
DICOM

Conformance Statement

Achieva 3.0T TX R3.1



Issued by:

Philips Medical Systems Nederland B.V.

P.O. Box 10.000
5680 DA Best
The Netherlands

email: <mailto:dicom@philips.com>

Internet: <http://www.medical.philips.com/connectivity>

Document Number: 452213312861/ XPS 031-090267

Date: 18 September 2009

1. DICOM CONFORMANCE STATEMENT OVERVIEW

This document is the DICOM Conformance Statement for Achieva 3.0T TX R3.1, later referred to as the MR System.

The Philips MR systems for which this document is valid standard support the DICOM Enhanced MR objects: Enhanced MR Image, MR Spectroscopy, and Raw Data. These objects can be sent and received. It depends on the capabilities of the remote system, which of these objects are supported in the transactions. The capabilities of the remote systems are locally stored on the MR System in configuration files per DICOM node. In case the remote system does not support the enhanced objects, the MR System will send the object as standard MR Image.

The MR System is an embedded modality system for DICOM MR images. It provides, amongst other things, the following features:

- DICOM Verification service (for both SCU and SCP).
- Storage of DICOM objects on a remote DICOM system.
- Commitment of stored DICOM objects on a remote DICOM system (Push Model).
- Querying for data on a remote DICOM system.
- Retrieval of DICOM objects from a remote DICOM system.
- Basic Worklist Management (BWLM).
- Implementation of Modality Performed Procedure Step (MPPS).
- Storage and retrieval of DICOM objects per DICOM media.
- Printing of hardcopies on a remote DICOM printer.

Table 1: Network Services

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Transfer			
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Private MR Spectrum Storage	1.3.46.670589.11.0.0.12.1	Yes	Yes
Private MR Series Data Storage	1.3.46.670589.11.0.0.12.2	Yes	Yes
Private MR Examcard Storage	1.3.46.670589.11.0.0.12.4	Yes	Yes
Query/Retrieve			
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
Workflow Management			
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No
Print Management			
Basic Film Session	1.2.840.10008.5.1.1.1	Yes	No
Basic Film Box	1.2.840.10008.5.1.1.2	Yes	No
Basic Grayscale Image Box	1.2.840.10008.5.1.1.4	Yes	No
Basic Grayscale Print Management (Meta)	1.2.840.10008.5.1.1.9	Yes	No
Printer	1.2.840.10008.5.1.1.16	Yes	No

The following table lists the supported media storage Application Profiles (with roles).

Table 2: Media Services

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Magneto-Optical Disk		
CT/MR Studies on 2.3GB MOD	No	Yes
CT/MR Studies on 4.1GB MOD	No	Yes
DVD		
CT/MR Studies on DVD Media	Yes	Yes
USB		
General Purpose USB Media Interchange with JPEG*	Yes	Yes

*No JPEG support.

2. TABLE OF CONTENTS

1.	DICOM CONFORMANCE STATEMENT OVERVIEW	3
2.	TABLE OF CONTENTS	5
3.	INTRODUCTION	8
3.1.	REVISION HISTORY	8
3.2.	AUDIENCE	8
3.3.	REMARKS	8
3.4.	DEFINITIONS, TERMS AND ABBREVIATIONS	9
3.5.	REFERENCES	10
4.	NETWORKING	11
4.1.	IMPLEMENTATION MODEL	11
4.1.1.	Application Data Flow	11
4.1.2.	Functional Definition of AE's	12
4.1.2.1.	Functional Definition of the Network AE	12
4.1.2.1.1.	Verify	12
4.1.2.1.2.	Query Worklist	12
4.1.2.1.3.	Report MPPS	12
4.1.2.1.4.	Query Images	12
4.1.2.1.5.	Retrieve Images	12
4.1.2.1.6.	Import Images	12
4.1.2.1.7.	Export Images	12
4.1.2.1.8.	Archive Images	13
4.1.2.2.	Functional Definition of the Print AE	13
4.1.2.2.1.	Print Images	13
4.1.3.	Sequencing of Real World Activities	13
4.1.3.1.	Integrated Workflow	13
4.1.3.2.	Import Images per Query/Retrieve	15
4.2.	AE SPECIFICATIONS	16
4.2.1.	Network AE	16
4.2.1.1.	SOP Classes	16
4.2.1.2.	Association Policies	16
4.2.1.2.1.	General	16
4.2.1.2.2.	Number of Associations	16
4.2.1.2.3.	Asynchronous Nature	17
4.2.1.2.4.	Implementation Identifying Information	17
4.2.1.2.5.	Communication Failure Handling	17
4.2.1.3.	Association Initiation Policy	18
4.2.1.3.1.	Query Worklist	19
4.2.1.3.2.	Report MPPS	24
4.2.1.3.3.	Query Images	28
4.2.1.3.4.	Retrieve Images	31
4.2.1.3.5.	Export Images	34
4.2.1.3.6.	Archive Images	36
4.2.1.4.	Association Acceptance Policy	40
4.2.1.4.1.	Verify	42
4.2.1.4.2.	Import Images	43
4.2.1.4.3.	Archive Images	44
4.2.2.	Print AE	47
4.2.2.1.	SOP Classes	47
4.2.2.2.	Association Policies	47
4.2.2.2.1.	General	47
4.2.2.2.2.	Number of Associations	47
4.2.2.2.3.	Asynchronous Nature	47
4.2.2.2.4.	Implementation Identifying Information	47

4.2.2.2.5.	Communication Failure Handling	47
4.2.2.3.	Association Initiation Policy	48
4.2.2.3.1.	Print Images	49
4.2.2.4.	Association Acceptance Policy	52
4.3.	NETWORK INTERFACES	53
4.3.1.	Physical Network Interface	53
4.3.2.	Additional Protocols	53
4.4.	CONFIGURATION	54
4.4.1.	AE Title/Presentation Address Mapping	54
4.4.1.1.	Local AE Titles	54
4.4.1.2.	Remote AE Title/Presentation Address Mapping	54
4.4.1.2.1.	Remote SCP Configuration	54
4.4.1.2.2.	Remote SCU Configuration	54
4.4.2.	Parameters	54
4.4.2.1.	Configuration of the Local System	55
4.4.2.2.	Configuration per Remote System	55
4.4.2.3.	Print Configuration	56
5.	MEDIA INTERCHANGE	58
5.1.	IMPLEMENTATION MODEL	58
5.1.1.	Application Data Flow Diagram	58
5.1.2.	Functional Definitions of AE's	58
5.1.2.1.	Functional Definition of the Media AE	58
5.1.3.	Sequencing of Real World Activities	58
5.1.4.	File Meta Information for Implementation Class and Version	59
5.2.	AE SPECIFICATIONS	59
5.2.1.	Media AE	59
5.2.1.1.	File Meta Information for the Media AE	60
5.2.1.2.	Real-World Activities	60
5.2.1.2.1.	Display Directory	60
5.2.1.2.2.	Read Images	60
5.2.1.2.3.	Write Images	60
5.3.	AUGMENTED AND PRIVATE APPLICATION PROFILES	61
5.3.1.	Augmented Application Profiles	61
5.3.1.1.	Augmented Application Profile AUG-CTMR-MOD23	61
5.3.1.1.1.	SOP Class Augmentations	61
5.3.1.1.2.	Directory Augmentations	61
5.3.1.1.3.	Other Augmentations	61
5.3.1.2.	Augmented Application Profile AUG-CTMR-MOD41	61
5.3.1.2.1.	SOP Class Augmentations	61
5.3.1.2.2.	Directory Augmentations	61
5.3.1.2.3.	Other Augmentations	62
5.3.1.3.	Augmented Application Profile AUG-CTMR-DVD	62
5.3.1.3.1.	SOP Class Augmentations	62
5.3.1.3.2.	Directory Augmentations	62
5.3.1.3.3.	Other Augmentations	62
5.3.2.	Private Application Profiles	62
5.4.	MEDIA CONFIGURATION	62
6.	SUPPORT OF CHARACTER SETS	63
7.	SECURITY	64
7.1.	TRANSPORT LAYER SECURITY (TLS)	64
7.2.	ASSOCIATION LEVEL SECURITY	64
7.3.	APPLICATION LEVEL SECURITY	64
7.4.	HIPAA	64
8.	ANNEXES	65
8.1.	IOD CONTENTS	65
8.1.1.	Created SOP Instances	65

8.1.1.1.	MR Image Storage SOP Class	66
8.1.1.2.	Enhanced MR Image Storage SOP Class	77
8.1.1.3.	MR Spectroscopy Storage SOP Class	91
8.1.1.4.	Secondary Capture Image Storage SOP Class	99
8.1.1.5.	Grayscale Softcopy Presentation State Storage SOP Class	104
8.1.1.6.	Raw Data Storage SOP Class	111
8.1.1.7.	Patient Root Query/Retrieve Information Model – FIND SOP Class	116
8.1.1.8.	Patient Root Query/Retrieve Information Model – MOVE SOP Class	117
8.1.1.9.	Study Root Query/Retrieve Information Model – FIND SOP Class	118
8.1.1.10.	Study Root Query/Retrieve Information Model – MOVE SOP Class	119
8.1.1.11.	Storage Commitment Push Model SOP Class	120
8.1.1.12.	Modality Performed Procedure Step SOP Class	121
8.1.1.13.	Modality Worklist Information Model – FIND SOP Class	124
8.1.1.14.	Basic Film Session SOP Class	127
8.1.1.15.	Basic Film Box SOP Class	128
8.1.1.16.	Basic Grayscale Image Box SOP Class	130
8.1.1.17.	Printer SOP Class	131
8.1.1.18.	Media Storage Directory Storage SOP Class	132
8.1.2.	Usage of Attributes from Received IOD's	135
8.1.3.	Attribute Mapping	135
8.1.4.	Coerced/Modified fields	136
8.2.	DATA DICTIONARY OF PRIVATE ATTRIBUTES	136
8.3.	CODED TERMINOLOGY AND TEMPLATES	136
8.4.	GRAYSCALE IMAGE CONSISTENCY	136
8.5.	STANDARD EXTENDED/SPECIALIZED/PRIVATE SOPS	136
8.5.1.	Standard Extended MR Image SOP Class	136
8.5.2.	Private SOP Classes	137
8.6.	PRIVATE TRANSFER SYNTAXES	137

3. INTRODUCTION

3.1. Revision History

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

Table 3: Revision History

Document Version	Date of Issue	Author	Description
0.0	18 September 2009	HI PII IOCC	Initial MR 3.1.1 DICOM Conformance Statement

3.2. Audience

This Conformance Statement is intended for:

- (potential) customers
- system integrators of medical equipment
- marketing staff interested in system functionality
- software designers implementing DICOM interfaces

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

3.3. Remarks

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

This DICOM Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**
Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into an IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.
It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.
- **Validation**
Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.
Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- **New versions of the DICOM Standard**

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.

The user should ensure that any non-Philips provider linking to Philips equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

3.4. Definitions, Terms and Abbreviations

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

The following definitions and terms are used in this document.

Examination	Part of a Study, being a collection of direct related Series of Images (originating from the same modality/SOP class). The user interface – Patient Administration – of the MR System shall present all data per Examination. A study shall contain one or more Examinations.
MR System	Intera R2.6.3, Achieva R2.6.3 and Panorama HFO R2.6.3
Philips	Philips Medical Systems Nederland B.V.

The following acronyms and abbreviations are used in this document.

AE	Application Entity
AET	Application Entity Title
AP	Application Profile
BWLM	Basic Worklist Management
DHCP	Dynamic Host Configuration Protocol
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DVD	Digital Versatile Disc
EBE	DICOM Explicit VR Big Endian
ELE	DICOM Explicit VR Little Endian
FSC	File-set Creator
FSF	Field Service Framework
FSR	File-set Reader
FSU	File-set Updater
HIPAA	Health Insurance Portability and Accountability Act
HI	Healthcare Informatics
HIS	Hospital Information System
IHE	Integrating the Healthcare Enterprise
ILE	DICOM Implicit VR Little Endian
IOCC	Interoperability Competence Center
IOD	Information Object Definition
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
PII	Philips Informatics Infrastructure
PR	Presentation State

Q/R	Query/Retrieve (service)
RIS	Radiology Information System
RWA	Real-World Activity
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
TLS	Transport Layer Security
TLHC	Top Left Hand Corner
UI	User Interface
UID	Unique Identifier

3.5. References

- [DICOM] Digital Imaging and Communications in Medicine (DICOM) 2007, Part 1 – 18 (NEMA PS 3.1-XXXX – PS 3.18-XXXX), National Electrical Manufacturers Association (NEMA) Publication Sales 1300 N. 17th Street, Suite 1847 Rosslyn, Virginia. 22209, United States of America

4. NETWORKING

4.1. Implementation model

The implementation model consists of three sections:

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

4.1.1. Application Data Flow

The MR System incorporates two networking Application Entities (AE). The related implementation model is shown in Figure 1.

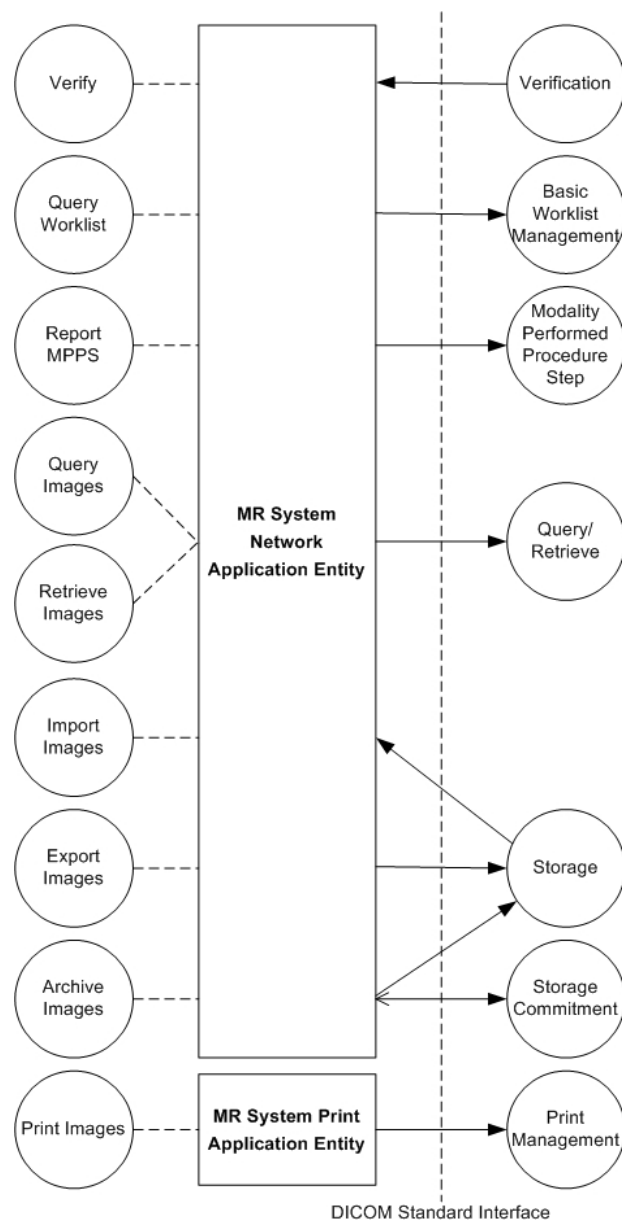


Figure 1: Application Data Flow Diagram

4.1.2. Functional Definition of AE's

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

4.1.2.1. Functional Definition of the Network AE

4.1.2.1.1. *Verify*

The MR System Network AE as Verification SCP implements the RWA Verify to handle verification requests.

4.1.2.1.2. *Query Worklist*

The MR System Network AE as Basic Worklist Management SCU implements the RWA Query Worklist to request the worklist from a DICOM Radiology Information System (RIS).

The function is initiated on the MR System by clicking the "RIS" button. After receiving the worklist data from the RIS the MR System will display the worklist on the user interface.

After selection of the relevant patient record the received patient data is displayed, and missing data may be manually added or invalid data may be modified before the patient data is stored in the local database.

4.1.2.1.3. *Report MPPS*

The MR System Network AE as Study Management SCU implements the RWA Report MPPS to create and update a Modality Performed Procedure Step object.

The RWA is initiated at the start of a new examination to inform the DICOM Radiology Information System (RIS) (status "IN-PROGRESS").

When the image object has been acquired and archived one may click the "Ready" button when the MPPS is completed or the "Incomplete" button if the MPPS is discontinued. The MR System Network AE will send a new MPPS notification with the status "COMPLETED" or "DISCONTINUED".

4.1.2.1.4. *Query Images*

The MR System Network AE as Query/Retrieve SCU implements the RWA Query Images to find Examinations on a remote system (e.g. PACS).

4.1.2.1.5. *Retrieve Images*

The MR System Network AE as Query/Retrieve SCU implements the RWA Retrieve Images to initiate import images from a remote system (e.g. PACS).

4.1.2.1.6. *Import Images*

The MR System Network AE as Storage SCP implements the RWA Import Images to store images from a remote archive using the relevant image storage and/or Grayscale Softcopy Presentation State SOP class.

The MR System Network AE will respond to a remote request and store the images in the patient database. DICOM instances (Secondary Capture, original Grayscale Softcopy Presentation State and MR images from a Philips MR System, private SOP classes) may be imported for reference purposes only; when these are exported again then consistency and completeness cannot be guaranteed.

4.1.2.1.7. *Export Images*

The MR System Network AE as Storage SCU implements the RWA Export Images to store images and related object data on a remote system using the relevant image storage or Grayscale Softcopy Presentation State SOP class.

The acquired images and object data, as selected per Examinations, can be sent to a selected remote system, either manually or by acquisition protocol.

The MR System can be configured to send Grayscale Softcopy Presentation State data for the selected Examinations.

Depending on the capabilities of the application receiving the acquired images a large amount of information can be stored in private data elements. When modifying/processing those images such application is responsible for data consistency and therefore must remove the private data elements. Note that the MR System can be configured to suppress the storage of private data elements.

4.1.2.1.8. Archive Images

The MR System Network AE implements the RWA Archive Images to store (as Storage SCU) and, if configured, commit (as Storage Commitment SCU) images on the configured remote archive (e.g. PACS) using the Storage and Storage Commitment Push Model SOP class.

After sending a series of images to the archive, the MR System will request a storage commitment from this archive. The storage commitment status is indicated on the Patient Administration User Interface.

After commitment the user may decide to delete the images locally.

4.1.2.2. Functional Definition of the Print AE

4.1.2.2.1. Print Images

The MR System Print AE as Print Management SCU implements the RWA Print Images to send and print images on a DICOM network printer using the Basic Grayscale Print Management Meta SOP class.

After selecting the images these can be sent to a DICOM network printer.

4.1.3. Sequencing of Real World Activities

4.1.3.1. Integrated Workflow

The sequence diagram in Figure 2 shows a typical example of a workflow (using a single acquisition, a single storage with commitment, without pre-fetching).

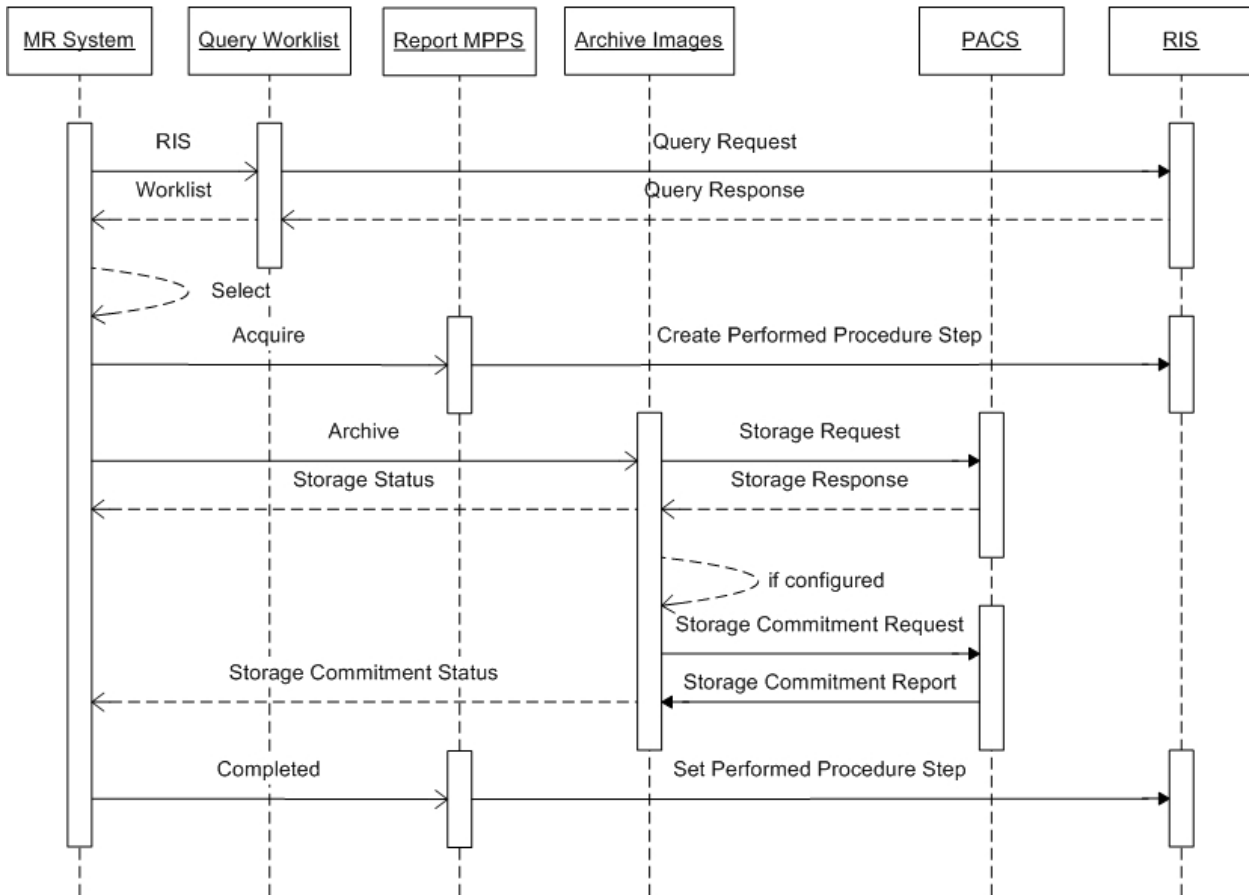


Figure 2: Sequencing of Integrated Workflow

The MR System workflow is initiated by clicking the “RIS” button. After receiving the worklist data from the RIS the MR System will display the worklist on the user interface.

Then one may select a relevant patient record and add missing data or modify invalid data (as specified) before the received patient data is stored in the local database. At the start and at the end of the acquisition/processing the configured MPPS system (RIS) is informed of the progress of the selected procedure step.

Before or after an acquisition a remote system can send related images of one or more of the scheduled patients to the MR System (pre-fetching, for reference only). The created images are converted into a DICOM message that can be sent to the remote system, or can be written onto DVD or local disk. After storage to a remote archive the MR System will request a storage commitment (as configured).

Note that, if no RIS is configured or no connection is possible, data can be introduced manually via the user interface.

After preparation of the scanner and the patient, the operator will perform the requested, or on his own initiative modified, procedure steps. Results may be MR images, Presentation State objects, and screen-grabs stored as Secondary Capture images, as well as Private MR Spectrum and Private MR Series Data.

4.1.3.2. Import Images per Query/Retrieve

The sequence diagram in Figure 3 shows a typical example of an import of a series of images per Query/Retrieve (e.g. pre-fetching).

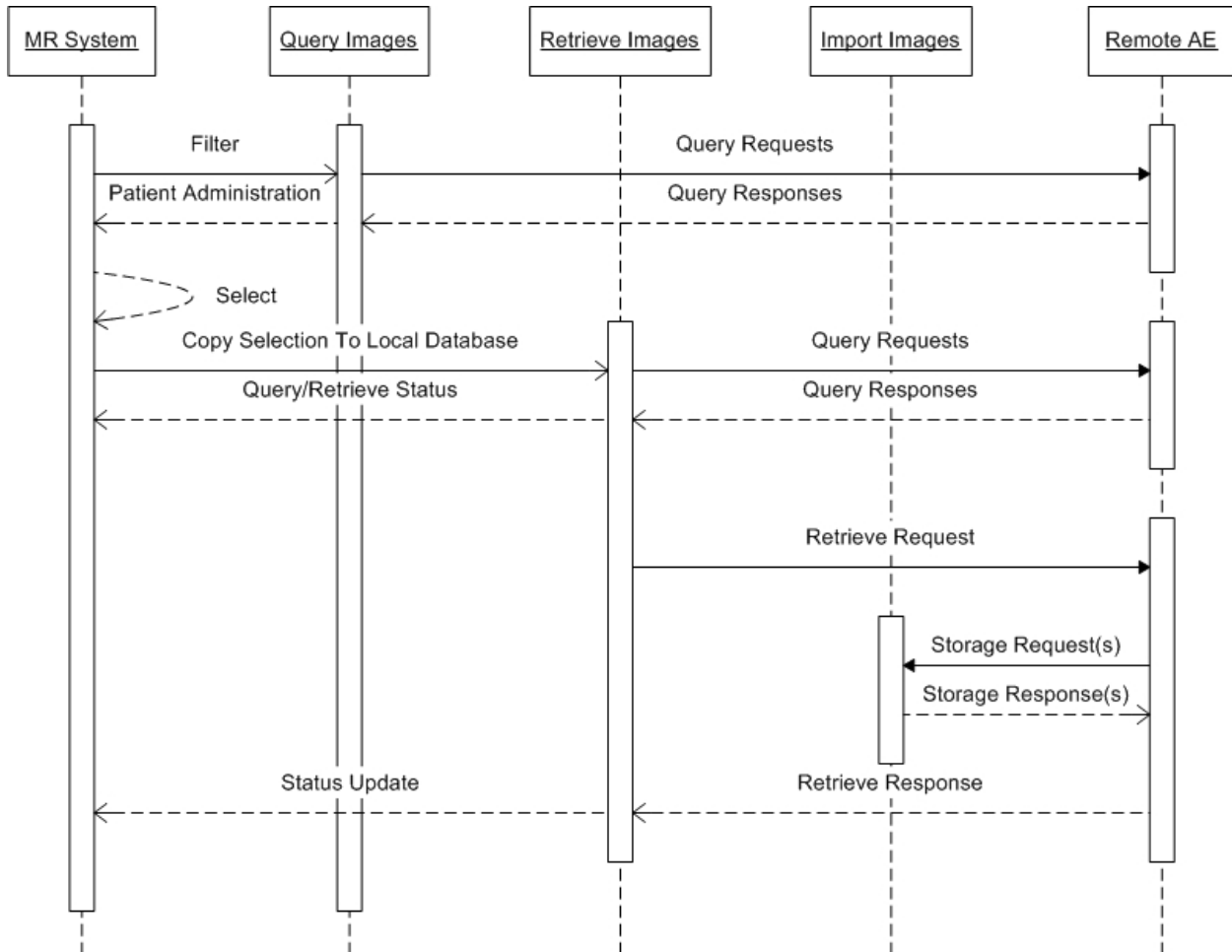


Figure 3: Sequencing of Import Images per Query/Retrieve

The MR System sends initial query requests to the remote AE to find all Examinations matching the specified filter.

After selecting the Examinations to be retrieved the copy selection to local database is initiated. New query requests are sent to find the Series related to the selected Examinations. This is followed by retrieve requests to the remote AE to move all required Series of Images. Then for each retrieve request the remote AE will store the related Images on the MR System.

4.2. AE Specifications

The network capability of the system consists of two DICOM Application Entities:

- MR System Network AE
- MR System Print AE

These are specified in section 4.2.1 and section 4.2.2.

The media services are described in section 5.

4.2.1. Network AE

4.2.1.1. SOP Classes

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

Table 4: SOP Classes for the Network AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	No*	Yes
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No
Private MR Spectrum Storage	1.3.46.670589.11.0.0.12.1	Yes	Yes
Private MR Series Data Storage	1.3.46.670589.11.0.0.12.2	Yes	Yes
Private MR Examcard Storage	1.3.46.670589.11.0.0.12.4	Yes	Yes

*The Verification SCU functionality is incorporated in the configuration tool.

4.2.1.2. Association Policies

This section describes the general association establishment and acceptance policies of the Network AE.

4.2.1.2.1. General

The following DICOM standard application context is specified.

Table 5: DICOM Application Context

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

4.2.1.2.2. Number of Associations

The number of simultaneous associations that the Network AE may support as a SCU or SCP is specified as follows.

