DICOM Conformance Statement

syngo® MR XA50A

Product Name	
MAGNETOM Avanto Fit	MAGNETOM Free.Max
MAGNETOM Free.Star	MAGNETOM Lumina
MAGNETOM Skyra Fit	MAGNETOM Vida
MAGNETOM Vida Fit	

November / 2021

SIEMENS Healthineers

DICOM Conformance Statement Overview

The *syngo*® MR XA50A conforms to the DICOM Standard and supports the network services as described in Table 1: Network Services and the media services as described in Table 2: Media Services

Table 1: Network Services

SOP Classes	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Verification			
Verification	1.2.840.10008.1.1	Yes	Yes
SOP Classes created by *syngo*® MR XA50A			

		Create	Send	Store	Display
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes	Yes	Yes
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Yes	Yes	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes	Yes	No
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes	Yes	Yes
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes	Yes	Yes
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Yes	Yes	Yes	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes	Yes	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes	Yes	Yes
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes	Yes	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes	Yes	Yes
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes	Yes	Yes

SOP Classes	SOP Class UID	User of Service (SCU)		Provider of Service (SCP)	
SOP Classes managed by *syngo*® MR XA50A					
		Create	**Send**	**Store**	**Display**
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	No	Yes	Yes	Yes
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	No	Yes	Yes	Yes
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	No	Yes	Yes	Yes
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	No	Yes	Yes	Yes
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes	Yes	Yes
Digital Intra-Oral X-Ray Image - for Presentation - IMAGE	1.2.840.10008.5.1.4.1.1.1.3	No	Yes	Yes	Yes
Digital Intra-Oral X-Ray Image - for Processing - IMAGE	1.2.840.10008.5.1.4.1.1.1.3.1	No	Yes	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No	Yes	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	No	Yes	Yes	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	No	Yes	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes	Yes	Yes
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Yes	Yes	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	No	Yes	Yes	Yes
Enhanced US Volume Storage	1.2.840.10008.5.1.4.1.1.6.2	No	Yes	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	No	Yes	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	No	Yes	Yes	Yes

SOP Classes	SOP Class UID	User of Service (SCU)		Provider of Service (SCP)	
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	No	Yes	Yes	Yes
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	No	Yes	Yes	No
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	No	Yes	Yes	No
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	No	Yes	Yes	No
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	No	Yes	Yes	No
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	No	Yes	Yes	No
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	No	Yes	Yes	No
General Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.2	No	Yes	Yes	No
Arterial Pulse Waveform Storage	1.2.840.10008.5.1.4.1.1.9.5.1	No	Yes	Yes	No
Respiratory Waveform Storage	1.2.840.10008.5.1.4.1.1.9.6.1	No	Yes	Yes	No
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes	Yes	Yes
Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.2	No	Yes	Yes	Yes
Pseudo-Color Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.3	No	Yes	Yes	Yes
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	No	Yes	Yes	Yes
Grayscale Planar MPR Volumetric Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.6	No	Yes	Yes	No
Compositing Planar MPR Volumetric Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.7	No	Yes	Yes	No
Advanced Blending Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.8	No	Yes	Yes	No
Volume Rendering Volumetric Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.9	No	Yes	Yes	No

SOP Classes	SOP Class UID	User of Service (SCU)		Provider of Service (SCP)	
Segmented Volume Rendering Volumetric Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.10	No	Yes	Yes	No
Multiple Volume Rendering Volumetric Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.11	No	Yes	Yes	No
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	No	Yes	Yes	Yes
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	No	Yes	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	No	Yes	Yes	Yes
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	No	Yes	Yes	Yes
X-Ray 3D Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.13.1.1	No	Yes	Yes	Yes
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	No	Yes	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	No	Yes	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes	Yes	No
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes	Yes	Yes
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	No	Yes	Yes	No
Deformable Spatial Registration SOP Class	1.2.840.10008.5.1.4.1.1.66.3	No	Yes	Yes	No
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes	Yes	Yes
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	No	Yes	Yes	Yes
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Yes	Yes	Yes	Yes
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	No	Yes	Yes	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes	Yes	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes	Yes	Yes
Procedure Log Storage Storage	1.2.840.10008.5.1.4.1.1.88.40	No	Yes	Yes	No
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	No	Yes	Yes	No
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59	No	Yes	Yes	No
X-Ray Radiation Dose SR Storage	1.2.840.10008.5.1.4.1.1.88.67	No	Yes	Yes	No
Radiopharmaceutical Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.68	No	Yes	Yes	No

SOP Classes	SOP Class UID	User of Service (SCU)		Provider of Service (SCP)	
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes	Yes	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	No	Yes	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes	Yes	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes	Yes	Yes
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	No	Yes	Yes	No
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes	Yes	Yes
Radio Therapy Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	No	Yes	Yes	No
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	No	Yes	Yes	No
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	No	Yes	Yes	No
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	No	Yes	Yes	No
Hanging Protocol Storage	1.2.840.10008.5.1.4.38.1	No	Yes	Yes	No
Transfer (Private SOP Class)					
Syngo Non-Image Storage	1.3.12.2.1107.5.9.1	Yes		Yes	
Storage Commitment					
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes		No	
Worklist Management					
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Yes		No	
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes		No	
Query/Retrieve					
Study Root Q/R - Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes		Yes	
Study Root Q/R - Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes		Yes	
Patient/Study Only Q/R - Information Model MOVE	1.2.840.10008.5.1.4.1.2.3.2	No		No	
Print Management					
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes		No	

SOP Classes	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
Basic Film Sesssion SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No

Table 2: Media Services

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Compact Disk - Recordable		
STD-GEN-CD	Yes	Yes
AUG-GEN-CD	Yes	Yes
DVD		
AUG-GEN-DVD	Yes	Yes
AUG- GEN-DVD-J2K	Yes	Yes
STD-GEN-DVD	Yes	Yes
STD-GEN-DVD-J2K	Yes	Yes
USB		
AUG- GEN-USB-J2K	Yes	Yes
STD-GEN-USB-J2K	Yes	Yes

Table 3: Implementation Identifying Information

Name	Value
Application Context Name	1.2.840.100008.3.1.1.1
Implementation Class UID	1.3.12.2.1107.5.2
Implementation Version Name	"SYNGO_MR_XA50A"

3 Introduction

3.1 Revision History

Version	Date	Change
syngo® MR XA50A	2022-05-19	*syngo* MR XA50A version (predecessor versions: *syngo* MR XA30A, *syngo* MR XA31A and *syngo* MR XA40A) New system support: MAGNETOM Avanto Fit, MAGNETOM Free.Max, MAGNETOM Free.Star, MAGNETOM Lumina, MAGNETOM Skyra Fit, MAGNETOM Vida, MAGNETOM Vida Fit IOD Tables added for: Enhanced MR Image, Enhanced MR Color Image, MR Spectroscopy, Raw Data

3.2 Audience

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

3.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between this product and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [1]. DICOM by itself does not guarantee interoperability.
The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.
This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of conformance statements is the first step towards assessing interconnectivity and interoperability between syngo® MR XA50A and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

Siemens Healthineers reserves the right to modify the design and specifications contained herein without prior notice. Please contact your local Siemens representative for the most recent product information.

3.4 Definitions, Terms and Abbreviations

Definitions, terms, and abbreviations used in this document are defined within the different parts of the DICOM standard.
Additional Abbreviations and terms are as follows:

AE	DICOM Application Entity
AET	Application Entity Title
ASCII	American Standard Code for Information Interchange
DCS	DICOM Conformance Statement
DICOM	Digital Imaging and Communications in Medicine
FSC	File Set Creator
FSR	File Set Reader
FSU	File Set Updater
GSDF	Grayscale Standard Display Function
IOD	DICOM Information Object Definition
ISO	International Standard Organization
n. a.	not applicable
NEMA	National Electrical Manufacturers Association
O	Optional Key Attribute
PDU	DICOM Protocol Data Unit
R	Required Key Attribute
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM Server)
SOP	DICOM Service-Object Pair
SR	Structured Report
TFT	Thin Film Transistor (Display)
TID	Template ID
U	Unique Key Attribute
UID	Unique Identifier
UTF-8	Unicode Transformation Format-8
VR	Value Representation

3.5 References

[1] Digital Imaging and Communications in Medicine (DICOM), https://www.dicomstandard.org
[2] Integrating the Healthcare Enterprise – IHE Radiology Technical Framework – http://www.ihe.net

4 Networking

4.1 Implementation Model

syngo® MR XA50A supports storing DICOM images to remote nodes like workstations or Archiving Systems. Using the Storage Commitment Service it can request safe keeping of previously stored instances from an Archiving system. Additionally the *syngo*® MR XA50A can query remote notes, retrieve and store selected instances from that node. Using the Modality Worklist service the *syngo*® MR XA50A can query a HIS/RIS for scheduled procedures. Performed procedure status and other procedure data can be returned to the HIS/RIS using the Modality Performed Procedure Step (MPPS) Service. Furthermore printing of color and grayscale images is supported.

4.1.1 Application Data Flow

The following figures provide a functional overview of the *syngo*® MR XA50A Application Entities (AE). Relationships are shown between user-invoked activities (in the circles at the left of the AEs) and the associated real-world activities provided by DICOM service providers (in the circles at the right of the AEs)

