be read as follows:
- COPY: Same value as in source data
- EMPTY: The attribute will have a value of zero length.
- ANP: Attribute Not Present
- n.a.: Not applicable, the attribute is not contained in the standard IOD of the Mobile C-Arm AE

The next table lists the protected data attributes.

Table 77: Basic Application Level Confidentiality Profile Attributes

Name	Tag	VR	Replacement Value
Instance Creator UID	0008,0014	UI	n.a.
SOP Instance UID	0008,0018	UI	COPY
Accession Number	0008,0050	SH	EMPTY
Institution Name	0008,0080	LO	ANP
Institution Address	0008,0081	ST	n.a.
Referring Physician's Name	0008,0090	PN	EMPTY
Referring Physician's Address	0008,0092	ST	n.a.
Referring Physician's Telephone Numbers	0008,0094	SH	n.a.
Station Name	0008,1010	SH	COPY
Study Description	0008,1030	LO	COPY
Series Description	0008,103E	LO	COPY
Institutional Department Name	0008,1040	LO	n.a.

Name	Tag	VR	Replacement Value
Physician(s) of Record	0008,1048	PN	n.a.
Performing Physicians' Name	0008,1050	PN	ANP
Name of Physician(s) Reading Study	0008,1060	PN	n.a.
Operators' Name (Technologist)	0008,1070	PN	COPY
Admitting Diagnoses Description	0008,1080	LO	n.a.
Referenced SOP Instance UID	0008,1155	UI	COPY
Derivation Description	0008,2111	ST	COPY
Patient's Name	0010,0010	PN	EMPTY
Patient ID	0010,0020	LO	In Patient Module the Patient ID value is "EMPTY". In the DIRECTORY RECORD: 0 (PATIENT) the Patient ID value has a new generated value
Patient's Birth Date	0010,0030	DA	EMPTY
Patient's Birth Time	0010,0032	TM	COPY
Patient's Sex	0010,0040	CS	EMPTY
Other Patient Ids	0010,1000	LO	COPY
Other Patient Names	0010,1001	PN	COPY
Patient's Age	0010,1010	AS	EMPTY
Patient's Size	0010,1020	DS	COPY
Patient's Weight	0010,1030	DS	COPY
Medical Record Locator	0010,1090	LO	n.a.
Ethnic Group	0010,2160	SH	n.a.
Occupation	0010,2180	SH	n.a.
Additional Patient's History	0010,21B0	LT	n.a.
Patient Comments	0010,4000	LT	n.a.
Device Serial Number	0018,1000	LO	COPY
Protocol Name	0018,1030	LO	COPY
Study Instance UID	0020,000D	UI	COPY
Series Instance UID	0020,000E	UI	COPY
Study ID	0020,0010	SH	EMPTY
Frame of Reference UID	0020,0052	UI	n.a.
Synchronization Frame of Reference UID	0020,0200	UI	n.a.
Image Comments	0020,4000	LT	COPY
Requested Attributes Sequence	0040,0275	SQ	n.a.
UID	0040,A124	UI	n.a.
Content Sequence	0040,A730	SQ	n.a.
Storage Media File-set UID	0088,0140	UI	n.a.
Referenced Frame of Reference UID	3006,0024	UI	n.a.
Related Frame of Reference UID	3006,00C2	UI	n.a.

SOP Class Augmentations

DICOM media that have been written with the de-identification feature switched on (anonymized data) will have DICOM-format data.

In case of writing to CD, DVD or USB media, de-identification is supported. However, when the de-identification feature is active, also Secondary Capture images are written to the DICOM media; it is possible that they contain burned-in patient information.

7.1.6. Network Address Management Profiles

Not applicable

7.1.7. Time Synchronization Profiles

Not applicable

7.1.8. Application Configuration Management Profiles

Not applicable

7.1.9. Audit Trail Profiles

Not applicable

7.2. Association Level Security

Not supported. Any calling AE title and/or IP address may open an association.

7.3. Application Level Security

Not applicable.

8. Annexes of application "Mobile C-Arm AE"

8.1.   IOD Contents

8.1.1.   Created SOP Instance

This section specifies each created IOD by this application.

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

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

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

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

8.1.1.1.   List of created SOP Classes

<div align="center">

Table 78: List of created SOP Classes

</div>

SOP Class Name	SOP Class UID
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67

8.1.1.2.   Secondary Capture Image Storage SOP Class

<div align="center">

Table 79: IOD of Created Secondary Capture Image Storage SOP Class Instances

</div>

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

Equipment	General Equipment Module	CONDITIONAL
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 80: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER	
Patient's Birth Date	0010,0030	DA		ALWAYS	MWL, USER	
Patient's Birth Time	0010,0032	TM		VNAP	MWL	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL, USER	
Other Patient IDs	0010,1000	LO		VNAP	MWL	
Other Patient Names	0010,1001	PN		VNAP	MWL	

Table 81: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	<yyyymmdd>
Study Time	0008,0030	TM		ALWAYS	AUTO	<hhmmss>
Accession Number	0008,0050	SH		ALWAYS	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL	
Study Description	0008,1030	LO		ALWAYS	AUTO, MWL	Copied from either Requested Procedure description' (0032,1060) or the 'Scheduled Procedure Step description' (0040,0007). If the MWL attribute is empty the Examination Type is used instead.
Procedure Code Sequence	0008,1032	SQ		ANAP	MWL	From Requested Procedure Code Sequence (0032,1064) of MWL. If empty in MWL, should not be present in Image IOD
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ANAP	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study ID	0020,0010	SH		ALWAYS	MWL	From Requested Procedure ID (0040,1001) of MWL

Table 82: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	

Table 83: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	For Dose Reports Export Date will be used.
Series Time	0008,0031	TM		ALWAYS	AUTO	For Dose Reports Export Time will be used.
Modality	0008.0060	CS	XA ,RF,OT	ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	AUTO	
Performing Physician's Name	0008,1050	PN		VNAP	MWL, USER	Copied from scheduled performing physician's name if this provided by MWL or can be entered by Operator.
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		VNAP	AUTO	Entered by the user in the MPPS panel is used in MPPS N-SET. Same will be copied to Image Storage.
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Laterality	0020,0060	CS		EMPTY	FIXED	
Request Attributes Sequence	0040,0275	SQ		ALWAYS	MWL	
>Requested Procedure Description	0032,1060	LO		ALWAYS	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ALWAYS	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ALWAYS	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Coding Scheme Version	0008,0103	SH		ANAP	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		ALWAYS	MWL	
>Requested Procedure ID	0040,1001	SH		ALWAYS	MWL	
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	AUTO	Examination Date
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	AUTO	Examination Time
Performed Procedure Step ID	0040,0253	SH		ALWAYS	AUTO	Internal counter
Performed Procedure Step Description	0040,0254	LO		ALWAYS	AUTO	Same as Study Description (0008,1030)

Table 84: General Equipment Module

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

Institution Name	0008,0080	LO		ANAP	CONFIG	Hospital Name.
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	"Veradius"