Table 6: Number of Associations as an Association Initiator for the Network AE

Maximum number of simultaneous associations	2
---	---

Table 7: Number of Associations as an Association Acceptor for the Network AE

Maximum number of simultaneous associations	Configurable, default is 2
---	----------------------------

4.2.1.2.3. Asynchronous Nature

Not applicable.

4.2.1.2.4. Implementation Identifying Information

The following values are used for Implementation Class UID and Implementation Version Name.

Table 8: DICOM Implementation Class and Version for the Network AE

Implementation Class UID	1.3.46.670589.11.0.0.51.4.26.2
Implementation Version Name	Philips MR 26.2

4.2.1.2.5. Communication Failure Handling

The behavior of the Network AE during communication failure is summarized in Table 9.

Table 9: Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	The association setup fails, the reason is logged and reported to the user.

4.2.1.3. Association Initiation Policy

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

The behavior of the Network AE during association rejection is summarized in Table 10.

Table 10: DICOM Association Rejection Handling

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

The behavior of the AE during association abort is summarized in Table 11.

Table 11: DICOM Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0 – reason-not-specified	When received, the Network AE terminates the connection and logs the event. Sent when: N-EVENT-REPORT for printing received with status FAILURE. Abort is issued. Any other problem than the ones specified for the MR System as SCU in the rows below.

Source	Reason/Diagnosis	Behavior
2 – DICOM UL service-provider	0 – reason-not-specified	When received, the Network AE terminates the connection and logs the event. Sent when: There are problems in SCU/SCP role negotiation. Any other problem than the ones specified for the MR System as SCU in the rows below.
	1 – unrecognized-PDU	When received, the Network AE terminates the connection and logs the event. Sent when: An unrecognized PDU type is received.
	2 – unexpected-PDU	When received, the Network AE terminates the connection and logs the event. Sent when: The received PDU type is not expected in the current state of connection.
	4 – unrecognized-PDU parameter	When received, the Network AE terminates the connection and logs the event. Sent when: An unrecognized Associate PDU item is received.
	5 – unexpected-PDU parameter	When received, the Network AE terminates the connection and logs the event. Sent when: One of the Associate PDU items is received more than once. One of the Associate PDU items is received unexpectedly.
	6 – invalid-PDU-parameter value	When received, the Network AE terminates the connection and logs the event. Sent when: One of the Associate PDU items is received more than once. One of the Associate PDU items is not received. There is mismatch in the application context names between the SCU and the SCP. Illegal Asynchronous Operations Window invoke value is received. Illegal Asynchronous Operations Window perform value is received. Unknown presentation context id is received. Unknown abstract syntax is received. The length or the format of a received PDU item is invalid.

4.2.1.3.1. Query Worklist

4.2.1.3.1.1. Description and Sequencing of Activities

The MR System RWA Query Worklist may be used to update the worklist for the MR System.

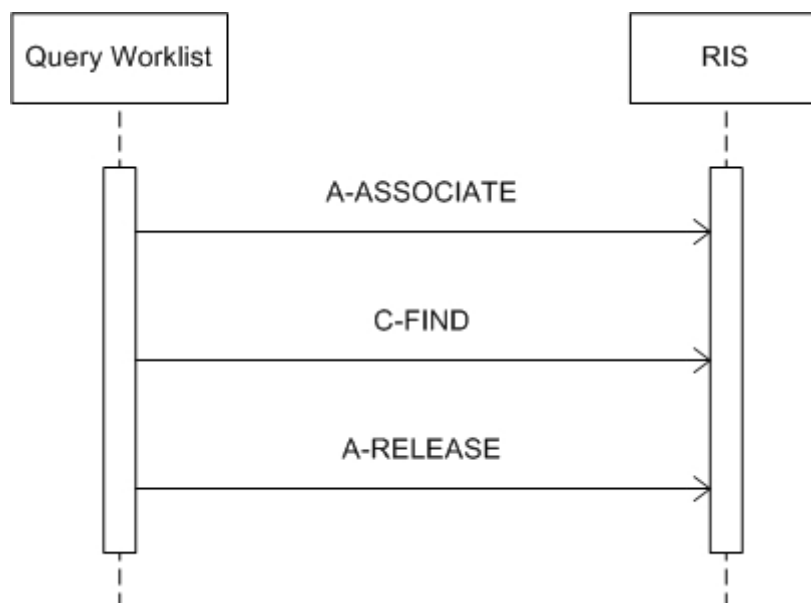


Figure 4: Sequencing of Query Worklist

The Query Worklist function will be accessible through the MR System user interface. An association will be initiated to the configured remote system (typically a RIS) to send the worklist query. After receiving the worklist the association will be released.

4.2.1.3.1.2. Proposed Presentation Contexts

The presentation context proposed by the Network AE for Query Worklist is defined in Table 12.

Table 12: Proposed Presentation Contexts for Query Worklist

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The order of the proposed transfer syntaxes is configurable; ELE is preferred.

4.2.1.3.1.3. SOP Specific Conformance for SOP Classes

The MR System provides the RIS dialog to enter matching criteria for the following matching keys.

Table 13: Matching Keys for Query Worklist

UI Matching Key	DICOM Matching Key		Note (UI input)
	Name	Tag	
Accession Number	Accession Number	(0008,0050)	Any value. Default value is empty.

UI Matching Key	DICOM Matching Key		Note (UI input)
	Name	Tag	
	Scheduled Procedure Step Sequence	(0040,0100)	-
Modality	> Modality	(0008,0060)	Select * or MR. Default value is empty (*).
Scheduled Station	> Scheduled Station AE Title	(0040,0001)	Select one of the configured AET's. Default value is the local AET (LOCAL).
Start Date	> Scheduled Procedure Step Start Date	(0040,0002)	Begin of range: positive number for days before today. Default value is today (0).
End Date			End of range: positive number for days after today. Default value is tomorrow (1).

The complete set of matching keys for Query Worklist is specified in section 8.1.1 Created SOP Instances. The use of specific character set is as specified in section 6, Support of Character Sets.

Table 14 lists the attributes that are shown on the “New Exam” dialog, providing the mapping of the DICOM attribute to the UI entry.

Table 14: Mapping between UI Fields and DICOM Attributes for New Exam

UI Entry	DICOM Element		Examination Entry Editable	
	Name	Tag	Manual	RIS
Examination				
Accession number	Accession Number	(0008,0050)	Yes	No
Physician	Referring Physician's Name	(0008,0090)	Yes	No
Patient's name	Patient's Name	(0010,0010)	Yes	No
Registration ID	Patient ID	(0010,0020)	Yes	No
Date of birth	Patient's Birth Date	(0010,0030)	Yes	No
Sex	Patient's Sex	(0010,0040)	Yes	No
Patient weight	Patient's Weight	(0010,1030)	Yes	Yes
	Scheduled Procedure Step Sequence	(0040,0100)	No	No
Exam name	> Scheduled Procedure Step Description	(0040,0007)	Yes	Yes
Exam date	Study Date	(0008,0020)	Yes	Yes
	Performed Procedure Step Start Date	(0040,0244)		
	Performed Procedure Step End Date	(0040,0250)		
Comments	Study Comments	(0032,4000)	Yes	Yes
	Comments on the Performed Procedure Step	(0040,0280)		
General Worklist				
Medical Alerts	Medical Alerts	(0010,2000)	Yes	No
Contrast Allergies	Contrast Allergies	(0010,2110)	Yes	No
Pregnancy Status	Pregnancy Status	(0010,21C0)	Yes	No
Requested Procedure				
	Requested Procedure Code Sequence	(0032,1064)	No	No
Code Value	> Code Value	(0008,0100)	No	No
Code Scheme Designator	> Coding Scheme Designator	(0008,0102)	No	No
Code Scheme Version	> Coding Scheme Version	(0008,0103)	No	No
Code Meaning	> Code Meaning	(0008,0104)	No	No
Procedure ID	Requested Procedure ID	(0040,1001)	No	No

UI Entry	DICOM Element		Examination Entry Editable	
	Name	Tag	Manual	RIS
Comments	Requested Procedure Comments	(0040,1400)	No	No
Scheduled Procedure Step				
	Scheduled Procedure Step Sequence	(0040,0100)	No	No
Modality	> Modality	(0008,0060)	No	No
	> Scheduled Procedure Step Start Date	(0040,0002)	No	No
	> Scheduled Procedure Step Start Time	(0040,0003)	No	No
	> Scheduled Protocol Code Sequence	(0040,0008)	No	No
Code Value	>> Code Value	(0008,0100)	No	No
Code Scheme Designator	>> Coding Scheme Designator	(0008,0102)	No	No
Code Scheme Version	>> Coding Scheme Version	(0008,0103)	No	No
Code Meaning	>> Code Meaning	(0008,0104)	No	No
Procedure Step Description	> Scheduled Procedure Step Description	(0040,0007)	No	No
Procedure Step ID	> Scheduled Procedure Step ID	(0040,0009)	No	No
Pre-Medication	> Pre-Medication	(0040,0012)	No	No
Comments	> Comments on the Scheduled Procedure Step	(0040,0400)	No	No
Performed Procedure Step				
	Performed Protocol Code Sequence	(0040,0260)	No	No
Code Value	> Code Value	(0008,0100)	Yes	Yes
Code Scheme Designator	> Coding Scheme Designator	(0008,0102)	Yes	Yes
Code Scheme Version	> Coding Scheme Version	(0008,0103)	Yes	Yes
Code Meaning	> Code Meaning	(0008,0104)	Yes	Yes
Comments	Study Comments	(0032,4000)	Yes	Yes
	Comments on the Performed Procedure Step	(0040,0280)		

The details regarding the response behavior to status codes are provided in Table 15.

Table 15: DICOM Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Refused	A700	Out of resources	No query results are displayed. The association is released. The reason is logged and reported by message in console.
Failed	A900	Identifier does not match SOP class	No query results are displayed. The association is released. The reason is logged and reported by message in console.
	Cxxx	Unable to process	No query results are displayed. The association is released. The reason is logged and reported by message in console.
Cancel	FE00	Matching terminated due to Cancel request	No query results are displayed. The association is released. The reason is logged and reported by message in console.

Service Status	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 Query Worklist job continues.
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The Query Worklist job continues.
Success	0000	Matching is complete	The query results are displayed. The association is released. Report message in console.

The behavior of the AE during communication failure is summarized in Table 16.

Table 16: DICOM Command Communication Failure Behavior

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

4.2.1.3.2. Report MPPS

4.2.1.3.2.1. Description and Sequencing of Activities

When the first scan of an examination is initiated the Network AE initiates an association to the MPPS server (typically a RIS) and sends an N-CREATE message with all appropriate information for the study; the status will be set to IN-PROGRESS. After clicking the "Ready" or "Incomplete" button the Network AE will Archive Images that were acquired (only those that have not been archived yet) and send an N-SET message with the end date and time and a status of respectively "COMPLETED" or "DISCONTINUED".

The following sequence diagram shows the interaction for the MR System RWA Report MPPS.

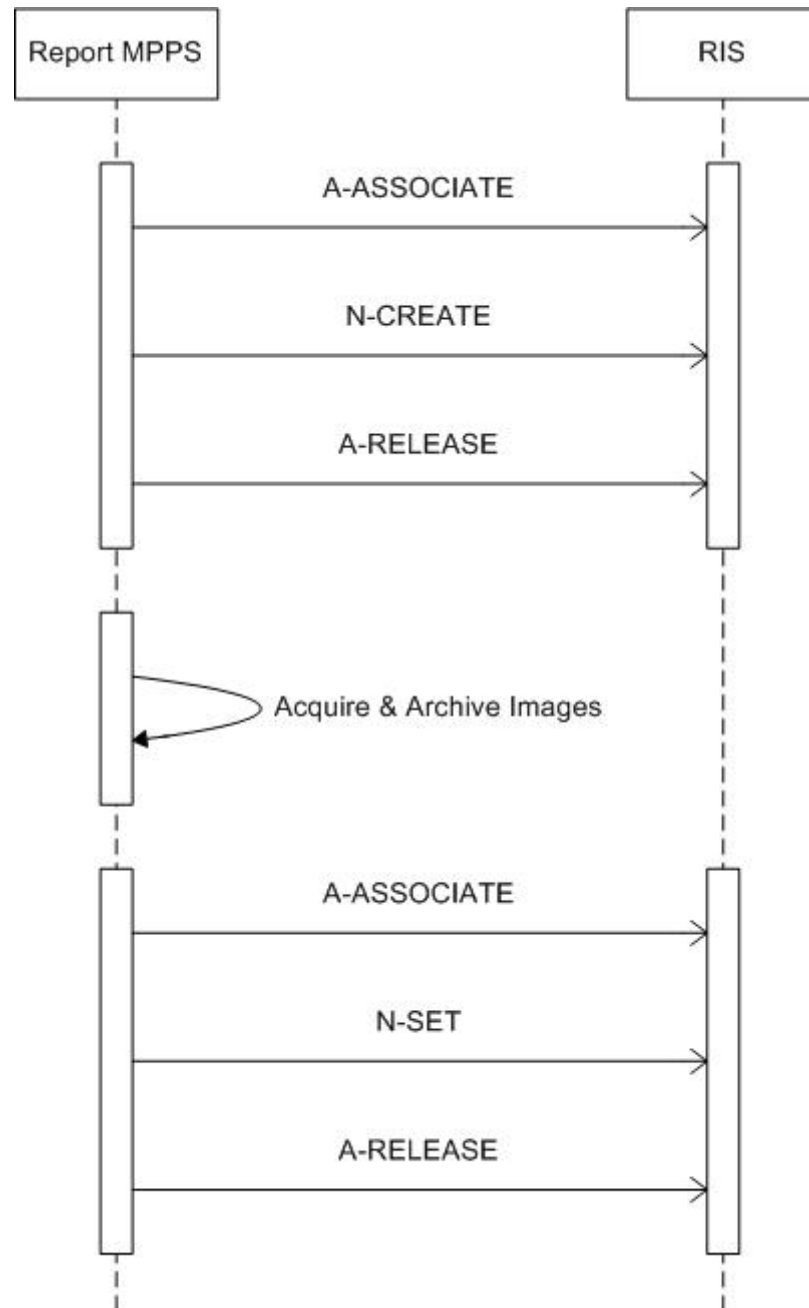


Figure 5: Sequencing of Report MPPS

4.2.1.3.2.2. Proposed Presentation Contexts

The presentation context proposed by Network AE for Report MPPS is defined in Table 17.

Table 17: Proposed Presentation Contexts for Report MPPS

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	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The order of the proposed transfer syntaxes is configurable; ELE is preferred.

4.2.1.3.2.3. SOP Specific Conformance for SOP Classes

The mapping of attributes for Report MPPS are specified in the in section 8.1.3 Attribute Mapping.

The details regarding the response behavior to status codes for the N-CREATE DIMSE are provided in Table 18.

Table 18: DICOM N-CREATE Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Success	0000	Confirmation	The association will be released. Message in console.
Failure	xxxx	(any other failure)	Message in console. The reason is logged.

The behavior of the AE during an N-CREATE communication failure is summarized in Table 19.

Table 19: DICOM N-CREATE Command Communication Failure Behavior

Exception	Behavior
Reply Time-out	The N-CREATE command fails and the association is aborted. The reason is logged and reported to the user.
Association Time-out SCU	The association is released.
Association Aborted	The N-CREATE command fails. The reason is logged and reported to the user.

The details regarding the response behavior to status codes for the N-SET DIMSE are provided in Table 20.

Table 20: DICOM N-SET Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Success	0000	Confirmation	The association will be released. Message in console.
Failure	0110	Performed procedure step object may no longer be updated	(Error ID A710) Message in console. The reason is logged
	xxxx	(any other failure)	Message in console. The reason is logged.

The behavior of the AE during an N-SET communication failure is summarized in Table 21.

Table 21: DICOM N-SET Command Communication Failure Behavior

Exception	Behavior
Reply Time-out	The N-SET command fails and the association is aborted. The reason is logged and reported to the user.
Association Time-out SCU	The association is released.
Association Aborted	The N-SET command fails. The reason is logged and reported to the user.

4.2.1.3.3. Query Images

4.2.1.3.3.1. Description and Sequencing of Activities

The MR System RWA Query Images may be used to find Examinations on a remote system. After clicking the Patient Administration – “Filter” button the Filter dialog offers the possibility to enter the required matching keys. One may now click the “Apply Filter” button to activate the specified filter settings or the “Proceed” button to reset the Patient Administration according to the specified filter settings.

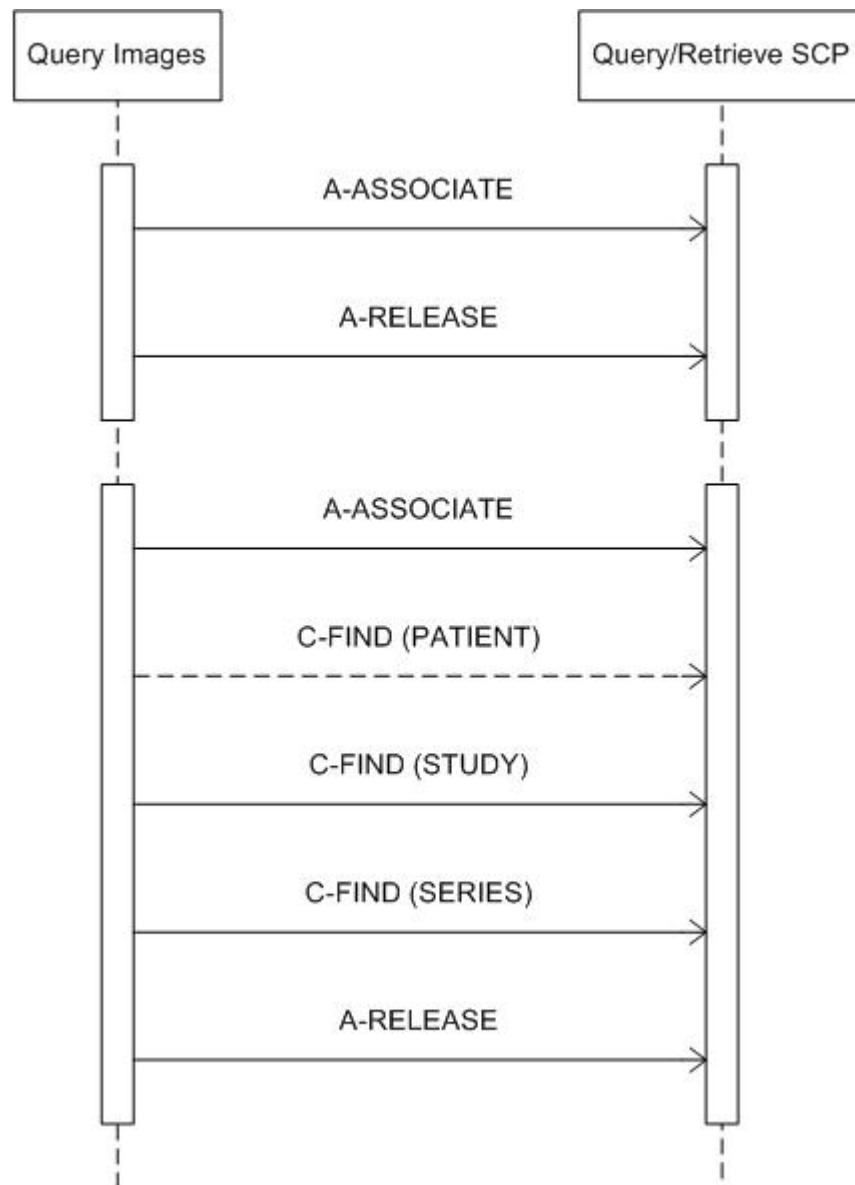


Figure 6: Sequencing of Query Images

The query dialog is initiated when clicking either the Patient Administration dialog – “Connect” button or the Filter dialog – “Proceed” button. The Network AE will try and request an association at the Query/Retrieve SCP. Then a query filter can be

specified and the Network AE initiates a new association to send query requests (as specified in the Filter dialog) to the Query/Retrieve SCP, starting with Patient or Study level query (for Patient Root (preferred) or Study Root model respectively) through to Series level queries (i.e. no Image level queries).

4.2.1.3.3.2. Proposed Presentation Contexts

The presentation context proposed by Network AE for Query Images is defined in Table 22.

Table 22: Proposed Presentation Contexts for Query Images

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All configured Query/Retrieve Information Model – FIND SOP classes.	See Table 1.	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The order of the proposed transfer syntaxes is configurable; ELE is preferred.

4.2.1.3.3.3. SOP Specific Conformance for SOP Classes

Depending on the configuration the MR System shows the following behaviour.

If the remote system is configured as archive (PACS) then the MR System requires a non-universal matching query filter before performing a query on the remote system. Otherwise the Network AE will perform an initial universal matching query. After this initial query the subsequent queries will be as specified in the Patient Administration Filter.

The MR System provides the Patient Administration – Filter dialog to enter matching criteria for the following matching keys.

Table 23: Patient Administration Filter

Filter Key	DICOM Matching Key		Note
	Name	Tag	
Patient name	Patient's Name	(0010,0010)	-
Registration ID	Patient ID	(0010,0020)	The initial query will always perform a universal match on Patient ID, independent on the entered matching value. Next the MR System will filter the relevant data, and implement further queries based on this data.
Date of birth	Patient's Birth Date	(0010,0030)	-
Exam date	Performed Procedure Step Start Date	(0040,0244)	-
Exam status	Performed Procedure Step Status	(0040,0252)	Enumerated value: Ready; Not ready.
Exam name	Performed Procedure Step Description	(0040,0254)	-

The complete set of matching keys for Query Images is specified in section 8.1.1 Created SOP Instances.

The use of specific character set is as specified in section 6, Support of Character Sets. The specific character set value is not checked.

The details regarding the response behavior to status codes are provided in Table 24.

Table 24: DICOM Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Refused	A700	Out of resources – Unable to calculate number of matches	No query results are displayed. The association is released. The reason is logged and reported by message in console.
Failed	A900	Identifier does not match SOP class	No query results are displayed. The association is released. The reason is logged and reported by message in console.
	Cxxx	Unable to process	No query results are displayed. The association is released. The reason is logged and reported by message in console.
Cancel*	FE00	Sub-operations terminated due to Cancel indication	No query results are displayed. The association is released. The reason is logged and reported by message in console.
Pending	FF00	Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys	The Query Images job continues.
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The Query Images job continues.
Success	0000	Matching is complete	The query results are displayed. The association is released. Report message in console.

*Note: As Query Images does not send Cancel requests this response behavior should not be applicable.

The behavior of the AE during communication failure is summarized in Table 25.

Table 25: DICOM Command Communication Failure Behavior

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

4.2.1.3.4. Retrieve Images

4.2.1.3.4.1. Description and Sequencing of Activities

In order to be able to select any Examination one must first Query Images on the remote database. Then the Series of Images of the selected Examinations may be copied from the queried remote database to the local database by means of the "Local Database" button in the MR System Patient Administration – Destinations environment.

The process of the MR System RWA Retrieve Images includes the actions as shown in Figure 7.

For each examination the Network AE initiates a new association to send move requests on series level only. The status of this retrieve is shown in the Queue Manager. Note that the Network AE may only import original MR images from a Philips MR System (ref. Import Images).

Figure 7 shows the diagram for the move request for only one Examination containing only one Series of Images.

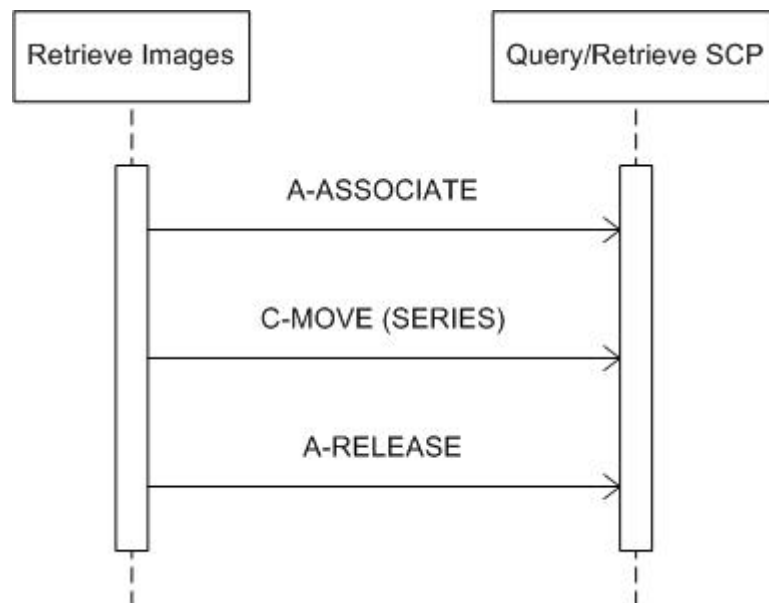


Figure 7: Sequencing of Retrieve Images

4.2.1.3.4.2. Proposed Presentation Contexts

The presentation context proposed by Network AE for Retrieve Images is defined in Table 26.

Table 26: Proposed Presentation Contexts for Retrieve Images

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All configured Query/Retrieve Information Model – FIND SOP classes.	See Table 1.	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
All configured Query/Retrieve Information Model – MOVE SOP classes.	See Table 1.	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The order of the proposed transfer syntaxes is configurable; ELE is preferred.

4.2.1.3.4.3. SOP Specific Conformance for SOP Classes

All details regarding the C-FIND response behavior to status codes are provided in Table 24. The behavior of the AE during C-FIND communication failure is summarized in Table 25.

All details regarding the C-MOVE response behavior to status codes are provided in Table 27.

Table 27: DICOM C-MOVE Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Refused	A701	Out of resources – Unable to calculate number of matches	The Retrieve Images job is marked as Failed at the queue manager. The association is released. The reason is logged and reported by message in console.
	A702	Out of resources – Unable to perform sub-operations	The Retrieve Images job is marked as Failed at the queue manager. The association is released. The reason is logged and reported by message in console.
	A801	Destination unknown	The Retrieve Images job is marked as Failed at the queue manager. The association is released. The reason is logged and reported by message in console.
Failed	A900	Identifier does not match SOP class	The Retrieve Images job is marked as Failed at the queue manager. The association is released. The reason is logged and reported by message in console.
	Cxxx	Unable to process	The Retrieve Images job is marked as Failed at the queue manager. The association is released. The reason is logged and reported by message in console.
Warning	B000	Sub-operations complete – One or more failures	The Retrieve Images job is marked as Completed at the queue manager. The association is released.
Cancel	FE00	Sub-operations terminated due to Cancel indication	The Retrieve Images job is marked as Failed at the queue manager. The association is released. The reason is logged and reported by message in console.
Pending	FF00	Sub-operations are continuing	The Retrieve Images job continues.
Success	0000	Sub-operations complete – No failures	The Retrieve Images job is marked as Completed at the queue manager. The association is released.

The behavior of the AE during C-MOVE communication failure is summarized in Table 28.

Table 28: DICOM C-MOVE Command Communication Failure Behavior

Exception	Behavior
Reply Time-out	The Retrieve Images job fails and the association is aborted. The reason is logged and reported to the user.
Association Time-out SCU	N/A
Association Aborted	The Retrieve Images job fails. The reason is logged and reported to the user.

4.2.1.3.5. Export Images

4.2.1.3.5.1. Description and Sequencing of Activities

As defined by the MR System RWA Export Images, using the local patient database one may export images to the selected network destination by clicking the Network button "Copy Selection To DICOM Node". For each selected Examination the Network AE will then initiate a successive association with the selected network node. Within such association all images and applicable presentation state objects of the particular Examination will be exported consecutively. When the storage job has finished, either successful or not, the Network AE will release the association. Export Images is only intended for MR images created by the MR System, not for imported images.

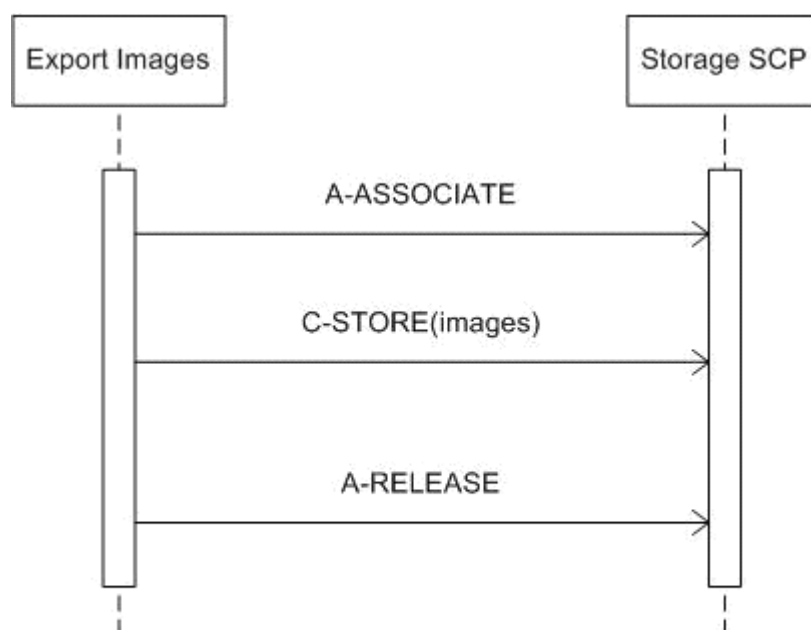


Figure 8: Sequencing of Export Images

4.2.1.3.5.2. Proposed Presentation Contexts

The presentation context proposed by Network AE for Export Images is defined in Table 29.