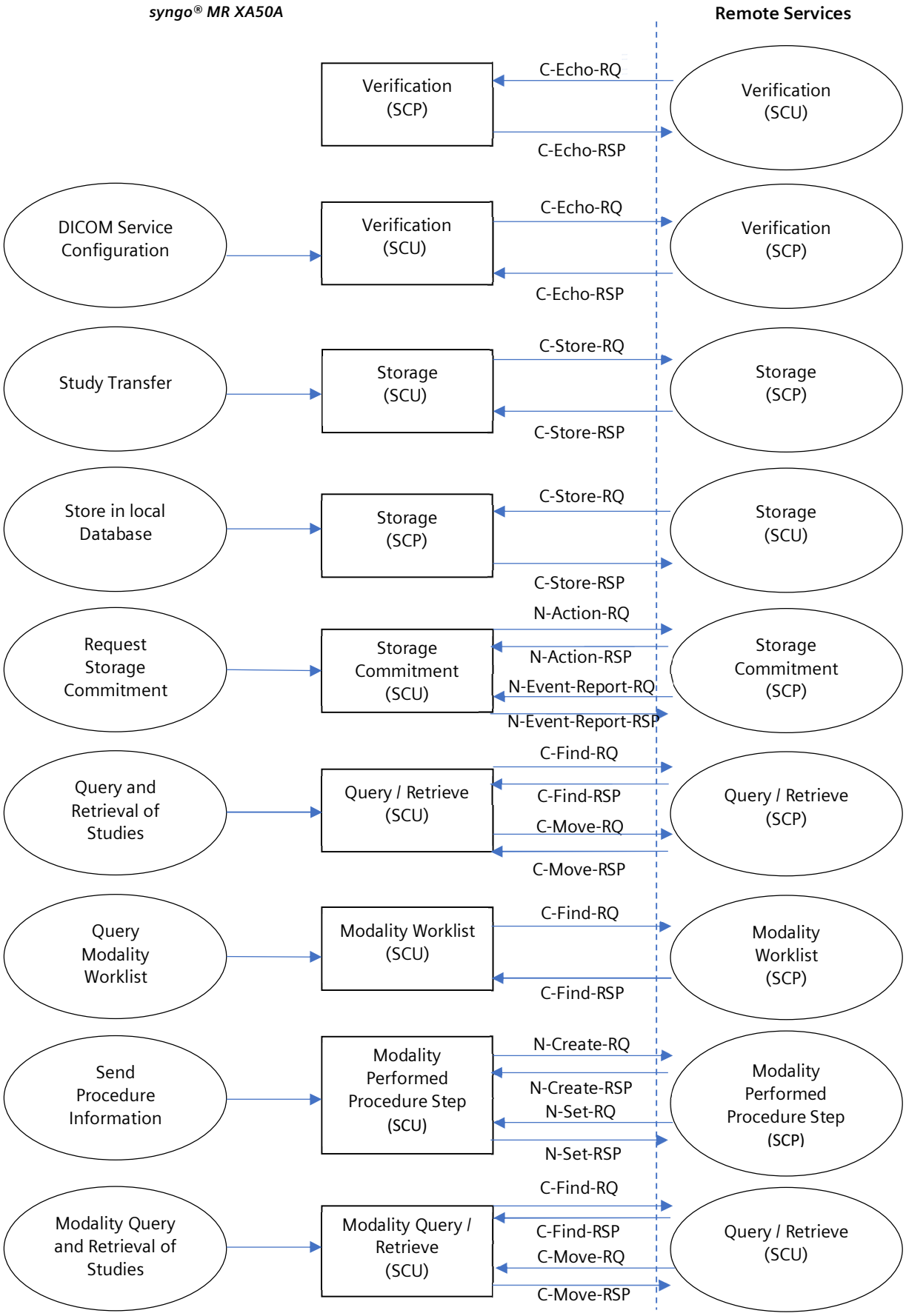

Figure 1: ***syngo*® MR XA50A DICOM Data Flow diagram – Acquisition Workflow**

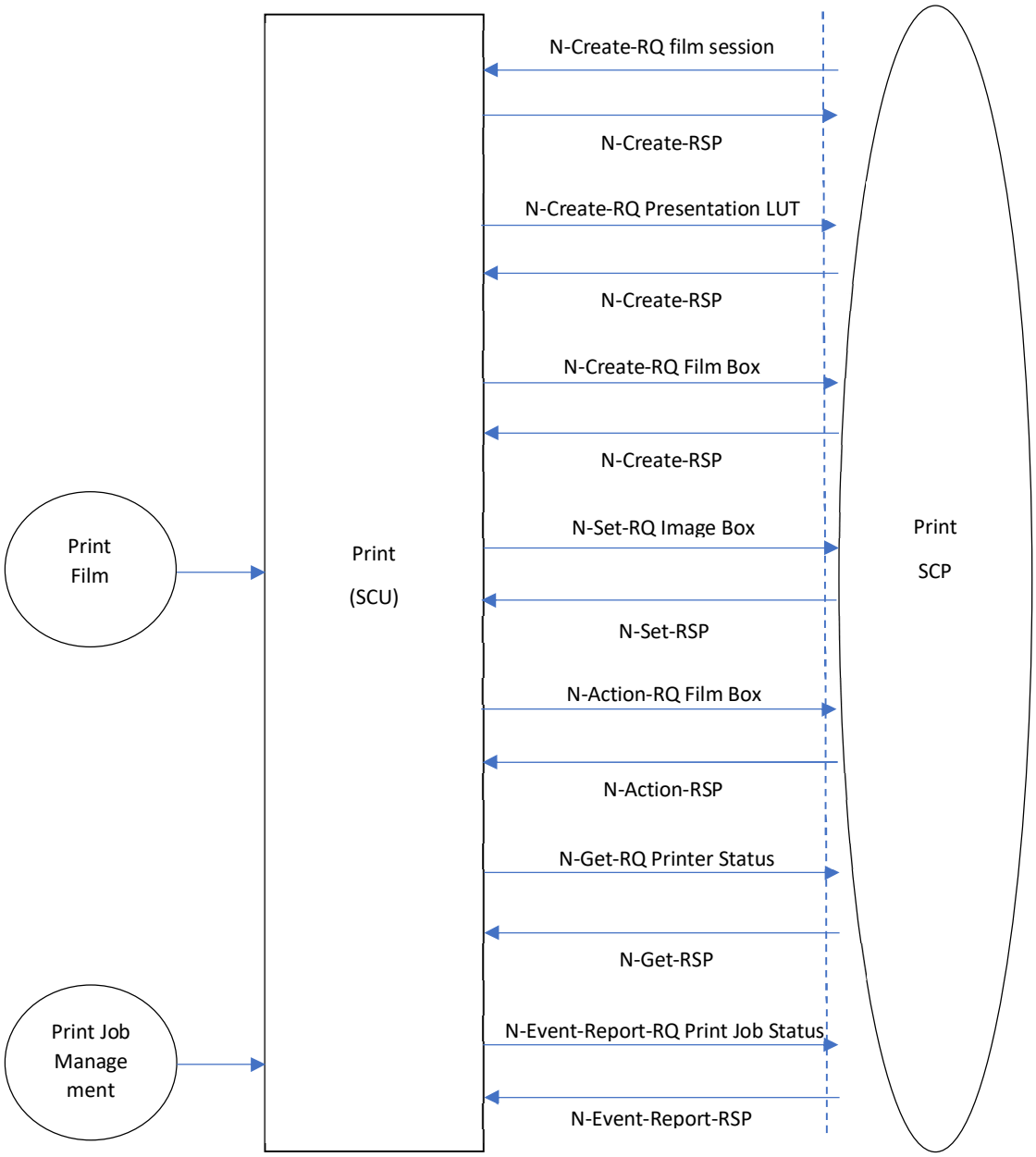

Figure 2: *syngo*® MR XA50A DICOM Data Flow diagram - Printing

4.1.2 Functional Definitions of Application Entities

The SCP components of the Application Entities of the *syngo*® MR XA50A operate as background server processes. They exist as soon as the system is powered up and wait for association requests. Upon accepting an association with a negotiated Presentation Context they start to receive and process the requests described in the following sections.

The SCU components of the Application Entity are invoked upon requests from the user interface or indirect by trigger from internal processes.

4.1.2.1 Functional Definitions of Verification AE

The *syngo*® MR XA50A supports the Verification service as a SCP and SCU. As a SCU, Verification can be activated from the Administrator Portal during system configuration by sending a C-ECHO-Request.

As a SCP of the Verification Service the *syngo*® MR XA50A processes and responds to incoming verification requests using the C-ECHO-Response.

4.1.2.2 Functional Definition of Storage of AE

The *syngo*® MR XA50A Storage SCU is invoked either directly by the user, by an auto-archive trigger or internally by the Query/Retrieve Application Entity that is responsible for processing retrieve requests. The job consists of data describing the composite objects selected for storage and the destination Application Entity Title. An association is negotiated with the destination Application Entity and the image data is transferred using the C-STORE-Request. The transfer status is reported to the initiator of the Storage request.

The Storage SCP component of the *syngo*® MR XA50A starts to receive the Composite Objects and import them into the database after accepting an association with a negotiated Presentation Context. The system responses to the Storage Request immediately after reception of the Data.

4.1.2.3 Functional Definition of the Storage Commitment AE

If configured, the *syngo*® MR XA50A can serve as a SCU for the DICOM Storage Commitment service. Upon successful completion of a storage job, the system uses the N-ACTION-Request to request storage commitment from a remote DICOM Storage Commitment SCP. This can either be the same as the storage destination or a different system depending on the system configuration. Storage Commitment Requests are sent after a configurable delay after storing the objects. The *syngo*® MR XA50A can receive the N-EVENT-REPORT-Request on the same or a different association.

4.1.2.4 Functional Specification of Query/Retrieve AE

The *syngo*® MR XA50A supports DICOM Query/Retrieve as a SCU: The user can initiate a query to a remote node using the C-FIND-Request. After matching the specified keys, the remote Query /Retrieve SCP uses the C-FIND-Response to return the results of its search, which will be displayed to the user. Depending on user action the *syngo*® MR XA50A Query/Retrieve DICOM SCU sends a C-MOVE-Request to initiate a C-STORE sub-operation on the SCP to start an image transfer from remote Storage SCU (running on Query/Retrieve SCP) to the system's Storage SCP.

The *syngo*® MR XA50A supports the following query model:

- Study Root Query Model

Furthermore, the SCU services may issue relational queries, if supported by the remote Query/Retrieve SCP node and required by the querying Application.

The *syngo*® MR XA50A DICOM Query/Retrieve SCP accepts C-FIND Request, queries the local database based on the provided matching keys and returns the matches using the C-FIND-Response. Depending on further request from the remote Query/Retrieve SCU, the *syngo*® MR XA50A responds to C-MOVE-Requests by initiating a C-STORE sub-operation to send image objects to the Storage SCP of the querying system.

4.1.2.5 Functional Definition of Modality Worklist AE

The *syngo*® MR XA50A Modality Worklist SCU issues DICOM Modality Worklist requests using C-FIND-Requests. The results in the C-FIND-Response are stored in internal database. The provided Patient and Procedure information is used for patient registration prior to starting an exam.

4.1.2.6 Functional Definition of Modality Performed Procedure Step SCU AE

The *syngo*® MR XA50A MPPS SCU uses the N-CREATE-Request to inform an Information System that a procedure step is IN PROGRESS.

The *syngo*® MR XA50A MPPS SCU uses the N-SET-Request to inform the Information System about the finalization of the Procedure Step, using either a status of COMPLETED or DISCONTINUED.

4.1.2.7 Functional Definition of Print AE

The Print SCU of the *syngo*® MR XA50A is invoked by the user interface to setup film-sheet layout and whenever an image is ready to be printed on film. The Print SCU will hold and maintain all data needed to compile a complete film-sheet from the data (images, layout, configuration) received. Whenever a film-sheet is ready to print the related data is used to supply the Information to the SOP Classes of the Print Management Service Class. A queue is maintained in order to intermediately store several film-sheets in case of resource problems on printer. The SCU will only supply and require the mandatory SOP Classes of the Print Management Service Class.

4.1.3 Sequencing of Activities

This section describes the sequencing of Real-World Activities performed by the *syngo*® MR XA50A Entities using a UML sequence diagram. Real-World Activities are depicted as vertical bars and arrows show the events exchanged between them