Table 85: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	XA	ALWAYS	AUTO	XA, for Dose report only OT
Conversion Type	0008,0064	CS	DI	ALWAYS	AUTO	
Secondary Capture Device ID	0018,1010	LO		ALWAYS	CONFIG	BV System ID.
Secondary Capture Device Manufacturer	0018,1016	LO	Philips Medical Systems	ALWAYS	AUTO	Philips Medical Systems.
Secondary Capture Device Manufacturer's Model Name	0018,1018	LO		ALWAYS	AUTO	"Veradius"
Secondary Capture Device Software Version(s)	0018,1019	LO	Value 1: PH Mobile C R4.1	ALWAYS	AUTO	

Table 86: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: DERIVED, Value 2: SECONDARY	ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	<yyyymmdd>
Content Time	0008,0033	TM		ALWAYS	AUTO	<hhmmss>
Irradiation Event UID	0008,3010	UI		ANAP	AUTO	When RDSR is enabled for SC images based on X-ray image
Instance Number	0020,0013	IS		ALWAYS	AUTO	Generated running number
Patient Orientation	0020,0020	CS		EMPTY	FIXED	

Table 87: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
Rows	0028,0010	US	1024	ALWAYS	AUTO	
Columns	0028,0011	US	1024	ALWAYS	AUTO	For images with text: 1280
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	12	ALWAYS	AUTO	
High Bit	0028,0102	US	11	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/ OB		ALWAYS	AUTO	

Table 88: 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 89: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	Required if expanded/replacement character set used.
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

8.1.1.3.   X-Ray Angiographic Image Storage SOP Class

Table 90: IOD of Created X-Ray Angiographic Image Storage SOP Class 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
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Cine Module	ALWAYS
Image	Multi-Frame Module	ALWAYS
Image	X-Ray Image Module	ALWAYS
Image	X-Ray Acquisition Module	ALWAYS
Image	XA Positioner Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 91: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER	
Patient's Birth Date	0010,0030	DA		ALWAYS	MWL, USER	
Patient's Birth Time	0010,0032	TM		VNAP	MWL	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL, USER	
Other Patient IDs	0010,1000	LO		VNAP	MWL	
Other Patient Names	0010,1001	PN		VNAP	MWL	

Table 92: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	<yyyymmdd>
Study Time	0008,0030	TM		ALWAYS	AUTO	<hhmmss>
Accession Number	0008,0050	SH		ALWAYS	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Description	0008,1030	LO		ALWAYS	AUTO, MWL	Copied from either Requested Procedure description' (0032,1060) or the 'Scheduled Procedure Step description' (0040,0007). If the MWL attribute is empty the Examination Type is used instead.
Procedure Code Sequence	0008,1032	SQ		ANAP	MWL	From Requested Procedure Code Sequence (0032,1064) of MWL. If empty in MWL, should not be present in Image IOD
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ANAPCV	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.1	ALWAYS	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study ID	0020,0010	SH		VNAP	MWL	From Requested Procedure ID (0040,1001) of MWL

Table 93: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	

Table 94: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS	XA,RF,OT	ALWAYS	AUTO	
Series Description	0008,103E	LO		ANAP	AUTO	
Performing Physician's Name	0008,1050	PN		VNAP	MWL, USER	Copied from scheduled performing physician's name if this provided by MWL or can be entered by Operator.
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		VNAP	AUTO	Entered by the user in the MPPS panel is used in the MPPS N-SET. Same will be copied to image storage
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	Increasing number that identifies series (run)
Laterality	0020,0060	CS		EMPTY	FIXED	
Request Attributes Sequence	0040,0275	SQ		ALWAYS	MWL	
>Requested Procedure Description	0032,1060	LO		ALWAYS	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ALWAYS	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ALWAYS	MWL	

>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Coding Scheme Version	0008,0103	SH		ANAP	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		ALWAYS	MWL	
>Requested Procedure ID	0040,1001	SH		ALWAYS	MWL	
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO	Internal counter.
Performed Procedure Step Description	0040,0254	LO		ALWAYS	MPPS	Copied from either Requested Procedure description' (0032,1060) or the 'Scheduled Procedure Step description' (0040,0007). If the MWL attribute is empty the Examination Type is used instead.

Table 95: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	Philips Medical Systems.
Institution Name	0008,0080	LO		ANAP	CONFIG	Hospital Name.
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	"Veradius"
Software Version(s)	0018,1020	LO	Value 1: PH Mobile C R4.1	ALWAYS	AUTO	

Table 96: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA		ALWAYS	AUTO	<yyyymmdd>
Content Time	0008,0033	TM		ALWAYS	AUTO	<hhmmss>
Irradiation Event UID	0008,3010	UI		ANAP	AUTO	When RDSR is enabled.
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		EMPTY	FIXED	

Table 97: Image Pixel Module

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

Table 98: Cine Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Start Trim	0008,2142	IS	1	ALWAYS	AUTO	
Stop Trim	0008,2143	IS		ALWAYS	AUTO	Number of images in the run.
Recommended Display Frame Rate	0008,2144	IS		ANAP	AUTO	Acquisition speed.
Cine Rate	0018,0040	IS		ANAP	AUTO	Calculated from acquisition speed.

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Time	0018,1063	DS		ALWAYS	AUTO	Calculated from acquisition speed [ms].
Frame Time Vector	0018,1065	DS		ANAP	AUTO	

Table 99: Multi-Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS		ALWAYS	AUTO	Number of exported images in the run.

Table 100: X-Ray 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	
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
Frame Increment Pointer	0028,0009	AT	0x00181063	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	12	ALWAYS	AUTO	
High Bit	0028,0102	US	11	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Pixel Intensity Relationship	0028,1040	CS	LIN	ALWAYS	AUTO	

Table 101: X-Ray Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		EMPTY	FIXED	-
Field of View Shape	0018,1147	CS	ROUND	ALWAYS	AUTO	-
Exposure	0018,1152	IS		EMPTY	FIXED	-
Radiation Setting	0018,1155	CS	GR, SC	ALWAYS	AUTO	-
Type of Filters	0018,1161	LO	Value 1: NONE	ALWAYS	AUTO	-
Intensifier Size	0018,1162	DS		ALWAYS	AUTO	-
Imager Pixel Spacing	0018,1164	DS		ANAP	AUTO	Absent during detector format switch
Grid	0018,1166	CS	IN	ALWAYS	AUTO	EMPTY for Veradius.
Pixel Spacing	0028,0030	DS		ANAP	AUTO	For all runs same as Imager Pixel Spacing (0018,1164). Absent during detector format switch.
Pixel Spacing Calibration Type	0028,0A02	CS	GEOMETRY	ANAP	AUTO	
Pixel Spacing Calibration Description	0028,0A04	LO		ANAP	AUTO	

Table 102: XA Positioner Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS		ALWAYS	FIXED	-
Distance Source to Patient	0018,1111	DS		ANAP	FIXED	
Positioner Motion	0018,1500	CS		ANAP	AUTO	EMPTY
Positioner Primary Angle	0018,1510	DS		ALWAYS	AUTO	-
Positioner Secondary Angle	0018,1511	DS		ALWAYS	FIXED	-
Positioner Primary Angle Increment	0018,1520	DS		ANAP	FIXED	
Positioner Secondary Angle Increment	0018,1521	DS	Value 1: 0	ANAP	FIXED	

Table 103: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	Required if expanded/replacement character set used.
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.12.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