Table 29: Proposed Presentation Contexts for Export Images

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All configured storage SOP classes.	See Table 1.	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The order of the proposed transfer syntaxes is configurable; ELE is preferred.

4.2.1.3.5.3. SOP Specific Conformance for SOP Classes

When receiving a C-STORE response with Refused or Error status the Network AE will release the association. All the images associated with the job will be considered by the Network AE to have failed to transfer. The Network AE has the ability to automatically recover from this situation and will attempt to send all the images at a later time.

The details regarding the response behavior are provided in Table 30.

Table 30: DICOM Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Refused	A7xx	Out of resources	The Export Images job fails and the association is released. The reason is logged and reported by message in console.
Error	A9xx	Data set does not match SOP class	The Export Images job fails and the association is released. The reason is logged and reported by message in console.
	Cxxx	Cannot understand	The Export Images job fails and the association is released. The reason is logged and reported by message in console.
Warning	B000	Coercion of data elements	Message in console. The Export Images job continues. When the last image of the job has been stored the job is marked as Completed at the queue manager and the association is released.
	B006	Elements discarded	Message in console. The Export Images job continues. When the last image of the job has been stored the job is marked as Completed at the queue manager and the association is released.
	B007	Data set does not match SOP class	Message in console. The Export Images job continues. When the last image of the job has been stored the job is marked as Completed at the queue manager and the association is released.
Success	0000	Storage is complete	Message in console. The Export Images job continues. When the last image of the job has been stored the job is marked as Completed at the queue manager and the association is released.

The behavior of the AE during communication failure is summarized in Table 31.

Table 31: DICOM Command Communication Failure Behavior

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

4.2.1.3.6. Archive Images

4.2.1.3.6.1. Description and Sequencing of Activities

As defined by the MR System RWA Archive Images, using the local patient database one may archive Images to the selected network destination by clicking the PACS button "Copy Selection To PACS". For each selected Examination the Network AE will then successively do the following.

First the Network AE will initiate an association with the configured PACS node. Within such association all images and applicable presentation state objects of the particular Examination will be exported consecutively. When the storage job has finished, either successful or not, the Network AE will release the association.

If the storage job failed then the storage job will have to be executed over again. Otherwise, if storage commitment is configured then, for each exported Series of Images the Network AE will request storage commitment on the PACS. Each storage commitment request handles the storage commitment of one series of images within its own association.

The Network AE supports both synchronous and asynchronous storage commitment. When synchronous storage commitment is configured and the event report is not received within the configured time-out interval, the Network AE will release the association and the storage commitment will commence as asynchronous.

Figure 9 shows the sequence diagram for the storage and synchronous storage commitment of an Examination containing one Series of images.

Figure 10 shows the same using asynchronous storage commitment.

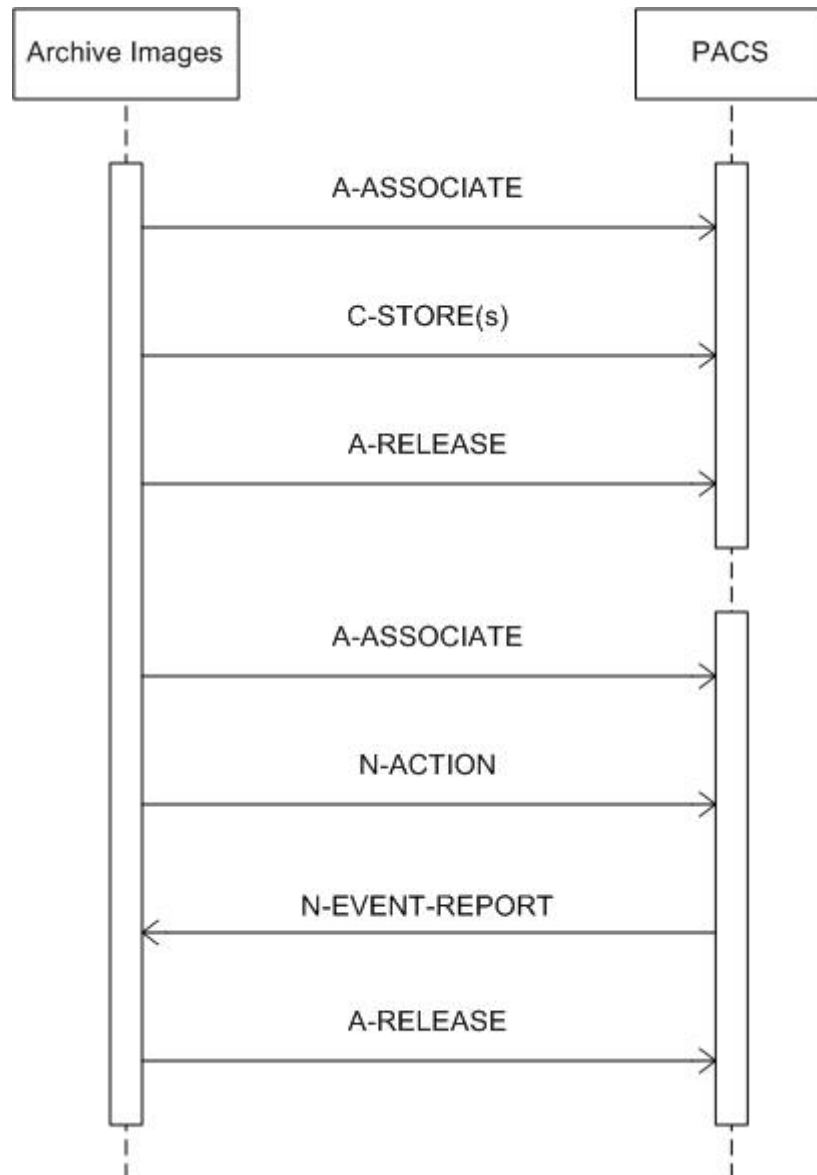
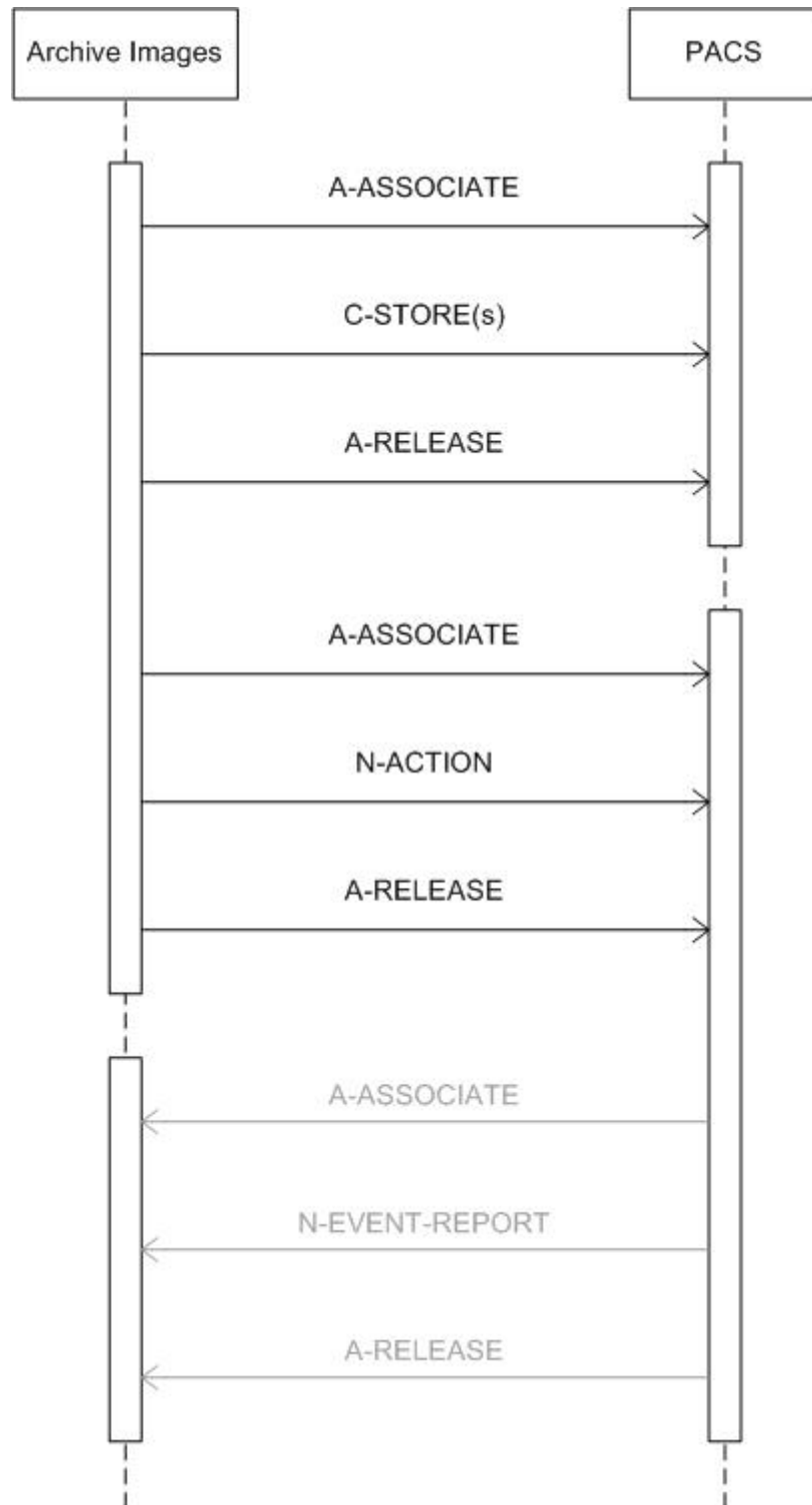


Figure 9: Sequencing of Synchronous Archive Images

**Figure 10: Sequencing of Asynchronous Archive Images**

4.2.1.3.6.2. Proposed Presentation Contexts

The presentation context proposed by Network AE for Archive Images is defined in Table 32.

Table 32: Proposed Presentation Contexts for Archive Images

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All configured Storage SOP classes.	See Table 1.	ELE EBE ILE	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2	SCU	None
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The order of the proposed transfer syntaxes is configurable; ELE is preferred.

4.2.1.3.6.3. SOP Specific Conformance for SOP Classes

As Grayscale Softcopy Presentation State objects are not stored in the same Series as the related Images, the Network AE will initiate separate associations for committing those Series – one after the other.

The details regarding the response behavior for the Archive Images storage are provided in Table 30.

The details regarding the response behavior for the Archive Images storage commitment request are provided in Table 33.

Table 33: DICOM N-ACTION Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Success	0000	Confirmation	The association will be released. Message in console.
Failure	xxxx	(any failure)	Message in console. The reason is logged.

The details regarding the response behavior for the Archive Images storage commitment event report are provided in section 4.2.1.4.3.3.

The behavior of the Network AE during storage communication failure is summarized in Table 31.

The behavior of the Network AE during storage commitment request communication failure is summarized in Table 34.

Table 34: DICOM N-ACTION Command Communication Failure Behavior

Exception	Behavior
Reply Time-out	The association is released. The Archive Images job expects storage commitment report.
Association Time-out SCU	The association is released. The Archive Images job expects storage commitment report.
Association Aborted	The Archive Images job expects storage commitment report.

4.2.1.4. Association Acceptance Policy

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

The AE association rejection policies are summarized in Table 35.

Table 35: DICOM Association Rejection Policies

Result	Source	Reason/Diagnosis	Explanation
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		2 – application-context-name-not-supported	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		3 – calling-AE-title-not-recognized	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		7 – called-AE-title-not-recognized	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		2 – protocol-version-not-supported	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		2 – local-limit-exceeded	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		2 – application-context-name-not-supported	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		3 – calling-AE-title-not-recognized	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		7 – called-AE-title-not-recognized	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).

Result	Source	Reason/Diagnosis	Explanation
	3 – DICOM UL service-provider (presentation related function)	2 – protocol-version-not-supported	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		1 – temporary-congestion	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).
		2 – local-limit-exceeded	If applicable the command will be retried. Log entry. The user is notified via pop-up (in preview mode only).

The behavior of the AE during association abort is summarized in Table 36.

Table 36: DICOM Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0 – reason-not-specified	When received, the Network AE terminates the connection and logs the event. Sent when: Association times out due to inactivity Any other problem than the ones specified for the MR System as SCP in the rows below.
	2 – DICOM UL service-provider	When received, the Network AE terminates the connection and logs the event. Sent when: Import fails.
2 – DICOM UL service-provider	0 – reason-not-specified	When received, the Network AE terminates the connection and logs the event. Sent when: Import fails.
	1 – unrecognized-PDU	When received, the Network AE terminates the connection and logs the event. Sent when: An unrecognized PDU type is received.
	2 – unexpected-PDU	When received, the Network AE terminates the connection and logs the event. Sent when: The received PDU type is not expected in the current state of connection.
	4 – unrecognized-PDU parameter	When received, the Network AE terminates the connection and logs the event. Sent when: An unrecognized Associate PDU item is received.
2 – DICOM UL service-provider	5 – unexpected-PDU parameter	When received, the Network AE terminates the connection and logs the event. Sent when: One of the Associate PDU items is received more than once. One of the Associate PDU items is received unexpectedly.

Source	Reason/Diagnosis	Behavior
	6 – invalid-PDU-parameter value	<p>When received, the Network AE terminates the connection and logs the event.</p> <p>Sent when:</p> <ul style="list-style-type: none"> One of the Associate PDU items is received more than once. One of the Associate PDU items is not received. Empty Called AE Title String (space-only) is received. Empty Calling AE Title String (space-only) is received. Unknown abstract syntax is received The length or the format of the received PDU item is invalid.

4.2.1.4.1. Verify

4.2.1.4.1.1. Description and Sequencing of Activities

As defined by the MR System RWA Verify, the Network AE will act as a Verification SCP for any remote SCU as verification SCU.

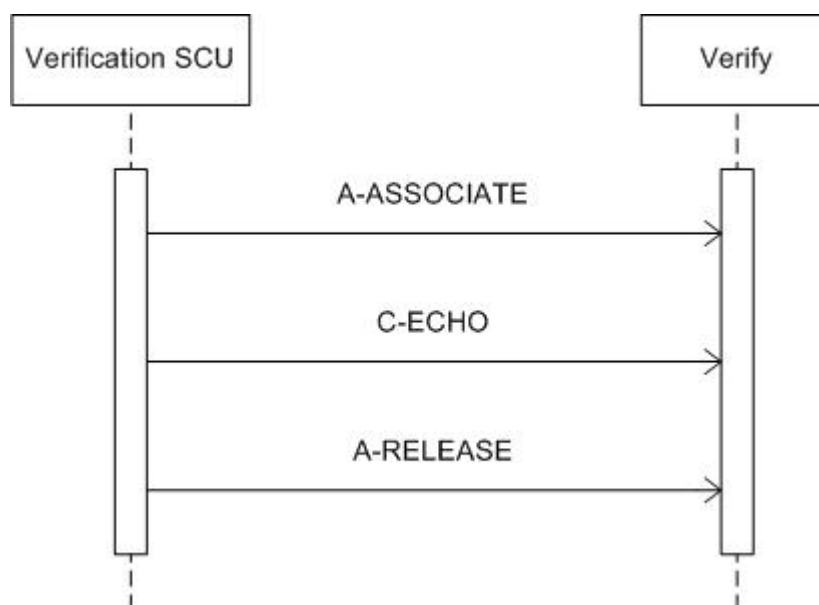


Figure 11: Sequencing of Verify

The Network AE accepts associations to verify application level communication using the C-ECHO command.

4.2.1.4.1.2. Accepted Presentation Contexts

The Network AE may accept the following presentation contexts.

Table 37: Acceptable Presentation Contexts for Verify

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	ELE	1.2.840.10008.1.2.1	SCP	None
		EBE	1.2.840.10008.1.2.2	SCP	None
		ILE	1.2.840.10008.1.2	SCP	None

The preferred transfer syntax is ELE.

4.2.1.4.1.3. SOP Specific Conformance for SOP Classes

The status behavior of the Network AE is as shown in Table 38.

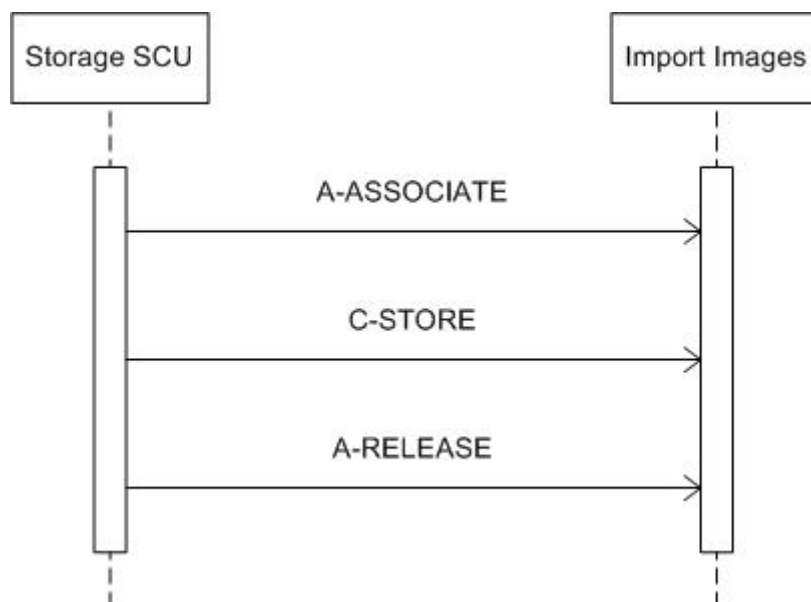
Table 38: Network AE C-ECHO Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Confirmation	Message in log file.

4.2.1.4.2. Import Images

4.2.1.4.2.1. Description and Sequencing of Activities

As defined by the MR System RWA Import Images, the Network AE will act as a Storage SCP for any remote Storage SCU that is configured in the MR System configuration using an accepted presentation context.

**Figure 12: Sequencing of Import Images**

After the Network AE accepts an association from the Storage SCU it will receive images, send store responses including the relevant status, and finally release the association on SCU request.

4.2.1.4.2.2. Accepted Presentation Contexts

The Network AE may accept the following presentation contexts.

Table 39: Acceptable Presentation Contexts for Import Images

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All configured storage SOP classes	All storage SOP classes in Table 1	ELE	1.2.840.10008.1.2.1	SCP	None
		EBE	1.2.840.10008.1.2.2	SCP	None
		ILE	1.2.840.10008.1.2	SCP	None

The preferred transfer syntax is ELE.

4.2.1.4.2.3. SOP Specific Conformance for SOP Classes

The Network AE provides level 2 conformance to the storage SOP classes.

Secondary Capture images may be imported at any time and from any source. However, the Network AE may only import MR images and Presentation State objects that were created on an MR System. These imported images may be used for reference only; it is not the intention to export them again.

When the Network AE receives images that do not originate from a Philips MR System it may not import the images but respond with error status (C000) "Cannot understand" and abort the association.

The status behavior of the Network AE is as shown in Table 40.

Table 40: Network AE C-STORE Status Response

Service Status	Code	Further Meaning	Description
Refused	A700	Out of resources	The local database is full; recovery from this condition is left to the SCU. The MR System sends the failure response, logs the condition, and aborts the association.
Error	A900	Data set does not match SOP class	The SOP class of the image(s) does not match the negotiated abstract syntax. The MR System sends the failure response, logs the condition, and aborts the association.
	C000	Cannot understand	The image(s) cannot be parsed. The MR System sends the failure response, logs the condition, and aborts the association.
Success	0000	Storage is complete	The image(s) shall be stored in the local database.

4.2.1.4.3. Archive Images

4.2.1.4.3.1. Description and Sequencing of Activities

The Network AE will act as a Storage Commitment SCU for the configured Storage Commitment SCP to receive asynchronous Storage Commitment reports from Storage Commitment requests send by the MR System RWA Archive Images (as Storage Commitment SCU), using an accepted presentation context.

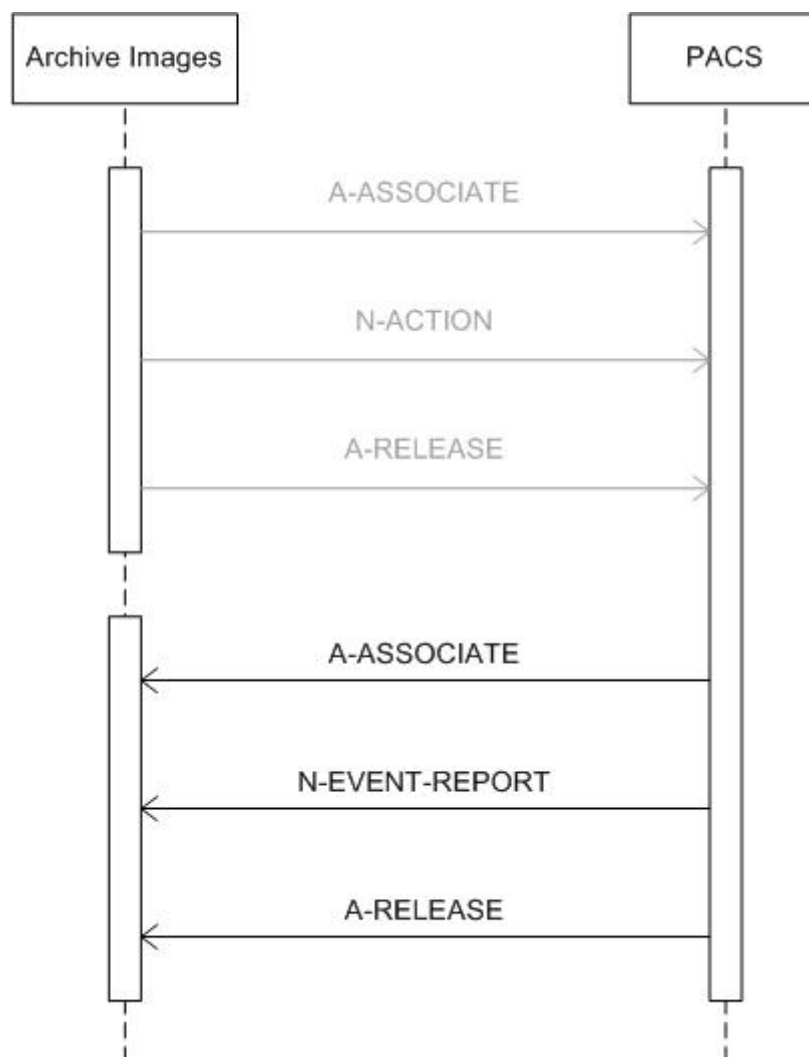


Figure 13: Sequencing of Archive Images

After the Network AE accepts an association from the remote Storage Commitment SCP it will receive Storage Commitment reports, send responses including the relevant status, and finally release the association on SCP request.

4.2.1.4.3.2. Accepted Presentation Contexts

The Network AE may accept the following presentation contexts.

Table 41: Acceptable Presentation Contexts for Archive Images

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	ELE	1.2.840.10008.1.2.1	SCU	None
		EBE	1.2.840.10008.1.2.2	SCU	None
		ILE	1.2.840.10008.1.2	SCU	None

The preferred transfer syntax is ELE.

4.2.1.4.3.3. SOP Specific Conformance for SOP Classes

The storage commitment status is reflected in the Patient Administration Examination status. If the storage commitment failed, the operator is responsible to retry Archive Images.

On receiving a storage commitment result with Event Type ID 1 (Storage Commitment Request Successful) the MR System Patient Administration Examination status shall be updated to reflect the successful storage commitment.

On receiving a storage commitment result with Event Type ID 2 (Storage Commitment Request Complete – Failures Exist) the Network AE shall behave as summarized in Table 42.

Table 42: Network AE N-EVENT-REPORT Failure Handling Behavior

Failure Reason		Behavior
Code	Semantic	
0110	Processing failure	Retry storage commitment request.
0112	No such object instance	Retry store and storage commitment request.
0119	Class / Instance conflict	Inform user and abort.
0122	Referenced SOP class not supported	Inform user and abort.
0131	Duplicate transaction UID	Inform user and abort.
0213	Resource limitation	Retry storage commitment request.

The status processing behavior of the Network AE is summarized in Table 43.

Table 43: Network AE N-EVENT-REPORT Status Processing Behavior

Service Status	Code	Further Meaning	Description
Success	0000	Confirmation	The MR System logs the event.

4.2.2. Print AE

4.2.2.1. SOP Classes

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

Table 44: SOP Classes for the Print AE

SOP Class Name	SOP Class UID	SCU	SCP
Basic Grayscale Print Management (Meta)	1.2.840.10008.5.1.1.9	Yes	No
> Basic Film Session	1.2.840.10008.5.1.1.1	Yes	No
> Basic Film Box	1.2.840.10008.5.1.1.2	Yes	No
> Basic Grayscale Image Box	1.2.840.10008.5.1.1.4	Yes	No
> Printer	1.2.840.10008.5.1.1.16	Yes	No

4.2.2.2. Association Policies

This section describes the general association establishment and acceptance policies of the Print AE.

4.2.2.2.1. General

The following DICOM standard application context is specified.

Table 45: DICOM Application Context

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

4.2.2.2.2. Number of Associations

The number of simultaneous associations that the Print AE may support is specified as follows. The Print AE does not accept any associations.

Table 46: Number of Associations as an Association Initiator for the Print AE

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

4.2.2.2.3. Asynchronous Nature

Not applicable.

4.2.2.2.4. Implementation Identifying Information

The following values are used for Implementation Class UID and Implementation Version Name.

Table 47: DICOM Implementation Class and Version for the Print AE

Implementation Class UID	2.16.124.113531.1.1.1
Implementation Version Name	MR PRINT 1.2

4.2.2.2.5. Communication Failure Handling

The behavior of the Print AE during communication failure is summarized in Table 48.

Table 48: Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	The association setup fails, the reason is logged and reported to the user.

4.2.2.3. Association Initiation Policy

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

The behavior of the Print AE during association rejection is summarized in Table 49.

Table 49: DICOM Association Rejection Handling

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

4.2.2.3.1. Print Images

4.2.2.3.1.1. Description and Sequencing of Activities

Before Print Images the Print AE must have an open association with the Printer. If no association is opened yet, the operator may initiate an association manually by selecting "On" in the printer queue manager dialog; otherwise the Print AE may try and initiate an association automatically at certain time intervals.

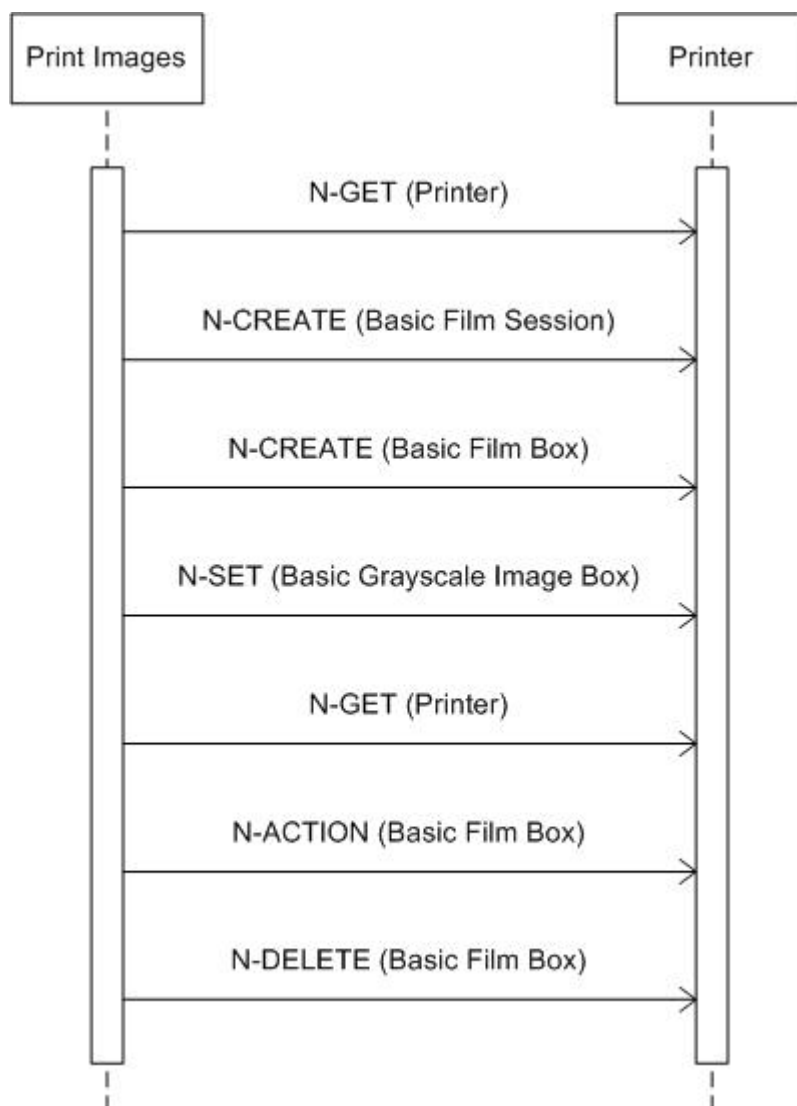


Figure 14: Sequencing of Print Images

Note that the first N-GET message is used to inquire for general printer information, where the second N-GET message is used to inquire for printer status information only.