4.1.3.1 System Configuration

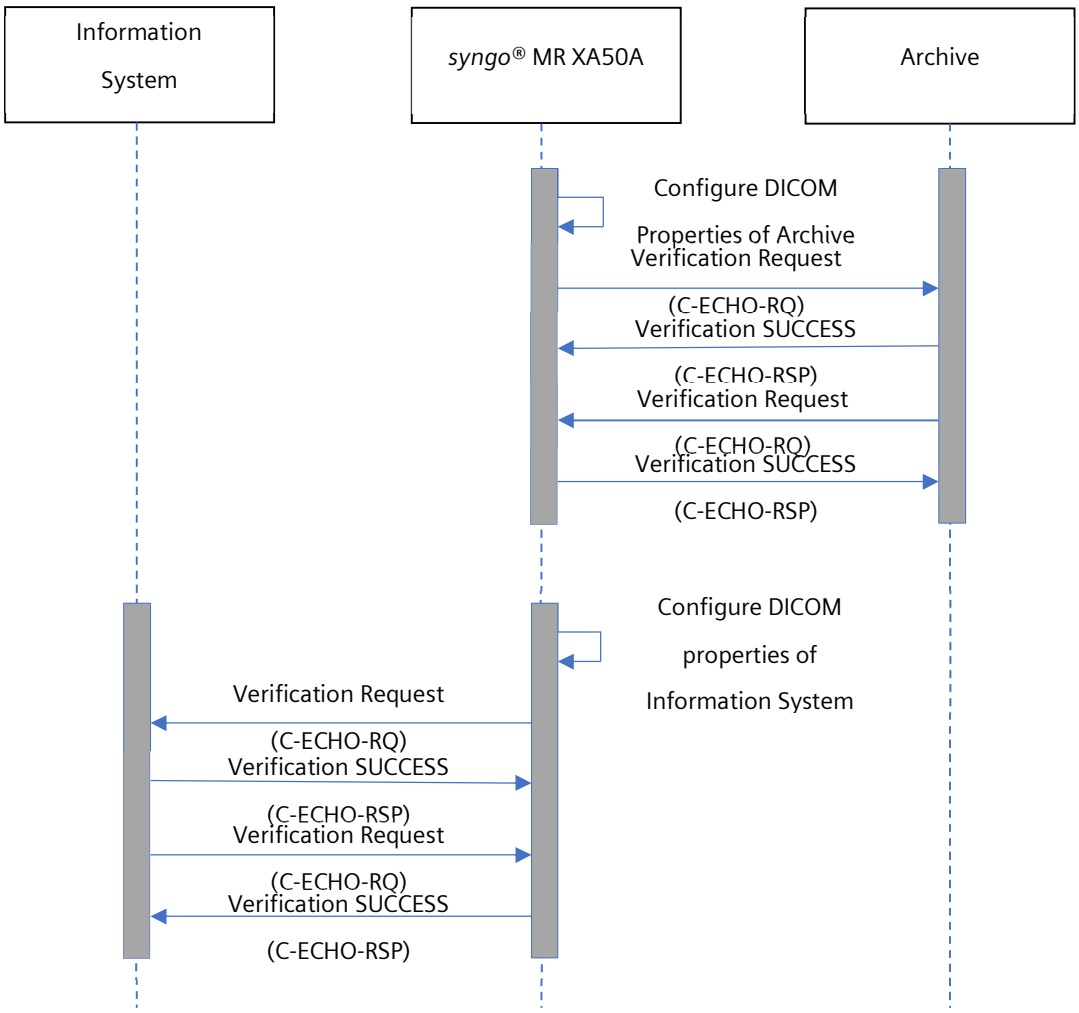

Figure 3: Sequence Diagram for Real World Activities - System Configuration

4.1.3.2 Acquisition Workflow

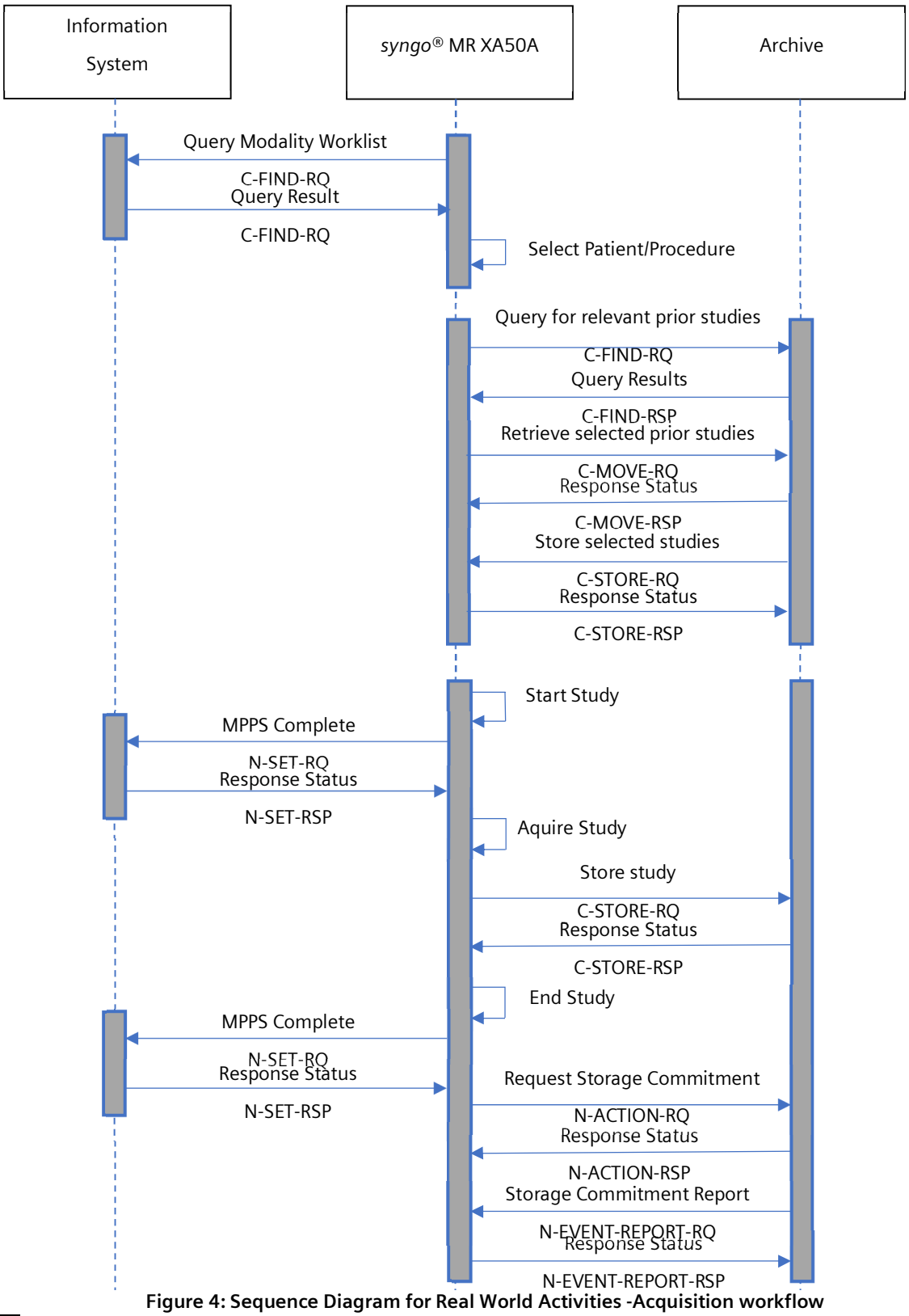

Figure 4: Sequence Diagram for Real World Activities -Acquisition workflow

4.1.3.3 Printing Workflow

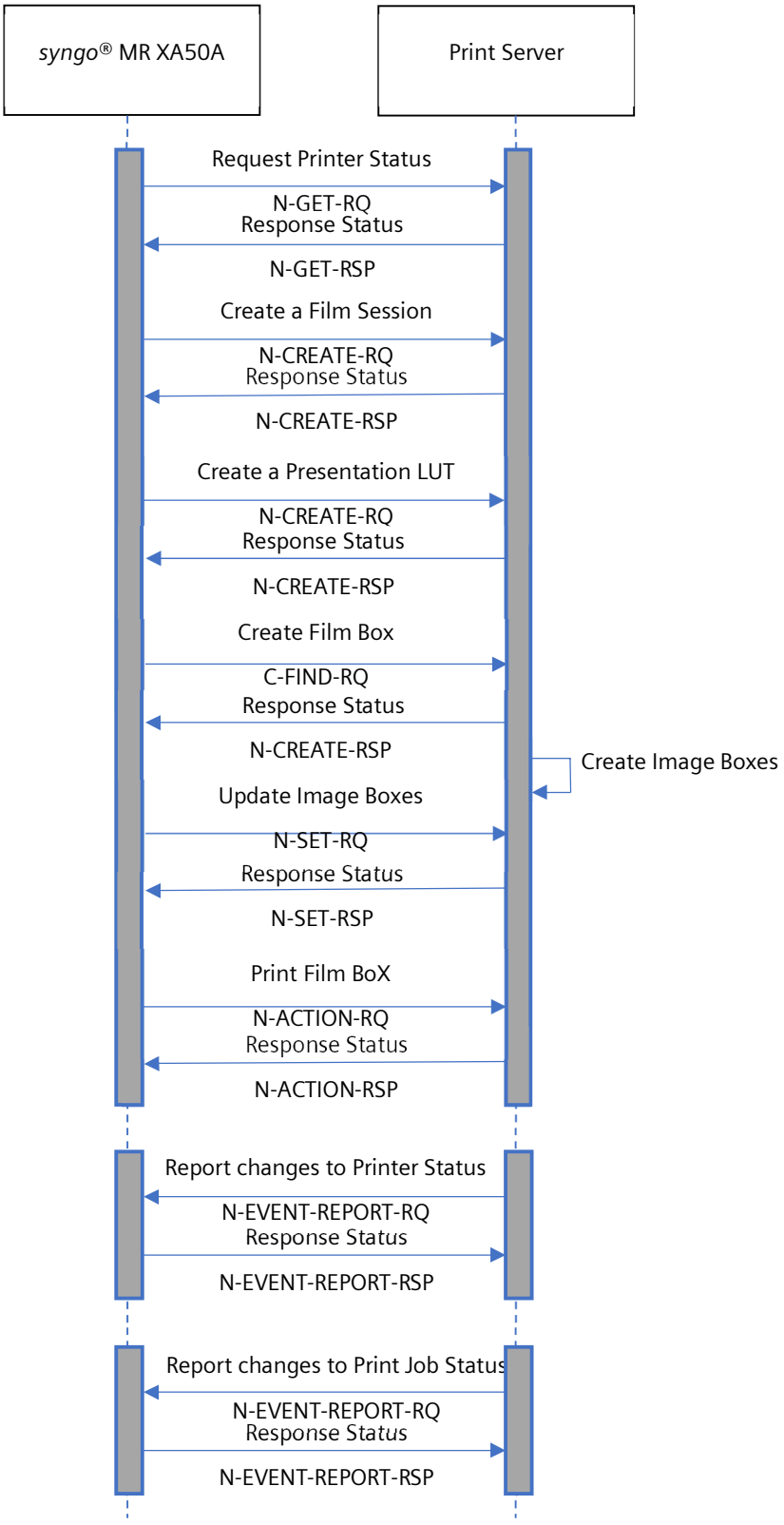

Figure 5: Sequence Diagram for Real World Activities - Printing

4.2 AE Specifications

This section outlines the specifications for each of the Application Entities that are part of the *syngo*® MR XA50A.

4.2.1 Verification AE Specification

4.2.1.1 SOP Classes

The Verification AE of the *syngo*® MR XA50A provides standard conformance to the Verification SOP Class listed in Table 1: Network Services section "Verification" in the "Conformance Statement Overview".

4.2.1.2 Association Policy

The syngo® MR XA50A Admin Portal attempts to open an association for verification request whenever the Verification function is activated.

Table 4: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]
Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

4.2.1.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any size is supported.

Table 5: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.1.2.2 Implementation Identifying Information

For Implementation Identifying Information please refer to "

Table 3: Implementation Identifying Information" in the "Conformance Statement Overview".

4.2.1.3 Association Initiation Policy

4.2.1.3.1 Activity – "Send Activity"

4.2.1.3.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU of the Verification Service Class. A C-ECHO-Request is initiated by the Administrator Portal whenever "Verification" is requested. If an association to a remote Application Entity is successfully established, Verification with the configured AET is requested via the open association. If the C-ECHO Response from the remote Application contains a status other than "Success" this will be indicated to the user and the association is closed.

[1] Default, the value is configurable

4.2.1.3.1.2 Proposed Presentation Contexts

Table 6: Presentation Context Table "Verification" below lists the supported presentation contexts for verification requests.

Table 6: Presentation Context Table "Verification"

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.1.3.1.3 SOP specific Conformance for SOP classes

The ECHO-SCU provides standard conformance to the Verification Service Class.

4.2.1.4 Association Acceptance Policy

4.2.1.4.1 Activity – "Receive Verification Request"

4.2.1.4.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCP of the Verification Service Class. If the Verification SCP accepts an association, it will respond to C-ECHO-Requests. If the Called AE Title does not match any pre-configured AE Title shared by SCP, the association will be rejected.

4.2.1.4.1.2 Accepted Presentation Contexts

The syngo® MR XA50A DICOM application will accept Presentation Contexts as shown in the following table:

Table 7: Presentation Context Table "Verification"

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

4.2.1.4.1.3 SOP specific Conformance – Verification SCP

The ECHO-SCP provides standard conformance to the Verification Service Class.

4.2.2 Storage AE Specification

4.2.2.1 SOP Classes

The Storage AE provides Standard Conformance to the SOP Classes listed in "Table 1: Network Services" section "SOP Classes Created by the *syngo*® MR XA50A" and "SOP Classes Managed by the *syngo*® MR XA50A" in the "Conformance Statement Overview".

4.2.2.2 Association Policy

Table 8: Association Policy

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]
Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The *syngo*® MR XA50A contains a limitation of 512 kB for the maximum PDU size. By default, the PDU size is set to 32kB.

The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.

There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system.

4.2.2.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any non-infinite maximum size will be accepted.

Table 9: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.2.2.2 Implementation Identifying Information

For Implementation Identifying Information please refer to "

Table 3: Implementation Identifying Information" in the "Conformance Statement Overview".

4.2.2.3 Association Initiation Policy

4.2.2.3.1 Activity- "Send Storage Request"

4.2.2.3.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU of the Storage Service Class. The Storage SCU is triggered by the transfer job queue or by an external retrieve request. An association request is sent to the destination AE. Upon successful negotiation of a Presentation Context, the transfer is started. Objects will be transferred sequentially on the same open association.

4.2.2.3.1.2 Proposed Presentation Contexts

For all Image Objects listed in Table 1 in the Conformance Statement Overview the Transfer Syntaxes marked with "yes" in the Image Objects Column of the table below are supported.

For all Non-Image Objects listed in Table 1 in the Conformance Statement Overview the Transfer Syntaxes marked with "yes" in the Non-Image Objects Column of the table below are supported.

[1] Default, the value is configurable

For a distinction between Image and Non-Image Objects please refer to the DICOM Standard PS3.3 Section A.1.4 "Overview of the Composite IOD Module Content [1]".

Table 10: Proposed Presentation Contexts for Storage

UID value	Transfer Syntax	Image Objects	Non-Image Objects
1.2.840.10008.1.2	Implicit VR Little Endian	Yes	Yes
1.2.840.10008.1.2.1	Explicit VR Little Endian	Yes	Yes
1.2.840.10008.1.2.2	Explicit VR Big Endian	Yes	Yes
1.2.840.10008.1.2.4.50	JPEG Baseline (Process 1) lossy compressed	Yes	No
1.2.840.10008.1.2.4.51	JPEG Extended (Process 2 & 4) lossy compressed	Yes	No
1.2.840.10008.1.2.4.70	JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14) lossless compressed	Yes	No
1.2.840.10008.1.2.4.90	JPEG 2000 Image Compression (Lossless Only) compressed	Yes	No
1.2.840.10008.1.2.4.91	JPEG 2000 Image Compression lossy compressed	Yes	No
1.2.840.10008.1.2.5	RLE Lossless compressed	Yes	No

Depending on the configuration, the Storage SCU will choose a compressed or uncompressed Transfer Syntax among those accepted by the SCP. The Transfer Syntax chosen is the preferred one among the compressed and uncompressed ones. The preference order is the order of occurrence in the configuration. For each node it is possible to select Transfer Syntaxes, that can be used, and Transfer Syntaxes, that are excluded. The configuration can even be extended, based on the combination of SOP Classes and supported Transfer Syntaxes.