8.1.1.4. X-Ray Radiation Dose SR

Table 104: IOD of Created X-Ray Radiation Dose SR Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Series	SR Document Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Document	SR Document General Module	ALWAYS
Document	SR Document Content Module	ALWAYS
Document	SOP Common Module	ALWAYS

Table 105: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		VNAP	MWL	
> Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER	
Patient's Birth Date	0010,0030	DA		ALWAYS	MWL, USER	
Patient's Birth Time	0010,0032	TM		VNAP	MWL	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL, USER	
Other Patient IDs	0010,1000	LO		VNAP	MWL	
Other Patient Names	0010,1001	PN		VNAP	MWL	

Table 106: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	<yyyymmdd>
Study Time	0008,0030	TM		ALWAYS	AUTO	<hhmmss>
Accession Number	0008,0050	SH		ALWAYS	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL	

Study Description	0008,1030	LO		ALWAYS	AUTO, MWL	Copied from either Requested Procedure description' (0032,1060) or the 'Scheduled Procedure Step description' (0040,0007). If the MWL attribute is empty the examination Type is used instead.
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study ID	0020,0010	SH		VNAP	MWL	From Requested Procedure ID (0040,1001) of MWL.

Table 107: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAPCV	MWL	
Admitting Diagnoses Code Sequence	0008,1084	SQ		ANAPCV	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ANAP	MWL	
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	

Table 108: SR Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Modality	0008,0060	CS	SR	ALWAYS	FIXED	
Series Description	0008,103E	LO		ALWAYS	CONFIG	Radiation Dose Information
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	COPY	If no associated Performed Procedure Step exists then the attribute remains empty.
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	FIXED	Unique

Table 109: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	"Philips Medical Systems".
Institution Name	0008,0080	LO		ANAP	AUTO	Hospital Name.
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	"Veradius"	ALWAYS	AUTO	"Veradius"
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	Value comes from service setting.
Software Version(s)	0018,1020	LO	Value 1: PH Mobile C R4.1	ALWAYS	AUTO	

Table 110: SR Document General Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Time	0008,0033	TM		ALWAYS	AUTO	-
Instance Number	0020,0013	IS	0	ALWAYS	AUTO	0
Content Date	0008,0023	DA		ALWAYS	AUTO	-
Completion Flag	0040,A491	CS	COMPLETE	ALWAYS	FIXED	-
Verification Flag	0040,A493	CS	UNVERIFIED	ALWAYS	FIXED	-
Referenced Request Sequence	0040,A370	SQ		ANAP	MWL	-
>Requested Procedure Description	0032,1060	LO		VNAP	MWL	-
>Reason for the Requested Procedure	0040,1002	LO		ANAPCV	MWL	-
>Accession Number	0008,0050	SH		VNAP	MWL	-
>Study Instance UID	0020,000D	UI		ALWAYS	MWL	-
>Requested Procedure ID	0040,1001	SH		VNAP	MWL	-
>Placer Order Number / Imaging Service Request	0040,2016	LO		VNAP	MWL	-
>Filler Order Number / Imaging Service Request	0040,2017	LO		VNAP	MWL	-
>Reason for Requested Procedure Code Sequence	0040,100A	SQ		ANAPCV	MWL	-
>>Code Value	0008,0100	SH		ALWAYS	MWL	-
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	-
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	-
>>Coding Scheme Version	0008,0103	SH		ANAP	MWL	-
>Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	-
>>Code Value	0008,0100	SH		ALWAYS	MWL	-
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	-
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	-
>>Coding Scheme Version	0008,0103	SH		ANAP	MWL	-
>Referenced Study Sequence	0008,1110	SQ		VNAP	MWL	-
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	-
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	-
Performed Procedure Code Sequence	0040,A372	SQ		EMPTY	AUTO	No Value and zero Value Length.

Table 111: SR Document Content Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Value Type	0040,A040	CS	CONTAINER	ALWAYS	FIXED	
Concept Name Code Sequence	0040,A043	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH	113701	ALWAYS	FIXED	
>Coding Scheme Designator	0008,0102	SH	DCM	ALWAYS	FIXED	
>Code Meaning	0008,0104	LO	X-ray radiation Dose Report	ALWAYS	FIXED	
Continuity Of Content	0040,A050	CS	SEPARATE	ALWAYS	FIXED	
Content Template Sequence	0040,A504	SQ		ALWAYS	AUTO	
>Mapping Resource	0008,0105	CS	DCMR	ALWAYS	FIXED	
>Template Identifier	0040,DB00	CS	TID 10001	ALWAYS	FIXED	
Content Sequence	0040,A730	SQ		ANAP	AUTO	

| >Relationship Type | 0040,A010 | CS | HAS CONCEPT MOD | ALWAYS | FIXED | |

Table 112: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	COPY	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.88.67	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance number	0020,0012	IS		ALWAYS	AUTO	

8.1.2. Usage of Attributes from Received IOD

Not applicable.

8.1.3. Attribute Mapping

The following mapping applies for attributes of the Mobile C-Arm AE.

Table 113: Attribute Mapping of the Mobile C-Arm AE

Attribute Name	MWL Tag	MPPS Create Tag	MPPS Set Tag	SC Tag	XA Tag	SR Tag
Specific Character Set (if present)	0008,0005	0008,0005	-	0008,0005	0008,0005	0040,A370 >0008,0005
Accession Number	0008,0050	(0040,0270) >(0008,0050)	-	0008,0050	0008,0050	0040,A370 >0008,0050
Referring Physician's Name	0008,0090	-	-	0008,0090	0008,0090	0008,0090
Referenced Study Sequence	0008,1110	(0040,0270) >(0008,1110)	-	0008,1110	0008,1110	0040,A370 >0008,1110
> Referenced SOP Class UID	>(0008,1150)	>(0008,1150)	-	>(0008,1150)	>(0008,1150)	>(0008,1150)
> Referenced SOP Instance UID	>(0008,1155)	>(0008,1155)	-	>(0008,1155)	>(0008,1155)	>(0008,1155)
Referenced Patient Sequence	(0008,1120)	(0008,1120)	-	-	-	0008,1120
> Referenced SOP Class UID	>(0008,1150)	>(0008,1150)	-	-	-	>0008,1150
> Referenced SOP Instance UID	>(0008,1155)	>(0008,1155)	-	-	-	>0008,1155
Patient's Name	0010,0010	0010,0010	-	0010,0010	0010,0010	0010,0010
Patient ID	0010,0020	0010,0020	-	0010,0020	0010,0020	0010,0020
Patient's Birth Date	0010,0030	0010,0030	-	0010,0030	0010,0030	0010,0030
Patient's Birth Time	0010,0032	-	-	0010,0032	0010,0032	0010,0032
Patient's Sex	0010,0040	0010,0040	-	0010,0040	0010,0040	0010,0040
Other Patient IDs	0010,1000	-	-	0010,1000	0010,1000	0010,1000
Other Patient Names	0010,1001	-	-	0010,1001	0010,1001	0010,1001
Patient's Weight	0010,1030	-	-	0010,1030	0010,1030	0010,1030
Study Instance UID	0020,000D	(0040,0270) >(0020,000D)	-	0020,000D	0020,000D	0040,A370 >0020,000D
Requested Procedure Description	0032,1060	(0040,0270) >(0032,1060)	-	(0040,0275) >(0032,1060)	(0040,0275) >(0032,1060)	0040,A370 >0032,1060
Reason for Requested Procedure	0040,1002	-	-	-	-	0040,A370 >0040,1002
Reason for Requested Procedure Code Sequence	0040,100A	-	-	-	-	0040,A370 >0040,100A
>Code Value	>0008,0100	-	-	-	-	>>0008,0100
>Coding Scheme Designator	>0008,0102	-	-	-	-	>>0008,0102
>Code Meaning	>0008,0104	-	-	-	-	>>0008,0104