4.2.2.3.1.2. Proposed Presentation Contexts

The presentation context proposed by Print AE for Print Images is defined in Table 50.

Table 50: Proposed Presentation Contexts for Print Images

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Grayscale Print Management (Meta)	1.2.840.10008.5.1.1.9	ILE	1.2.840.10008.1.2	SCU	None
Presentation LUT	1.2.840.10008.5.1.1.23	ILE	1.2.840.10008.1.2	SCU	None

4.2.2.3.1.3. SOP Specific Conformance for SOP Classes

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

The Print AE cannot handle any N-EVENT-REPORT messages.

The details regarding the response behavior to all status codes, both from an application level and communication errors are provided in Table 51 to Table 56.

Table 51: DICOM Command Response Status Handling Behavior for Printer N-GET

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

Table 52: DICOM Command Response Status Handling Behavior for Basic Film Session N-CREATE

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

Table 53: DICOM Command Response Status Handling Behavior for Basic Film Box N-CREATE

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

Table 54: DICOM Command Response Status Handling Behavior for Basic Grayscale Image Box N-SET

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Warning	B604	Image size is larger than image box size – the image has been de-magnified	The print job continues and the warning is reported and logged.
	B605	Requested Min Density or Max Density outside of printer's operating range	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.
Failure	C603	Image size is larger than image box size	The print job is marked as failed, the reason is reported and logged.
	C605	Insufficient memory in printer to store the image	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.

Table 55: DICOM Command Response Status Handling Behavior for Basic Film Box N-ACTION

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Warning	B603	Film Box SOP instance hierarchy does not contain Image Box SOP instances	The print job continues and the warning is reported and logged.
	B604	Image size is larger than image box size – the image has been de-magnified	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.
Failure	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.

Service Status	Code	Further Meaning	Behavior
	C613	Combined print image size is larger than image box size	The print job is marked as failed, the reason is reported and logged.

Table 56: DICOM Command Response Status Handling Behavior for Basic Film Box N-DELETE

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The status is logged.
Failure	0110	Processing failure	The status is logged.
	0112	No such object instance	The status is logged.
	0117	Invalid object instance	The status is logged.
	0118	No such SOP class	The status is logged.
	0119	Class instance conflict	The status is logged.
	0210	Duplicate invocation	The status is logged.
	0211	Unrecognized operation	The status is logged.
	0212	Mistyped argument	The status is logged.
	0213	Resource limitation	The status is logged.

The behavior of the AE during communication failure is summarized in Table 57.

Table 57: DICOM Command Communication Failure Behavior

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

4.2.2.4. Association Acceptance Policy

The MR System Print AE does not accept any associations.

4.3. Network Interfaces

4.3.1. Physical Network Interface

The MR System provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM standard. No OSI stack communications are provided with this implementation.

The MR System supports Ethernet v2.0 and IEEE 802.3, 10/100/1000 Base-T.

4.3.2. Additional Protocols

Not applicable.

4.4. Configuration

The MR System is configured by means of a configuration program. This program is accessible from the login prompt of the operating system. It is password protected and intended to be used by Philips Customer Support Engineers only. The program allows the Customer Support Engineer to enter configuration information needed by the MR System applications.

4.4.1. AE Title/Presentation Address Mapping

4.4.1.1. Local AE Titles

The MR System can be configured in two ways for the local IP network:

- Automatically via DHCP (hospital provided).
- By assigning a dedicated IP address, (sub)net mask and gateway (if necessary) manually.

This is determined upon installation time of the MR System.

The MR System host name is configurable.

The local AE title mapping and configuration is as specified in the following table.

Table 58: AE Title Configuration Table

Application Entity	Default AE Title	Default TCP/IP Port
Network AE	NODENAME	104 *
Print AE	NODENAME	3010

* The default TCP/IP listen port for Network AE is 104. If needed, this can be changed.

4.4.1.2. Remote AE Title/Presentation Address Mapping

4.4.1.2.1. Remote SCP Configuration

All relevant remote applications that are able to accept an association from the MR System must be configured on the MR System with the following information:

- IP Address.
- Host name and listening port number.
- AE Title.
- The SOP classes and transfer syntaxes that are supported by the remote application.

4.4.1.2.2. Remote SCU Configuration

All relevant remote applications that are able to initiate an association with the MR System must be configured on the MR System with the following information:

- IP Address.
- Host name and listening port number.
- AE Title.
- The SOP classes and transfer syntaxes for which the MR System accepts associations.

4.4.2. Parameters

This section specifies any important operational parameters and, if configurable, their default value and range.

Table 59: Configuration Parameters table

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	No	180 [s]
General DIMSE level time-out values	No	300 [s]
Time-out waiting for response to TCP/IP connect request. (Low-level timeout)	No	ref. operating system
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	No	ref. operating system
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)	No	ref. operating system
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	ref. operating system
AE Specific Parameters		
Size constraint in maximum object size	No	-
Maximum PDU size the AE can receive	Yes	32768
Maximum PDU size the AE can send	Yes	32768
AE specific DIMSE level time-out values	No	300 [s]
SOP Class support	Yes	per template
Convert MR image to Secondary Capture	No	No
Transfer Syntax support	Yes	ELE, EBE, ILE

4.4.2.1. Configuration of the Local System

The following items are configurable per MR System installation:

Table 60: Installation Configuration Items of MR System

Parameter	Explanation	Default
Maximum data PDU size	For associations initiated by the MR System; value must be greater than 0	32768
Allow incoming queries?	Not used – should not be changed	No
ARTIM timeout	Max. time MR System waits for an incoming association	60 seconds
Max nbr of associations	Simultaneous incoming connections to the MR System	2
Image number direction	Order of instance number given upon storage export	Feet to Head (F-H) Left to Right (L-R) Anterior to Posterior (A-P)
Institution name	Must be shorter than 40 characters	-
Automatic association timeout (seconds)	The period of inactivity after which the association with the target node will be closed	Q/R: 5 s RIS: 60 s else: 3600 s

4.4.2.2. Configuration per Remote System

All relevant remote applications are defined through selection of one of the available preconfigured templates. Each defined remote application can be fine-tuned (if necessary) through several configurable parameters. What parameters are configurable depends on the selected template.

Table 61: Configurable Parameters for Remote Systems of MR System

Parameter	Explanation	Default
IsArchive	If set to Yes then the network node plays role of archive	-
Storage Commitment	Only when IsArchive is Yes;	-
Network Node Name		

Parameter	Explanation	Default
Storage Commitment Max. Reply Waiting Time	Only when IsArchive is Yes; For asynchronous storage commitment use -1	-
Supported SOP classes	Depends on used template; SOP classes can be unconfigured	-
Supported Transfer Syntaxes	Depends on used template; the preference can be configured by ordering the supported transfer syntaxes	-
ARTIM timeout	Maximum time MR System waits for association acknowledge	60 seconds
Split multiple day range	Only with RIS template	No
Pure DICOM	Do not send private attributes: only standard attributes	No
Combine MR Rescaling	Rescaling for pixel calibration is discarded (combined with window)	Yes
Send logging	For trouble shooting purposes	No
Receive logging	For trouble shooting purposes	No
Add group length attributes	For trouble shooting purposes	No

- The Basic Worklist Management services may be configured for one node only.
- A worklist query can be configured in two ways:
 - MR System requests one worklist: for today till tomorrow
 - MR System requests two worklists: one for today and one for tomorrow (default)
 This is configurable through the parameter 'Split multiple day range'.
- The MPPS service may be configured for one node only.
- If IsArchive is set to Yes then the following statements apply:
 - Only complete series can be sent;
 - Storage commitment will be enabled;
 - A committed image will be marked in the Patient Administration UI with "archive" flag set;
 - Query filter must be specified and applied.
- The MR System can auto-push MR images to the selected remote application. Whether or not to auto-push a scan is defined in the scan protocol.

4.4.2.3. Print Configuration

Configurable per MR System installation:

- The DICOM printers to be selected by the operator.

Configurable for each defined DICOM printer:

All relevant DICOM printers are defined through selection of one of the available preconfigured templates. Each defined DICOM printer can be fine-tuned (if necessary) through several configurable parameters.

The following list shows all the configurable printer parameters. Depending on the type of printer not all parameters may be present.

-
- Medium type
 - Film formats
 - Destination
 - Photometric Interpretation
 - Film size ID
 - Orientation
 - Magnification
 - Smoothing
 - Border density
 - Empty image density
 - Min. density
 - Max. density
 - Trim
 - Configuration Info
 - Polarity

The MR System can print to only one DICOM printer at a time.

5. MEDIA INTERCHANGE

5.1. Implementation Model

5.1.1. Application Data Flow Diagram

Figure 15 shows the application data flow diagram presenting all of the Application Entities present in an implementation and graphically depicting the relationship of the AE's use of DICOM to Real-World Activities.

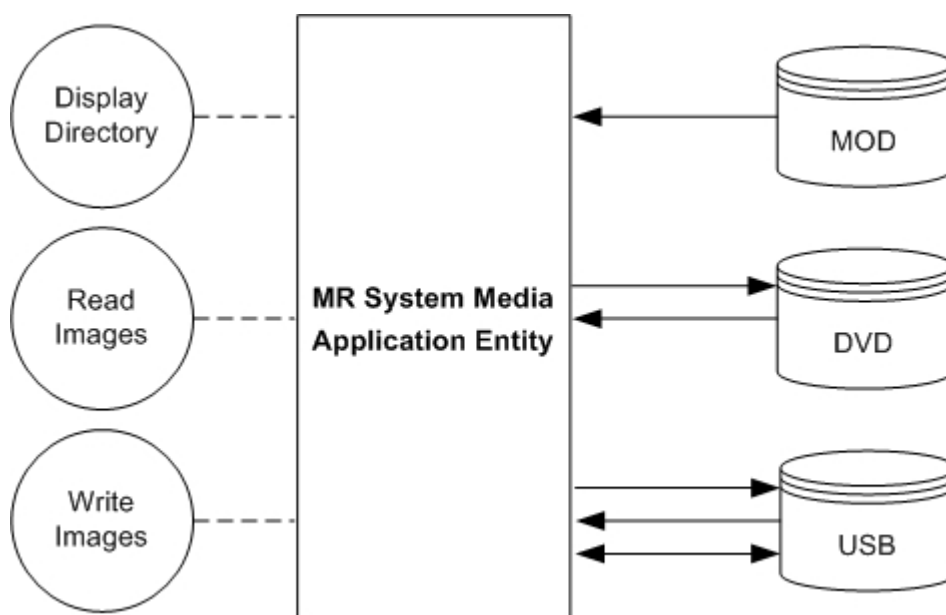


Figure 15: Application Data Flow Diagram

5.1.2. Functional Definitions of AE's

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

5.1.2.1. Functional Definition of the Media AE

The Media AE is the one and only Media application entity within the MR System. It includes the following service class.

Media Storage Service Class

The Media AE can perform the Media Storage service as SCU, with capabilities for RWA Display Directory (as FSR), RWA Write Images (as FSC or FSU), and RWA Read Images (as FSR).

Using initialized media, Write Images can be initiated by selecting the requested images and clicking the media copy button.

5.1.3. Sequencing of Real World Activities

Whenever media has to be written the Media AE first tries to read the DicomDIR. Then the Media AE will write the images of the selected Examinations and the updated DicomDIR to the DICOM media.

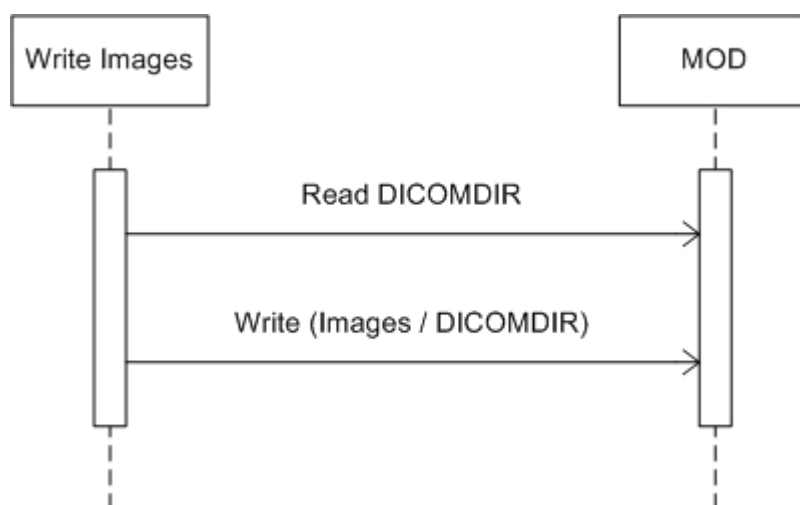


Figure 16: Sequencing of Media Write

5.1.4. File Meta Information for Implementation Class and Version

The following values are assigned to the File Meta Information attributes (see PS 3.10) that pertain to the Implementation Class and Version.

Table 62: DICOM Implementation Class and Version for MR System

File Meta Information Version	00, 01
Implementation Class UID	1.3.46.670589.11.0.0.51.4.26.2
Implementation Version Name	Philips MR 26.2

5.2. AE Specifications

5.2.1. Media AE

The following table lists the Application Profiles and their Real-World Activities, the roles required for each of these Real-World Activities, and the Service Class option.

Table 63: AE Related Application Profiles, Real-World Activities, and Roles

Supported Application Profile	Real-World Activity	Roles	SC Option
AUG-CTMR-MOD23	Display Directory	FSR	Interchange
	Read Images	FSR	Interchange
AUG-CTMR-MOD41	Display Directory	FSR	Interchange
	Read Images	FSR	Interchange
AUG-CTMR-DVD	Display Directory	FSR	Interchange
	Write Images	FSC	Interchange
	Read Images	FSR	Interchange

The next table gives an overview of the supported SOP Classes that can be read and written according the Application Profiles in Table 63.

Table 64: Supported SOP Classes by the Media AE

SOP Class	
Name	UID
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66
Private MR Spectrum Storage	1.3.46.670589.11.0.0.12.1
Private MR Series Data Storage	1.3.46.670589.11.0.0.12.2
Private MR Examcard Storage	1.3.46.670589.11.0.0.12.4

5.2.1.1. File Meta Information for the Media AE

The Media AE has no specific File Meta Information.

5.2.1.2. Real-World Activities

5.2.1.2.1. Display Directory

The Media AE supports the FSR role to interchange stored data on DICOM media.

5.2.1.2.1.1. Media Storage Application Profiles

The Media AE will act as a FSR when reading the directory of DICOM media. This will result in an overview of the Examinations on the MR System Patient Administration.

5.2.1.2.2. Read Images

The Media AE supports the FSR role to interchange stored data on DICOM media.

5.2.1.2.2.1. Media Storage Application Profiles

The MR System Media AE will act as a FSR when reading all images of the selected Examinations from DICOM media. Only images made on an MR System are allowed to be imported again; these imported images are to be used for reference only, it is not intended to export them again.

5.2.1.2.2.1.1. Options

The mandatory attributes of the DICOM images are required for the correct storage of the images in the MR System internal image database. For conformance see section 8.

5.2.1.2.3. Write Images

The Media AE supports the FSC and FSU role to interchange stored data on DICOM media.

The Media AE acts as an FSC when writing DICOM objects onto DICOM media in case the medium contains no DICOM file-set.

When the medium contains a DICOM file-set then the Media AE acts as an FSU. Thus it can merge new objects into the existing file-set or can remove objects from that file-set.

5.2.1.2.3.1. Media Storage Application Profiles

The Media AE will act as a FSC or FSU when writing all images of the selected Examinations onto DICOM media.

5.2.1.2.3.1.1. Options

The DICOMDIR file will be extended when new images are written. In case some attributes are not present in the images but are specified Mandatory in the DICOMDIR definition in DICOM Media, a generated dummy value will be filled in.

Implementation remarks and restriction:

- When writing the DICOMDIR records the following key values are generated if no value of the corresponding attribute is supplied:
 - Patient ID;
 - Study ID;
 - Study Instance UID;
 - Series Number;
 - Series Instance UID;
 - Image Number;
 - SOP Instance UID.
- The mechanism of generating a value for Patient ID creates each time a new value based on Patient's Name for each new study written to DICOM media, even if this study belongs to a patient recorded earlier.
- The default value for the Pixel Intensity Relationship (0028,1040) is set to DISP.
- A number of attributes (e.g., Window Width and Window Centre) can be formatted as floating point numbers.

5.3. Augmented and Private Application Profiles

This section describes any augmented and private Application Profiles.

5.3.1. Augmented Application Profiles

5.3.1.1. Augmented Application Profile AUG-CTMR-MOD23

5.3.1.1.1. SOP Class Augmentations

As an augmentation to the STD-CTMR-MOD23 application profiles, also grayscale softcopy presentation state and private objects shall be interchanged per MOD.

5.3.1.1.2. Directory Augmentations

Not applicable.

5.3.1.1.3. Other Augmentations

Not applicable.

5.3.1.2. Augmented Application Profile AUG-CTMR-MOD41

5.3.1.2.1. SOP Class Augmentations

As an augmentation to the STD-CTMR-MOD41 application profiles, also grayscale softcopy presentation state and private objects shall be interchanged per MOD.

5.3.1.2.2. Directory Augmentations

Not applicable.

5.3.1.2.3. Other Augmentations

Not applicable.

5.3.1.3. Augmented Application Profile AUG-CTMR-DVD**5.3.1.3.1. SOP Class Augmentations**

As an augmentation to the STD-CTMR-DVD application profiles, also grayscale softcopy presentation state and private objects shall be interchanged per DVD.

5.3.1.3.2. Directory Augmentations

Not applicable.

5.3.1.3.3. Other Augmentations

Not applicable.

5.3.2. Private Application Profiles

Not applicable.

5.4. Media Configuration

Not applicable.

6. SUPPORT OF CHARACTER SETS

The MR System supports the following character sets.

Table 65: Supported Character Sets of the MR System

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
Latin alphabet No. 1	ISO_IR 100	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 100	G1	Supplementary set of ISO 8859
	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
Japanese	ISO_IR 13	-	ISO-IR 13	G1	JIS X 0201: Katakana
		-	ISO-IR 14	G0	JIS X 0201: Romaji
	ISO 2022 IR 13	ESC 02/09 04/09	ISO-IR 13	G1	JIS X 0201: Katakana
		ESC 02/08 04/10	ISO-IR 14	G0	JIS X 0201: Romaji
	ISO 2022 IR 87	ESC 02/04 04/02	ISO-IR 87	G0	JIS X 0208: Kanji
	ISO 2022 IR 159	ESC 02/04 02/08 04/04	ISO-IR 159	G0	JIS X 0212: Supplementary Kanji set

Note that the MR System supports Japanese character sets only for use in the Patient's Name attribute (0010,0010).

Internally the MR System only uses Unicode characters. This implies that text will be displayed as Unicode to.

If the MR System receives a Specific Character Set that is not supported then the related association will be aborted.

However, if a RIS worklist contains a Specific Character Set attribute that is not empty and not supported according Table 65 then the MR System will send a C-CANCEL request to the RIS and a "RIS ERROR" message will be displayed; the MR System will reject the RIS import.

The Print AE provides no support for extended character sets in the communication with DICOM SCP's.

7. SECURITY

7.1. Transport Layer Security (TLS)

TLS is supported, certificate validation is in preparation.

7.2. Association Level Security

The MR System accepts associations only from known applications or an application whose “calling AE Title” is defined in its configuration file. The MR System will reject association requests from unknown applications, i.e. applications that offer an unknown “calling AE title”. An application entity (AE) is known if – and only if – it is defined during configuration of the MR System, which is done via the configuration application.

7.3. Application Level Security

The MR System allows the use of either conventional (non-secure) communication or secure communication based on the Transport Layer Security (TLS) protocol. If configured, the MR System supports security measures for:

- secure authentication of a node;
- replay protection;
- access control

7.4. HIPAA

Among the list of HIPAA requirements to be supported the security mechanisms outlined below have been implemented.

Table 66: Security Mechanisms

Requirement	Implementation	Technical Solution
Access Control	Role-based access	The MR System system enables applications to provide access to functionality based on roles.
	User-based access	The MR System system protects files, applications, and other system resources from unauthorized use based on user roles.
	Encryption	N/A
Audit Trail	-	N/A
Data Authentication	-	N/A
Entity Authentication	Unique user identification	The number of users and their privileges are limited based on predefined user roles. In addition, the MR System supports hardware dongle and SmartCard based user privilege allocation.
	Password	Requirements for MR System user passwords can be configured via the Group Policy management application. Options include minimum password length, maximum password age, password re-use, etc.
	Token	Windows 2000 operating system supports authentication via both hardware dongle and SmartCard.

8. ANNEXES

8.1. IOD Contents

8.1.1. Created SOP Instances

This section specifies each IOD created by the MR System Network AE.

Used abbreviations are:

For module and macro Usage

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

For attribute Definition

The first value is about the presence of the attribute and the next value(s) tell something about the source. In case the source contains multiple values, then either one of these may be applicable depending on the use of the system.

Presence

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

Source

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 source is a 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. MR Image Storage SOP Class

Table 67: Modules of the MR Image Storage SOP Class

Information Entity	Module Name	Usage
Patient	Patient	ALWAYS
	Patient Medical	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
Frame of Reference	Frame of Reference	ALWAYS
Equipment	General Equipment	ALWAYS
Image	General Image	ALWAYS
	Image Plane	ALWAYS
	Image Pixel	ALWAYS
	MR Image	ALWAYS
	Overlay Plane	CONDITIONAL (Usage of this module depends on configuration of the GSPS SOP class in FSF and the presence of overlays on images)
	Modality LUT	CONDITIONAL (Usage of this module depends on configuration of "Combine MR Rescaling" in FSF)
	VOI LUT	ALWAYS
	SOP Common	ALWAYS
	Private Group	CONDITIONAL (Usage of this module depends on configuration of "Pure DICOM" in FSF)

Table 68: Created MR Image Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Module				
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 Sex	0010,0040	CS	ALWAYS, MWL / USER	-
Other Patient IDs	0010,1000	LO	VNAP, MWL	Only present when patient demographics received from RIS.
Ethnic Group	0010,2160	SH	ANAPCV, MWL / USER	Only present when patient demographics received from RIS.
Patient Comments	0010,4000	LT	ANAPCV, MWL	Only present when patient demographics received from RIS.
Patient Medical Module				

Name	Tag	VR	Definition	Comment
Medical Alerts	0010,2000	LO	ANAPCV, MWL / USER	
Contrast Allergies	0010,2110	LO	ANAPCV, MWL / USER	
Pregnancy Status	0010,21C0	US	VNAP, MWL / USER	-
Special Needs	0038,0050	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
Patient State	0038,0500	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
General Study Module				
Study Date	0008,0020	DA	ALWAYS, AUTO / MWL	-
Study Time	0008,0030	TM	ALWAYS, AUTO / MWL	-
Accession Number	0008,0050	SH	ALWAYS, AUTO / MWL / USER	-
Referring Physician's Name	0008,0090	PN	VNAP, MWL / USER	-
Study Description	0008,1030	LO	VNAP, MWL / USER	-
Procedure Code Sequence	0008,1032	SQ	ANAP, MWL / USER	-
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-
Referenced Study Sequence	0008,1110	SQ	ALWAYS, AUTO / MWL	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO / MWL	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO / MWL	-

Name	Tag	VR	Definition	Comment
Study Instance UID	0020,000D	UI	ALWAYS, AUTO / MWL	-
Study ID	0020,0010	SH	ALWAYS, AUTO	-
Requesting Physician	0032,1032	PN	VNAP, MWL	-
Requesting Service	0032,1033	LO	VNAP, MWL	-
Requested Procedure Description	0032,1060	LO	VNAP, MWL	-
Requested Contrast Agent	0032,1070	LO	VNAP, MWL	-
Study Comments	0032,4000	LT	VNAP, COPY	Maximally 32 characters copied from (0040,0280) Comments on the Performed Procedure Steps.
Scheduled Performing Physician's Name	0040,0006	PN	VNAP, MWL	-
Performed Station AE Title	0040,0241	AE	ALWAYS, CONFIG	-
Performed Station Name	0040,0242	SH	ANAPCV, CONFIG	If MPPS applied.
Performed Location	0040,0243	SH	ANAPCV, CONFIG	If MPPS applied.
Performed Procedure Step End Date	0040,0250	DA	VNAP, AUTO	-
Performed Procedure Step End Time	0040,0251	TM	VNAP, AUTO	-
Performed Procedure Step Status	0040,0252	CS	ANAP, IMPLICIT	If MPPS applied.
Requested Procedure ID	0040,1001	SH	VNAP, MWL	-
Reason for the Requested Procedure	0040,1002	LO	VNAP, MWL	-
Requested Procedure Priority	0040,1003	SH	VNAP, MWL	-
Patient Transport Arrangements	0040,1004	LO	VNAP, MWL	-
Requested Procedure Location	0040,1005	LO	VNAP, MWL	-
Requested Procedure Comments	0040,1400	LT	VNAP, MWL	-
Reason for the Imaging Service Request	0040,2001	LO	VNAP, MWL	-
Issue Date of Imaging Service Request	0040,2004	DA	VNAP, MWL	-
Issue Time of Imaging Service Request	0040,2005	TM	VNAP, MWL	-
Order Enterer's Location	0040,2009	SH	VNAP, MWL	-
Order Callback Phone Number	0040,2010	SH	VNAP, MWL	-
Imaging Service Request Comments	0040,2400	LT	VNAP, MWL	-
Patient Study Module				
Admitting Diagnoses Description	0008,1080	LO	VNAP, MWL	-
Patient's Size	0010,1020	DS	VNAP / MWL	-

Name	Tag	VR	Definition	Comment
Patient's Weight	0010,1030	DS	ALWAYS, MWL / USER	-
Occupation	0010,2180	SH	ANAPCV, MWL	Only present when patient demographics received from RIS.
Additional Patient History	0010,21B0	LT	VNAP, MWL	-
General Series Module				
Series Date	0008,0021	DA	ALWAYS, AUTO	-
Series Time	0008,0031	TM	ALWAYS, AUTO	-
Modality	0008,0060	CS	ALWAYS, FIXED	Applied value: MR
Series Description	0008,103E	LO	ANAP, AUTO / USER	
Operator's Name	0008,1070	PN	EMPTY, FIXED	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ALWAYS, AUTO	-
>Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
>Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
>Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, FIXED	Applied value: 1.2.840.10008.3.1.2.3.3
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, MPPS	-
>Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Body Part Examined	0018,0015	CS	ANAP, AUTO	If ExamCard scan.
Protocol Name	0018,1030	LO	ALWAYS, USER	Scan name.
Patient Position	0018,5100	CS	ALWAYS, AUTO	-
Series Instance UID	0020,000E	UI	ALWAYS, AUTO	Generated by MR System.
Series Number	0020,0011	IS	ALWAYS, AUTO	Created dynamically at export. Contains the concatenation of the acquisition number and the private reconstruction number.
Laterality	0020,0060	CS	ANAPCV, USER	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, AUTO	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, AUTO	-
Performed Procedure Step ID	0040,0253	SH	ALWAYS, AUTO	-
Performed Procedure Step Description	0040,0254	LO	VNAP, MWL / USER	-