An instance will be JPEG lossless compressed only if it fulfills the following criteria:

- Is an image and not already compressed
- Photometric Interpretation (0028,0004) is either MONOCHROME1, MONOCHROME2, RGB, YBR_FULL or YBR_FULL_422
- Bits Allocated (0028,0100) equal to '16 or '8'
- Bits Stored (0028,0101) equal to '12' or '8'
- High Bit (0028,0102) equal to Bits Stored (0028,0101) - 1
- Pixel Representation (0028,0103) equal to '0'

An instance will be JPEG lossy compressed during transfer only if the following criteria is fulfilled:

- Is an image
- Photometric Interpretation (0028,0004) is either MONOCHROME1, MONOCHROME2 or RGB
- Bits Allocated (0028,0100) equal to '16' or '8'
- Bits Stored (0028,0101) equal to '12' or '8'
- High Bit (0028,0102) equal to Bits Stored (0028,0101) - 1
- Pixel Representation (0028,0103) equal to '0'
- Only lossy transfer syntaxes are supported (Implicit VR Little Endian is not supported) at the remote side

An instance will be JPEG 2000 lossless compressed only if it fulfills the following criteria:

- Is an image and not already compressed
- Photometric Interpretation (0028,0004) is either MONOCHROME, RGB, YBR_FULL or YBR_FULL_422
- Bits Allocated (0028,0100) equal to '16' or '8'

An instance will be RLE lossless compressed only if it fulfills the following criteria:

- Is an image and not already compressed
- Photometric Interpretation (0028,0004) is MONOCHROME, RGB, YBR_FULL or RGB
- Bits Allocated (0028,0100) neither '16' nor '8'

An instance will be JPEG 2000 lossy compressed during transfer only if the following criteria is fulfilled:

- Is an image
- Photometric Interpretation (0028,0004) is MONOCHROME or RGB
- Bits Stored (0028,0101) equal to '12' or '8'
- Only lossy transfer syntaxes are supported (Implicit VR Little Endian is not supported) at the remote side

There is no extended negotiation as an SCU.

4.2.2.3.1.3 SOP Specific Conformance for SOP Classes

The syngo® MR XA50A does not add or change private attributes by default, even in case objects are compressed or the image header is updated according to IHE [2] Patient Information Reconciliation Profile.

The behavior of *syngo*® MR XA50A when encountering status codes in a C-STORE response is summarized in Table 11

Table 11: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	Any other DIMSE Error Status	Any none null Code	Send is continued till the end. Log message is created.
Success	Image is successfully stored	0000	If configured, Storage Commitment is requested for successfully stored instances

Table 12 below indicates the behavior if exceptions occur:

Table 12: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Log message is created (Timeout configurable; default 30s)
Association Aborted	Send is failed. Log message is created.

4.2.2.3.1.4 Correction and Rearrangement

When a Study is moved to a different:

- Procedure received through a DICOM Modality Worklist, the Study Instance UID is overwritten with the Study Instance UID and Accession Number of the Procedure.
- Patient, the system generates a new Study Instance UID.

The system will not update references to the changed Study Instance UIDs, therefore it is possible that there will be broken links between Studies after such move operations.

In case of Patient Merge and Correction no UIDs are changed, therefore it is advised to delete any corrected or rearranged objects from the PACS before attempting to archive them again, to ensure that the PACS system can store them successfully.

When the Patient Position (0018,5100) attribute is corrected, the following attributes are recalculated by the system (no UIDs are changed):

1. Image Position (0020,0032)
2. Image Orientation (0020,0037)
3. Patient Orientation (0020,0020)
4. Data Collection Center (Patient) (0018,9313) (CT only)
5. Reconstruction Target Center (Patient) (0018,9318) (CT only)
6. Positioner Primary Angle (0018,1510) (XA only)
7. Positioner Secondary Angle (0018,1511) (XA only)

Also, the value of the Slice Location (0020,1041) attribute is emptied and a new Frame of Reference UID (0020,0052) is generated for the corrected series.

When the Patient Birth Date or the Study Date is corrected, the system recalculates the Patient Age.

A new item containing attributes that were removed or replaced by other values is added to the Original Attribute Sequence (0400,0561).

4.2.2.4 Association Acceptance Policy

4.2.2.4.1 Activity – "Receive Storage Request"

4.2.2.4.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCP of the Storage Service Class. The storage SCP accepts incoming C-Store Request from any configured AE Title, receives supported objects transmitted on that association and stores them in the local database.

4.2.2.4.1.2 Accepted Presentation Contexts

For all supported Transfer Objects (see "Table 1: Network Services" section "SOP Classes Created by the *syngo*® MR XA50A" and "SOP Classes Managed by the *syngo*® MR XA50A" in the "Conformance Statement Overview".) the Transfer Syntaxes described in Table 10.

Generally, all Presentation Contexts are accepted as long as they contain at least one suitable Transfer Syntax. All other Presentation Contexts are rejected.

There is no Extended Negotiation as an SCP.

4.2.2.4.1.3 SOP-specific Conformance Statement for Storage SOP classes

The syngo® MR XA50A conforms to the Full Storage Class at Level 2.

In case of a successful C-STORE operation, the image has successfully been received in the negotiated transfer syntax.

The Storage AE of the *syngo*® MR XA50A returns the status "success" when the data is received, and a minimal image header validation has been performed.

The following header attributes must be available and filled:

- SOP Class UID,
- Study Instance UID,
- Series Instance UID and
- SOP Instance UID.

Table 13 below list the status codes that the *syngo*® MR XA50A can return:

Table 13: Storage C-STORE Response Status

Service Status	Further Meaning	Error Code	Reason
Success	Success	0000	Image received correctly (success notification is done after receiving, before indexing and storing)
Failure	Out-of-resource	A700	No resource left in the Short Term Storage
Failure	Unable to Process	Cxxx	Error during instance reception

Failure	Data set does not match SOP Class	A9xx	The data set is not conform to the SOP Class contained in the resource.

Restriction: Depending on response configuration successful operation does not guarantee storage on disk and storage of header data in the database.

4.2.2.4.1.4 Other SOP specific behavior

If an image is received that is already stored in the database - identified by the SOP Instance UID - the new image will be ignored. The existing instance is not superseded.

4.2.3 Storage Commitment AE Specification

4.2.3.1 SOP Classes

The Storage Commitment AE of the *syngo*® MR XA50A provides standard conformance to the SOP Class listed in "Table 1: Network Services" section "Storage Commitment" in the "Conformance Statement Overview".

4.2.3.2 Association Policy

Table 14: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]
Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The syngo® MR XA50A contains a limitation of 512 kB for the maximum PDU size. By default, the PDU size is set to 32kB.

The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.

There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system.

4.2.3.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any non-infinite maximum size will be accepted.

Table 15: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.3.2.2 Implementation Identifying Information

For Implementation Identifying Information please refer to "

Table 3: Implementation Identifying Information" in the "Conformance Statement Overview".

[1] Default, the value is configurable

4.2.3.3 Association Initiation Policy

4.2.3.3.1 Activity "Send Initial Storage Commitment"

4.2.3.3.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU of the Storage Commitment Service Class. After successful transfer of Imaging Objects to a configured Archive, the Storage Commitment SCU initiates an N-Action Request, if Storage Commitment is configured. This request will be sent on a different association than the storage request.

The Storage Commitment Request will be sent out with a delay, in order to ensure that the remote node properly indexes received instances. The delay time is configurable with a default delay of 10 minutes.

The system may issue one N-ACTION Request for a complete set (bundle) of instances or issue one N-ACTION-Request per instance. This behavior is configurable; the default value is "bundled".

The *syngo*® MR XA50A will accept the N-Event-Report-Request on the same association if sent immediately after the N-ACTION-Response. However, it will not wait for it. The association is closed after three seconds.

4.2.3.3.1.2 Proposed Presentation Contexts

The *syngo® MR XA50A* DICOM application supports the presentation contexts listed in the following table for the Storage Commitment Service Class.

Table 16: Proposed Presentation Contexts for Storage Commitment

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name List**	**UID List**		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.3.3.1.3 SOP specific Conformance for SOP classes

The behavior of *syngo*® MR XA50A when encountering status codes in an N-ACTION response is summarized in Table 17:

Table 17: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	Any failure that occurs	Any none null Code	Failure reported to user; corresponding object(s) will be marked as "Archived failed"
Success	All Instances are available on the remote node	0000	Success reported to user; in case failures exist, the corresponding instances will be marked as "Archived failed"

Table 18 below indicates the behavior if exceptions occur:

Table 18: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s); the request will be retried
Association Aborted	Failure reported to user; the request will be retried

4.2.3.4 Association Acceptance Policy

4.2.3.4.1 Activity "Receive Reply to Initial Storage Commitment"

4.2.3.4.1.1 Description and Sequencing of Activities

The syngo® MR XA50A supports the reverse role negotiation of the Storage Commitment Service Class as the SCU. It accepts incoming N-EVENT-REPORT-Request, if they do not arrive on the same association as the N-ACTION-Request.

4.2.3.4.1.2 Accepted Presentation Contexts

The syngo® MR XA50A DICOM application supports the presentation contexts listed in the following table for the Storage Commitment Service Class.

Table 19: Presentation Context Table "Update Flag Information"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.3.4.1.3 SOP-specific Conformance Statement for Storage Commitment SOP classes

The Storage Commitment SCU provides standard conformance to the Storage Commitment SOP Class.

4.2.4 Query/Retrieve AE Specification

4.2.4.1 SOP Classes

The Query/Retrieve AE provides Standard Conformance to the SOP Classes listed in "Table 1: Network Services" section "Query/Retrieve" in the "Conformance Statement Overview".

4.2.4.2 Association Policy

Table 20: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]

[1] Default, the value is configurable

Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The *syngo*® MR XA50A contains a limitation of 512 kB for the maximum PDU size. By default, the PDU size is set to 32kB.

The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.

There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system.

4.2.4.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any non-infinite maximum size will be accepted.

Table 21: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.4.2.2 Implementation Identifying Information

For Implementation Identifying Information please refer to "

Table 3: Implementation Identifying Information" in the "Conformance Statement Overview".

4.2.4.3 Association Initiation Policy

4.2.4.3.1 Activity "Querying a Remote Node" for Instances

4.2.4.3.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU for the following SOP Class

- Study Root Q/R Information Model – FIND SOP Class

Using the attributes specified by the user as Query Keys (in accordance with the query model) the Query SCU initiates a C-FIND Request and displays the responses to the user.

4.2.4.3.1.2 Proposed Presentation Contexts

The *syngo*® MR XA50A will propose Presentation Contexts as shown in the following table:

Table 22: Proposed Presentation Contexts for Query

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name List**	**UID List**		
Study Root Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 23: Extended Negotiation as an SCU

Name	UID	Extended Negotiation
Study Root Query/ Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Relational Query will be negotiated as defined in DICOM PS3.4

4.2.4.3.1.3 SOP Specific Conformance Statement to Query SOP classes

The *syngo*® MR XA50A checks for the following status codes in the Query SCP's C-FIND-Response:

Table 24: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Failure	e.g. Out of Resources; Cancellation; Identifier does not match SOP Class; Unable to process	Any none null Code	Failure reported to user
Pending	All optional keys are supported the same manner as Required Keys.	FF00	Pending state is indicated to user
	Matching Operation continues; some of the optional keys were not supported the same way as the required keys	FF01	Pending state is indicated to user
Success	Query has been performed successfully.	0000	Success reported to user

Table 25 below indicates the behavior if exceptions occur:

Table 25: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

The *syngo*® MR XA50A supports the following query levels:

- Study
- Series

Matching Keys on Instance Level is not supported by the *syngo*® MR XA50A as SCU.