Attribute Name	MWL Tag	MPPS Create Tag	MPPS Set Tag	SC Tag	XA Tag	SR Tag
>Coding Scheme Version	>0008,0103	-	-	-	-	>>0008,0103
>Scheduled Performing Physician's Name (Physician who makes the Examination)	(0040,0100) >(0040,0006)	-	(0040,0340) >(0008,1050)	(0008,1050)	(0008,1050)	-
>Scheduled Procedure Step Description	(0040,0100) >(0040,0007)	(0040,0270) >(0040,0007)	-	(0040,0275)	(0040,0275)	0008,1030
>Scheduled Procedure Step ID	(0040,0100) >(0040,0009)	(0040,0270)	-	(0040,0275)	(0040,0275)	-
	-	>(0040,0009)	-	>(0040,0009)	>(0040,0009)	-
> Scheduled Protocol Code Sequence	(0040,0100) >(0040,0008)	(0040,0270)	-	(0040,0275)	(0040,0275)	-
	-	>(0040,0008)	-	>(0040,0008)	>(0040,0008)	-
>> Code Value	>>(0008,0100)	>>(0008,0100)	-	>>(0008,0100)	>>(0008,0100)	-
>> Coding Scheme Designator	>>(0008,0102)	>>(0008,0102)	-	>>(0008,0102)	>>(0008,0102)	-
>> Coding Scheme Version	>>(0008,0103)	>>(0008,0103)	-	>>(0008,0103)	>>(0008,0103)	-
>> Code Meaning	>>(0008,0104)	>>(0008,0104)	-	>>(0008,0104)	>>(0008,0104)	-
Requested Procedure ID	0040,1001	(0040,0270)	-	(0040,0275)	(0040,0275)	0040,A370 >0040,1001
	-	>(0040,1001), (0020,0010)	-	>(0040,1001), (0020,0010)	>(0040,1001), (0020,0010)	-
Performed Procedure Step ID	-	0040,0253	-	0040,0253	0040,0253	-
MPPS SOP Class UID	-	0000,0002	0000,0003	0008,1111 >0008,1150	0008,1111 >0008,1150	0008,1111 >0008,1150
MPPS SOP Instance UID	-	0000,1000	0000,1001	0008,1111 >0008,1155	0008,1111 >0008,1155	0008,1111 >0008,1155
Admitting Diagnoses Description	0008,1080	-	-	-	-	0008,1080
Admitting Diagnoses Code Sequence	0008,1084	-	-	0008,1084	0008,1084	0008,1084
>Code Value	>0008,0100	-	-	>0008,0100	>0008,0100	>0008,0100
>Coding Scheme Designator	>0008,0102	-	-	>0008,0102	>0008,0102	>0008,0102
>Code Meaning	>0008,0104	-	-	>0008,0104	>0008,0104	>0008,0104
>Coding Scheme Version	>0008,0103	-	-	>0008,0103	>0008,0103	>0008,0103
Scheduled Procedure Step Sequence	0040,0100	-	-	-	-	-
>Modality	>(0008,0060)	0008,0060	-	-	-	-
>Scheduled Station AE Title	>(0040,0001)	(0040,0242)	-	-	-	-
>Scheduled Procedure Step Start Date	>(0040,0002)	(0040,0244)	(0040,0250)	-	-	-
>Scheduled Procedure Step Start Time	>(0040,0003)	(0040,0245)	(0040,0251)	-	-	-
>Scheduled Station Name	>(0040,0010)	>(0040,0242)	-	0040,0010	0040,0010	-
Requested Procedure Code Sequence	(0032,1064)	(0008,1032)	-	(0008,1032)	(0008,1032)	(0040,A370) >(0032,1064)
>Code Value	>(0008,0100)	>(0008,0100)	-	>(0008,0100)	>(0008,0100)	>>(0008,0100)
>Coding Scheme Designator	>(0008,0102)	>(0008,0102)	-	>(0008,0102)	>(0008,0102)	>>(0008,0102)
>Coding Scheme Version	>(0008,0103)	>(0008,0103)	-	>(0008,0103)	>(0008,0103)	>>(0008,0103)
>Code Meaning	>(0008,0104)	>(0008,0104)	-	>(0008,0104)	>(0008,0104)	>>(0008,0104)
Placer Order Number/Imaging Service Request	(0040,2016)	-	-	-	-	(0040,A370) >(0040,2016)
Filler Order Number/Imaging Service Request	(0040,2017)	-	-	-	-	(0040,A370) >(0040,2017)

8.1.4. Coerced/Modified fields

When exporting an image the following behavior applies.

A Secondary Capture image shall be exported as reflected in the GUI.

To enable reconstruction, an X-ray image shall be exported without annotations and using the original grayscale values as per acquisition and a 3D image shall be exported without supplementary rotation.

8.2. Data Dictionary of Private Attributes

Not applicable

8.3. Coded Terminology and Templates

Not applicable.

8.3.1. Context Groups

Not applicable.

8.3.2. Template Specifications

Not applicable.

8.3.3. Private code definitions

Not applicable.

8.4. Grayscale Image consistency

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

8.5. STRUCTURED REPORT DOCUMENT INFORMATIONS

8.5.1. Radiation Dose Structured Report

8.5.1.1. TID 10001 Projection X-Ray Radiation Dose

Table 114: Projection X-Ray Radiation Dose

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		X-Ray Radiation Dose Report	1	ALWAYS	
>	HAS CONCEPT MOD	Procedure reported	1	ALWAYS	Projection X-Ray

>>	HAS CONCEPT MOD	Has Intent	1	ALWAYS	Diagnostic Intent
>		DTID (1002) Observer Context	1	ALWAYS	
>	HAS OBS CONTEXT	Scope of Accumulation	1	ALWAYS	Performed Procedure Step
>>	HAS PROPERTIES	DCID (10001) UID Types	1	ALWAYS	Performed Procedure Step SOP Instance UID When the system does not use MPPS, a UID will be used based on the examination timestamp.
>	CONTAINS	DTID (10002) Accumulated X-Ray Dose	1	ALWAYS	
>	CONTAINS	DTID (10003) Irradiation Event X-Ray Data	1-n	ALWAYS	
>	CONTAINS	Source of Dose Information	1	ALWAYS	Automated Data Collection

8.5.1.2. TID 10002 Accumulated X-Ray Dose

Table 115: Accumulated X-Ray Dose

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		Accumulated X-Ray Dose Data	1	ALWAYS	
>	HAS CONCEPT MOD	Acquisition Plane	1	ALWAYS	Single Plane
>	CONTAINS	Calibration	1	ALWAYS	Values from service calibration
>>	HAS CONCEPT MOD	Dose Measurement Device	1	ALWAYS	Dosimeter
>>	CONTAINS	Calibration Date	1	ALWAYS	System date of last calibration
>>	CONTAINS	"Calibration Factor	1	ALWAYS	1
>>	CONTAINS	Calibration Uncertainty	1	ALWAYS	35%
>>	CONTAINS	Calibration Responsible Party	1	ALWAYS	Party responsible for servicing the device
>	CONTAINS	DTID (10004) Accumulated Projection X-Ray Dose	1	ALWAYS	