Name	Tag	VR	Definition	Comment
Performed Protocol Code Sequence	0040,0260	SQ	ANAPCV, MWL / USER	Filled if scheduled.
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-
>Context Identifier	0008,010F	CS	VNAP, MWL	-
Request Attributes Sequence	0040,0275	SQ	VNAP, MWL	-
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, MWL	-
>Scheduled Procedure Step ID	0040,0009	SH	ALWAYS, MWL	-
>Requested Procedure ID	0040,1001	SH	ALWAYS, MWL	-
Comments on the Performed Procedure Steps	0040,0280	ST	ANAPCV, MWL / USER	Maximum of 64 characters.
Frame of Reference Module				
Frame of Reference UID	0020,0052	UI	ALWAYS, AUTO	-
Position Reference Indicator	0020,1040	LO	EMPTY, FIXED	-
General Equipment Module				
Manufacturer	0008,0070	LO	ALWAYS, FIXED	Applied value: Philips Medical Systems
Institution Name	0008,0080	LO	ALWAYS, CONFIG	Configured on the system.
Station Name	0008,1010	SH	ALWAYS, CONFIG	Same as the Host Name.
Institutional Department Name	0008,1040	LO	ALWAYS, CONFIG	-
Manufacturer's Model Name	0008,1090	LO	ALWAYS, FIXED	Applied values: Achieva, Intera, Panorama HFO
Device Serial Number	0018,1000	LO	ALWAYS, FIXED	System serial number.
Software Version(s)	0018,1020	LO	ALWAYS, FIXED	The release text of the original image.
General Image Module				

Name	Tag	VR	Definition	Comment
Acquisition Date	0008,0022	DA	ALWAYS, AUTO	Same as Content Date.
Content Date	0008,0023	DA	ALWAYS, AUTO	-
Acquisition Time	0008,0032	TM	ALWAYS, AUTO	Same as Content Time.
Content Time	0008,0033	TM	ALWAYS, AUTO	-
Referenced Image Sequence	0008,1140	SQ	VNAP, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, IMPLICIT	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, IMPLICIT	-
Acquisition Number	0020,0012	IS	ALWAYS, AUTO	Scan Number on UI.
Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Lossy Image Compression	0028,2110	CS	ALWAYS, FIXED	Applied value: 00
Presentation LUT Shape	2050,0020	CS	ALWAYS, FIXED	Applied value: IDENTITY
Image Plane Module				
Slice Thickness	0018,0050	DS	ALWAYS, AUTO	-
Image Position (Patient)	0020,0032	DS	ALWAYS, AUTO	-
Image Orientation (Patient)	0020,0037	DS	ALWAYS, AUTO	-
Slice Location	0020,1041	DS	ALWAYS, AUTO	Value is shortest distance between TLHC of the images from TLHC of first image of the series, Value may only be used for a sorting order. Value is redefined for each series.
Pixel Spacing	0028,0030	DS	ALWAYS, AUTO	-
Image Pixel Module				
Rows	0028,0010	US	ALWAYS, IMPLICIT	Applied values: min: 64 - max: 2048
Columns	0028,0011	US	ALWAYS, IMPLICIT	Applied values: min: 64 - max: 2048
Pixel Aspect Ratio	0028,0034	IS	ALWAYS, FIXED	Applied value: (1\1)
Bits Stored	0028,0101	US	ALWAYS, IMPLICIT	-
High Bit	0028,0102	US	ALWAYS, IMPLICIT	-
Pixel Representation	0028,0103	US	ALWAYS, FIXED	Applied value: 0
Pixel Data	7FE0,0010	OW	ALWAYS, IMPLICIT	-
MR Image Module				
Image Type	0008,0008	CS	ALWAYS, AUTO	-
Scanning Sequence	0018,0020	CS	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Sequence Variant	0018,0021	CS	ALWAYS, AUTO	-
Scan Options	0018,0022	CS	VNAP, IMPLICIT	-
MR Acquisition Type	0018,0023	CS	ALWAYS, AUTO	-
Repetition Time	0018,0080	DS	ANAP, IMPLICIT / USER	-
Echo Time	0018,0081	DS	ALWAYS, IMPLICIT / USER	-
Inversion Time	0018,0082	DS	ANAP, IMPLICIT / USER	-
Number of Averages	0018,0083	DS	ALWAYS, IMPLICIT / USER	-
Imaging Frequency	0018,0084	DS	ALWAYS, CONFIG	-
Imaged Nucleus	0018,0085	SH	ALWAYS, IMPLICIT	-
Echo Number(s)	0018,0086	IS	VNAP, IMPLICIT	-
Magnetic Field Strength	0018,0087	DS	VNAP, CONFIG	-
Spacing Between Slices	0018,0088	DS	ALWAYS, IMPLICIT / USER	-
Number of Phase Encoding Steps	0018,0089	IS	VNAP, IMPLICIT / USER	-
Echo Train Length	0018,0091	IS	VNAP, IMPLICIT / USER	-
Percent Sampling	0018,0093	DS	VNAP, IMPLICIT / USER	-
Percent Phase Field of View	0018,0094	DS	VNAP, IMPLICIT / USER	-
Pixel Bandwidth	0018,0095	DS	ALWAYS, AUTO	-
Trigger Time	0018,1060	DS	VNAP, IMPLICIT / USER	Will only have a value if Dynamic Series (2001,1012) Equals 1
Low R-R Value	0018,1081	IS	ANAPCV, IMPLICIT	-
High R-R Value	0018,1082	IS	ANAPCV, IMPLICIT	-
Intervals Acquired	0018,1083	IS	ANAP, IMPLICIT	-
Intervals Rejected	0018,1084	IS	ANAPCV, IMPLICIT	-
Heart Rate	0018,1088	IS	ANAPCV, IMPLICIT / USER	-
Trigger Window	0018,1094	IS	ANAPCV, IMPLICIT	-
Reconstruction Diameter	0018,1100	DS	VNAP, CONFIG	Value is a copy of the largest value of the Field of View

Name	Tag	VR	Definition	Comment
Receiving Coil	0018,1250	SH	ALWAYS, IMPLICIT / USER	-
Transmitting Coil	0018,1251	SH	ALWAYS, IMPLICIT / USER	-
Acquisition Matrix	0018,1310	US	VNAP, IMPLICIT	-
In-plane Phase Encoding Direction	0018,1312	CS	VNAP, IMPLICIT	-
Flip Angle	0018,1314	DS	VNAP, IMPLICIT / USER	-
Temporal Position Identifier	0020,0100	IS	VNAP, IMPLICIT	-
Number of Temporal Positions	0020,0105	IS	VNAP, IMPLICIT / USER	-
Samples per Pixel	0028,0002	US	ALWAYS, FIXED	Applied value: 1
Photometric Interpretation	0028,0004	CS	ALWAYS, FIXED	Applied value: MONOCHROME2
Bits Allocated	0028,0100	US	ALWAYS, FIXED	Applied value: 16
Overlay Plane Module				
Overlay Rows	6000,0010	US	ALWAYS, AUTO	-
Overlay Columns	6000,0011	US	ALWAYS, AUTO	-
Overlay Description	6000,0022	LO	ANAPEV, AUTO	-
Overlay Type	6000,0040	CS	ALWAYS, AUTO	-
Overlay Subtype	6000,0045	LO	ANAPEV, 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	ANAPEV, AUTO	-
ROI Mean	6000,1302	DS	ANAPEV, AUTO	-
ROI Standard Deviation	6000,1303	DS	ANAPEV, AUTO	-
Overlay Label	6000,1500	LO	EMPTY, FIXED	-
Overlay Data	6000,3000	OW	ALWAYS, AUTO	-
Modality LUT Module				
Rescale Intercept	0028,1052	DS	ALWAYS, AUTO	When a value is present and not 0, then this value shall be used in the scaling calculation for the correct Window setting.

Name	Tag	VR	Definition	Comment
Rescale Slope	0028,1053	DS	ALWAYS, AUTO	When a value is present and not 1, then this value shall be used in the scaling calculation for the correct Window setting.
Rescale Type	0028,1054	LO	ALWAYS, AUTO	Applied values: cm/sec, milliradials, milliseconds, mm ² /sec, normalized, seconds, US Values apply in case of quantitative images like QFLOW or Functional maps.
VOI LUT Module				
Window Center	0028,1050	DS	ALWAYS, AUTO	-
Window Width	0028,1051	DS	ALWAYS, AUTO	-
VOI LUT Sequence	0028,3010	SQ	ANAP, AUTO	Required if Window Center (0028,1050) is not present. May be present otherwise.
SOP Common Module				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied values: ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159
Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
SOP Class UID	0008,0016	UI	ALWAYS, FIXED	-
SOP Instance UID	0008,0018	UI	ALWAYS, AUTO	-
Private Group				
Private Creator Group 2001	2001,0010	LO	ALWAYS, FIXED	Applied value: Philips Imaging DD 001
Chemical Shift	2001,1001	FL	ANAPCV, USER	Only applicable for spectro 2dsi.
Chemical Shift Number MR	2001,1002	IS	ANAPCV, IMPLICIT	Only applicable for spectro 2dsi.
Diffusion b-value	2001,1003	FL	ANAPCV, USER	Only applicable for diffusion scans.
Diffusion Direction	2001,1004	CS	ANAPCV, USER	Possible values: P (Preparation Direction) M (Measurement Direction) S (Selection Direction) O (Oblique Direction) I (Isotropic) Only applicable for diffusion scans.
Image Enhanced	2001,1006	CS	VNAP, IMPLICIT / USER	-

Name	Tag	VR	Definition	Comment
Image Type ED ES	2001,1007	CS	VNAP, IMPLICIT / USER	-
Phase Number	2001,1008	IS	ALWAYS, IMPLICIT	When cardiac synchronization used.
Slice Number MR	2001,100A	IS	ALWAYS, IMPLICIT	-
Diffusion Echo Time	2001,1011	FL	ANAPCV, IMPLICIT	Only applicable for diffusion scans.
Dynamic Series	2001,1012	CS	VNAP, USER	-
EPI Factor	2001,1013	SL	ALWAYS, IMPLICIT / USER	-
Number of Echoes	2001,1014	SL	VNAP, USER	-
Number of Locations	2001,1015	SS	VNAP, IMPLICIT / USER	-
Number of PC Directions	2001,1016	SS	VNAP, USER	-
Number of Phases MR	2001,1017	SL	VNAP, IMPLICIT / USER	-
Number of Slices MR	2001,1018	SL	VNAP, IMPLICIT / USER	-
Partial Matrix Scanned	2001,1019	CS	VNAP, IMPLICIT / USER	-
PC Velocity	2001,101A	FL	ALWAYS, IMPLICIT / USER	-
Prepulse Delay	2001,101B	FL	VNAP, IMPLICIT / USER	-
Prepulse Type	2001,101C	CS	VNAP, USER	-
Reconstruction Number MR	2001,101D	IS	VNAP, IMPLICIT	-
Respiration Sync	2001,101F	CS	VNAP, USER	-
SPIR	2001,1021	CS	VNAP, USER	-
Water Fat Shift	2001,1022	FL	VNAP, IMPLICIT / USER	-
Flip Angle Philips	2001,1023	DS	ALWAYS, IMPLICIT / USER	-
Number of Stacks	2001,1060	SL	VNAP, USER	-
Number of Dynamic Scans	2001,1081	IS	VNAP, IMPLICIT / USER	-
Acquisition Number	2001,107B	IS	ALWAYS, IMPLICIT	-
Prospective Motion Correction	2001,10F1	FL	ANAP, AUTO	Only applicable if prospective correction is done on the data.

Name	Tag	VR	Definition	Comment
Retrospective Motion Correction	2001,10F2	FL	ANAP, AUTO	Only applicable if retrospective correction is done on the data.
Private Creator Group 2005	2005,0010	LO	ALWAYS, FIXED	Applied value: Philips MR Imaging DD 001
Number of Chemical Shift	2005,1020	SL	ANAPCV, USER	Only applicable for spectro 2dsi.
Syncra Scan Type	2005,10A1	CS	ANAPCV, USER	If syncra scan. Applied values: SENSE, SYN_CLASSIC, SYN_COCA
Diffusion Direction RL	2005,10B0	FL	ANAP, AUTO	Only applicable if Diffusion Direction is Oblique.
Diffusion Direction AP	2005,10B1	FL	ANAP, AUTO	Only applicable if Diffusion Direction is Oblique.
Diffusion Direction FH	2005,10B2	FL	ANAP, AUTO	Only applicable if Diffusion Direction is Oblique.
Additional Attributes				
Acquisition Duration	0018,9073	FD	ANAP, AUTO	-
Diffusion B-value	0018,9087	FD	ANAP, AUTO	-
Diffusion Gradient Orientation	0018,9089	FD	ANAP, AUTO	-

8.1.1.2. Enhanced MR Image Storage SOP Class

The applicable Functional Groups sequences, as defined in Table 71 may be part of either the Shared Functional Groups Sequence (5200,9229) or the Per-frame Functional Groups Sequence (5200, 9230) respectively.

Table 69: Modules of the Enhanced MR Image Storage SOP Class

Information Entity	Module Name	Usage
Patient	Patient	ALWAYS
	Patient Medical	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
	MR Series	ALWAYS
Frame of Reference	Frame of Reference	ALWAYS
Equipment	General Equipment	ALWAYS
	Enhanced General Equipment	ALWAYS
Image	Image Pixel	ALWAYS
	Acquisition Context	ALWAYS
	Multi-frame Functional Groups	ALWAYS
	Multi-frame Dimension	ALWAYS
	Cardiac Synchronization	CONDITIONAL
	Respiratory Synchronization	CONDITIONAL
	Bulk Motion Synchronization	CONDITIONAL
	Supplemental Palette Color Lookup Table	CONDITIONAL
	Enhanced MR Image	ALWAYS
	MR Pulse Sequence	CONDITIONAL
	Softcopy Presentation LUT	ALWAYS
	SOP Common	ALWAYS

Table 70: Created Enhanced MR Image Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Module				
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 Sex	0010,0040	CS	ALWAYS, MWL / USER	-
Other Patient IDs	0010,1000	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
Ethnic Group	0010,2160	SH	ANAPCV, MWL / USER	Only present when patient demographics received from RIS.

Name	Tag	VR	Definition	Comment
Patient Comments	0010,4000	LT	ANAPCV, MWL	Only present when patient demographics received from RIS.
Patient Medical Module				
Medical Alerts	0010,2000	LO	ANAPCV, MWL / USER	-
Contrast Allergies	0010,2110	LO	ANAPCV, MWL / USER	-
Pregnancy Status	0010,21C0	US	VNAP, MWL / USER	-
Special Needs	0038,0050	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
Patient State	0038,0500	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
General Study Module				
Study Date	0008,0020	DA	ALWAYS, AUTO / MWL	-
Study Time	0008,0030	TM	ALWAYS, AUTO / MWL	-
Accession Number	0008,0050	SH	ALWAYS, AUTO / MWL / USER	-
Referring Physician's Name	0008,0090	PN	VNAP, MWL / USER	-
Study Description	0008,1030	LO	VNAP, MWL / USER	-
Procedure Code Sequence	0008,1032	SQ	ANAP, MWL / USER	-
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-

Name	Tag	VR	Definition	Comment
>Context Identifier	0008,010F	CS	ANAPCV, MWL	-
Referenced Study Sequence	0008,1110	SQ	ALWAYS, AUTO / MWL	As received from RIS or else default.
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO / MWL	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO / MWL	-
Study Instance UID	0020,000D	UI	ALWAYS, AUTO / MWL	-
Study ID	0020,0010	SH	ALWAYS, AUTO	-
Scheduled Performing Physician's Name	0040,0006	PN	VNAP, MWL	-
Patient Study Module				
Admitting Diagnoses Description	0008,1080	LO	VNAP, MWL	-
Patient's Size	0010,1020	DS	VNAP	-
Patient's Weight	0010,1030	DS	ALWAYS, MWL / USER	-
Occupation	0010,2180	SH	ANAPCV, MWL	Only present when patient demographics received from RIS.
Additional Patient History	0010,21B0	LT	VNAP, MWL	-
General Series Module				
Series Date	0008,0021	DA	ALWAYS, AUTO	-
Series Time	0008,0031	TM	ALWAYS, AUTO	-
Series Description	0008,103E	LO	ANAP, AUTO / USER	-
Operators' Name	0008,1070	PN	EMPTY, FIXED	-
Body Part Examined	0018,0015	CS	ANAP, AUTO	If ExamCard scan.
Protocol Name	0018,1030	LO	ALWAYS, USER	Scan name.
Patient Position	0018,5100	CS	ALWAYS, AUTO	-
Series Instance UID	0020,000E	UI	ALWAYS, AUTO	Generated by MR System.
Series Number	0020,0011	IS	ALWAYS, AUTO	Created dynamically at export. Contains the concatenation of the acquisition number and the private reconstruction number.
Laterality	0020,0060	CS	ANAPCV, USER	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, AUTO	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Performed Procedure Step ID	0040,0253	SH	ALWAYS, AUTO	-
Performed Procedure Step Description	0040,0254	LO	VNAP, MWL / USER	-
Performed Protocol Code Sequence	0040,0260	SQ	ANAPCV, MWL / USER	Only present when patient demographics received from RIS. Filled if scheduled.
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-
>Context Identifier	0008,010F	CS	VNAP, MWL	-
Request Attributes Sequence	0040,0275	SQ	VNAP, MWL	Only present when patient demographics received from RIS.
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, MWL	-
>Scheduled Procedure Step ID	0040,0009	SH	ALWAYS, MWL	-
>Requested Procedure ID	0040,1001	SH	ALWAYS, MWL	-
Comments on the Performed Procedure Steps	0040,0280	ST	ANAPCV, MWL / USER	Only present when patient demographics received from RIS. Maximum of 64 characters.
MR Series Module				
Modality	0008,0060	CS	ALWAYS, FIXED	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ALWAYS, AUTO	-
>Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
>Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
>Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, FIXED	Applied value: 1.2.840.10008.3.1.2.3.3

Name	Tag	VR	Definition	Comment
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, MPPS	-
>Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Frame of Reference Module				
Frame of Reference UID	0020,0052	UI	ALWAYS, AUTO	-
Position Reference Indicator	0020,1040	LO	EMPTY, FIXED	-
General Equipment Module				
Institution Name	0008,0080	LO	ALWAYS, CONFIG	Configured on the system.
Station Name	0008,1010	SH	ALWAYS, CONFIG	Same as the Host Name.
Institutional Department Name	0008,1040	LO	ALWAYS, CONFIG	-
Enhanced General Equipment Module				
Manufacturer	0008,0070	LO	ALWAYS, FIXED	Applied value: Philips Medical Systems
Manufacturer's Model Name	0008,1090	LO	ALWAYS, FIXED	Applied values: Achieva, Intera, Panorama 1.0T
Device Serial Number	0018,1000	LO	ALWAYS, FIXED	System serial number.
Software Version(s)	0018,1020	LO	ALWAYS, FIXED	The release text of the original Image.
Image Pixel Module				
Rows	0028,0010	US	ALWAYS, AUTO	Applied values: 64, 128, 256, 512, 1024, 2048
Columns	0028,0011	US	ALWAYS, AUTO	Applied values: 64, 128, 256, 512, 1024, 2048
Pixel Aspect Ratio	0028,0034	IS	ALWAYS, AUTO	Applied value: (1,1)
Pixel Representation	0028,0103	US	ALWAYS, AUTO	Applied value: 0000
Pixel Data	7FE0,0010	OW	ALWAYS, COPY	-
Acquisition Context Module				
Acquisition Context Sequence	0040,0555	SQ	EMPTY, FIXED	-
Multi-frame Functional Groups Module				
Content Date	0008,0023	DA	ALWAYS, AUTO	-
Content Time	0008,0033	TM	ALWAYS, AUTO	-
Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Number of Frames	0028,0008	IS	ALWAYS, AUTO	-
Shared Functional Groups Sequence	5200,9229	SQ	ALWAYS, AUTO	Always present in combination with the Per-frame Functional Groups Sequence (5200,9230)
Per-frame Functional Groups Sequence	5200,9230	SQ	ALWAYS, AUTO	Always present in combination with the Shared Functional Groups Sequence (5200,9229)
Multi-frame Dimension Module				

Name	Tag	VR	Definition	Comment
Dimension Organization Sequence	0020,9221	SQ	VNAP, AUTO	-
>Dimension Organization UID	0020,9164	UI	ALWAYS, AUTO	-
Dimension Index Sequence	0020,9222	SQ	VNAP, AUTO	-
>Dimension Organization UID	0020,9164	UI	ALWAYS, AUTO	-
>Dimension Index Pointer	0020,9165	AT	ALWAYS, AUTO	-
>Functional Group Pointer	0020,9167	AT	ANAP, AUTO	-
>Dimension Index Private Creator	0020,9213	LO	ANAP, AUTO	-
>Functional Group Private Creator	0020,9238	LO	ANAP, AUTO	-
Cardiac Synchronization Module				
Low R-R Value	0018,1081	IS	ANAPCV, AUTO	-
High R-R Value	0018,1082	IS	ANAPCV, AUTO	-
Intervals Acquired	0018,1083	IS	ANAPCV, AUTO	-
Intervals Rejected	0018,1084	IS	ANAPCV, AUTO	-
Cardiac Synchronization Technique	0018,9037	CS	ANAP, AUTO	-
Cardiac R-R Interval Specified	0018,9070	FD	ANAP, AUTO	-
Cardiac Signal Source	0018,9085	CS	ANAP, AUTO	-
Cardiac Beat Rejection Technique	0018,9169	CS	ANAP, AUTO	-
Respiratory Synchronization Module				
Respiratory Motion Compensation Technique	0018,9170	CS	ANAP, AUTO	-
Respiratory Signal Source	0018,9171	CS	ANAP, AUTO	-
Respiratory Trigger Delay Threshold	0020,9256	FD	ANAP, AUTO	-
Bulk Motion Synchronization Module				
Bulk Motion Compensation Technique	0018,9172	CS	ANAP, AUTO	Applied value: NONE
Supplemental Palette Color Lookup Table Module				
Red Palette Color Lookup Table Descriptor	0028,1101	US	ALWAYS, AUTO	-
Green Palette Color Lookup Table Descriptor	0028,1102	US	ALWAYS, AUTO	-
Blue Palette Color Lookup Table Descriptor	0028,1103	US	ALWAYS, AUTO	-
Red Palette Color Lookup Table Data	0028,1201	OW	ALWAYS, AUTO	-
Green Palette Color Lookup Table Data	0028,1202	OW	ALWAYS, AUTO	-
Blue Palette Color Lookup Table Data	0028,1203	OW	ALWAYS, AUTO	-
Enhanced MR Image Module				

Name	Tag	VR	Definition	Comment
Image Type	0008,0008	CS	ALWAYS, AUTO	Applied values: ({DERIVED, ORIGINAL}, PRIMARY, {METABOLITE_MAP, REALTIME, VELOCITY}, {ADC, DELAYED_IMAGE, DELAYED_RECON, DIFFUSION, DIFFUSION_ANISO, ENHANCEMENT, FLOW_ENCODED, FLUID_ATTENUATED, FOV_FUSION, INVERSE_RECON, MAXIMUM, MIXED, MTT, NONE, PERFUSION, PROTON_DENSITY, RCBF, RCBV, RESAMPLED, SPECTRO, STIR, SUBTRACTION, T1, T2, T2_STAR, TAGGING, TOF, TTP, UNKNOWN})
Acquisition Datetime	0008,002A	DT	ANAP, AUTO	-
Acquisition Duration	0018,9073	FD	ANAP, AUTO	-
Referenced Image Evidence Sequence	0008,9092	SQ	ANAP, AUTO	-
>Study Instance UID	0020,000D	UI	ALWAYS, AUTO	-
Pixel Presentation	0008,9205	CS	ALWAYS, AUTO	-
Volumetric Properties	0008,9206	CS	ALWAYS, AUTO	-
Volume Based Calculation Technique	0008,9207	CS	ALWAYS, AUTO	Applied values: MAX_IP, MPR, NONE
Complex Image Component	0008,9208	CS	ALWAYS, AUTO	-
Acquisition Contrast	0008,9209	CS	ALWAYS, AUTO	-
Magnetic Field Strength	0018,0087	DS	ANAP, AUTO	-
Spacing Between Slices	0018,0088	DS	ANAPCV, AUTO	-
Content Qualification	0018,9004	CS	ALWAYS, AUTO	-
k-space Filtering	0018,9064	CS	ANAP, AUTO	Applied values: COSINE, COSINE_SQUARED, FERMI, GAUSSIAN, HAMMING, HANNING, LORENTZIAN, LRNTZ_GSS_TRNSFM, NONE, RIESZ, TUKEY, USER_DEFINED
Resonant Nucleus	0018,9100	CS	ANAP, AUTO	Applied values: 129XE, 13C, 19F, 1H, 23NA, 31P, 3HE, 7LI, OTHER
Applicable Safety Standard Agency	0018,9174	CS	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Acquisition Number	0020,0012	IS	ANAPCV, AUTO	-
Image Comments	0020,4000	LT	ANAPCV, USER	-
Samples per Pixel	0028,0002	US	ALWAYS, FIXED	-
Photometric Interpretation	0028,0004	CS	ALWAYS, FIXED	-
Bits Allocated	0028,0100	US	ALWAYS, IMPLICIT	-
Bits Stored	0028,0101	US	ALWAYS, IMPLICIT	-
High Bit	0028,0102	US	ALWAYS, AUTO	-
Burned In Annotation	0028,0301	CS	ALWAYS, AUTO	Applied value: NO
Lossy Image Compression	0028,2110	CS	ALWAYS, AUTO	Applied value: 00
Presentation LUT Shape	2050,0020	CS	ALWAYS, AUTO	-
MR Pulse Sequence Module				
MR Acquisition Type	0018,0023	CS	ANAP, AUTO	Applied values: 1D, 2D, 3D, UNKNOWN
Pulse Sequence Name	0018,9005	SH	ANAP, AUTO	-
Echo Pulse Sequence	0018,9008	CS	ANAP, AUTO	-
Multiple Spin Echo	0018,9011	CS	ANAP, AUTO	-
Multi-planar Excitation	0018,9012	CS	ANAP, AUTO	-
Phase Contrast	0018,9014	CS	ANAP, AUTO	-
Time of Flight Contrast	0018,9015	CS	ANAP, AUTO	-
Steady State Pulse Sequence	0018,9017	CS	ANAP, AUTO	-
Echo Planar Pulse Sequence	0018,9018	CS	ANAP, AUTO	-
Saturation Recovery	0018,9024	CS	ANAP, AUTO	-
Spectrally Selected Suppression	0018,9025	CS	ANAP, AUTO	-
Oversampling Phase	0018,9029	CS	ANAP, AUTO	-
Geometry of k-Space Traversal	0018,9032	CS	ANAP, AUTO	-
Segmented k-Space Traversal	0018,9033	CS	ANAP, AUTO	-
Rectilinear Phase Encode Reordering	0018,9034	CS	ANAP, AUTO	Applied values: CENTRIC, LINEAR, REVERSE_CENTRIC, REVERSE_LINEAR, SEGMENTED, UNKNOWN
Number of k-Space Trajectories	0018,9093	US	ANAP, AUTO	-
Coverage of k-Space	0018,9094	CS	ANAP, AUTO	-
SOP Common Module				

Name	Tag	VR	Definition	Comment
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied values: ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159
Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
SOP Class UID	0008,0016	UI	ALWAYS, FIXED	-
SOP Instance UID	0008,0018	UI	ALWAYS, AUTO	-

Table 71: Created Enhanced MR Multi-frame Functional Group Macro Attributes

Name	Tag	VR	Definition	Comment
Pixel Measures				
>Pixel Measures Sequence	0028,9110	SQ	ALWAYS, AUTO	-
>>Slice Thickness	0018,0050	DS	ANAP, AUTO	-
>>Pixel Spacing	0028,0030	DS	ANAP, AUTO	-
Frame Content				
>Frame Content Sequence	0020,9111	SQ	ALWAYS, AUTO	-
>>Frame Acquisition Datetime	0018,9074	DT	ANAP, AUTO	-
>>Frame Reference Datetime	0018,9151	DT	ANAP, AUTO	-
>>Frame Acquisition Duration	0018,9220	FD	ANAP, AUTO	-
>>Stack ID	0020,9056	SH	ANAP, AUTO	If scan contains stacks.
>>In-Stack Position Number	0020,9057	UL	ANAP, AUTO	-
>>Dimension Index Values	0020,9157	UL	ANAP, AUTO	-
Plane Position				
>Plane Position Sequence	0020,9113	SQ	ALWAYS, AUTO	-
>>Image Position (Patient)	0020,0032	DS	ANAP, AUTO	-
Plane Orientation				
>Plane Orientation Sequence	0020,9116	SQ	ALWAYS, AUTO	-
>>Image Orientation (Patient)	0020,0037	DS	ANAP, AUTO	-
Referenced Image				
>Referenced Image Sequence	0008,1140	SQ	ANAP, AUTO	If scan was planned on other scan.