The following table lists the various attributes at Study and Series level, which can be used for hierarchical queries as well as return values for display. The display capabilities are highly configurable and "yes" indicates that it is possible to configure display of the data:

Table 26: Attributes supported for Study/Series Query - SCU

Attribute Name	Tag	Type	User input	UI
Study Level				
Patient's Name	(0010,0010)	O	enter value	Yes
Patient ID	(0010,0020)	O	enter value	Yes
Issuer of Patient ID	(0010,0021)	O	enter value	Yes
Patient's Birth Date	(0010,0030)	O	enter value	Yes

Attribute Name	Tag	Type	User input	UI
Patient's Birth Time	(0010,0032)	O	enter value	Yes
Patient's Sex	(0010,0040)	O	enter value	Yes
Accession Number	(0008,0050)	O	enter value	Yes
Study ID	(0020,0010)	O	enter value	Yes
Study Instance UID	(0020,000D)	U	enter value	Yes
Study Date	(0008,0020)	O	enter value	Yes
Study Time	(0008,0030)	O	enter value	Yes
Referring Physician' s Name	(0008,0090)	O	enter value	Yes
Study Description	(0008,1030)	O	enter value	Yes
Number of Study related Instances	(0020,1208)	O	-	Yes
Modalities in Study	(0008,0061)	O	enter value	Yes
Number of Study Related Series	(0020,1206)	O	-	Yes
Series Level				
Modality	(0008,0060)	O	enter value	Yes
Series Date	(0008,0021)	O	enter value	Yes
Series Time	(0008,0031)	O	enter value	Yes
Number of Series related Instances	(0020,1209)	O	-	Yes
Series Number	(0020,0011)	O	enter value	Yes
Series Description	(0008,103E)	O	enter value	Yes
Request Attributes Sequence \ Requested Procedure ID	(0040,0275) \ (0040,1001)	O	enter value	Yes
Request Attributes Sequence \ Scheduled Procedure Step ID	(0040,0275) \ (0040,0009)	O	enter value	Yes
Performed Procedure Step Start Date	(0040,0244)	O	enter value	Yes
Performed Procedure Step Start Time	(0040,0245)	O	enter value	Yes
Series Instance UID	(0020,000E)	U	-	Yes

- Activity "Retrieve Instances from a remote node"

4.2.4.3.1.4 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU for the following SOP Classes

- Study Root Q/R Information Model – MOVE SOP Class

The C-MOVE-Request is used to retrieve the selected imaging objects. The Retrieve AE supports the query model Patient Root, Study Root, Patient/Study Root.

4.2.4.3.1.5 Proposed Presentation Contexts

The *syngo*® MR XA50A proposes Presentation Contexts shown in the following table:

Table 27: Proposed Presentation Contexts for Retrieve and Activity "MOVE SCU"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.4.3.1.6 SOP Specific Conformance Statement for Move SCU Classes

The behavior of *syngo*® MR XA50A when encountering status codes in a C-MOVE response is summarized in Table 28

Table 28: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	e.g. Out of Resources; Cancellation; Identifier does not match SOP Class; Unable to process; Move destination unknown	Any none null Code	Failure reported to user
Pending	Move Operation continues	FF00	Operation continues in background
Success	Move has been performed successfully.	0000	Success reported to user

Table 29 below indicates the behavior if exceptions occur:

Table 29: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

4.2.4.4 Association Acceptance Policy

The *syngo*® MR XA50A provides SCU and SCP functionality.

4.2.5 Modality Worklist AE Specifation

4.2.5.1 SOP Classes

The Modality Worklist AE provides Standard Conformance to the SOP Class "Modality Worklist Information Model – FIND" as it is listed in "Table 1: Network Services" in the "Conformance Statement Overview".

4.2.5.2 Association Policy

Table 30: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]

[1] Default, the value is configurable

Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The *syngo*® MR XA50A contains a limitation of 512 kB for the maximum PDU size. By default, the PDU size is set to 32kB.

The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.

There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system.

4.2.5.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any non-infinite maximum size will be accepted.

Table 31: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.5.2.2 Implementation Identifying Information

For Implementation Identifying Information please refer to "

Table 3: Implementation Identifying Information" in the "Conformance Statement Overview".

4.2.5.3 Association Initiation Policy

- Activity "Querying a Remote Node" for Modality Worklist

4.2.5.3.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU of the Modality Worklist service. It performs worklist queries by issuing a C-FIND request at regular intervals. In addition a worklist request can be triggered manually.

4.2.5.3.1.2 Proposed Presentation Contexts

The *syngo*® MR XA50A will propose Presentation Contexts as shown in the following table:

Table 32: Proposed Presentation Contexts for Worklist

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name List**	**UID List**		
Modality Worklist- FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.5.3.1.3 SOP Specific Conformance for SOP Classes

Search Key Attributes of the Worklist C-FIND

The *syngo*® MR XA50A Modality Worklist SCU supports "broad worklist queries" with all required search keys. The following tables describe the "broad query" search keys that the SCU supports. The list is configurable in 'DICOM Modality Worklist Query'.

Table 33: Broad Query search keys

Attribute Name	Tag	Matching Key Type	Query Value
Scheduled Procedure Step			
Scheduled Procedure Step Sequence	(0040,0100)	R	
>Modality	(0008,0060)	R	<configured by Modality> or "*"
>Scheduled Station AE Title	(0040,0001)	R	<own AET> or "*"1
>Scheduled Procedure Step Start Date	(0040,0002)	R	Range from UI 2
>Scheduled Station Name	(0040,0010)	O	
>Scheduled Procedure Step Location	(0040,0011)	O	
>Scheduled Procedure Step Status	(0040,0020)	O	
>Scheduled Performing Physician's Name	(0040,0006)	O	
Requested Procedure Description	(0032,1060)	O	
Requested Procedure Priority	(0040,1003)	O	
Patient Transport Arrangements	(0040,1004)	O	
Requested Procedure Comments	(0040,1400)	O	
Requested Procedure Code Sequence	(0032,1064)	O	
>Code Value	(0008,0100)	O	
Requesting Physician	(0032,1032)	O	
Referring Physicians Name	(0008,0090)	O	
Current Patient Location	(0038,0300)	O	
Pregnancy Status	(0010, 21C0)	O	
Medical Alerts	(0010,2000)	O	
Allergies	(0010,2110)	O	

Return Key Attributes of the Modality Worklist C-FIND

The *syngo*® MR XA50A Modality Worklist SCU supports worklist queries with return key attributes of all types. The following tables describe the return keys that the SCU supports.

An "yes" in the **UI** column indicates that the attribute may be visualized when browsing the Worklist results with the Browser. The Browser display is additionally influenced by the related Browser configuration.

[1] This depends on user configuration (Administration Portal->Technical Configuration->DICOM Nodes->Local DICOM Node->Worklist) if the "own AET" is provided or not.
[2] A time window can be configured by defining how many days to look into the past and into the future (Administration Portal-> Technical Configuration->DICOM Nodes->Local DICOM Node->Worklist)

Table 34: Modality Worklist C-Find Return keys

Attribute Name	Tag	Return Key Type	UI	Notes
SOP Common				
Specific Character Set	(0008,0005)	1C	No	
Scheduled Procedure Step				
Scheduled Procedure Step Sequence	(0040,0100)	1	No	
>Modality	(0008,0060)	1	Yes	
>Scheduled Station AE Title	(0040,0001)	1		"Scheduled Station AE Title" is taken as default for "Performed Station AE Title"
>Scheduled Procedure Step Start Date	(0040,0002)	1	Yes	
>Scheduled Procedure Step Start Time	(0040,0003)	1	Yes	
>Scheduled Procedure Step End Date	(0040,0004)	3	No	
>Scheduled Procedure Step End Time	(0040,0005)	3	No	
>Scheduled Performing Physician's Name	(0040,0006)	1	Yes	"Scheduled Performing Physician's Name" is taken as default for "Performing Physician's Name"
>Scheduled Procedure Step Description	(0040,0007)	1C	Yes	"Scheduled Procedure Step Description" is taken as default for "Performed Procedure Step Description"
>Scheduled Protocol Code Sequence **	(0040,0008)	1C	No	Uses universal sequence match "Scheduled Protocol Code Sequence" is taken as default for "Performed Protocol Code Sequence"
>>Code Value	(0008,0100)	1C	No	
>>Coding Scheme Designator	(0008,0102)	1C	No	
>>Coding Scheme Version	(0008,0103)	3	No	
>>Code Meaning	(0008,0104)	3	No	
>>Mapping Resource	(0008,0105)	3	No	
>>Context Group Version	(0008,0106)	3	No	
>>Context Group Local Version	(0008,0107)	3	No	
>>Context Group Extension Flag	(0008,010B)	3	No	
>>Context Group Extension Creator UID	(0008,010D)	3	No	
>>Context Identifier	(0008,010F)	3	No	
>Scheduled Procedure Step ID	(0040,0009)	1	Yes	"Scheduled Procedure Step ID" is taken as default for "Performed Procedure Step ID"
>Scheduled Station Name	(0040,0010)	2	Yes	
>Scheduled Procedure Step Location	(0040,0011)	2	No	"Scheduled Procedure Step Location" is taken as default for "Performed Location"

Attribute Name	Tag	Return Key Type	UI	Notes
>Scheduled Procedure Step Status	(0040,0020)	3	No	
>Comments on the Scheduled Procedure Step	(0040,0400)	3	No	
Requested Procedure				
Study Date	(0008,0020)	3	No	
Study Time	(0008,0030)	3	No	
Referenced Study Sequence	(0008,1110)	2	No	Uses universal sequence match
>Referenced SOP Class UID	(0008,1150)	1C	No	
>Referenced SOP Instance UID	(0008,1155)	1C	No	
Study Instance UID	(0020,000D)	1	No	
Requested Procedure Description	(0032,1060)	1C	Yes	
Requested Procedure Code Sequence	(0032,1064)	1C	No	Uses universal sequence match "Requested Procedure Code Sequence" is taken as default for "Procedure Code Sequence"
>Code Value	(0008,0100)	1C	No	
>Coding Scheme Designator	(0008,0102)	1C	No	
>Coding Scheme Version	(0008,0103)	3	No	
>Code Meaning	(0008,0104)	3	No	
>>Mapping Resource	(0008,0105)	3	No	
>>Context Group Version	(0008,0106)	3	No	
>>Context Group Local Version	(0008,0107)	3	No	
>>Context Group Extension Flag	(0008,010B)	3	No	
>>Context Group Extension Creator UID	(0008,010D)	3	No	
>>Context Identifier	(0008,010F)	3	No	
Requested Procedure ID	(0040,1001)	1	Yes	"Requested Procedure ID" is taken as default for "Study ID"
Reason for the Requested Procedure	(0040,1002)	3	No	
Requested Procedure Priority	(0040,1003)	2	Yes	
Patient Transport Arrangements	(0040,1004)	2	No	
Confidentiality Code	(0040,1008)	3	No	
Reporting Priority	(0040,1009)	3	Yes	
Names of intended Recipients of Results	(0040,1010)	3	No	
Requested Procedure Comments	(0040,1400)	3	No	
Imaging Service Request				
Accession Number	(0008,0050)	2	Yes	
Referring Physician's Name	(0008,0090)	2	Yes	

Attribute Name	Tag	Return Key Type	UI	Notes
Requesting Physician	(0032,1032)	2	Yes	
Requesting Service	(0032,1033)	3	No	
Issuing Date of Imaging Service Request	(0040,2004)	3	No	
Issuing Time of Imaging Service Request	(0040,2005)	3	No	
Placer Order Number / Imaging Service Request	(0040,2016)	3	No	Old tag (0040,2006) is retired and not used.
Filler Order Number / Imaging Service Request	(0040,2017)	3	No	Old tag (0040,2007) is retired and not used.
Order entered by ...	(0040,2008)	3	No	
Order Enterer's location	(0040,2009)	3	No	
Order Callback Phone Number	(0040,2010)	3	No	
Imaging Service Request Comments	(0040,2400)	3	No	
Visit Identification				
Admission ID	(0038,0010)	2	Yes	
Issuer of Admission ID	(0038,0011)	3	No	
Institution Name	(0008,0080)	3	No	
Institution Address	(0008,0081)	3	No	
Visit Status				
Current Patient Location	(0038,0300)	2	Yes	
Visit Admission				
Admitting Diagnosis Description	(0008,1080)	3	Yes	
Admitting Date	(0038,0020)	3	No	
Patient Identification				
Patient's Name	(0010,0010)	1	Yes	
Patient ID	(0010,0020)	1	Yes	
Issuer of Patient ID	(0010,0021)	3	No	
Other Patient IDs	(0010,1000)	3	Yes	
Other Patient Names	(0010,1001)	3	Yes	
Patient's Birth Name	(0010,1005)	3	No	
Patient Demographic				
Patient's Birth Date	(0010,0030)	2	Yes	
Patient's Birth Time	(0010,0032)	3	No	
Patient's Sex	(0010,0040)	2	Yes	
Patient's Insurance Plan Code Sequence	(0010,0050)	3	No	Uses universal sequence match
>Code Value	(0008,0100)	1C	No	
>Coding Scheme Designator	(0008,0102)	1C	No	
>Coding Scheme Version	(0008,0103)	3	No	

Attribute Name	Tag	Return Key Type	UI	Notes
>Code Meaning	(0008,0104)	3	No	
Patient's Age	(0010,1010)	3	No	
Patient's Size	(0010,1020)	3	Yes	
Patient's Weight	(0010,1030)	2	Yes	
Patient's Address	(0010,1040)	3	Yes	
Military Rank	(0010,1080)	3	Yes	
Branch of Service	(0010,1081)	3	No	
Ethnic Group	(0010,2160)	3	Yes	
Patient Comments	(0010,4000)	3	Yes	
Patient Medical				
Medical Alerts	(0010,2000)	2	Yes	
Allergies	(0010,2110)	2	Yes	
Pregnancy Status	(0010,21C0)	2	Yes	
Smoking Status	(0010,21A0)	3	Yes	
Last Menstrual Date	(0010,21D0)	3	Yes	
Additional Patient History	(0010,21B0)	3	Yes	
Special Needs	(0038,0050)	2	Yes	

The behavior of the *syngo*® MR XA50A when encountering status codes in a C-FIND response is summarized in Table 35.