8.5.1.3.   TID 10003 Irradiation Event X-Ray Data

Table 116: Irradiation Event X-Ray Data

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		Irradiation Event X-Ray Data	1	ALWAYS	
>	HAS CONCEPT MOD	Acquisition Plane	1	ALWAYS	Single Plane
>	CONTAINS	DateTime Started	1	ALWAYS	
>	CONTAINS	Irradiation Event Type	1	ALWAYS	Stationary Acquisition (for digital exposure and Radiography) Fluoroscopy (for all other runs)
>	CONTAINS	Acquisition Protocol	1	CONDITIONAL	Copy from series module when available.
>	CONTAINS	Reference Point Definition	1	ALWAYS	30cm in Front of Image Input Surface
>	CONTAINS	Irradiation Event UID	1	ALWAYS	
>	CONTAINS	Dose Area Product	1	ALWAYS	Dose area product.
>	CONTAINS	Dose (RP)	1	ALWAYS	Dose at the dose reference point.
>	CONTAINS	Positioner Primary Angle	1	CONDITIONAL	
>	CONTAINS	Positioner Secondary Angle	1	CONDITIONAL	
>	CONTAINS	Positioner Primary End Angle	1	CONDITIONAL	
>	CONTAINS	Positioner Secondary End Angle	1	CONDITIONAL	
>	CONTAINS	Collimated Field Area	1	ALWAYS	Collimator area at detector plane
>	CONTAINS	X-Ray Filters	2	ALWAYS	List of all fixed pre-filters in the system
>	CONTAINS	Irradiation Duration	1	ALWAYS	Time in seconds
>	CONTAINS	DCID (10008) Dose Related Distance Measurements	2	ALWAYS	Fill in fixed values for: - Distance source to reference point - Distance source to detector
>	CONTAINS	Target Region	1	ALWAYS	One of the list below can be selected by the user. - Abdomen - Chest - Chest, Abdomen and Pelvis - Entire body - Extremity - Head - Hip joint - Spine
>	CONTAINS	Anode Target Material	1	ALWAYS	Tungsten or Tungsten compound
>	CONTAINS	X-Ray Grid	1	ALWAYS	Focused grid

| > | CONTAINS | DTID (1020) Person Participant | 1 | ALWAYS | |
| > | CONTAINS | DTID (1021) Device Participant | 1 | ALWAYS | Irradiating Device |

Note that the number of irradiation events in an exported dose structured report message is limited to 1000.

8.5.1.4. TID 10004 Accumulated Projection X-Ray Dose

Table 117: Accumulated Projection X-Ray Dose

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		Dose Area Product Total	1	ALWAYS	Gym2
		Dose (RP) Total	1	ALWAYS	Gy
		Fluoro Dose Area Product Total	1	CONDITIONAL	Gym2
		Fluoro Dose (RP) Total	1	CONDITIONAL	Gy
		Total Fluoro Time	1	CONDITIONAL	Time in seconds
		Acquisition Dose Area Product Total	1	ALWAYS	The dose administered for Digital Exposures & Radiography.
		Acquisition Dose (RP) Total	1	ALWAYS	The dose administered for Digital Exposures & Radiography.
		Total Acquisition Time	1	ALWAYS	Time in seconds
		Total Number of Radiographic Frames	1	CONDITIONAL	no units
		Reference Point Definition	1	ALWAYS	30cm in Front of Image Input Surface

8.5.1.5. TID 1002 Observer Context

Table 118: Observer Context

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
	HAS OBS CONTEXT	Observer Type	1	CONDITIONAL	Device
	HAS OBS CONTEXT	DTID (1004) Device observer identifying attributes	1	ALWAYS	

8.5.1.6. TID 1004 Device Observer Identifying Attributes

Table 119: Device Observer Identifying Attributes

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		Device Observer UID	1	ALWAYS	Based on the Device Serial Number (0018, 1000)
		Device Observer Name	1	CONDITIONAL	Station Name (0008,1010)

		Device Observer Manufacturer	1	CONDITIONAL	Manufacturer (0008,0070)
		Device Observer Model Name	1	CONDITIONAL	Manufacturer's Model Name (0008,1090)
		Device Observer Serial Number	1	CONDITIONAL	Device Serial Number (0018,1000)

8.5.1.7. TID 1020 Person Participant

Table 120: Person Participant

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		Person Name	1	ALWAYS	- Performing Physician's Name (0008,1050) - Physician's name as entered in the system for the examination. - Operator's Name (0008,1070) - Operator's Name as entered in the system for the examination. - First available value from the list is used.
>	HAS PROPERTIES	Person Role in Procedure	1	ALWAYS	Irradiation Administering.

8.5.1.8. TID 1021 Device Participant

Table 121: Device Participant

NL	Relation with Parent	Concept Name	VM	Presence of Value	Value
		Device Role in Procedure	1	ALWAYS	Irradiation Device
>	HAS PROPERTIES	Device Name	1	CONDITIONAL	Use the Station name (0008,1010)
>	HAS PROPERTIES	Device Manufacturer	1	ALWAYS	Manufacturer (0008,0070)
>	HAS PROPERTIES	Device Model Name	1	ALWAYS	"Veradius"
>	HAS PROPERTIES	Device Serial Number	1	ALWAYS	Device Serial Number (0018,1000)

8.6. Private Transfer Syntaxes

Not applicable.

9. Annexes of application "ViewForum Surgical Workstation AE"

9.1. IOD Contents

9.1.1. Created SOP Instance

This section specifies each created IOD by this application.

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

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

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

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

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

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

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

9.1.1.1. List of created SOP Classes

Table 122: List of created SOP Classes

SOP Class Name	SOP Class UID
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1

9.1.1.2. Secondary Capture Image Storage SOP Class

Table 123: 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	CONDITIONAL
Series	General Series Module	ALWAYS

Equipment		General Equipment Module	CONDITIONAL
Equipment		SC Equipment Module	ALWAYS
Image		General Image Module	ALWAYS
Image		Image Pixel Module	ALWAYS
Image		SC Image Module	ALWAYS
Image		Overlay Plane Module	CONDITIONAL
Image		Modality LUT Module	CONDITIONAL
Image		VOI LUT Module	CONDITIONAL
Image		SOP Common Module	ALWAYS

Table 124: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		VNAP	AUTO, USER	From GUI.
Patient's Birth Date	0010,0030	DA		VNAP	AUTO, USER	<yyyymmdd> From GUI.
Patient's Birth Time	0010,0032	TM		VNAP	AUTO	<hhmm> From GUI.
Patient's Sex	0010,0040	CS	F, M, O	VNAP	AUTO, USER	
Other Patient IDs	0010,1000	LO		ANAP	AUTO	
Other Patient Names	0010,1001	PN		ANAP	AUTO	
Ethnic Group	0010,2160	SH		ANAP	AUTO	
Patient Comments	0010,4000	LT		ANAP	AUTO, USER	From GUI.