Name	Tag	VR	Definition	Comment
>>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO	-
>>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO	-
>>Referenced Frame Number	0008,1160	IS	ANAP, AUTO	-
>>Purpose of Reference Code Sequence	0040,A170	SQ	ALWAYS, AUTO	-
>>>Code Value	0008,0100	SH	ALWAYS, AUTO	-
>>>Coding Scheme Designator	0008,0102	SH	ALWAYS, AUTO	-
>>>Code Meaning	0008,0104	LO	ALWAYS, AUTO	-
Cardiac Synchronization				
>Cardiac Trigger Sequence	0018,9118	SQ	ANAP, AUTO	-
>>Trigger Delay Time	0020,9153	FD	ALWAYS, AUTO	-
>>R-R Interval Time Measured	0020,9251	FD	ANAP, AUTO	-
Frame Anatomy				
>Frame Anatomy Sequence	0020,9071	SQ	ALWAYS, AUTO	-
>>Anatomic Region Sequence	0008,2218	SQ	ALWAYS, AUTO	-
>>>Code Value	0008,0100	SH	ALWAYS, COPY	-
>>>Coding Scheme Designator	0008,0102	SH	ALWAYS, COPY	-
>>>Code Meaning	0008,0104	LO	ALWAYS, COPY	Value from examcard from STANDARD table, possibly translated
>>Frame Laterality	0020,9072	CS	ALWAYS, AUTO	Value from . examcard
Pixel Value Transformation				
>Pixel Value Transformation Sequence	0028,9145	SQ	ALWAYS, AUTO	-
>>Rescale Intercept	0028,1052	DS	ALWAYS, AUTO	-
>>Rescale Slope	0028,1053	DS	ALWAYS, AUTO	-
>>Rescale Type	0028,1054	LO	ALWAYS, AUTO	-
Frame VOI LUT				
>Frame VOI LUT Sequence	0028,9132	SQ	ALWAYS, AUTO	-
>>Window Center	0028,1050	DS	ALWAYS, AUTO	-
>>Window Width	0028,1051	DS	ALWAYS, AUTO	-
Real World Value Mapping				
>Real World Value Mapping Sequence	0040,9096	SQ	ANAP, AUTO	-
>>LUT Explanation	0028,3003	LO	ALWAYS, AUTO	-
>>Measurement Units Code Sequence	0040,08EA	SQ	ALWAYS, AUTO	-
>>>Code Value	0008,0100	SH	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
>>>Coding Scheme Designator	0008,0102	SH	ALWAYS, AUTO	-
>>>Code Meaning	0008,0104	LO	ALWAYS, AUTO	-
>>LUT Label	0040,9210	SH	ALWAYS, AUTO	-
>>Real World Value Last Value Mapped	0040,9211	SS/ US	ALWAYS, AUTO	-
>>Real World Value First Value Mapped	0040,9216	SS/ US	ALWAYS, AUTO	-
>>Real World Value Intercept	0040,9224	FD	ALWAYS, AUTO	-
>>Real World Value Slope	0040,9225	FD	ALWAYS, AUTO	-
Respiratory Trigger				
>Respiratory Trigger Sequence	0020,9253	SQ	ANAP, AUTO	-
>>Respiratory Interval Time	0020,9254	FD	ALWAYS, AUTO	-
>>Respiratory Trigger Delay Time	0020,9255	FD	ALWAYS, AUTO	-
MR Image Frame Type				
>MR Image Frame Type Sequence	0018,9226	SQ	ALWAYS, AUTO	-
>>Frame Type	0008,9007	CS	ALWAYS, AUTO	-
>>Pixel Presentation	0008,9205	CS	ALWAYS, AUTO	-
>>Volumetric Properties	0008,9206	CS	ALWAYS, AUTO	-
>>Volume Based Calculation Technique	0008,9207	CS	ALWAYS, AUTO	Applied values: MAX_IP, MPR, NONE
>>Complex Image Component	0008,9208	CS	ALWAYS, AUTO	-
>>Acquisition Contrast	0008,9209	CS	ALWAYS, AUTO	-
MR Timing and Related Parameters				
>MR Timing and Related Parameters Sequence	0018,9112	SQ	ALWAYS, AUTO	-
>>Repetition Time	0018,0080	DS	ANAP, AUTO	-
>>Echo Train Length	0018,0091	IS	ANAP, AUTO	-
>>Flip Angle	0018,1314	DS	ANAP, AUTO	-
>>Operation Mode Sequence	0018,9176	SQ	ANAP, AUTO	-
>>>Operating Mode Type	0018,9177	CS	ALWAYS, AUTO	-
>>>Operating Mode	0018,9178	CS	ALWAYS, AUTO	-
>>Gradient Output Type	0018,9180	CS	ANAP, AUTO	-
>>Gradient Output	0018,9182	FD	ANAP, AUTO	-
>>Specific Absorption Rate Sequence	0018,9239	SQ	ANAP, AUTO	-
>>>Specific Absorption Rate Definition	0018,9179	CS	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
>>>Specific Absorption Rate Value	0018,9181	FD	ALWAYS, AUTO	-
>>RF Echo Train Length	0018,9240	US	ANAP, AUTO	-
>>Gradient Echo Train Length	0018,9241	US	ANAP, AUTO	-
MR FOV/Geometry				
>MR FOV/Geometry Sequence	0018,9125	SQ	ALWAYS, AUTO	-
>>Percent Sampling	0018,0093	DS	ANAP, AUTO	-
>>Percent Phase Field of View	0018,0094	DS	ANAP, AUTO	-
>>In-plane Phase Encoding Direction	0018,1312	CS	ANAP, AUTO	-
>>MR Acquisition Frequency Encoding Steps	0018,9058	US	ANAP, AUTO	-
>>MR Acquisition Phase Encoding Steps in-plane	0018,9231	US	ANAP, AUTO	-
>>MR Acquisition Phase Encoding Steps out-of-plane	0018,9232	US	ANAP, AUTO	-
MR Echo				
>MR Echo Sequence	0018,9114	SQ	ALWAYS, AUTO	-
>>Effective Echo Time	0018,9082	FD	ANAP, AUTO	-
MR Modifier				
>MR Modifier Sequence	0018,9115	SQ	ALWAYS, AUTO	-
>>Inversion Recovery	0018,9009	CS	ANAP, AUTO	-
>>Flow Compensation	0018,9010	CS	ANAP, AUTO	-
>>Spoiling	0018,9016	CS	ANAP, AUTO	-
>>T2 Preparation	0018,9021	CS	ANAP, AUTO	-
>>Spectrally Selected Excitation	0018,9026	CS	ANAP, AUTO	-
>>Spatial Pre-saturation	0018,9027	CS	ANAP, AUTO	-
>>Partial Fourier Direction	0018,9036	CS	ANAP, AUTO	-
>>Parallel Reduction Factor In-plane	0018,9069	FD	ANAP, AUTO	-
>>Parallel Acquisition	0018,9077	CS	ANAP, AUTO	-
>>Parallel Acquisition Technique	0018,9078	CS	ANAP, AUTO	-
>>Inversion Times	0018,9079	FD	ANAP, AUTO	-
>>Partial Fourier	0018,9081	CS	ANAP, AUTO	-
>>Parallel Reduction Factor out-of-plane	0018,9155	FD	ANAP, AUTO	-
>>Parallel Reduction Factor Second In-plane	0018,9168	FD	ANAP, AUTO	-
>>Flow Compensation Direction	0018,9183	CS	ANAP, AUTO	-
MR Imaging Modifier				

Name	Tag	VR	Definition	Comment
>MR Imaging Modifier Sequence	0018,9006	SQ	ALWAYS, AUTO	-
>>Pixel Bandwidth	0018,0095	DS	ANAP, AUTO	-
>>Tag Angle First Axis	0018,9019	FD	ANAP, AUTO	-
>>Magnetization Transfer	0018,9020	CS	ANAP, AUTO	-
>>Blood Signal Nulling	0018,9022	CS	ANAP, AUTO	-
>>Tagging	0018,9028	CS	ANAP, AUTO	-
>>Tag Spacing First Dimension	0018,9030	FD	ANAP, AUTO	-
>>Tag Thickness	0018,9035	FD	ANAP, AUTO	Applied value: 0.0
>>Transmitter Frequency	0018,9098	FD	ANAP, AUTO	-
>>Tag Spacing Second Dimension	0018,9218	FD	ANAP, AUTO	-
>>Tag Angle Second Axis	0018,9219	SS	ANAP, AUTO	-
MR Receive Coil				
>MR Receive Coil Sequence	0018,9042	SQ	ALWAYS, AUTO	-
>>Receiving Coil Name	0018,1250	SH	ANAP, AUTO	-
>>Receive Coil Manufacturer Name	0018,9041	LO	EMPTY, FIXED	-
>>Receive Coil Type	0018,9043	CS	ANAP, AUTO	-
>>Quadrature Receive Coil	0018,9044	CS	ANAP, AUTO	-
>>Multi-Coil Definition Sequence	0018,9045	SQ	ANAP, AUTO	-
>>>Multi-Coil Element Name	0018,9047	SH	ALWAYS, AUTO	-
>>>Multi-Coil Element Used	0018,9048	CS	ALWAYS, AUTO	-
MR Transmit Coil				
>MR Transmit Coil Sequence	0018,9049	SQ	ALWAYS, AUTO	-
>>Transmitting Coil Name	0018,1251	SH	ALWAYS, AUTO	-
>>Transmit Coil Manufacturer Name	0018,9050	LO	EMPTY, FIXED	-
>>Transmit Coil Type	0018,9051	CS	ANAP, AUTO	-
MR Diffusion				
>MR Diffusion Sequence	0018,9117	SQ	ANAP, AUTO	-
>>Diffusion Directionality	0018,9075	CS	ANAP, AUTO	-
>>Diffusion Gradient Direction Sequence	0018,9076	SQ	ANAP, AUTO	-
>>>Diffusion Gradient Orientation	0018,9089	FD	ANAP, AUTO	-
>>Diffusion b-value	0018,9087	FD	ANAP, AUTO	-

Name	Tag	VR	Definition	Comment
>>Diffusion Anisotropy Type	0018,9147	CS	ANAP, AUTO	Applied value: FRACTIONAL
MR Averages				
>MR Averages Sequence	0018,9119	SQ	ALWAYS, AUTO	-
>>Number of Averages	0018,0083	DS	ANAP, AUTO	-
MR Spatial Saturation				
>MR Spatial Saturation Sequence	0018,9107	SQ	ANAP, AUTO	If slab information is present.
>>Slab Thickness	0018,9104	FD	ALWAYS, AUTO	-
>>Slab Orientation	0018,9105	FD	ALWAYS, AUTO	-
>>Mid Slab Position	0018,9106	FD	ALWAYS, AUTO	-
MR Metabolite Map				
>MR Metabolite Map Sequence	0018,9152	SQ	ANAP, AUTO	-
>>Metabolite Map Description	0018,9080	ST	ANAP, AUTO	-
MR Velocity Encoding				
>MR Velocity Encoding Sequence	0018,9197	SQ	ANAP, AUTO	-
>>Velocity Encoding Direction	0018,9090	FD	ANAP, AUTO	-
>>Velocity Encoding Minimum Value	0018,9091	FD	ANAP, AUTO	Applied value: 0.0
>>Velocity Encoding Maximum Value	0018,9217	FD	ANAP, AUTO	-
MR Spectroscopy FOV/Geometry				
>MR Spectroscopy FOV/Geometry Sequence	0018,9103	SQ	ALWAYS, AUTO	-
>>Percent Sampling	0018,0093	DS	ANAP, AUTO	-
>>Percent Phase Field of View	0018,0094	DS	ANAP, AUTO	-
>>Spectroscopy Acquisition Phase Rows	0018,9095	UL	ANAP, AUTO	-
>>Spectroscopy Acquisition Data Columns	0018,9127	UL	ANAP, AUTO	-
>>Spectroscopy Acquisition Out-of- plane Phase Steps	0018,9159	UL	ANAP, AUTO	-
>>Spectroscopy Acquisition Phase Columns	0018,9234	UL	ANAP, AUTO	-
MR Spectroscopy Frame Type				
>MR Spectroscopy Frame Type Sequence	0018,9227	SQ	ALWAYS, AUTO	-
>>Frame Type	0008,9007	CS	ALWAYS, AUTO	-
>>Volumetric Properties	0008,9206	CS	ALWAYS, AUTO	-
>>Volume Based Calculation Technique	0008,9207	CS	ALWAYS, AUTO	-
>>Complex Image Component	0008,9208	CS	ALWAYS, AUTO	-
>>Acquisition Contrast	0008,9209	CS	ALWAYS, AUTO	Applied values: MIXED, PROTON_DENSITY, SPECTROSCOPY, T1, T2, UNKNOWN

8.1.1.3. MR Spectroscopy Storage SOP Class

The applicable Functional Groups sequences, as defined in Table 71 may be part of either the Shared Functional Groups Sequence (5200,9229) or the Per-frame Functional Groups Sequence (5200, 9230) respectively.

Table 72: Modules of the MR Spectroscopy Storage SOP Class

Information Entity	Module Name	Usage
Patient	Patient	ALWAYS
	Patient Medical	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
	MR Series	ALWAYS
Frame of Reference	Frame of Reference	ALWAYS
Equipment	General Equipment	ALWAYS
	Enhanced General Equipment	ALWAYS
MR Spectroscopy	Acquisition Context	ALWAYS
	Multi-frame Functional Groups	ALWAYS
	Multi-frame Dimension	ALWAYS
	Cardiac Synchronization	CONDITIONAL
	Respiratory Synchronization	CONDITIONAL
	Bulk Motion Synchronization	CONDITIONAL
	MR Spectroscopy	ALWAYS
	MR Spectroscopy Pulse Sequence	ALWAYS
	MR Spectroscopy Data	ALWAYS
	SOP Common	ALWAYS

Table 73: Created MR Spectroscopy Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Module				
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 Sex	0010,0040	CS	ALWAYS, MWL / USER	-
Other Patient IDs	0010,1000	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
Ethnic Group	0010,2160	SH	ANAPCV, MWL / USER	Only present when patient demographics received from RIS.

Name	Tag	VR	Definition	Comment
Patient Comments	0010,4000	LT	ANAPCV, MWL	Only present when patient demographics received from RIS.
Patient Medical Module				
Medical Alerts	0010,2000	LO	ANAPCV, MWL / USER	-
Contrast Allergies	0010,2110	LO	ANAPCV, MWL / USER	-
Pregnancy Status	0010,21C0	US	VNAP, MWL / USER	-
Special Needs	0038,0050	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
Patient State	0038,0500	LO	ANAPCV, MWL	Only present when patient demographics received from RIS.
General Study Module				
Study Date	0008,0020	DA	ALWAYS, AUTO / MWL	-
Study Time	0008,0030	TM	ALWAYS, AUTO / MWL	-
Accession Number	0008,0050	SH	ALWAYS, AUTO / MWL / USER	-
Referring Physician's Name	0008,0090	PN	VNAP, MWL / USER	-
Study Description	0008,1030	LO	VNAP, MWL / USER	-
Procedure Code Sequence	0008,1032	SQ	ANAP, MWL / USER	-
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-

Name	Tag	VR	Definition	Comment
>Context Identifier	0008,010F	CS	ANAPCV, MWL	-
Referenced Study Sequence	0008,1110	SQ	ALWAYS, AUTO / MWL	As received from RIS or else default.
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO / MWL	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO / MWL	-
Study Instance UID	0020,000D	UI	ALWAYS, AUTO / MWL	-
Study ID	0020,0010	SH	ALWAYS, AUTO	-
Scheduled Performing Physician's Name	0040,0006	PN	VNAP, MWL	-
Patient Study Module				
Admitting Diagnoses Description	0008,1080	LO	VNAP, MWL	-
Patient's Size	0010,1020	DS	VNAP	-
Patient's Weight	0010,1030	DS	ALWAYS, MWL / USER	-
Occupation	0010,2180	SH	ANAPCV, MWL	Only present when patient demographics received from RIS.
Additional Patient History	0010,21B0	LT	VNAP, MWL	-
General Series Module				
Series Date	0008,0021	DA	ALWAYS, AUTO	-
Series Time	0008,0031	TM	ALWAYS, AUTO	-
Series Description	0008,103E	LO	ANAP, AUTO / USER	-
Operators' Name	0008,1070	PN	EMPTY, FIXED	-
Body Part Examined	0018,0015	CS	ANAP, AUTO	If ExamCard scan.
Protocol Name	0018,1030	LO	ALWAYS, USER	Scan name.
Patient Position	0018,5100	CS	ALWAYS, AUTO	-
Series Instance UID	0020,000E	UI	ALWAYS, AUTO	Generated by MR System.
Series Number	0020,0011	IS	ALWAYS, AUTO	Created dynamically at export. Contains the concatenation of the acquisition number and the private reconstruction number.
Laterality	0020,0060	CS	ANAPCV, USER	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, AUTO	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Performed Procedure Step ID	0040,0253	SH	ALWAYS, AUTO	-
Performed Procedure Step Description	0040,0254	LO	VNAP, MWL / USER	-
Performed Protocol Code Sequence	0040,0260	SQ	ANAPCV, MWL / USER	Only present when patient demographics received from RIS. Filled if scheduled.
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-
>Context Identifier	0008,010F	CS	VNAP, MWL	-
Request Attributes Sequence	0040,0275	SQ	VNAP, MWL	Only present when patient demographics received from RIS.
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, MWL	-
>Scheduled Procedure Step ID	0040,0009	SH	ALWAYS, MWL	-
>Requested Procedure ID	0040,1001	SH	ALWAYS, MWL	-
Comments on the Performed Procedure Steps	0040,0280	ST	ANAPCV, MWL / USER	Only present when patient demographics received from RIS. Maximum of 64 characters.
MR Series Module				
Modality	0008,0060	CS	ALWAYS, FIXED	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ALWAYS, AUTO	-
>Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
>Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
>Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, FIXED	Applied value: 1.2.840.10008.3.1.2.3.3

Name	Tag	VR	Definition	Comment
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, MPPS	-
>Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Frame of Reference Module				
Frame of Reference UID	0020,0052	UI	ALWAYS, AUTO	-
Position Reference Indicator	0020,1040	LO	EMPTY, FIXED	-
General Equipment Module				
Institution Name	0008,0080	LO	ALWAYS, CONFIG	Configured on the system.
Station Name	0008,1010	SH	ALWAYS, CONFIG	Same as the Host Name.
Institutional Department Name	0008,1040	LO	ALWAYS, CONFIG	-
Enhanced General Equipment Module				
Manufacturer	0008,0070	LO	ALWAYS, FIXED	Applied value: Philips Medical Systems
Manufacturer's Model Name	0008,1090	LO	ALWAYS, FIXED	Applied values: Achieva, Intera, Panorama HFO
Device Serial Number	0018,1000	LO	ALWAYS, FIXED	System serial number.
Software Version(s)	0018,1020	LO	ALWAYS, FIXED	The release text of the original Image.
Acquisition Context Module				
Acquisition Context Sequence	0040,0555	SQ	EMPTY, FIXED	-
Multi-frame Functional Groups Module				
Content Date	0008,0023	DA	ALWAYS, AUTO	-
Content Time	0008,0033	TM	ALWAYS, AUTO	-
Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Number of Frames	0028,0008	IS	ALWAYS, AUTO	-
Shared Functional Groups Sequence	5200,9229	SQ	VNAP, AUTO	Always present in combination with the Per-frame Functional Groups Sequence (5200,9230)
Per-frame Functional Groups Sequence	5200,9230	SQ	ALWAYS, AUTO	Always present in combination with the Shared Functional Groups Sequence (5200,9229)
Multi-frame Dimension Module				
Dimension Organization Sequence	0020,9221	SQ	VNAP, AUTO	-
>Dimension Organization UID	0020,9164	UI	ALWAYS, AUTO	-
Dimension Index Sequence	0020,9222	SQ	VNAP, AUTO	-
>Dimension Organization UID	0020,9164	UI	ANAP, AUTO	-
>Dimension Index Pointer	0020,9165	AT	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
>Functional Group Pointer	0020,9167	AT	ANAP, AUTO	-
>Dimension Index Private Creator	0020,9213	LO	ANAP, AUTO	-
>Functional Group Private Creator	0020,9238	LO	ANAP, AUTO	-
Cardiac Synchronization Module				
Low R-R Value	0018,1081	IS	ANAPCV, AUTO	-
High R-R Value	0018,1082	IS	ANAPCV, AUTO	-
Intervals Acquired	0018,1083	IS	ANAPCV, AUTO	-
Intervals Rejected	0018,1084	IS	ANAPCV, AUTO	-
Cardiac Synchronization Technique	0018,9037	CS	ANAP, AUTO	-
Cardiac R-R Interval Specified	0018,9070	FD	ANAP, AUTO	-
Cardiac Signal Source	0018,9085	CS	ANAP, AUTO	-
Cardiac Beat Rejection Technique	0018,9169	CS	ANAP, AUTO	-
Respiratory Synchronization Module				
Respiratory Motion Compensation Technique	0018,9170	CS	ANAP, AUTO	-
Respiratory Signal Source	0018,9171	CS	ANAP, AUTO	-
Respiratory Trigger Delay Threshold	0020,9256	FD	ANAP, AUTO	-
Bulk Motion Synchronization Module				
Bulk Motion Compensation Technique	0018,9172	CS	ANAP, AUTO	Applied value: NONE
MR Spectroscopy Module				
Image Type	0008,0008	CS	ALWAYS, AUTO	Applied values: ORIGINAL \ PRIMARY \ SPECTROSCOPY
Acquisition Datetime	0008,002A	DT	ANAP, AUTO	-
Acquisition Duration	0018,9073	FD	ANAP, AUTO	-
Volumetric Properties	0008,9206	CS	ALWAYS, AUTO	-
Volume Based Calculation Technique	0008,9207	CS	ALWAYS, AUTO	-
Complex Image Component	0008,9208	CS	ALWAYS, AUTO	-
Acquisition Contrast	0008,9209	CS	ALWAYS, AUTO	Applied values: MIXED, PROTON_DENSITY, SPECTROSCOPY, T1, T2, UNKNOWN
Magnetic Field Strength	0018,0087	DS	ANAP, AUTO	-
Content Qualification	0018,9004	CS	ALWAYS, AUTO	-
Spectral Width	0018,9052	FD	ANAP, AUTO	-
Chemical Shift Reference	0018,9053	FD	ANAP, AUTO	Applied value: 4.67

Name	Tag	VR	Definition	Comment
Volume Localization Technique	0018,9054	CS	ANAP, AUTO	-
De-coupling	0018,9059	CS	ANAP, AUTO	-
De-coupled Nucleus	0018,9060	CS	ANAP, AUTO	-
De-coupling Frequency	0018,9061	FD	ANAP, AUTO	-
De-coupling Method	0018,9062	CS	ANAP, AUTO	-
De-coupling Chemical Shift Reference	0018,9063	FD	ANAP, AUTO	Applied value: 4.67
k-space Filtering	0018,9064	CS	ANAP, AUTO	-
Time Domain Filtering	0018,9065	CS	ANAP, AUTO	-
Number of Zero fills	0018,9066	US	ANAP, AUTO	-
Baseline Correction	0018,9067	CS	ANAP, AUTO	-
Transmitter Frequency	0018,9098	FD	ANAP, AUTO	-
Resonant Nucleus	0018,9100	CS	ANAP, AUTO	Applied values: 129XE, 13C, 19F, 1H, 23NA, 31P, 3HE, 7LI, OTHER
Frequency Correction	0018,9101	CS	ANAP, AUTO	-
Volume Localization Sequence	0018,9126	SQ	ANAP, AUTO	-
>Slab Thickness	0018,9104	FD	ALWAYS, AUTO	-
>Slab Orientation	0018,9105	FD	ALWAYS, AUTO	-
>Mid Slab Position	0018,9106	FD	ALWAYS, AUTO	-
Applicable Safety Standard Agency	0018,9174	CS	ALWAYS, AUTO	-
First Order Phase Correction	0018,9198	CS	ANAP, AUTO	-
Water Referenced Phase Correction	0018,9199	CS	ANAP, AUTO	-
Acquisition Number	0020,0012	IS	ANAPCV, AUTO	-
Image Comments	0020,4000	LT	ANAPCV, USER	-
MR Spectroscopy Pulse Sequence Module				
Pulse Sequence Name	0018,9005	SH	ANAP, AUTO	-
Echo Pulse Sequence	0018,9008	CS	ANAP, AUTO	-
Multiple Spin Echo	0018,9011	CS	ANAP, AUTO	-
Multi-planar Excitation	0018,9012	CS	ANAP, AUTO	-
Steady State Pulse Sequence	0018,9017	CS	ANAP, AUTO	-
Echo Planar Pulse Sequence	0018,9018	CS	ANAP, AUTO	-

Name	Tag	VR	Definition	Comment
Spectrally Selected Suppression	0018,9025	CS	ANAP, AUTO	-
Geometry of k-Space Traversal	0018,9032	CS	ANAP, AUTO	-
Segmented k-Space Traversal	0018,9033	CS	ANAP, AUTO	-
Rectilinear Phase Encode Reordering	0018,9034	CS	ANAP, AUTO	-
Number of k-Space Trajectories	0018,9093	US	ANAP, AUTO	-
Coverage of k-Space	0018,9094	CS	ANAP, AUTO	-
MR Spectroscopy Acquisition Type	0018,9200	CS	ANAP, AUTO	-
MR Spectroscopy Data Module				
Rows	0028,0010	US	ALWAYS, AUTO	-
Columns	0028,0011	US	ALWAYS, AUTO	-
Data Point Rows	0028,9001	UL	ALWAYS, FIXED	Applied value: 1
Data Point Columns	0028,9002	UL	ALWAYS, AUTO	-
Signal Domain Columns	0028,9003	CS	ALWAYS, AUTO	-
Data Representation	0028,9108	CS	ALWAYS, AUTO	-
First Order Phase Correction Angle	5600,0010	OF	ANAP, AUTO	-
Spectroscopy Data	5600,0020	OF	ALWAYS, AUTO	-
SOP Common Module				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied values: ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159
Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
SOP Instance UID	0008,0018	UI	ALWAYS, AUTO	-
SOP Class UID	0008,0016	UI	ALWAYS, FIXED	-

8.1.1.4. Secondary Capture Image Storage SOP Class

Table 74: Modules of the Secondary Capture Image Storage SOP Class

Information Entity	Module Name	Usage
Patient	Patient	ALWAYS
	Patient Medical	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
Equipment	General Equipment	ALWAYS
	SC Equipment	ALWAYS
Image	General Image	ALWAYS
	Image Pixel	ALWAYS
	SC Image	ALWAYS
	SOP Common	ALWAYS

Table 75: Created Secondary Capture Image Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Module				
Patient's Name	0010,0010	PN	ALWAYS, COPY	-
Patient ID	0010,0020	LO	ALWAYS, COPY	-
Patient's Birth Date	0010,0030	DA	ALWAYS, COPY	-
Patient's Sex	0010,0040	CS	ALWAYS, COPY	-
Other Patient IDs	0010,1000	LO	ANAPCV / COPY	-
Patient Medical Module				
Medical Alerts	0010,2000	LO	ANAPCV, COPY	-
Contrast Allergies	0010,2110	LO	ANAPCV, COPY	-
Pregnancy Status	0010,21C0	US	VNAP, COPY	-
Special Needs	0038,0050	LO	ANAPCV, COPY	-
Patient State	0038,0500	LO	ANAPCV, COPY	-
General Study Module				
Study Date	0008,0020	DA	ALWAYS, COPY	-
Study Time	0008,0030	TM	ALWAYS, COPY	-
Accession Number	0008,0050	SH	ALWAYS, COPY	-
Referring Physician's Name	0008,0090	PN	VNAP, COPY	-
Study Description	0008,1030	LO	VNAP, COPY	-
Procedure Code Sequence	0008,1032	SQ	ANAP, COPY	If present in original study.
>Code Value	0008,0100	SH	ALWAYS, COPY	-