Table 35: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	e.g. Out of Resources; Cancellation; Identifier does not match SOP Class; Unable to process	Any none null Code	Failure reported to user
Pending	All optional keys are supported the same manner as Required Keys.	FF00	Pending state is indicated to user
	Matching Operation continues; some of the optional keys were not supported the same way as the required keys	FF01	Pending state is indicated to user
Success	Query has been performed successfully.	0000	Success reported to user

Table 36 below indicates the behavior if exceptions occur:

Table 36: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)

Association Aborted	Failure reported to user

4.2.5.4 Association Acceptance Policy

The *syngo*® MR XA50A does not provide the functionality of a SCP of the Modality Worklist – Find SOP Class.

4.2.6 Modality Performed Procedure Step AE Specification

4.2.6.1 SOP Classes

The Modality Performed Procedure Step AE provides Standard Conformance to the SOP Class "Modality Performed Procedure Step" as it is listed in "Table 1: Network Services" section "Worklist Management" in the "Conformance Statement Overview".

4.2.6.2 Association Policy

Table 37: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]
Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The *syngo*® MR XA50A contains a limitation of 512 kB for the maximum PDU size. By default, the PDU size is set to 32kB.

The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.

There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system.

4.2.6.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any non-infinite maximum size will be accepted.

Table 38: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.6.2.2 Implementation Identifying Information

For Implementation Identifying Information please refer to "

Table 3: Implementation Identifying Information" in the "Conformance Statement Overview".

[1] Default, the value is configurable

4.2.6.3 Association Initiation Policy

4.2.6.3.1 Activity "Create Modality Performed Procedure Step"

4.2.6.3.1.1 Description and Sequencing of Activities

The *syngo*® MR XA50A serves as a SCU of the Modality Performed Procedure Step SOP Class. It sends N-CREATE request to inform the Information System that a Procedure Step has been started.

4.2.6.3.1.2 Accepted Presentation Contexts

The *syngo*® MR XA50A proposes Presentation Contexts as shown in the following table:

Table 39: Acceptable Presentation Contexts Activity "Create MPPS"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	**UID**	**Name List**	**UID List**		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.6.3.1.3 SOP specific Conformance for MPPS SOP class Table 40

The behavior of *syngo*® MR XA50A when encountering status codes in an N-CREATE-RSP response is summarized in Table 40:

Table 40: MPPS N-CREATE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	MPPS creation request could not be processed.	Any none null Code	MPPS is not created.
Success	MPPS creation request processed successfully.	0000	MPPS is created.

4.2.6.3.2 Activity "Update Modality Performed Procedure Step"

4.2.6.3.2.1 Description and Sequencing of Activities

When the procedure step has been finished, the *syngo*® MR XA50A sends N-SET request to inform the Information System about the finalization of the procedure step (COMPLETED or DISCONTINUED).

4.2.6.3.2.2 Proposed Presentation Contexts

The *syngo*® MR XA50A proposes Presentation Contexts as shown in the following table:

Table 41: Acceptable Presentation Contexts Activity "Update MPPS"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

4.2.6.3.2.3 SOP specific Conformance for MPPS SOP class

The behavior of *syngo*® MR XA50A when encountering status codes in an N-SET-RSP response is summarized in Table 42:

Table 42: MPPS N-SET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Error	MPPS update request could not be processed.	Any none null Code	MPPS is not updated.
Success	MPPS update request could processed successfully.	0000	MPPS is updated.

4.2.6.4 Association Acceptance Policy

The *syngo*® MR XA50A does not provide the functionality of a SCP of the Modality Performed Procedure Step SOP Class.

4.2.7 Print AE Specification

4.2.7.1 SOP Classes

The Print AE provides Standard Conformance to the SOP Classes listed in “Table 1: Network Services” section “Print Management" in the “Conformance Statement Overview”.

4.2.7.2 Association Policy

Table 43: Association Policies

Application Context Name	1.2.840.10008.3.1.1.1
PDU size	32 kB [1]
Maximum number of simultaneous associations as an association acceptor	12[1]
Maximum number of simultaneous associations as an association initiator	unlimited

The *syngo*® MR XA50A contains a limitation of 512 kB for the maximum PDU size. By default, the PDU size is set to 32kB.

The maximum number of simultaneous receiving associations (SCP) is configurable at run time, based on the system resources available. By default, the maximum number of associations is set to 12.

There is no inherent limit to the number of outgoing associations (SCU), other than limits imposed by the computer operating system.

4.2.7.2.1 Asynchronous Nature

The syngo® MR XA50A supports asynchronous communication (multiple outstanding transactions over a single association). On the SCU side the Window size proposed is infinite. On the SCP Side any non-infinite maximum size will be accepted.

Table 44: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	10

4.2.7.3 Association Initiation Policy

4.2.7.3.1 Activity Print Film

4.2.7.3.1.1 Description and Sequencing of Activities

Whenever a film-sheet is prepared by the user, it is forwarded to the Printer Job queue. As soon as the associated Printer device is available the job is activated and an association is established.

After he film sheet is internally processed, converted to a Standard/1,1 layout and the page image is sent to the printer, the status is controlled by awaiting any N-EVENT-REPORT message throughout the transfer until the last image or film-sheet is sent.

If the response from the remote application contains a status other than Success or Warning the printing is stopped and the job status is set to Aborted.

[1] Default, the value is configurable

4.2.7.3.1.2 Proposed Presentation Context

The *syngo*® MR XA50A proposes Presentation Contexts as shown in the following table:

Table 45: Presentation Contexts for the Activity "Print Film"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Printer SOP Class	1.2.840.10008.5.1.1.16	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Print Job SOP Class	1.2.840.10008.5.1.1.14	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.7.3.1.3 SOP Specific Conformance

The *syngo*® MR XA50A Print SCU conforms to the DICOM Basic Grayscale Print Management Meta SOP Class and the Basic Color Print Management Meta SOP Class.

The application uses a configuration platform to define the properties of the connected DICOM SCP, e.g.:

- supported film sizes of the connected DICOM SCP
- supported film formats of the DICOM SCP

The printing is only suspended in the case of a failure return status of the SCP.

Basic Film Session SOP Class
The Basic Film Session information object definition describes all the user-defined parameters, which are common for all the films of a film session. The Basic Film Session refers to one or more Basic Film Boxes that are printed on one hardcopy printer.

The *syngo*® MR XA50A Print Management SCU supports the following DIMSE Service elements for the Basic Film Session SOP Class as SCU:

- N-CREATE
- N-DELETE

The Basic Film Session SOP Class N-CREATE-RQ (SCU) uses the attributes listed in the table below:

Table 46: Attributes for the N-CREATE-RQ of the Basic Film Session

Attribute Name	Tag	Usage SCU	Supported Values
Number of Copies	(2000,0010)	U	1
Medium Type	(2000,0030)	U	BLUE FILM
			CLEAR FILM
			PAPER
			MAMMO BLUE FILM
			MAMMO CLEAR FILM

The Affected SOP Instance UID received with N-CREATE-RSP message will be kept internally and used for later requests (e.g. N-DELETE-RQ) on the Basic Film Session.

The Basic Film Session SOP class interprets the status codes (from N-CREATE-RSP messages) listed in the table below:

Table 47: N-CREATE-RSP Status Handling Behavior for the Basic Film Session

Service Status	Further Meaning	Error Codes	Behavior
Warning	Memory Allocation not supported	B600	Print job continues, warning is logged
Success	Film session successfully created	0000	Print job continues

The N-DELETE-RQ on the Basic Film Session SOP Class is used to remove the complete Basic Film Session SOP Instance hierarchy.

Basic Film Box SOP Class

The Basic Film Box information object definition describes all user-defined parameters of one film of the film session including presentation parameters, which are common for all images on a given film sheet.

The Basic Film Box refers to one or more Image Boxes.

The *syngo*® MR XA50A Print Management SCU supports the following DIMSE Service elements for the Basic Film Box SOP Class as SCU:

- N-CREATE
- N-ACTION
- N-DELETE

The Basic Film Box SOP Class N-CREATE-RQ message uses the attributes listed below. The actual values for each attribute depend on DICOM printer configuration within the *syngo*® MR XA50A DICOM Print Management SCU:

Table 48: Attributes for the N-CREATE-RQ of the Basic Film Session

Attribute Name	Tag	Usage SCU	Supported Values
Image Display Format	(2010,0010)	M	STANDARD\1,1
Referenced Film Session Sequence	(2010,0500)	M	
> Referenced SOP Class UID	(0008,1150)	M	1.2.840.10008.5.1.1.1
> Referenced SOP Instance UID	(0008,1155)	M	
Film Orientation	(2010,0040)	M	PORTRAIT, LANDSCAPE

Attribute Name	Tag	Usage SCU	Supported Values
Film Size ID	(2010,0050)	M	8INX10IN, 10INX12IN, 10INX14IN, 11INX14IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM
Magnification Type	(2010,0060)	M	BILINEAR, CUBIC, NONE, REPLICATE
Border Density	(2010,0100)	U	BLACK, WHITE
Max Density	(2010,0130)	U	0 < Value
Min Density	(2010,0120)	U	0 < Value < 50
Required if Presentation LUT is present			
Reflective Ambient Light	(2010,0160)	U	0 < Value
Illumination	(2010,015E)	U	0 < Value
Referenced Presentation LUT Sequence	(2050,0500)	U	

For Page Mode printing, the Image Display format used is Standard\1,1.

The N-CREATE-RSP message from the Print SCP includes the Referenced Image Box Sequence with SOP Class/Instance UID pairs which will be kept internally to be further used for the subsequent Basic Image Box SOP Class N-SET-RQ messages.

When all Image Boxes (including parameters) for the film-sheet have been set, the *syngo*® MR XA50A print manager will issue an N-ACTION-RQ message with the SOP Instance UID of the Basic Film Box and the Action Type ID of 1.

The affected SOP Instance UID received with N-CREATE-RSP message will be kept internally and used for later requests (e.g., N-DELETE-RQ) on the Basic Film Box.

The Basic Film Box SOP class interprets the status codes listed in the tables below:

Table 49: N-CREATE-RSP Status Handling Behavior for Basic Film Box

Service Status	Meaning	Error Codes	Behavior
Failure	There is an existing Film Box that has not been printed and N-ACTION at the Film Session level is not supported. A new Film Box will not be created when a previous Film Box has not been printed	C616	Print job is marked as failed and the reason is logged
Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead	B605	Print job continues and warning is logged
Success	Film Box successfully created	0000	Print job continues

Table 50: N-ACTION-RSP Status Handling Behavior for Basic Film Box

Service Status	Meaning	Error Codes	Behavior
Failure	Unable to create print job, print queue is full	C602	Print job is marked as failed and the reason is logged
	Image size is larger than images box size	C603	Print job is marked as failed and the reason is logged
	Combined Print Image size is larger than the Image Box size	C613	Print job is marked as failed and the reason is logged
Warning	Film box does not contain image box (empty page)	B603	Print job continues and warning is logged
	Image size is larger than image box size, the image has been demagnified	B604	Print job continues and warning is logged
	Image size is larger than the Image Box size. The Image has been cropped to fit.	B609	Print job continues and warning is logged
	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.	B60A	Print job continues and warning is logged
Success	Film accepted for printing	0000	Print job continues

Basic Grayscale Image Box SOP Class

The Basic Grayscale Image Box information object definition is the presentation of an image and image related data in the image area of a film. The Basic Image Box information describes the presentation parameters and image pixel data, which apply to a single image of a sheet of film.