Table 125: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO	<yyyymmdd>
Study Time	0008,0030	TM		VNAP	AUTO	<hhmmss>
Accession Number	0008,0050	SH		VNAP	AUTO, USER	From GUI.
Referring Physician's Name	0008,0090	PN		VNAP	AUTO, USER	From GUI.
Study Description	0008,1030	LO		ANAP	AUTO, USER	From GUI.
Procedure Code Sequence	0008,1032	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
>Context Identifier	0008,010F	CS		ANAP	AUTO	
Physician(s) of Record	0008,1048	PN		ANAP	AUTO, USER	From GUI.
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	AUTO, USER	From GUI.
Referenced Study Sequence	0008,1110	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study ID	0020,0010	SH		VNAP	MWL	

Table 126: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Admitting Diagnoses Description	0008,1080	LO		ANAP	AUTO, USER	From GUI.
Admitting Diagnoses Code Sequence	0008,1084	SQ		ANAP	AUTO, USER	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	
>Context Identifier	0008,010F	CS		ANAP	AUTO	
Patient's Age	0010,1010	AS		ANAP	AUTO	From GUI.
Patient's Size	0010,1020	DS		ANAP	AUTO	
Patient's Weight	0010,1030	DS		ANAP	AUTO	
Occupation	0010,2180	SH		ANAP	AUTO, USER	From GUI.
Additional Patient History	0010,21B0	LT		ANAP	AUTO, USER	From GUI

Table 127: 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	
Series Description	0008,103E	LO		ANAP	AUTO	
Performing Physician's Name	0008,1050	PN		ANAP	AUTO, USER	
Operators' Name	0008,1070	PN		ANAP	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Body Part Examined	0018,0015	CS		ANAP	AUTO	
Protocol Name	0018,1030	LO		ANAP	AUTO, USER	

Patient Position	0018,5100	CS		ANAPCV	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Laterality	0020,0060	CS		EMPTY	FIXED	
Smallest Pixel Value in Series	0028,0108	US /SS		ANAP	AUTO	
Largest Pixel Value in Series	0028,0109	US /SS		ANAP	AUTO	
Request Attributes Sequence	0040,0275	SQ		ALWAYS	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ALWAYS	AUTO	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ALWAYS	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	
>>Context Identifier	0008,010F	CS		ANAP	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP		
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO, USER	From GUI.
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	
>Context Identifier	0008,010F	CS		ANAP	AUTO	
Comments on the Performed Procedure Step	0040,0280	ST		ANAP	AUTO, USER	From GUI.

Table 128: General Equipment Module

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

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Institution Name	0008,0080	LO		ANAP	CONFIG	
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ANAP	AUTO	
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ANAP	AUTO	
Software Version(s)	0018,1020	LO		ANAP	AUTO	
Spatial Resolution	0018,1050	DS		ANAP	AUTO	
Date of Last Calibration	0018,1200	DA		ANAP	AUTO	
Time of Last Calibration	0018,1201	TM		ANAP	AUTO	
Pixel Padding Value	0028,0120	US/SS		ANAP	AUTO	

Table 129: SC Equipment Module

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

Table 130: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: DERIVED, Value 2: SECONDARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ANAP	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	<yyyymmdd>
Acquisition Datetime	0008,002A	DT		ANAP	AUTO	
Acquisition Time	0008,0032	TM		ANAP	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	<hhmmss>
Referenced Image Sequence	0008,1140	SQ		ANAP	AUTO	
>Purpose of Reference Code Sequence	0040,A170	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	
>>Context Identifier	0008,010F	CS		ANAP	AUTO	
>>Scheduled Procedure Step ID	0040,0009	SH		ALWAYS	AUTO	
>Referenced Frame Number	0008,1160	IS		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Derivation Description	0008,2111	ST		ANAP	AUTO	
Source Image Sequence	0008,2112	SQ		ANAP	AUTO	
>Purpose of Reference Code Sequence	0040,A170	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH		ALWAYS	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	
>>Context Identifier	0008,010F	CS		ANAP	AUTO	
>>Scheduled Procedure Step ID	0040,0009	SH		ALWAYS	AUTO	
>Referenced Frame Number	0008,1160	IS		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Derivation Code Sequence	0008,9215	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Coding Scheme Version	0008,0103	SH		ALWAYS	AUTO	
>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Mapping Resource	0008,0105	CS		ALWAYS	AUTO	
>Context Group Version	0008,0106	DT		ALWAYS	AUTO	
>Context Group Local Version	0008,0107	DT		ALWAYS	AUTO	
>Context Group Extension Flag	0008,010B	CS		ANAP	AUTO	
>Context Group Extension Creator UID	0008,010D	UI		ALWAYS	AUTO	
>Context Identifier	0008,010F	CS		ANAP	AUTO	
Acquisition Number	0020,0012	IS		ANAP	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO	
Images in Acquisition	0020,1002	IS		ANAP	AUTO	
Image Comments	0020,4000	LT		ANAP	AUTO	
Quality Control Image	0028,0300	CS		ANAP	AUTO	
Burned In Annotation	0028,0301	CS		ANAP	AUTO	
Lossy Image Compression	0028,2110	CS		ANAP	AUTO	
Lossy Image Compression Ratio	0028,2112	DS		ANAP	AUTO	
Icon Image Sequence	0088,0050	SQ		ANAP	AUTO	
>Slice Thickness	0018,0050	DS		ALWAYS	AUTO	
>Slice Location	0020,1041	DS		ALWAYS	AUTO	
>Pixel Spacing	0028,0030	DS		ALWAYS	AUTO	
Presentation LUT Shape	2050,0020	CS		ANAP	AUTO	

Table 131: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
Planar Configuration	0028,0006	US		ANAP	AUTO	
Rows	0028,0010	US	1024	ALWAYS	AUTO	
Columns	0028,0011	US	1024	ALWAYS	AUTO	

Pixel Aspect Ratio	0028,0034	IS		ANAP	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	12	ALWAYS	AUTO	
High Bit	0028,0102	US	11	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Smallest Image Pixel Value	0028,0106	US /SS		ANAP	AUTO	
Largest Image Pixel Value	0028,0107	US /SS		ANAP	AUTO	
Red Palette Color Lookup Table Descriptor	0028,1101	US /SS		ANAP	AUTO	
Green Palette Color Lookup Table Descriptor	0028,1102	US /SS		ANAP	AUTO	
Blue Palette Color Lookup Table Descriptor	0028,1103	US /SS		ANAP	AUTO	
Red Palette Color Lookup Table Data	0028,1201	OW		ANAP	AUTO	
Green Palette Color Lookup Table Data	0028,1202	OW		ANAP	AUTO	
Blue Palette Color Lookup Table Data	0028,1203	OW		ANAP	AUTO	
Pixel Data	7FE0,0010	OW/ OB		ALWAYS	AUTO	