Name	Tag	VR	Definition	Comment
>Coding Scheme Designator	0008,0102	SH	ALWAYS, COPY	-
>Coding Scheme Version	0008,0103	SH	ANAP, COPY	-
>Code Meaning	0008,0104	LO	ALWAYS, COPY	-
>Context Group Local Version	0008,0107	DT	ANAP, COPY	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, COPY	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, COPY	-
Referenced Study Sequence	0008,1110	SQ	ANAP, COPY	If present in original study.
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, COPY	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, COPY	-
Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
Study ID	0020,0010	SH	ALWAYS, COPY	-
Scheduled Performing Physician's Name	0040,0006	PN	VNAP, MWL	-
Patient Study Module				
Admitting Diagnoses Description	0008,1080	LO	VNAP, COPY	-
Patient's Size	0010,1020	DS	VNAP	-
Patient's Weight	0010,1030	DS	ALWAYS, COPY	-
General Series Module				
Series Date	0008,0021	DA	ALWAYS, AUTO	-
Series Time	0008,0031	TM	ALWAYS, AUTO	-
Series Description	0008,103E	LO	ANAP, AUTO / USER	-
Operator's Name	0008,1070	PN	EMPTY, AUTO	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ALWAYS, AUTO	-
>Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
>Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
>Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO	-
>Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Body Part Examined	0018,0015	CS	ANAP, COPY	-
Protocol Name	0018,1030	LO	ALWAYS, COPY	-
Series Instance UID	0020,000E	UI	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Series Number	0020,0011	IS	ALWAYS, AUTO	-
Laterality	0020,0060	CS	ANAPCV, COPY	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, COPY	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, COPY	-
Performed Procedure Step ID	0040,0253	SH	ALWAYS, COPY	-
Performed Procedure Step Description	0040,0254	LO	VNAP, COPY	-
Performed protocol code sequence	0040,0260	SQ	ANAPCV, COPY	-
>Code Value	0008,0100	SH	ALWAYS, COPY	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, COPY	-
>Coding Scheme Version	0008,0103	SH	ANAP, COPY	-
>Code Meaning	0008,0104	LO	ALWAYS, COPY	-
>Context Group Local Version	0008,0107	DT	ANAP, COPY	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, COPY	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, COPY	-
Request Attributes Sequence	0040,0275	SQ	ANAPCV, COPY	-
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, COPY	-
>Scheduled Procedure Step ID	0040,0009	SH	ALWAYS, COPY	-
>Requested Procedure ID	0040,1001	SH	ALWAYS, COPY	-
Comments on the Performed Procedure Steps	0040,0280	ST	ANAPCV, COPY	Maximum of 64 characters.
General Equipment Module				
Manufacturer	0008,0070	LO	ALWAYS, AUTO	Applied value: Philips Medical Systems
Institution Name	0008,0080	LO	ALWAYS, CONFIG	-
Institution Address	0008,0081	ST	ANAPCV, CONFIG	-
Station Name	0008,1010	SH	ALWAYS, CONFIG	-
Institutional Department Name	0008,1040	LO	ALWAYS, CONFIG	-
Manufacturer's Model Name	0008,1090	LO	ALWAYS, AUTO	Applied values: Achieva, Intera, Panorama HFO
Device Serial Number	0018,1000	LO	ALWAYS, AUTO	-
Software Version(s)	0018,1020	LO	ALWAYS, AUTO	-
SC Equipment Module				
Modality	0008,0060	CS	ALWAYS, AUTO	Applied value: MR

Name	Tag	VR	Definition	Comment
Conversion Type	0008,0064	CS	ALWAYS, AUTO	Applied values: SYN, WSD
Secondary Capture Device Manufacturer	0018,1016	LO	ANAP, AUTO	-
Secondary Capture Device Manufacturer's Model Name	0018,1018	LO	ANAP, AUTO	-
Secondary Capture Device Software Version(s)	0018,1019	LO	ANAP, AUTO	-
General Image Module				
Content Date	0008,0023	DA	ALWAYS, AUTO	-
Content Time	0008,0033	TM	ALWAYS, AUTO	-
Acquisition Number	0020,0012	IS	ALWAYS, AUTO	-
Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Patient Orientation	0020,0020	CS	EMPTY, AUTO	-
Image Comments	0020,4000	LT	EMPTY, AUTO	-
Lossy Image Compression	0028,2110	CS	ALWAYS, AUTO	Applied value: 00
Image Pixel Module				
Samples per Pixel	0028,0002	US	ALWAYS, AUTO	Applied values: 1, 3
Photometric Interpretation	0028,0004	CS	ALWAYS, IMPLICIT	Applied values: MONOCHROME2, RGB
Planar Configuration	0028,0006	US	ANAP, AUTO	-
Rows	0028,0010	US	ALWAYS, AUTO	-
Columns	0028,0011	US	ALWAYS, AUTO	-
Pixel Aspect Ratio	0028,0034	IS	ALWAYS, AUTO	Applied value: (1,1)
Bits Allocated	0028,0100	US	ALWAYS, AUTO	-
Bits Stored	0028,0101	US	ALWAYS, AUTO	-
High Bit	0028,0102	US	ALWAYS, AUTO	-
Pixel Representation	0028,0103	US	ALWAYS, AUTO	-
Pixel Data	7FE0,0010	OW	ALWAYS, AUTO	-
SC Image Module				
Date of Secondary Capture	0018,1012	DA	ANAP, AUTO	-
Time of Secondary Capture	0018,1014	TM	ANAP, AUTO	-
SOP Common Module				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied values: ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159

Name	Tag	VR	Definition	Comment
Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
SOP Class UID	0008,0016	UI	ALWAYS, AUTO	Applied value: 1.2.840.10008.5.1.4.1.1. 7
SOP Instance UID	0008,0018	UI	ALWAYS, AUTO	-

8.1.1.5. Grayscale Softcopy Presentation State Storage SOP Class

Table 76: Modules of the Grayscale Softcopy Presentation State Storage SOP Class

Information Entity	Module Name	Usage
Patient	Patient	ALWAYS
	Patient Medical	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
	Presentation Series	ALWAYS
Equipment	General Equipment	ALWAYS
Presentation State	Overlay Plane	CONDITIONAL – Required if an Overlay is to be applied to referenced images
	Displayed Area	ALWAYS
	Graphic Annotation	CONDITIONAL – Required if Graphic Annotations are to be applied to referenced images
	Spatial Transformation	CONDITIONAL – Required if Rotation or Flipping are to be applied to referenced images
	Graphic Layer	CONDITIONAL – Required if Graphic Annotations or Overlays or Curves are to be applied to referenced image(s)
	Modality LUT	CONDITIONAL – Required if a Modality LUT is to be applied to referenced images
	Softcopy Presentation LUT	ALWAYS
	Overlay Activation	CONDITIONAL
	Softcopy VOI LUT	ALWAYS
	Presentation State Identification	ALWAYS
	Presentation State Relationship	ALWAYS
	Presentation State Shutter	ALWAYS
	SOP Common	ALWAYS

Table 77: Created Grayscale Softcopy Presentation State Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Module				
Patient's Name	0010,0010	PN	ALWAYS, COPY	-
Patient ID	0010,0020	LO	ALWAYS, COPY	-
Patient's Birth Date	0010,0030	DA	ALWAYS, COPY	-
Patient's Sex	0010,0040	CS	ALWAYS, COPY	-
Other Patient IDs	0010,1000	LO	VNAP	-
Ethnic Group	0010,2160	SH	ANAPCV, COPY	-
Patient Comments	0010,4000	LT	ANAPCV, COPY	-
Patient Medical Module				

Name	Tag	VR	Definition	Comment
Medical Alerts	0010,2000	LO	ANAPCV, COPY	-
Contrast Allergies	0010,2110	LO	ANAPCV, COPY	-
Pregnancy Status	0010,21C0	US	VNAP, COPY	-
Special Needs	0038,0050	LO	ANAPCV, COPY	-
Patient State	0038,0500	LO	ANAPCV, COPY	-
General Study Module				
Study Date	0008,0020	DA	ALWAYS, COPY	-
Study Time	0008,0030	TM	ALWAYS, COPY	-
Accession Number	0008,0050	SH	ALWAYS, COPY	-
Referring Physician's Name	0008,0090	PN	VNAP, COPY	-
Study Description	0008,1030	LO	VNAP, COPY	-
Procedure Code Sequence	0008,1032	SQ	ANAP, COPY	If present in original study.
>Code Value	0008,0100	SH	ALWAYS, COPY	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, COPY	-
>Coding Scheme Version	0008,0103	SH	ANAP, COPY	-
>Code Meaning	0008,0104	LO	ALWAYS, COPY	-
>Context Group Local Version	0008,0107	DT	ANAP, COPY	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, COPY	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, COPY	-
Referenced Study Sequence	0008,1110	SQ	ANAP, COPY	If present in original study.
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, COPY	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, COPY	-
Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
Study ID	0020,0010	SH	ALWAYS, COPY	-
Scheduled Performing Physician's Name	0040,0006	PN	VNAP, MWL	-
Patient Study Module				
Admitting Diagnoses Description	0008,1080	LO	VNAP, COPY	-
Patient's Size	0010,1020	DS	VNAP	-
Patient's Weight	0010,1030	DS	ALWAYS, COPY	-
Occupation	0010,2180	SH	ANAPCV, COPY	-
Additional Patient History	0010,21B0	LT	ANAPCV, COPY	-
General Series Module				

Name	Tag	VR	Definition	Comment
Series Date	0008,0021	DA	ALWAYS, AUTO	-
Series Time	0008,0031	TM	ALWAYS, AUTO	-
Series Description	0008,103E	LO	ANAP, AUTO / USER	-
Operator's Name	0008,1070	PN	EMPTY, AUTO	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ALWAYS, AUTO	-
>Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
>Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
>Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO	-
>Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Body Part Examined	0018,0015	CS	ANAP, COPY	-
Protocol Name	0018,1030	LO	ANAP, COPY	-
Patient Position	0018,5100	CS	ANAP, COPY	-
Series Instance UID	0020,000E	UI	ALWAYS, AUTO	-
Series Number	0020,0011	IS	ALWAYS, AUTO	-
Laterality	0020,0060	CS	ANAPCV, COPY	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, COPY	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, COPY	-
Performed Procedure Step ID	0040,0253	SH	ALWAYS, COPY	-
Performed Procedure Step Description	0040,0254	LO	VNAP, COPY	-
Performed protocol code sequence	0040,0260	SQ	ANAPCV, COPY	-
>Code Value	0008,0100	SH	ALWAYS, COPY	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, COPY	-
>Coding Scheme Version	0008,0103	SH	ANAP, COPY	-
>Code Meaning	0008,0104	LO	ALWAYS, COPY	-
>Context Group Local Version	0008,0107	DT	ANAP, COPY	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, COPY	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, COPY	-

Name	Tag	VR	Definition	Comment
Request Attributes Sequence	0040,0275	SQ	ANAPCV, COPY	-
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, COPY	-
>Scheduled Procedure Step ID	0040,0009	SH	ALWAYS, COPY	-
>Requested Procedure ID	0040,1001	SH	ALWAYS, COPY	-
Comments on the Performed Procedure Steps	0040,0280	ST	ANAPCV, COPY	Maximum of 64 characters.
Presentation Series Module				
Modality	0008,0060	CS	ALWAYS, AUTO	-
General Equipment Module				
Manufacturer	0008,0070	LO	ALWAYS, AUTO	Applied value: Philips Medical Systems
Institution Name	0008,0080	LO	ALWAYS, CONFIG	-
Station Name	0008,1010	SH	ALWAYS, CONFIG	Same as the Host Name.
Institutional Department Name	0008,1040	LO	ALWAYS, CONFIG	-
Manufacturer's Model Name	0008,1090	LO	ALWAYS, AUTO	Applied values: Achieva, Intera, Panorama 1.0T
Device Serial Number	0018,1000	LO	ALWAYS, AUTO	-
Software Version(s)	0018,1020	LO	ALWAYS, AUTO	-
Overlay Plane Module				
Overlay Rows	6000,0010	US	ALWAYS, AUTO	-
Overlay Columns	6000,0011	US	ALWAYS, AUTO	-
Overlay Description	6000,0022	LO	ANAPEV, AUTO	-
Overlay Type	6000,0040	CS	ALWAYS, AUTO	-
Overlay Subtype	6000,0045	LO	ANAPEV, 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	ANAPEV, AUTO	-
ROI Mean	6000,1302	DS	ANAPEV, AUTO	-
ROI Standard Deviation	6000,1303	DS	ANAPEV, AUTO	-
Overlay Label	6000,1500	LO	EMPTY, AUTO	-
Overlay Data	6000,3000	OW	ALWAYS, AUTO	-
Displayed Area Module				
Displayed Area Selection Sequence	0070,005A	SQ	ALWAYS, IMPLICIT	-

Name	Tag	VR	Definition	Comment
>Referenced Image Sequence	0008,1140	SQ	ANAP, IMPLICIT	-
>>Referenced SOP Class UID	0008,1150	UI	ALWAYS, IMPLICIT	-
>>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, IMPLICIT	-
>Displayed Area Top Left Hand Corner	0070,0052	SL	ALWAYS, IMPLICIT	-
>Displayed Area Bottom Right Hand Corner	0070,0053	SL	ALWAYS, IMPLICIT	-
>Presentation Size Mode	0070,0100	CS	ALWAYS, IMPLICIT	Applied values: MAGNIFY, SCALE TO FIT
>Presentation Pixel Spacing	0070,0101	DS	ANAP, IMPLICIT	Applied value: (0.0, 0.0)
>Presentation Pixel Aspect Ratio	0070,0102	IS	ANAP, IMPLICIT	-
>Presentation Pixel Magnification Ratio	0070,0103	IS	ANAP, IMPLICIT	Applied value: 1.0
>Zoom Mode	2001,103F	CS	VNAP, IMPLICIT	-
Graphic Annotation Module				
Graphic Annotation Sequence	0070,0001	SQ	ALWAYS, IMPLICIT	-
>Referenced Image Sequence	0008,1140	SQ	ANAP, IMPLICIT	-
>>Referenced SOP Class UID	0008,1150	UI	ALWAYS, IMPLICIT	-
>>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, IMPLICIT	-
>Graphic Layer	0070,0002	CS	ALWAYS, IMPLICIT	-
>Text Object Sequence	0070,0008	SQ	ANAP, IMPLICIT	-
>>Anchor Point Annotation Units	0070,0004	CS	ALWAYS, IMPLICIT	-
>>Unformatted Text Value	0070,0006	ST	ALWAYS, IMPLICIT	-
>>Anchor Point	0070,0014	FL	ALWAYS, IMPLICIT	-
>>Anchor Point Visibility	0070,0015	CS	ALWAYS, IMPLICIT	-
>Graphic Object Sequence	0070,0009	SQ	ANAP, IMPLICIT	-
>>Graphic Annotation Units	0070,0005	CS	ALWAYS, IMPLICIT	-
>>Graphic Dimensions	0070,0020	US	ALWAYS, IMPLICIT	-
>>Number of Graphics Points	0070,0021	US	ALWAYS, IMPLICIT	-
>>Graphic Data	0070,0022	FL	ALWAYS, IMPLICIT	-
>>Graphic Type	0070,0023	CS	ALWAYS, IMPLICIT	-
>>Graphic Filled	0070,0024	CS	ANAP, IMPLICIT	-
Spatial Transformation Module				
Image Horizontal Flip	0070,0041	CS	ALWAYS, IMPLICIT	-

Name	Tag	VR	Definition	Comment
Image Rotation	0070,0042	US	ALWAYS, IMPLICIT	-
Graphic Layer Module				
Graphic Layer Sequence	0070,0060	SQ	ALWAYS, IMPLICIT	-
>Graphic Layer	0070,0002	CS	ALWAYS, IMPLICIT	-
>Graphic Layer Order	0070,0062	IS	ALWAYS, IMPLICIT	-
Modality LUT Module				
Rescale Intercept	0028,1052	DS	ALWAYS, COPY	-
Rescale Slope	0028,1053	DS	ALWAYS, COPY	-
Rescale Type	0028,1054	LO	ALWAYS, COPY	Applied Value(s): cm/sec, milliradians, milliseconds, mm^2/sec, normalized, seconds, US
Softcopy Presentation LUT Module				
Presentation LUT Shape	2050,0020	CS	ALWAYS, AUTO	-
Overlay Activation Module				
Overlay Activation Layer	6000,1001	CS	ANAP, AUTO	Applied value: 1
Softcopy VOI LUT Module				
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	ALWAYS, AUTO	-
>Window Width	0028,1051	DS	ALWAYS, AUTO	-
Presentation State Identification Module				
Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Content Label	0070,0080	CS	ALWAYS, AUTO	Applied values: AS LAST SEEN, NEW AT IMPORT
Content Description	0070,0081	LO	VNAP, AUTO	-
Presentation Creation Date	0070,0082	DA	ALWAYS, AUTO	-
Presentation Creation Time	0070,0083	TM	ALWAYS, AUTO	-
Content Creator's Name	0070,0084	PN	VNAP, AUTO	Same as Manufacturer's Model Name.
Presentation State Relationship Module				
Referenced Series Sequence	0008,1115	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	-

Name	Tag	VR	Definition	Comment
>Series Instance UID	0020,000E	UI	ALWAYS, AUTO	-
Presentation State Shutter Module				
Shutter Presentation Value	0018,1622	US	ANAP, AUTO	Applied value: 0
SOP Common Module				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied Value(s): ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159
Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
SOP Class UID	0008,0016	UI	ALWAYS, AUTO	Applied Value(s): 1.2.840.10008.5.1.4.1.1. 11.1
SOP Instance UID	0008,0018	UI	ALWAYS, AUTO	-

8.1.1.6. Raw Data Storage SOP Class

Table 78: Modules of the Raw Data Storage SOP Class

Information Entity	Module Name	Usage
Patient	Patient	ALWAYS
	Patient Medical	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
Frame of Reference	Frame of Reference	CONDITIONAL
Equipment	General Equipment	ALWAYS
Raw Data	Acquisition Context	ALWAYS
	Raw Data	ALWAYS
	SOP Common	ALWAYS

Table 79: Created Raw Data Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Module				
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 Sex	0010,0040	CS	ALWAYS, MWL / USER	-
Other Patient IDs	0010,1000	LO	VNAP	-
Ethnic Group	0010,2160	SH	ANAPCV, MWL / USER	-
Patient Comments	0010,4000	LT	ANAPCV, MWL	-
Patient Medical Module				
Medical Alerts	0010,2000	LO	ANAPCV, COPY	-
Contrast Allergies	0010,2110	LO	ANAPCV, COPY	-
Pregnancy Status	0010,21C0	US	VNAP, COPY	-
Special Needs	0038,0050	LO	ANAPCV, COPY	-
Patient State	0038,0500	LO	ANAPCV, COPY	-
General Study Module				
Study Date	0008,0020	DA	ALWAYS, AUTO / MWL	-
Study Time	0008,0030	TM	ALWAYS, AUTO / MWL	-

Name	Tag	VR	Definition	Comment
Accession Number	0008,0050	SH	ALWAYS, AUTO / MWL / USER	-
Referring Physician's Name	0008,0090	PN	VNAP, MWL / USER	-
Study Description	0008,1030	LO	VNAP, MWL / USER	-
Procedure Code Sequence	0008,1032	SQ	ANAP, MWL / USER	-
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-
>Context Identifier	0008,010F	CS	ANAPCV, MWL	-
Referenced Study Sequence	0008,1110	SQ	ANAP, MWL	If received from RIS.
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO / MWL	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO / MWL	-
Study Instance UID	0020,000D	UI	ALWAYS, AUTO / MWL	-
Study ID	0020,0010	SH	ALWAYS, AUTO	-
Scheduled Performing Physician's Name	0040,0006	PN	VNAP, MWL	-
Patient Study Module				
Admitting Diagnoses Description	0008,1080	LO	VNAP, MWL	-
Patient's Size	0010,1020	DS	VNAP	-
Patient's Weight	0010,1030	DS	ALWAYS, MWL / USER	-
Occupation	0010,2180	SH	ANAPCV, MWL	-

Name	Tag	VR	Definition	Comment
Additional Patient History	0010,21B0	LT	VNAP, COPY	-
General Series Module				
Series Date	0008,0021	DA	ALWAYS, AUTO	-
Series Time	0008,0031	TM	ALWAYS, AUTO	-
Modality	0008,0060	CS	ALWAYS, AUTO	Applied value: MR
Series Description	0008,103E	LO	ANAP, AUTO / USER	
Operators' Name	0008,1070	PN	EMPTY, AUTO	-
Referenced Performed Procedure Step Sequence	0008,1111	SQ	ALWAYS, AUTO	-
>Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
>Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
>Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, MPPS	Applied value: 1.2.840.10008.3.1.2.3.3
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, MPPS	-
>Instance Number	0020,0013	IS	ALWAYS, AUTO	-
Body Part Examined	0018,0015	CS	ANAP, AUTO	If ExamCard scan.
Protocol Name	0018,1030	LO	ALWAYS, USER	Scan name.
Patient Position	0018,5100	CS	ANAP, AUTO	-
Series Instance UID	0020,000E	UI	ALWAYS, AUTO	Generated by MR System.
Series Number	0020,0011	IS	ALWAYS, AUTO	Created dynamically at export. Contains the concatenation of the acquisition number and the private reconstruction number.
Laterality	0020,0060	CS	ANAPCV, USER	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, AUTO	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, AUTO	-
Performed Procedure Step ID	0040,0253	SH	ALWAYS, AUTO	-
Performed Procedure Step Description	0040,0254	LO	VNAP, MWL / USER	-
Performed protocol code sequence	0040,0260	SQ	ANAPCV, MWL / USER	Filled if scheduled, otherwise empty.
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-

Name	Tag	VR	Definition	Comment
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	ANAP, MWL / USER	-
>Code Meaning	0008,0104	LO	ALWAYS, MWL / USER	-
>Mapping Resource	0008,0105	CS	ANAP, MWL	-
>Context Group Version	0008,0106	DT	ANAP, MWL	-
>Context Group Local Version	0008,0107	DT	ANAP, MWL	-
>Context Group Extension Flag	0008,010B	CS	ALWAYS, MWL	-
>Context Group Extension Creator UID	0008,010D	UI	ANAP, MWL	-
>Context Identifier	0008,010F	CS	VNAP, MWL	-
Request Attributes Sequence	0040,0275	SQ	ANAPCV, MWL	-
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, MWL	-
>Scheduled Procedure Step ID	0040,0009	SH	ALWAYS, MWL	-
>Requested Procedure ID	0040,1001	SH	ALWAYS, MWL	-
Comments on the Performed Procedure Steps	0040,0280	ST	ANAPCV, MWL / USER	Maximum of 64 characters.
Frame of Reference Module				
Frame of Reference UID	0020,0052	UI	ALWAYS, AUTO	-
Position Reference Indicator	0020,1040	LO	EMPTY, AUTO	-
General Equipment Module				
Manufacturer	0008,0070	LO	ALWAYS, AUTO	Applied value: Philips Medical Systems
Institution Name	0008,0080	LO	ALWAYS, CONFIG	Configured on the system.
Station Name	0008,1010	SH	ALWAYS, CONFIG	Same as the Host Name.
Institutional Department Name	0008,1040	LO	ALWAYS, CONFIG	-
Manufacturer's Model Name	0008,1090	LO	ALWAYS, AUTO	Applied values: Achieva, Intera, Panorama HFO
Device Serial Number	0018,1000	LO	ALWAYS, AUTO	System serial number.
Software Version(s)	0018,1020	LO	ALWAYS, AUTO	The release text of the original Image.
Acquisition Context Module				
Acquisition Context Sequence	0040,0555	SQ	EMPTY, AUTO	-
Raw Data Module				
Content Date	0008,0023	DA	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Acquisition Datetime	0008,002A	DT	ANAPCV, AUTO	-
Content Time	0008,0033	TM	ALWAYS, AUTO	-
Creator-Version UID	0008,9123	UI	ALWAYS, AUTO	-
Instance Number	0020,0013	IS	VNAP, AUTO	-
SOP Common Module				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied values: ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159
Instance Creation Date	0008,0012	DA	ALWAYS, AUTO	-
Instance Creation Time	0008,0013	TM	ALWAYS, AUTO	-
Instance Creator UID	0008,0014	UI	ALWAYS, AUTO	-
SOP Class UID	0008,0016	UI	ALWAYS, AUTO	Applied value: 1.2.840.10008.5.1.4.1.1. 66
SOP Instance UID	0008,0018	UI	ALWAYS, AUTO	-

8.1.1.7. Patient Root Query/Retrieve Information Model – FIND SOP Class

Table 80: Created Patient Root Query/Retrieve Information Model – FIND SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Level				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied value: ISO_IR 100
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	-
Patient's Name	0010,0010	PN	VNAP, USER	Filter value.
Patient ID	0010,0020	LO	EMPTY, AUTO	Not Filter value.
Patient's Birth Date	0010,0030	DA	VNAP, USER	Filter value.
Patient's Sex	0010,0040	CS	EMPTY, AUTO	-
Ethnic Group	0010,2160	SH	EMPTY, AUTO	-
Study Level				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied value: ISO_IR 100
Study Date	0008,0020	DA	EMPTY, AUTO	-
Study Time	0008,0030	TM	EMPTY, AUTO	-
Accession Number	0008,0050	SH	EMPTY, AUTO	-
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	-
Study Description	0008,1030	LO	EMPTY, AUTO	-
Patient ID	0010,0020	LO	ALWAYS, COPY	Filter value.
Study Instance UID	0020,000D	UI	EMPTY, AUTO	-
Study ID	0020,0010	SH	EMPTY, AUTO	-
Performed Procedure Step Start Date	0040,0244	DA	VNAP, USER	Filter value.
Performed Procedure Step Status	0040,0252	CS	VNAP, USER	Filter value.
Performed Procedure Step Description	0040,0254	LO	VNAP, USER	Filter value.
Private Creator Group 2001	2001,0010	LO	ALWAYS, AUTO	Applied value: Philips Imaging DD 001
Examination Source	2001,1063	CS	EMPTY, AUTO	-
Series Level				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied value: ISO_IR 100
Series Date	0008,0021	DA	EMPTY, AUTO	-
Series Time	0008,0031	TM	EMPTY, AUTO	-
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Modality	0008,0060	CS	EMPTY, AUTO	-
Series Description	0008,103E	LO	EMPTY, AUTO	-
Patient ID	0010,0020	LO	ALWAYS, COPY	Filter value.
Body Part Examined	0018,0015	CS	EMPTY, AUTO	-
Protocol Name	0018,1030	LO	EMPTY, AUTO	-
Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
Series Instance UID	0020,000E	UI	EMPTY, AUTO	-
Series Number	0020,0011	IS	EMPTY, AUTO	-
Number of Series Related Instances	0020,1209	IS	EMPTY, AUTO	-

8.1.1.8. Patient Root Query/Retrieve Information Model – MOVE SOP Class

Table 81: Created Patient Root Query/Retrieve Information Model – MOVE SOP Class Attributes

Name	Tag	VR	Definition	Comment
Series Level				
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	-
Patient ID	0010,0020	LO	ALWAYS, COPY	-
Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
Series Instance UID	0020,000E	UI	ALWAYS, COPY	-

8.1.1.9. Study Root Query/Retrieve Information Model – FIND SOP Class

Table 82: Created Study Root Query/Retrieve Information Model – FIND SOP Class Attributes

Name	Tag	VR	Definition	Comment
Study Level				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied value: ISO_IR 100
Study Date	0008,0020	DA	EMPTY, AUTO	-
Study Time	0008,0030	TM	EMPTY, AUTO	-
Accession Number	0008,0050	SH	EMPTY, AUTO	-
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	-
Study Description	0008,1030	LO	EMPTY, AUTO	-
Patient's Name	0010,0010	PN	VNAP, USER	Filter value.
Patient ID	0010,0020	LO	VNAP, USER	Filter value
Patient's Birth Date	0010,0030	DA	VNAP, USER	Filter value.
Patient's Sex	0010,0040	CS	EMPTY, AUTO	-
Ethnic Group	0010,2160	SH	EMPTY, AUTO	-
Study Instance UID	0020,000D	UI	EMPTY, AUTO	-
Study ID	0020,0010	SH	EMPTY, AUTO	-
Performed Procedure Step Start Date	0040,0244	DA	VNAP, USER	Filter value.
Performed Procedure Step Status	0040,0252	CS	VNAP, USER	Filter value.
Performed Procedure Step Description	0040,0254	LO	VNAP, USER	Filter value.
Private Creator Group 2001	2001,0010	LO	ALWAYS, AUTO	Applied value: Philips Imaging DD 001
Examination Source	2001,1063	CS	EMPTY, AUTO	-
Series Level				
Specific Character Set	0008,0005	CS	ALWAYS, AUTO	Applied value: ISO_IR 100
Series Date	0008,0021	DA	EMPTY, AUTO	-
Series Time	0008,0031	TM	EMPTY, AUTO	-
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	-
Modality	0008,0060	CS	EMPTY, AUTO	-
Series Description	0008,103E	LO	EMPTY, AUTO	-
Body Part Examined	0018,0015	CS	EMPTY, AUTO	-
Protocol Name	0018,1030	LO	EMPTY, AUTO	-

Name	Tag	VR	Definition	Comment
Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
Series Instance UID	0020,000E	UI	EMPTY, AUTO	-
Series Number	0020,0011	IS	EMPTY, AUTO	-
Number of Series Related Instances	0020,1209	IS	EMPTY, AUTO	-

8.1.1.10. Study Root Query/Retrieve Information Model – MOVE SOP Class

Table 83: Created Study Root Query/Retrieve Information Model – MOVE SOP Class Attributes

Name	Tag	VR	Definition	Comment
Series Level				
Query/Retrieve Level	0008,0052	CS	ALWAYS, AUTO	Applied value: SERIES
Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
Series Instance UID	0020,000E	UI	ALWAYS, COPY	-

8.1.1.11. Storage Commitment Push Model SOP Class

Table 84: Modules of the Storage Commitment Push Model SOP Class

Information Entity	Module Name	Usage
-	Storage Commitment	ALWAYS

Table 85: Created Storage Commitment Push Model SOP Class Attributes

Name	Tag	VR	Definition	Comment
Storage Commitment Module				
Transaction UID	0008,1195	UI	ALWAYS, AUTO	-
Referenced SOP Sequence	0008,1199	SQ	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, COPY	-
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, COPY	-

8.1.1.12. Modality Performed Procedure Step SOP Class

Table 86: Modules of the Modality Performed Procedure Step SOP Class – N-CREATE

Information Entity	Module Name	Usage
Study	Performed Procedure Step Relationship	ALWAYS
	Performed Procedure Step Information	ALWAYS
	Image Acquisition Results	ALWAYS
General	SOP Common	ALWAYS

Table 87: Created Modality Performed Procedure Step SOP Class N-CREATE Attributes

Name	Tag	VR	Definition	Comment
SOP Common Module				
Specific Character Set	0008,0005	CS	VNAP, IMPLICIT	Applied values: ISO_IR 13, ISO_IR 100, ISO 2022 IR 13, ISO 2022 IR 87, ISO 2022 IR 100, ISO 2022 IR 159
Performed Procedure Step Relationship Module				
Referenced Patient Sequence	0008,1120	SQ	VNAP, AUTO	Always empty
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 Sex	0010,0040	CS	ALWAYS, MWL / USER	-
Scheduled Step Attribute Sequence	0040,0270	SQ	ALWAYS, AUTO	-
>Accession Number	0008,0050	SH	VNAP, MWL / USER	-
>Referenced Study Sequence	0008,1110	SQ	EMPTY, AUTO	-
>Study Instance UID	0020,000D	UI	ALWAYS, AUTO	-
>Requested Procedure Description	0032,1060	LO	VNAP, MWL	-
>Scheduled Procedure Step Description	0040,0007	LO	VNAP, MWL	-
>Scheduled Action Item Code Sequence	0040,0008	SQ	EMPTY, AUTO	-
>Scheduled Procedure Step ID	0040,0009	SH	VNAP, MWL	-
>Requested Procedure ID	0040,1001	SH	VNAP, MWL	-
Performed Procedure Step Information Module				
Procedure Code Sequence	0008,1032	SQ	EMPTY, AUTO	Attribute always empty.