The Grayscale Image Box SOP Class uses only the N-SET-RQ with the attributes listed in the table below:

Table 51: Attributes for N-SET-RQ of Basic Grayscale Image Box

Attribute Name	Tag	Usage SCU	Supported Values
Image Position	(2020,0010)	M	1
Basic Grayscale Image Sequence	(2020,0110)	M	
> Samples per Pixel	(0028,0002)	M	1
> Photometric Interpretation	(0028,0004)	M	MONOCHROME2
> Rows	(0028,0010)	M	
> Columns	(0028,0011)	M	
> Pixel Aspect Ratio	(0028,0034)	M	
> Bits Allocated	(0028,0100)	M	8,16
> Bits Stored	(0028,0101)	M	8,12
> High Bit	(0028,0102)	M	7,11
> Pixel Representation	(0028,0103)	M	0
> Pixel Data	(7FE0,0010)	M	

The Basic Grayscale Image Box SOP class interprets the status codes as listed below:

Table 52: N-SET-RSP Status Handling Behavior for the Basic Grayscale Image Box SOP Class

Service Status	Further Meaning	Error Codes	Behavior
Failure	Image contains more pixel than printer can print in Image Box	C603	Print job is marked as failed and the reason is logged
	Insufficient memory in printer to store the image	C605	Print job is marked as failed and the reason is logged
	Combined Print Image size is larger than the Image Box size	C613	Print job is marked as failed and the reason is logged
Warning	Image size is larger than image box size, the image has been demagnified.	B604	Print job continues and the reason is logged
	Requested MinDensity or MaxDensity outside of Printer's operating range	B605	Print job continues and the reason is logged
	Image size is larger than the Image Box size. The Image has been cropped to fit.	B609	Print job continues and warning is logged
	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.	B60A	Print job continues and warning is logged
Success	Image successfully stored in Image Box	0000	Print job continues

Basic Color Image Box SOP Class

The Basic Color Image Box information object definition is the presentation of an image and image related data in the image area of a film. The Basic Image Box information describes the presentation parameters and image pixel data, which apply to a single image of a sheet of film.

The Color Image Box SOP Class uses only the N-SET-RQ with the attributes listed below:

Table 53: Attributes for N-SET-RQ of Basic Color Image Box

Attribute Name	Tag	Usage SCU	Supported Values
Image Position	(2020,0010)	M	1
Basic Color Image Sequence	(2020,0111)	M	
> Samples per Pixel	(0028,0002)	M	3
> Photometric Interpretation	(0028,0004)	M	RGB
> Planar Configuration	(0028,0006)	M	0
> Rows	(0028,0010)	M	
> Columns	(0028,0011)	M	
> Pixel Aspect Ratio	(0028,0034)	M	
> Bits Allocated	(0028,0100)	M	8
> Bits Stored	(0028,0101)	M	8
> High Bit	(0028,0102)	M	7
> Pixel Representation	(0028,0103)	M	0
> Pixel Data	(7FE0,0010)	M	

The Color Image Box SOP class interprets the status codes listed below:

Table 54: N-SET-RSP Status Handling Behavior for the Color Grayscale Image Box

Service Status	Meaning	Error Codes	Behavior
Failure	Image contains more pixel than printer can print in Image Box	C603	Print job is marked as failed and the reason is logged
	Insufficient memory in printer to store the image	C605	Print job is marked as failed and the reason is logged
	Combined Print Image size is larger than the Image Box size	C613	Print job is marked as failed and the reason is logged
Warning	Image size larger than image box size	B604	Print job continues and the reason is logged
	Image size is larger than the Image Box size. The Image has been cropped to fit.	B609	Print job continues and warning is logged
	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.	B60A	Print job continues and warning is logged
Success	Image successfully stored in Image Box	0000	Print job continues

Presentation LUT SOP Class

The objective of the Presentation LUT is to realize image hardcopy printing tailored for specific modalities, applications and user preferences.

The output of the Presentation LUT is Presentation Values (P-Values). P-Values are approximately related to human perceptual response. They are intended to facilitate common input for hardcopy. P-Values are intended to be independent of the specific class or characteristics of the hardcopy device.

The *syngo*® MR XA50A Print Management SCU supports the following DIMSE Service elements for the Basic Film Session SOP Class as SCU:

- N-CREATE
- N-DELETE

The Presentation LUT SOP Class uses only the N-CREATE-RQ with the attributes listed below:

Table 55: Attributes for N-CREATE-RQ of Presentation LUT SOP Class

Attribute Name	Tag	Usage SCU	Supported Values
Presentation LUT Shape	(2050,0020)	U	IDENTITY

The affected SOP Instance UID received with N-CREATE-RSP message will be kept internally and is used for later requests on the Basic Film Box (N-CREATE-RQ) and on the Presentation LUT (N-DELETE-RQ).

The Presentation LUT SOP class interprets the status codes listed below:

Table 56: N-**CREATE-RSP Status Handling Behavior for the Presentation LUT SOP Class**

Service Status	Further Meaning	Error Codes	Behavior
Warning	Requested MinDensity or MaxDensity outside of HCD's operating range. HCD will use its respective minimum or maximum density value instead.	B605	Print job continues and the reason is logged
Success	Presentation LUT successfully created	0000	Print job continues

Printer SOP Class

The Printer SOP Class provides the possibility to monitor the status of the hardcopy printer in a synchronous and in an asynchronous way.

When used synchronously the *syngo*® MR XA50A Print SCU uses the N-GET-RQ to request information about the printer status. It uses the attributes listed in the table below.

Table 57: Attributes for N-GET-RQ of the Printer SOP Class

Attribute Name	Tag	Usage SCP	Supported Values
Printer Status	(2110,0010)	M	NORMAL, FAILURE, WARNING
Printer Status Info	(2110,0020)	M	See table in chapter 9.7 for possible values.

The command communication failure behavior listed below applies to all SOP classes used for the "Print Film" activity:

Table 58: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s)
Association Aborted	Failure reported to user

4.2.7.4 Association Acceptance Policy

4.2.7.4.1 Activity Print Film

4.2.7.4.1.1 Description and Sequencing of Activities

The *syngo® MR XA50A* supports the reverse role negotiation of the Printer SOP Class. Receiving the N-EVENT-REPORT-RQ from a printer the *syngo®* MR XA50A is asynchronously informed about changes of the printer status.

4.2.7.4.1.2 Accepted Presentation Context

The *syngo®* MR XA50A accepts Presentation Contexts as shown in the following table:

Table 59: Presentation Contexts for the Activity "Print Film"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Printer SOP Class	1.2.840.10008.5.1.1.16	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.7.4.1.3 SOP Specific Conformance

The arguments of the N-EVENT-REPORT-RQ are defined in the table below:

Table 60: Attributes for the N-EVENT-REPORT-RQ of the Printer SOP Class

Event-type Name	Event	Attributes	Tag	Usage SCU
Normal	1	-	-	-
Warning	2	Printer Status Info	(2110,0020)	U
Failure	3	Printer Status Info	(2110,0020)	U

4.2.7.4.2 Activity Print Management

4.2.7.4.2.1 Description and Sequencing of Activities

The *syngo® MR XA50A* supports the reverse role negotiation of the Print Job SOP Class. Receiving the N-EVENT-REPORT-RQ from a printer the *syngo®* MR XA50A is asynchronously informed about the status of a print job for monitoring its progress.

4.2.7.4.2.2 Accepted Presentation Context

The *syngo®* MR XA50A accepts Presentation Contexts as shown in the following table:

Table 61: Presentation Contexts for the Activity "Print Management"

Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Print Job SOP Class	1.2.840.10008.5.1.1.14	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.7.4.2.3 SOP Specific Conformance

Attributes that can be handled by the Print AE of the product are listed in the table below.

Table 62: Attributes for the N-EVENT-REPORT-RQ of the Print Job SOP Class

Event-type Name	Event	Attributes	Tag	Usage SCU
Pending	1	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U
Printing	2	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U
Done	3	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U
Failure	4	Execution Status Info	(2100,0030)	U
		Print Job ID	(2100,0010)	-- (Print Queue Management SOP Class not supported)
		Film Session Label	(2000,0050)	U
		Printer Name	(2110,0030)	U

4.3 Network Interfaces

4.3.1 Physical Network Interface

The *syngo*® MR XA50A provides DICOM 3.0 TCP/IP network communication support as defined in Part 8 of the DICOM Standard. The network communication is independent from the physical medium over which TCP/IP executes; it inherits this from the Windows OS system upon which it executes.

4.3.2 Additional Protocols

None

4.3.3 IPv4 and IPv6 Support

IPv4 and IPv6 are supported. Regarding IPv6 please note, that the complete networking infrastructure in the hospital (firewalls, DNS-Servers, ...) must support IPv6 to get a functioning communication.

4.4 Configuration

4.4.1 AE Title/Presentation Address Mapping

AE Titles shall be unique within the hospital. A common way to achieve that is to use the hostname as part of the AE Titles. The string can be up to 16 characters and must not contain any extended characters. Only 7-bit ASCII characters (excluding Control Characters) are allowed according to the DICOM Standard.

4.4.1.1 Local AE Titles

The *syngo*® MR XA50A allows to configure AE Titles, Ports and Services in any wished way. Default delivery is that all services are using the same AE title and only one port number. In case the connected systems cannot handle this default, the customer service engineer is able to configure for each service its own AE title and Port number.

Table 63: AE Titles

Parameter	Configurable	Default Value
Default AE title	Yes	hostname in uppercase characters; limited to 16 characters
Default Basic Port	Yes	104
Default Secure Port	Yes	2762

4.4.1.2 Remote AE Title/Presentation Address Mapping

4.4.1.2.1 Remote Association Initiators

All relevant remote applications that may setup DICOM associations towards *syngo*® MR XA50A need to be configured in *syngo*® MR XA50A, before the association can be established. This behavior is configurable, but it is recommended, not to change this behavior.

The mapping of external AE Titles to TCP/IP addresses and ports is configurable and initially set at the time of installation by Installation Personnel. Changes can later on also be performed by the local system administrator. The Application Entity Titles and supported transfer syntaxes need to be known for configuration.

To enable a fast and efficient configuration possibility Siemens will deliver templates for known configuration examples, so that the behavior (usage of one AE title, default port numbers, supported services) is determined already through the template.

Remote Application Entities can be configured without restarting the process.

4.4.1.2.2 Remote Association Acceptors

For remote applications that shall be able to accept DICOM associations from *syngo*® MR XA50A, the following information needs to be available:

- Application Entity Title
- Host Name / IP address on which the remote application service runs
- Port number on which the remote application accepts association requests.

The remote system will be indicated in the UI of *syngo*® MR XA50A with a logical name, that is also entered when configuring the node in the administration UI.

To enable a fast and efficient configuration possibility Siemens will deliver templates for known configuration examples, so that the behavior (usage of one AE title, default port numbers, supported services) is determined already through the template.

Remote Application Entities can be configured without restarting the process.

4.4.1.3 Secure DICOM Communication

The system supports configuring the DICOM communication to use secure channel (TLS) between *syngo*® MR XA50A and configured remote nodes. As a security measure the certificate thumbprint or certificate trust chain of the remote nodes shall be added (pinned) to the *syngo*® MR XA50A system to authorize the incoming connection.

Detailed instructions how to set up secure DICOM communication are available in the Administrator Online Help.

Note: The default DICOM port will change to 2762.

If the certificate of remote node contains Enhanced Key Usage (Extended Key Usage) field, then:

- If the remote node acts as DICOM SCP it shall contain Server Authentication (1.3.6.1.5.5.7.3.1)
- If the remote node acts as a DICOM SCU it shall contain Client Authentication (1.3.6.1.5.5.7.3.2)

Otherwise *syngo*® MR XA50A will not accept the certificate.

4.4.2 Parameters

The next table lists configuration parameters, which are true for all Application Entities.