Table 132: 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 133: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ALWAYS	AUTO	
Overlay Columns	6000,0011	US		ALWAYS	AUTO	
Overlay Description	6000,0022	LO		ANAP	AUTO	
Overlay Type	6000,0040	CS		ALWAYS	AUTO	
Overlay Subtype	6000,0045	LO		ANAP	AUTO	
Overlay Origin	6000,0050	SS		ALWAYS	AUTO	
Overlay Bits Allocated	6000,0100	US		ALWAYS	AUTO	
Overlay Bit Position	6000,0102	US		ALWAYS	AUTO	
ROI Area	6000,1301	IS		ANAP	AUTO	
ROI Mean	6000,1302	DS		ANAP	AUTO	
ROI Standard Deviation	6000,1303	DS		ANAP	AUTO	
Overlay Label	6000,1500	LO		ANAP	AUTO	
Overlay Data	6000,3000	OW/ OB		ALWAYS	AUTO	

Table 134: Modality LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Intercept	0028,1052	DS		ANAP	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Slope	0028,1053	DS		ANAP	AUTO	
Modality LUT Sequence	0028,3000	SQ		ANAP	AUTO	
>LUT Descriptor	0028,3002	US/SS		ALWAYS	AUTO	
>LUT Explanation	0028,3003	LO		ANAP	AUTO	
>Modality LUT Type	0028,3004	LO		ALWAYS	AUTO	
>LUT Data	0028,3006	US/OW		ALWAYS	AUTO	

Table 135: 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	
Window Center & Width Explanation	0028,1055	LO		ANAP	AUTO	
VOI LUT Sequence	0028,3010	SQ		ANAP	AUTO	
>LUT Descriptor	0028,3002	US/SS		ALWAYS	AUTO	
>LUT Explanation	0028,3003	LO		ANAP	AUTO	
>LUT Data	0028,3006	US/OW		ALWAYS	AUTO	

Table 136: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	Required if expanded/replacement character set used.
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.3.   Grayscale Softcopy Presentation State Storage SOP Class

Table 137: IOD of Created Grayscale Softcopy Presentation State Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Series	Presentation Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Presentation State	Presentation State Identification Module	ALWAYS
Presentation State	Presentation State Relationship Module	ALWAYS
Presentation State	Presentation State Shutter Module	ALWAYS
Presentation State	Displayed Area Module	ALWAYS
Presentation State	Graphic Layer Module	CONDITIONAL
Presentation State	Softcopy VOI LUT Module	CONDITIONAL
Presentation State	Softcopy Presentation LUT Module	ALWAYS
Presentation State	SOP Common Module	ALWAYS

Table 138: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MPPS, USER	
Patient ID	0010,0020	LO		VNAP	AUTO, USER	From GUI.
Patient's Birth Date	0010,0030	DA		VNAP	AUTO, USER	<yyyymmdd> From GUI.
Patient's Birth Time	0010,0032	TM		ANAP	AUTO	<hhmm> From GUI.
Patient's Sex	0010,0040	CS	F, M, O	VNAP	AUTO, USER	

Table 139: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		VNAP	COPY	
Referenced Study Sequence	0008,1110	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	

Table 140: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAP	AUTO	<yyyymmdd>
Series Time	0008,0031	TM		ANAP	AUTO	<hhmm>
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	COPY	
Laterality	0020,0060	CS	L, R	ANAP	COPY	

Table 141: Presentation Series Module

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

Table 142: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	

Table 143: Presentation State Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	Current date.
Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	Current time.

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Label	0070,0080	CS	AS LAST SEEN, NEW AT IMPORT	ALWAYS	AUTO	
Content Description	0070,0081	LO		VNAP	AUTO	
Content Creator's Name	0070,0084	PN	"Surgical user"	ALWAYS	AUTO	

Table 144: Presentation State Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	COPY	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	COPY	
>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	

Table 145: Presentation State Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Presentation Value	0018,1622	US	0	ANAP	AUTO	

Table 146: Displayed Area Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Displayed Area Selection Sequence	0070,005A	SQ		ALWAYS	AUTO	
>Displayed Area Top Left Hand Corner	0070,0052	SL	1, 1	ALWAYS	FIXED	
>Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	AUTO	
>Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	FIXED	

Table 147: Graphic Layer Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Layer Sequence	0070,0060	SQ		ALWAYS	AUTO	
>Graphic Layer	0070,0002	CS		ALWAYS	AUTO	
>Graphic Layer Order	0070,0062	IS		ALWAYS	AUTO	

Table 148: Softcopy VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ANAP	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Window Center	0028,1050	DS		ANAP	AUTO	
>Window Width	0028,1051	DS		ANAP	AUTO	
>Window Center & Width Explanation	0028,1055	LO		ANAPCV	AUTO	
>VOI LUT Sequence	0028,3010	SQ		ANAP	COPY	
>>LUT Descriptor	0028,3002	US /SS		ALWAYS	COPY	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
>>LUT Explanation	0028,3003	LO			ANAPCV	COPY	
>>LUT Data	0028,3006	US /O W			ALWAYS	COPY	

Table 149: Softcopy Presentation LUT Module

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

Table 150: SOP Common Module

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

9.1.2.   Usage of Attributes from Received IOD

None.

9.1.3.   Attribute Mapping

Not applicable.

9.1.4.   Coerced/Modified fields

In general, the ViewForum Surgical Workstation AE will try and optimize the imported image data. This may involve the removal of redundant data, either or not due to the creation of a Presentation State object for the image data. This may also involve the creation of extra attributes. As it is not the intention of the ViewForum Surgical Workstation AE to export this data as such, the SOP Instance UID shall not be changed. If not available at import then the ViewForum Surgical Workstation AE will create the additional attributes as listed in the following table.

Table 151: Additional Attributes for Image Storage

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

If the SCU does not propose a presentation context for the Grayscale Softcopy Presentation State storage SOP class, then the ViewForum Surgical Workstation AE will derive Presentation State data from the imported image data and store this data in a new series within the examination of the imported image. However, if during import the image is accompanied by Presentation State data, the ViewForum Surgical Workstation AE database shall avoid data overlap by only storing the relevant data from the first object received; either the first image or its Presentation State!

Thus it will omit data received by succeeding objects concerning the optional attributes (VT=3) listed in the following table, and clear all mandatory attributes (VT=2) listed in the second table below.