Name	Tag	VR	Definition	Comment
Performed Station AE Title	0040,0241	AE	ALWAYS, CONFIG	-
Performed Station Name	0040,0242	SH	VNAP, CONFIG	-
Performed Location	0040,0243	SH	VNAP, CONFIG	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS, AUTO	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS, AUTO	-
Performed Procedure Step End Date	0040,0250	DA	VNAP, AUTO	-
Performed Procedure Step End Time	0040,0251	TM	VNAP, AUTO	-
Performed Procedure Step Status	0040,0252	CS	ALWAYS, AUTO	Applied value: IN PROGRESS
Performed Procedure Step ID	0040,0253	SH	ALWAYS, COPY	-
Performed Procedure Step Description	0040,0254	LO	VNAP, MWL / USER	-
Performed Procedure Type Description	0040,0255	LO	EMPTY, AUTO	-
Image Acquisition Results Module				
Modality	0008,0060	CS	ALWAYS, AUTO	Applied value: MR
Study ID	0020,0010	SH	ALWAYS, AUTO	-
Performed protocol code sequence	0040,0260	SQ	VNAP, IMPLICIT	-
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	VNAP, MWL / USER	-
>Code Meaning	0008,0104	LO	VNAP, MWL / USER	-
Performed Series Sequence	0040,0340	SQ	EMPTY, AUTO	-

Table 88: Modules of the Modality Performed Procedure Step SOP Class – N-SET

Information Entity	Module Name	Usage
Study	Performed Procedure Step Information	ALWAYS
	Image Acquisition Results	ALWAYS

Table 89: Created Modality Performed Procedure Step SOP Class N-SET Attributes

Name	Tag	VR	Definition	Comment
Performed Procedure Step Information Module				
Performed Procedure Step End Date	0040,0250	DA	ALWAYS, AUTO	-

Name	Tag	VR	Definition	Comment
Performed Procedure Step End Time	0040,0251	TM	ALWAYS, AUTO	-
Performed Procedure Step Status	0040,0252	CS	ALWAYS, IMPLICIT	Applied values: COMPLETED, DISCONTINUED
Performed Procedure Step Description	0040,0254	LO	VNAP, MWL / USER	-
Image Acquisition Results Module				
Performed protocol code sequence	0040,0260	SQ	VNAP, IMPLICIT	-
>Code Value	0008,0100	SH	ALWAYS, MWL / USER	-
>Coding Scheme Designator	0008,0102	SH	ALWAYS, MWL / USER	-
>Coding Scheme Version	0008,0103	SH	VNAP, MWL / USER	-
>Code Meaning	0008,0104	LO	VNAP, MWL / USER	-
Performed Series Sequence	0040,0340	SQ	VNAP, IMPLICIT	-
>Retrieve AE Title	0008,0054	AE	EMPTY, AUTO	-
>Series Description	0008,103E	LO	VNAP, COPY	-
>Performing Physician's Name	0008,1050	PN	EMPTY, AUTO	-
>Operator's Name	0008,1070	PN	EMPTY, AUTO	-
>Referenced Image Sequence	0008,1140	SQ	VNAP, IMPLICIT	Empty while in progress.
>>Referenced SOP Class UID	0008,1150	UI	ALWAYS, IMPLICIT	-
>>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, IMPLICIT	-
>Protocol Name	0018,1030	LO	ALWAYS, COPY	-
>Series Instance UID	0020,000E	UI	VNAP, COPY	-
>Referenced Standalone SOP Instance Sequence	0040,0220	SQ	EMPTY, AUTO	-

8.1.1.13. Modality Worklist Information Model – FIND SOP Class

Table 90: Modules of the Modality Worklist Information Model – FIND SOP Class

Information Entity	Module Name	Usage
Patient	Patient Identification	ALWAYS
	Patient Demographic	ALWAYS
	Patient Medical	ALWAYS
Visit	Visit Status	ALWAYS
Study	Scheduled Procedure Step	ALWAYS
	Requested Procedure	ALWAYS
	Imaging Service Request	ALWAYS

Table 91: Created Modality Worklist Information Model – FIND SOP Class Attributes

Name	Tag	VR	Definition	Comment
Patient Identification Module				
Patient's Name	0010,0010	PN	EMPTY, AUTO	-
Patient ID	0010,0020	LO	EMPTY, AUTO	-
Other Patient IDs	0010,1000	LO	EMPTY, AUTO	-
Patient Demographic Module				
Patient's Birth Date	0010,0030	DA	EMPTY, AUTO	-
Patient's Sex	0010,0040	CS	EMPTY, AUTO	-
Patient's Weight	0010,1030	DS	EMPTY, AUTO	-
Ethnic Group	0010,2160	SH	EMPTY, AUTO	-
Patient Comments	0010,4000	LT	EMPTY, AUTO	-
Patient Medical Module				
Medical Alerts	0010,2000	LO	EMPTY, AUTO	-
Contrast Allergies	0010,2110	LO	EMPTY, AUTO	-
Additional Patient History	0010,21B0	LT	EMPTY, AUTO	-
Pregnancy Status	0010,21C0	US	EMPTY, AUTO	-
Visit Status Module				
Current Patient Location	0038,0300	LO	EMPTY, AUTO	-
Scheduled Procedure Step Module				
Scheduled Procedure Step Sequence	0040,0100	SQ	ALWAYS, AUTO	-
>Modality	0008,0060	CS	VNAP, USER	Can be used as matching key.
>Requested Contrast Agent	0032,1070	LO	EMPTY, AUTO	-
>Scheduled Station AE Title	0040,0001	AE	VNAP, USER	Can be used as matching key.
>Scheduled Procedure Step Start Date	0040,0002	DA	VNAP, USER	Can be used as range matching key.

Name	Tag	VR	Definition	Comment
>Scheduled Procedure Step Start Time	0040,0003	TM	EMPTY, AUTO	-
>Scheduled Procedure Step End Date	0040,0004	DA	EMPTY, AUTO	-
>Scheduled Procedure Step End Time	0040,0005	TM	EMPTY, AUTO	-
>Scheduled Performing Physician's Name	0040,0006	PN	EMPTY, AUTO	-
>Scheduled Procedure Step Description	0040,0007	LO	EMPTY, AUTO	-
>Scheduled Action Item Code Sequence	0040,0008	SQ	ALWAYS, AUTO	-
>>Code Value	0008,0100	SH	EMPTY, AUTO	-
>>Coding Scheme Designator	0008,0102	SH	EMPTY, AUTO	-
>>Coding Scheme Version	0008,0103	SH	EMPTY, AUTO	-
>>Code Meaning	0008,0104	LO	EMPTY, AUTO	-
>Scheduled Procedure Step ID	0040,0009	SH	EMPTY, AUTO	-
>Scheduled Station Name	0040,0010	SH	EMPTY, AUTO	-
>Scheduled Procedure Step Location	0040,0011	SH	EMPTY, AUTO	-
>Pre-Medication	0040,0012	LO	EMPTY, AUTO	-
>Scheduled Procedure Step Status	0040,0020	CS	EMPTY, AUTO	-
>Comments on the Scheduled Procedure Step	0040,0400	LT	EMPTY, AUTO	-
Requested Procedure Module				
Referenced Study Sequence	0008,1110	SQ	ALWAYS, AUTO	-
>Referenced SOP Class UID	0008,1150	UI	EMPTY, AUTO	-
>Referenced SOP Instance UID	0008,1155	UI	EMPTY, AUTO	-
Study Instance UID	0020,000D	UI	EMPTY, AUTO	-
Requested Procedure Description	0032,1060	LO	EMPTY, AUTO	-
Requested Procedure Code Sequence	0032,1064	SQ	ALWAYS, AUTO	-
>Code Value	0008,0100	SH	EMPTY, AUTO	-
>Coding Scheme Designator	0008,0102	SH	EMPTY, AUTO	-
>Coding Scheme Version	0008,0103	SH	EMPTY, AUTO	-
>Code Meaning	0008,0104	LO	EMPTY, AUTO	-
Requested Procedure ID	0040,1001	SH	EMPTY, AUTO	-
Names of Intended Recipients of Results	0040,1010	PN	EMPTY, AUTO	-
Requested Procedure Comments	0040,1400	LT	EMPTY, AUTO	-
Imaging Service Request Module				

Name	Tag	VR	Definition	Comment
Accession Number	0008,0050	SH	VNAP, USER	Can be used as matching key.
Referring Physician's Name	0008,0090	PN	EMPTY, AUTO	-
Requesting Physician	0032,1032	PN	EMPTY, AUTO	-
Requesting Service	0032,1033	LO	EMPTY, AUTO	-
Imaging Service Request Comments	0040,2400	LT	EMPTY, AUTO	-

8.1.1.14. Basic Film Session SOP Class

Table 92: Modules of the Basic Film Session SOP Class – N-CREATE

Information Entity	Module Name	Usage
Print Management	Basic Film Session Presentation	ALWAYS

Table 93: Created Basic Film Session SOP Class N-CREATE Attributes

Name	Tag	VR	Definition	Comment
Basic Film Session Presentation Module				
Number of Copies	2000,0010	IS	ALWAYS, IMPLICIT / USER	Between 1 and 99. Applied value: 1
Medium Type	2000,0030	CS	ALWAYS, IMPLICIT	Applied value: BLUE FILM

8.1.1.15. Basic Film Box SOP Class

Table 94: Modules of the Basic Film Box SOP Class – N-CREATE

Information Entity	Module Name	Usage
Print Management	Basic Film Box Presentation	ALWAYS
	Basic Film Box Relationship	ALWAYS

Table 95: Created Basic Film Box SOP Class N-CREATE Attributes

Name	Tag	VR	Definition	Comment
Basic Film Box Presentation Module				
Image Display Format	2010,0010	ST	ALWAYS, CONFIG	Applied values: COL, CUSTOM, CUSTOM\1, ROW, SLIDE, STANDARD, STANDARD\1,1, SUPERSLIDE
Film Orientation	2010,0040	CS	ALWAYS, CONFIG	Applied value: PORTRAIT
Film Size ID	2010,0050	CS	ALWAYS, CONFIG	Applied values: 10INX12IN, 10INX14IN, 11INX14IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM, 8INX10IN
Magnification Type	2010,0060	CS	ALWAYS, CONFIG	Applied value: CUBIC
Smoothing Type	2010,0080	CS	ALWAYS, AUTO	SCP specific. Applied value: 140
Border Density	2010,0100	CS	ALWAYS, AUTO	The desired density in hundredths of OD. Applied value: BLACK
Empty Image Density	2010,0110	CS	ALWAYS, AUTO	<i> where <i> represents the desired density in hundredths of OD. Applied value: BLACK
Min Density	2010,0120	US	ALWAYS, CONFIG	Maximum density of the images on the film, expressed in hundredths of OD. If Max Density is higher than maximum printer density than Max Density is set to maximum printer density.
Max Density	2010,0130	US	ALWAYS, CONFIG	Minimum density of the images on the film, expressed in hundredths of OD. If Min Density is lower than minimum printer density than Min Density is set to minimum printer density.
Trim	2010,0140	CS	ALWAYS, CONFIG	Applied value: NO
Configuration Information	2010,0150	ST	ALWAYS, CONFIG	LUT.
Basic Film Box Relationship Module				
Referenced Film Session Sequence	2010,0500	SQ	ALWAYS, AUTO	Parent Film Session.

Name	Tag	VR	Definition	Comment
>Referenced SOP Class UID	0008,1150	UI	ALWAYS, AUTO	Applied value: 1.2.840.10008.5.1.1.1
>Referenced SOP Instance UID	0008,1155	UI	ALWAYS, AUTO	-

8.1.1.16. Basic Grayscale Image Box SOP Class

Table 96: Modules of the Basic Grayscale Image Box SOP Class – N-SET

Information Entity	Module Name	Usage
Print Management	Image Box Pixel Presentation	ALWAYS

Table 97: Created Basic Grayscale Image Box SOP Class N-SET Attributes

Name	Tag	VR	Definition	Comment
Image Box Pixel Presentation Module				
Magnification Type	2010,0060	CS	ALWAYS, CONFIG	Applied value: CUBIC
Smoothing Type	2010,0080	CS	ALWAYS, CONFIG	SCP specific. Applied value: 140
Image Position	2020,0010	US	ALWAYS, AUTO	Applied value: 1
Polarity	2020,0020	CS	ALWAYS, AUTO	Applied value: NORMAL
Preformatted Grayscale Image Sequence	2020,0110	SQ	ALWAYS, AUTO	-
>Samples per Pixel	0028,0002	US	ALWAYS, AUTO	Applied value: 1
>Photometric Interpretation	0028,0004	CS	ALWAYS, AUTO	Applied value: MONOCHROME2
>Rows	0028,0010	US	ALWAYS, IMPLICIT	Depending on the selected printer type and film size.
>Columns	0028,0011	US	ALWAYS, IMPLICIT	Depending on the selected printer type and film size.
>Pixel Aspect Ratio	0028,0034	IS	ALWAYS, AUTO	Applied value: (1,1)
>Bits Allocated	0028,0100	US	ALWAYS, AUTO	Applied value: 8
>Bits Stored	0028,0101	US	ALWAYS, AUTO	Applied value: 8
>High Bit	0028,0102	US	ALWAYS, AUTO	Applied value: 7
>Pixel Representation	0028,0103	US	ALWAYS, AUTO	Applied value: 0x0000
>Pixel Data	7FE0,0010	OW	ALWAYS, AUTO	-

8.1.1.17. Printer SOP Class

Table 98: Modules of the Printer SOP Class – N-GET

Information Entity	Module Name	Usage
Print Management	Printer	ALWAYS

Table 99: Created Printer SOP Class N-GET Attributes

Name	Tag	VR	Definition	Comment
Printer Module				
Manufacturer	0008,0070	LO	ANAPEV, AUTO	Initial message only.
Manufacturer's Model Name	0008,1090	LO	ANAPEV, AUTO	Initial message only.
Device Serial Number	0018,1000	LO	ANAPEV, AUTO	Initial message only.
Software Version(s)	0018,1020	LO	ANAPEV, AUTO	Initial message only.
Printer Status	2110,0010	CS	ANAPEV, AUTO	Final message only.
Printer Status Info	2110,0020	CS	ANAPEV, AUTO	Final message only.
Printer Name	2110,0030	LO	ANAPEV, AUTO	Initial message only.

8.1.1.18. Media Storage Directory Storage SOP Class

Table 100: Modules of the Media Storage Directory Storage SOP Class

Information Entity	Module Name	Usage
Media	File-set Identification	ALWAYS
	Directory Information	ALWAYS

Table 101: Created Media Storage Directory Storage SOP Class Attributes

Name	Tag	VR	Definition	Comment
File-set Identification Module				
File-set ID	0004,1130	CS	ALWAYS, AUTO	-
Directory Information Module				
Offset of the First Directory Record of the Root Directory Entity	0004,1200	UL	ALWAYS, AUTO	-
Offset of the Last Directory Record of the Root Directory Entity	0004,1202	UL	ALWAYS, AUTO	-
File-set Consistency Flag	0004,1212	US	ALWAYS, AUTO	-
Directory Record Sequence	0004,1220	SQ	VNAP, AUTO	-
> Offset of the Next Directory Record	0004,1400	UL	ALWAYS, AUTO	-
> Record In-use Flag	0004,1410	US	ALWAYS, AUTO	-
> Offset of Referenced Lower-Level Directory Entity	0004,1420	UL	ALWAYS, AUTO	-
> Directory Record Type	0004,1430	CS	ALWAYS, AUTO	-
> Private Record UID	0004,1432	UI	ANAP, AUTO	-
> Referenced File ID	0004,1500	CS	ANAP, AUTO	-
> MRDR Directory Record Offset	0004,1504	UL	ANAP, AUTO	-
> Referenced SOP Class UID in File	0004,1510	UI	ANAP, AUTO	-
> Referenced SOP Instance UID in File	0004,1511	UI	ANAP, AUTO	-
> Referenced Transfer Syntax UID in File	0004,1512	UI	ANAP, AUTO	-
> Patient Keys				
> Patient's Name	0010,0010	PN	ALWAYS, COPY	-
> Patient ID	0010,0020	LO	ALWAYS, COPY	-
> Patient's Birth Date	0010,0030	DA	ALWAYS, COPY	-
> Patient's Sex	0010,0040	CS	ALWAYS, COPY	-
> Study Keys				
> Study Date	0008,0020	DA	ALWAYS, COPY	-
> Study Time	0008,0030	TM	ALWAYS, COPY	-
> Accession Number	0008,0050	SH	VNAP, COPY	-

Name	Tag	VR	Definition	Comment
> Study Description	0008,1030	LO	VNAP, COPY	-
> Study Instance UID	0020,000D	UI	ALWAYS, COPY	-
> Study ID	0020,0010	SH	ALWAYS, COPY	-
> Performed Procedure Step Start Date	0040,0244	DA	VNAP, COPY	-
> Performed Procedure Step Description	0040,0254	LO	VNAP, COPY	-
> Series Keys				
> Series Date	0008,0021	DA	VNAP, COPY	-
> Series Time	0008,0031	TM	VNAP, COPY	-
> Modality	0008,0060	CS	ALWAYS, COPY	-
> Protocol Name	0018,1030	LO	VNAP, COPY	-
> Series Instance UID	0020,000E	UI	ALWAYS, COPY	-
> Series Number	0020,0011	IS	ALWAYS, COPY	-
> Image Keys				
> Image Type	0008,0008	CS	VNAP, COPY	-
> SOP Class UID	0008,0016	UI	VNAP, COPY	-
> SOP Instance UID	0008,0018	UI	VNAP, COPY	-
> Referenced Image Sequence	0008,1140	SQ	VNAP, COPY	-
>> Referenced SOP Class UID	0008,1150	UI	VNAP, COPY	-
>> Referenced SOP Instance UID	0008,1155	UI	VNAP, COPY	-
> Instance Number	0020,0013	IS	ALWAYS, COPY	-
> Image Position (Patient)	0020,0032	DS	VNAP, COPY	-
> Image Orientation (Patient)	0020,0037	DS	VNAP, COPY	-
> Frame of Reference UID	0020,0052	UI	VNAP, COPY	-
> Photometric Interpretation	0028,0004	CS	VNAP, COPY	-
> Rows	0028,0010	US	VNAP, COPY	-
> Cols	0028,0011	US	VNAP, COPY	-
> Pixel Spacing	0028,0030	DS	VNAP, COPY	-
> Bits Stored	0028,0101	US	VNAP, COPY	-
> High Bit	0028,0102	US	VNAP, COPY	-
> Presentation Keys				
> SOP Instance UID	0008,0018	UI	VNAP, COPY	-

Name	Tag	VR	Definition	Comment
> Referenced Series Sequence	0008,1115	SQ	ALWAYS, COPY	-
>> Referenced Image Sequence	0008,1140	SQ	ANAP, COPY	If available.
>>> 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, COPY	-
> Instance Number	0020,0013	IS	ALWAYS, COPY	-
> Content Label	0070,0080	CS	ALWAYS, COPY	-
> Content Description	0070,0081	LO	VNAP, COPY	-
> Presentation Creation Date	0070,0082	DA	ALWAYS, COPY	-
> Presentation Creation Time	0070,0083	TM	ALWAYS, COPY	-
> Content Creator's Name	0070,0084	PN	VNAP, COPY	-
> Private Keys				
> Private Creator Group 2001	2001,0010	LO	ALWAYS, AUTO	-
> Number of Echoes	2001,1014	SL	VNAP, COPY	-
> Number of Phases MR	2001,1017	SL	VNAP, COPY	-
> Number of Slices MR	2001,1018	SL	VNAP, COPY	-
> Reconstruction Number MR	2001,101D	IS	VNAP, COPY	-
> Scanning Technique Description MR	2001,1020	LO	VNAP, COPY	-
> Echo Time Display MR	2001,1025	SH	VNAP, COPY	-
> Stack Sequence	2001,105F	SQ	VNAP, COPY	-
>> Stack Number Of Slices	2001,102D	SS	VNAP, COPY	-
>> Stack Radial Angle	2001,1032	FL	VNAP, COPY	-
>> Stack Radial Axis	2001,1033	CS	VNAP, COPY	-
>> Stack Slice Number	2001,1035	SS	VNAP, COPY	-
>> Stack Type	2001,1036	CS	VNAP, COPY	-
> Examination Source	2001,1063	CS	VNAP, COPY	-
> Private Creator Group 2005	2005,0010	LO	ALWAYS, AUTO	-
> Number of Chemical Shift	2005,1020	SL	VNAP, COPY	-
> Syncra Scan Type	2005,10A1	CS	VNAP, COPY	-

8.1.2. Usage of Attributes from Received IOD's

The MR System will only function correctly on original MR images from a Philips MR System; it is not the intention to operate on other images.

8.1.3. Attribute Mapping

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

Table 102: Correlation of DICOM Object

Nr.	Level	Attribute	MWL Find Tag	MPPS Create Tag	Related Store Tag	MPPS Set Tag
1	Patient	Patient's Name	0010,0010	0010,0010	0010,0010	-
2		Patient ID	0010,0020	0010,0020	0010,0020	-
3		Patient's Birth Date	0010,0030	0010,0030	0010,0030	-
4		Patient's Sex	0010,0040	0010,0040	0010,0040	-
5	Study	Accession Number	0008,0050	0008,0050	0008,0050	-
6		Patient's Weight	0010,1030	-	0010,1030	-
7		Study Instance UID	0020,000D	0020,000D	0020,000D	-
8		Request Procedure Description	0032,1060	0032,1060	0032,1060	-
9		Scheduled Performing Physician's Name	0040,0006	-	0040,0006	-
10		Request Procedure ID	0040,1001	0040,1001	0040,1001	-
11	Exam	Scheduled Procedure Step	0040,0002	0040,0244	0008,0020	-
12		Start Date		0040,0250		-
13		Scheduled Procedure Step Description	0040,0007	0040,0007	0040,0007	-
-		Performed Protocol Code Sequence	0040,0008	0040,0260	0040,0260	0040,0260
14		>Code Value	0008,0100	0008,0100	0008,0100	0008,0100
15		>Code Scheme Designator	0008,0102	0008,0102	0008,0102	0008,0102
16		>Coding Scheme Version	0008,0103	0008,0103	0008,0103	0008,0103
17		>Code Meaning	0008,0104	0008,0104	0008,0104	0008,0104
18		Scheduled Procedure Step ID	0040,0009	0040,0009	0040,0009	-
-		Scheduled Procedure Step Sequence	0040,0100	-	-	-
19		>Comments on the Scheduled Procedure Step	0040,0400	-	0032,4000	-
20					0040,0280	
21		Performed Procedure Step ID	-	0040,0253	0040,0253	-
		Study ID		-	0020,0010	
-	Series / Image / Grayscale softcopy presentation state	Performed Series Sequence	-	-	-	0040,0340
-		>Referenced Image Sequence	-	-	-	0008,1140
22		>>Referenced SOP Class UID	-	-	0008,0016	0008,1150
23		>>Referenced SOP Instance UID	-	-	0008,0018	0008,1155
-		>Referenced Stand Alone SOP Inst. Seq for the grayscale softcopy presentation state objects	-	-	-	0040,0220
24		>>Referenced SOP Class UID	-	-	0008,0016	0008,1150

Nr.	Level	Attribute	MWL Find Tag	MPPS Create Tag	Related Store Tag	MPPS Set Tag
25		>>Referenced SOP Instance UID	-	-	0008,0018	0008,1155
26		>Series Protocol Name	-	-	0018,1030	0018,1030
27		>Series Description	-	-	0008,103E	0008,103E
28		>Series Instance UID	-	-	0020,000E	0020,000E

8.1.4. Coerced/Modified fields

The Network AE will only import MR images and Presentation State objects that were created on an MR System. These imported images may be coerced or modified and are to be used for reference only; it is not the intention to export them again.

8.2. Data Dictionary of Private Attributes

Refer to section 8.1.1.

8.3. Coded Terminology and Templates

The MR System has no specific support for coded terminology or templates.

8.4. Grayscale Image consistency

The display monitor of the MR system is calibrated according to the Grayscale Standard Display Function (GSDF).

As described in the object definitions the Presentation LUT shape (2050, 0020) is always IDENTITY.

Consequently receiving stations must be calibrated according the GSDF and use the standard DICOM P-LUT.

8.5. Standard Extended/Specialized/Private SOPs

8.5.1. Standard Extended MR Image SOP Class

The following standard extensions are applied for the MR Image Storage SOP class. See also the overview of the applied MR Image IOD in section 8.1.1.

Table 103: Applied Standard Extensions

IOD	Module	Note
MR Image	Patient Medical Module	-
MR Image	Study Classification Module	-
MR Image	Study Scheduling Module	-
MR Image	Requested Procedure Module	Additional attribute: Requested Contrast Agent
MR Image	Imaging Service Request Module	-
MR Image	Performed Procedure Step Information Module	-
MR Image	Billing and Material Management Code Module	-
MR Image	General Series Module	Additional attributes in Referenced Performed Procedure Step Sequence: >Specific Character Set >Instance Creation Date >Instance Creation Time >Instance Creator UID >Instance Number

IOD	Module	Note
MR Image	Modality LUT Module	Present if configured. Must be applied when viewing the image.
MR Image	Private Group	Private MR attributes.
All storage	General Study Module	Additional attribute: Scheduled Performing Physician's Name

8.5.2. Private SOP Classes

The MR System system supports private SOP classes; for the C-STORE services these private SOP classes are listed in the following table.

Table 104: Supported Private SOP Classes as SCU and SCP by the MR System

SOP Class Name	UID
Private MR Spectrum Storage	1.3.46.670589.11.0.0.12.1
Private MR Series Data Storage	1.3.46.670589.11.0.0.12.2
Private MR Examcard Storage	1.3.46.670589.11.0.0.12.4

8.6. Private Transfer Syntaxes

The MR System does not support any private transfer syntaxes.