Table 152: Omitted Attributes for Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient Module					
Referenced Patient Sequence	0008,1120	SQ		ANAP	AUTO
Patient's Birth Date	0010,0032	TM		ANAP	AUTO
Other Patient IDs	0010,1000	LO		ANAP	AUTO
Other Patient Names	0010,1001	PN		ANAP	AUTO
Ethnic Group	0010,2160	SH		ANAP	AUTO
Patient Comments	0010,4000	LT		ANAP	AUTO
General Study Module					
Referring Physician Identification Sequence	0008,0096	SQ		ANAP	AUTO
Study Description	0008,1030	LO		ANAP	AUTO
Procedure Code Sequence	0008,1032	SQ		ANAP	AUTO
Physician(s) of Record	0008,1048	PN		ANAP	AUTO
Physician(s) of Record Identification Sequence	0008,1049	SQ			
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	AUTO
Physician(s) Reading Study Identification Sequence	0008,1062	SQ		ANAP	AUTO
Referenced Study Sequence	0008,1110	SQ		ANAP	AUTO
Patient Study Module					
Admitting Diagnoses Description	0008,1080	UI		ANAP	AUTO
Admitting Diagnoses Code Sequence	0008,1084	SQ		ANAP	AUTO
Patient's Age	0010,1010	AQ		ANAP	AUTO
Patient's Size	0010,1020	DS		ANAP	AUTO
Patient's Weight	0010,1030	DS		ANAP	AUTO
Occupation	0010,2180	SH		ANAP	AUTO
Additional Patient History	0010,21B0	LT		ANAP	AUTO
Clinical Trial Study Module					
Clinical Trial Time Point Description	0012,0051	DA		ANAP	AUTO
General Series Module					
Series Date	0008,0021	DA		ANAP	AUTO
Series Time	0008,0031	TM		ANAP	AUTO
Series Description	0008,103E	LO		ANAP	AUTO
Performing Physician's Name	0008,1050	PN		ANAP	AUTO
Performing Physician Identification Sequence	0008,1052	SQ		ANAP	AUTO
Operators' Name	0008,1070	PN		ANAP	AUTO
Operators Identification Sequence	0008,1072	SQ		ANAP	AUTO
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO
Body Part Examined	0008,0015	CS		ANAP	AUTO
Protocol Name	0018,1030	LO		ANAP	AUTO
Smallest Pixel Value in Series	0028,0108	US / SS		ANAP	AUTO
Largest Pixel Value in Series	0028,0109	US / SS		ANAP	AUTO
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	AUTO
Request Attributes Sequence	0040,0275	SQ		ANAP	AUTO
Comments on the Performed Procedure Step	0040,0280	ST		ANAP	AUTO
General Equipment Module					

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

Table 153: Cleared Attributes for Image Storage

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient Module					
Patient's Name	0010,0010	PN		VNAP	AUTO
Patient ID	0010,0020	LO		VNAP	AUTO
Patient's Birth Date	0010,0030	DA		VNAP	AUTO
Patient's Sex	0010,0040	CS		VNAP	AUTO
Clinical Trial Subject Module					
Clinical Trial Protocol	0012,0021	LO		VNAP	AUTO
Clinical Trial Site ID	0012,0030	LO		VNAP	AUTO
Clinical Trial Site Name	0012,0031	LO		VNAP	AUTO
General Study Module					
Study Date	0008,0020	DA		VNAP	AUTO
Study Time	0008,0030	TM		VNAP	AUTO

Attribute Name	Tag	VR	Value	Presence of Value	Source
Accession Number	0008,0050	SH		VNAP	AUTO
Referring Physician's Name	0008,0090	PN		VNAP	AUTO
Study ID	0020,0010	SH		VNAP	AUTO
Clinical Trial Study Module					
Clinical Trial Time Point ID	0012,0050	LO		VNAP	AUTO
General Series Module					
Patient Position	0018,5100	CS		ANAPCV	AUTO
Series Number	0020,0011	IS		VNAP	AUTO
Laterality	0020,0060	CS		ANAPCV	AUTO
Clinical Trial Series Module					
Clinical Trial Coordinating Center Name	0012,0060	LO		VNAP	AUTO
General Equipment Module					
Manufacturer	0008,0070	LO		VNAP	AUTO
Mask Module					
Recommended Viewing Mode	0028,1090	CS		VNAP	AUTO
Overlay/Curve Activation Module					
Curve Activation Layer	50xx,1001	CS		ANAP	AUTO
Overlay Activation Layer	60xx,1001	CS		ANAP	AUTO

The ViewForum Surgical Workstation AE allows the operator (USER) to modify attributes of the stored images in the GUI; see the following table. The ViewForum Surgical Workstation AE does not modify the pixel values of the stored images. Modified images retain their original Study, Series and Image UID.

Table 154: Modifiable Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient					
Patient's Name	0010,0010	PN		VNAP	USER
Patient ID	0010,0050	LO		VNAP	USER
Patient's Birth Date	0010,0030	DA		VNAP	USER
Patient's Sex	0010,0040	CS		VNAP	USER
Medical Alerts	0010,2000	LO	1-N	VNAP	USER
Contrast Allergies	0010,2110	LO	1-N	VNAP	USER
Patient Comments	0010,4000	LT		ANAP	USER
Study					
Accession Number	0008,0050	SH		VNAP	USER
Referring Physician's Name	0008,0090	PN		VNAP	USER
Study Description	0008,1030	LO		ANAP	USER
Physician(s) of Record	0008,1048	PN	1-N	ANAP	USER
Name of Physician(s) Reading Study	0008,1060	PN	1-N	ANAP	USER
Admitting Diagnoses Description	0008,1080	LO	1-N	ANAP	USER
Patient's Age	0010,1010	AS		ANAP	USER
Occupation	0010,2180	SH		ANAP	USER
Additional Patient History	0010,21B0	LT		ANAP	USER
Examination					
Performed Station Name	0040,0242	SH		An institution defined name for the modality on which the Performed Procedure Step was performed.	CONF, MPPS, USER
Performed Location	0040,0243	SH		Description of the location at which the Performed Procedure Step was performed.	MPPS, USER

Attribute Name	Tag	VR	Value	Presence of Value	Source
Performed Procedure Step Description	0040,0254	LO		From Modality Worklist or user input. The user can modify the description provided via Modality Worklist.	MPPS, USER
Performed Procedure Type Description	0040,0255	LO		A description of the type of procedure performed.	MPPS, USER
Comments on the Performed Procedure Step	0040,0280	ST		User-defined comments on the Performed Procedure Step.	MPPS, USER

9.2. Data Dictionary of Private Attributes

Not applicable.

9.3. Coded Terminology and Templates

Not applicable.

9.3.1. Context Groups

Not applicable.

9.3.2. Template Specifications

Not applicable.

9.3.3. Private code definitions

Not applicable.

9.4. Grayscale Image consistency

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

9.5. Standard Extended/Specialized/Private SOPs

The ViewForum Surgical Workstation AE supports the following standard specialized SOP classes as SCP.

Table 155: Standard Specialized SOP Classes of ViewForum Surgical Workstation AE

SOP Class Name	SOP Class UID
X-Ray Specialization	1.3.46.670589.2.3.1.1
Stack of X-Ray	1.3.46.670589.2.4.1.1
Volume	1.3.46.670589.5.0.1.1
3D Volume Object	1.3.46.670589.5.0.2.1
Surface	1.3.46.670589.5.0.3.1
Cardio	1.3.46.670589.5.0.8.1
CT Synthetic Image	1.3.46.670589.5.0.9
MR Synthetic Image	1.3.46.670589.5.0.10
MR Cardio Analysis	1.3.46.670589.5.0.11.1
CX Synthetic Image	1.3.46.670589.5.0.12
Perfusion	1.3.46.670589.5.0.13

SOP Class Name	SOP Class UID
Perfusion Analysis	1.3.46.670589.5.0.14

Table 156: List of created SOP Classes

SOP Class Name	SOP Class UID
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1

9.5.1.   Standard Extended/Specialized/Private SOP Instance

9.5.1.1.   Secondary Capture Image Storage SOP Class

Table 157: Extended DICOM and private attributes for Secondary Capture Image Storage SOP Class Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		ANAP	AUTO, USER	Patient Medical Module. From GUI.
Allergies	0010,2110	LO		ANAP	AUTO, USER	Patient Medical Module. From GUI.

9.6.   Private Transfer Syntaxes

Not applicable.