Table 64: Parameter List

Parameter	Configurable	Default Value
PDU size	Yes	32768 Bytes
time-out for accepting/rejecting an association request	Yes	30 s
time-out for responding to an association open/close request	Yes	30 s
time-out for accepting a message over network	Yes	30 s
time-out for waiting for data between TCP/IP-packets	Yes	5 s
time-outs for waiting for a Service Request/Response message from the remote node (Storage SCP/SCU)	Yes	30 s
time-outs for waiting for a Service Request/Response message from the remote node (Query/Retrieve SCP/SCU)	Yes	30 s
time-out for waiting for a C-MOVE-RSP	No	1200 s
number of image collection before saving to database	Yes	20
max matches query limit	Yes	100
max number of parallel receiving associations	Yes	12

5 Media Interchange

5.1 Implementation Model

5.1.1 Application Data Flow Diagram

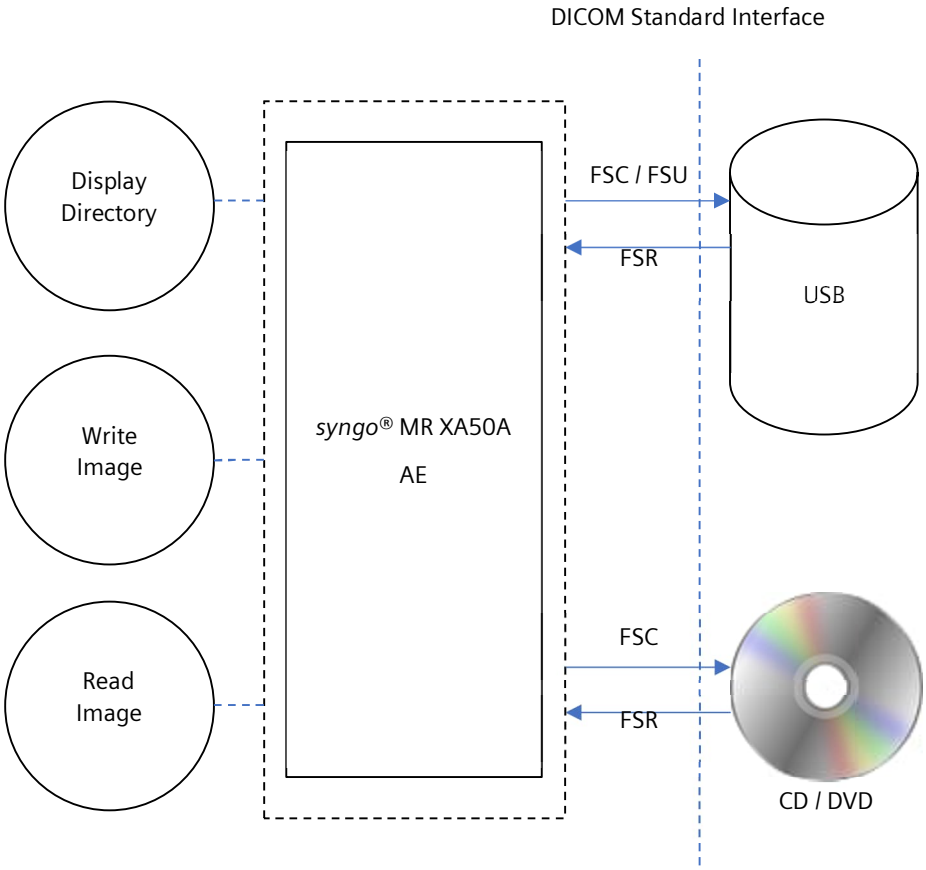

Figure 6: Media Interchange Application Data Flow Diagram

The *syngo*® MR XA50A provides the functionality to Import or Export DICOM Instances from and to the File System. During export, a DICOMDIR may also be generated (user selection). A complete ISO Image ready-to-burn can also be generated. All SOP Classes defined in Table 1: Network Services are supported for the Import/Export functionality.

5.1.2 Functional Definitions of AEs

The *syngo*® MR XA50A application is capable of

- creating a new File-set in the File System (Export to ...)
- importing SOP Instances from the medium onto local storage
- writing the File-sets DICOMDIR information into the file system and joining it to an ISO image.

5.1.3 Sequencing of Real-World Activities

Whenever data is written to an external media, *syngo*® MR XA50A creates a DICOMDIR from the selected data and creates an ISO image of the selected data on the local hard disk. Depending on the selected data and options (selected media size, with or without compression) either General Purpose CD profile, DVD-J2K, BD-J2K profile is used.

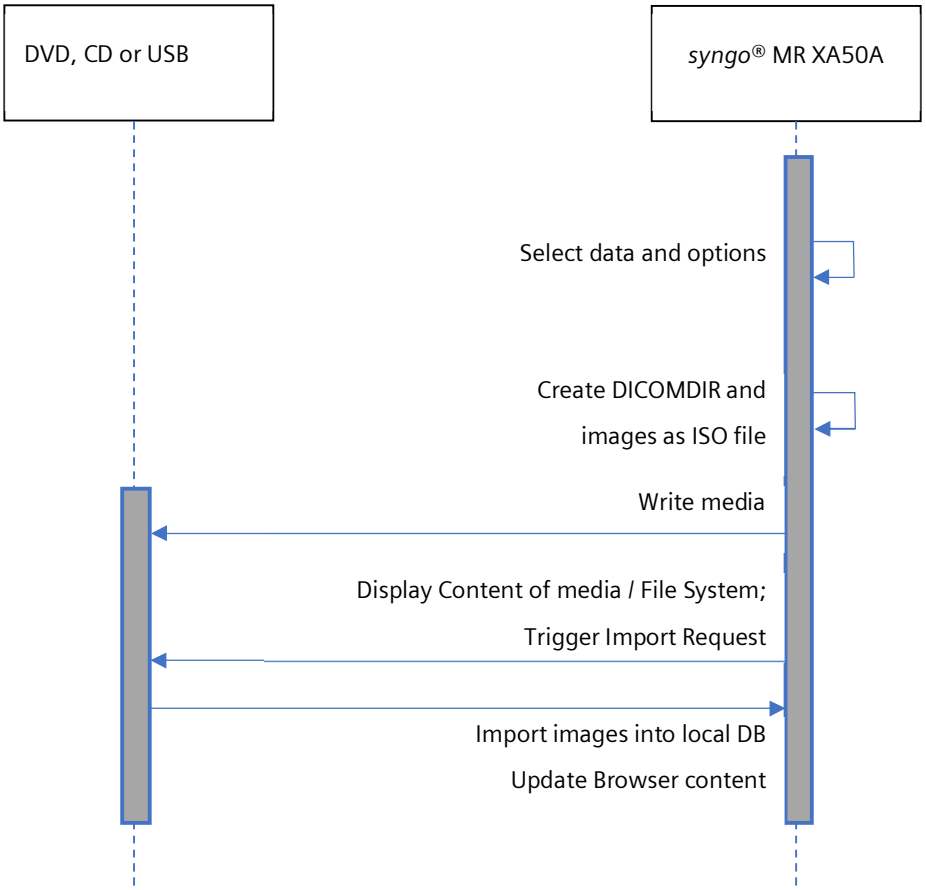

Figure 7: Sequence diagram – Media creation

5.1.4 File Meta Information for Implementation Class and Version

This section describes the values assigned to the File Meta Information attributes (see part PS 3.10) that pertain to the Implementation Class and Version. The implementation Class UID and the Implementation Version name in the File Meta Header are the same as the values specified for networking.

Table 65: Implementation Class/Version Name - Media Interchange

File Meta Information Version	0001
Implementation Class UID	1.3.12.2.1107.5.8.2
Implementation Version Name	SYNGO_MR_XA50A

5.2 AE Specifications

5.2.1 Media Storage AE – Specification

The *syngo*® MR XA50A provides conformance to the following Application Profiles as an FSC as well as an FSR. The FSU role is only supported on a non-optical storage device (e.g. USB stick).

In addition, augmented conformance is provided to store extra data objects important for the full feature support of the *syngo*®-based products. Details are listed below:

Table 66: Media - Application Profiles and Real-World Activities

Application Profiles Supported	Real-World Activity	Role	Service Class Option
AUG-GEN-CD	Browse Directory Information Import into Application Export to local Archive Media	FSR, FSC	Interchange
AUG-GEN-DVD			
AUG- GEN-DVD-J2K			
AUG-GEN-BD			
AUG-GEN-BD-J2K			
AUG- GEN-USB-J2K		FSR, FSC, FSU	
STD-GEN-CD	Browse Directory Information Import into Application Export to local Archive Media	FSR, FSC	Interchange
STD-GEN-DVD			
STD-GEN-DVD-J2K			
STD-GEN-BD			
STD-GEN-BD-J2K			
STD-GEN-USB-J2K		FSR, FSC, FSU	

5.2.1.1 Real-World Activities

5.2.1.1.1 Activity "Browse Directory Information"

The *syngo*® MR XA50A acts as FSR using the interchange option when requested to read the media directory.

The *syngo*® MR XA50A will read the DICOMDIR and insert those directory entries that are valid for the application profiles supported, into a local database. The database then is used for browsing media contents.

Note: The "Icon Image Sequence" is also supported in DICOMDIR. But only those Icon Images with "Bits Allocated" (0028,0100) equal to 8 and size of 64x64 or 128x128 pixels are imported into database and are visible in the Browser.

5.2.1.1.2 Real World Activity "Import into Application"

The *syngo*® MR XA50A application acts as FSR using the interchange option when requested to read SOP Instances from the medium into the application.

The SOP Instance selected from the media directory will be copied into the running Application. Only SOP Instances, that are valid for the application profile supported and supported by *syngo*® MR XA50A can be retrieved from media.

5.2.1.1.3 Real-World Activity "Export to local Archive Media"

The *syngo*® MR XA50Aapplication acts as FSU (for media with existing DICOM file-set) or FSC (media not initialized) using the interchange option when requested to copy SOP Instances from the local storage to local Archive Medium. The activity as FSU is only possible as long as the local burning SW of *syngo*® MR XA50A has not already processed the generated ISO file.

The *syngo*® MR XA50A application will receive a list of SOP Instances to be copied to the local archive medium. Depending on the profile selected (Standard: uncompressed, with DICOMDIR; Patient: compressed with DICOMDIR) the SOP Instances will be taken, and an ISO file is being generated that includes the DICOMDIR and the corresponding objects.

It is then up to *syngo*® MR XA50A local configuration (if equipped with a local media burner) to burn the ISO file to the appropriate media.

5.2.1.2 SOP Classes and Transfer Syntaxes

These Application Profiles are based on the Media Storage Service Class with the Interchange Option. The *syngo*® MR XA50A provides Standard Conformance to the SOP Classes listed in "Table 1: Network Services" section "SOP Classes Created by the *syngo*® MR XA50A" and "SOP Classes Managed by the *syngo*® MR XA50A" in the "Conformance Statement Overview".

Using the Application Profiles supporting compression (AUG- GEN-DVD-J2K, AUG-GEN-BD-J2K, AUG- GEN-USB-J2K, STD-GEN-DVD-J2K, STD-GEN-USB-J2K, STD-GEN-BD-J2K) the following Transfer Syntaxes are supported:

Table 67: Transfer Syntaxes for STD-GEN-DVD-J2K, STD-GEN-BD-J2K and STD-GEN-USB-J2K

UID value	Transfer Syntax	Image Objects	Non-Image Objects
1.2.840.10008.1.2.1	Explicit VR Little Endian	Yes	Yes
1.2.840.10008.1.2.4.50	JPEG Baseline (Process 1) lossy compressed	Yes	No
1.2.840.10008.1.2.4.51	JPEG Extended (Process 2 & 4) lossy compressed	Yes	No
1.2.840.10008.1.2.4.70	JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14) lossless compressed	Yes	No
1.2.840.10008.1.2.4.90	JPEG 2000 Image Compression (Lossless Only) compressed	Yes	No
1.2.840.10008.1.2.4.91	JPEG 2000 Image Compression lossy compressed	Yes	No
1.2.840.10008.1.2.5	RLE Lossless compressed	Yes	No

Using the Application Profiles that do not support compression (AUG- GEN-DVD, AUG-GEN-BD, AUG- GEN-USB, STD-GEN-DVD, STD-GEN-BD, STD-GEN-USB) only Explicit VR Little Endian (1.2.840.10008.1.2.1) is supported.

5.3 Augmented and Private Application Profiles

5.3.1 Augmented Application Profiles

N/A

5.4 Media Configuration

None

6 Support of Extended Character Sets

The syngo® MR XA50A DICOM application supports the following character sets as defined in the four tables below:

Table 68: Single-Byte Character Sets without Code Extension

Character Set Description	Defined Term	ISO registration number	Character Set
Default repertoire	None	ISO_IR 6	ISO 646:
Latin alphabet No. 1	ISO_IR 100	ISO_IR 100	Supplementary set
		ISO_IR 6	ISO 646:
Latin alphabet No. 2	ISO_IR 101	ISO_IR 101	Supplementary set
		ISO_IR 6	ISO 646
Latin alphabet No. 3	ISO_IR 109	ISO_IR 109	Supplementary set
		ISO_IR 6	ISO 646
Latin alphabet No. 4	ISO_IR 110	ISO_IR 110	Supplementary set
		ISO_IR 6	ISO 646
Cyrillic	ISO_IR 144	ISO_IR 144	Supplementary set
		ISO_IR 6	ISO 646
Arabic	ISO_IR 127	ISO_IR 127	Supplementary set
		ISO_IR 6	ISO 646
Greek	ISO_IR 126	ISO_IR 126	Supplementary set
		ISO_IR 6	ISO 646
Hebrew	ISO_IR 138	ISO_IR 138	Supplementary set
		ISO_IR 6	ISO 646
Latin alphabet No. 5	ISO_IR 148	ISO_IR 148	Supplementary set
		ISO_IR 6	ISO 646
Japanese	ISO_IR 13	ISO_IR 13	JIS X 0201: Katakana
		ISO_IR 14	JIS X 0201: Romaji
Thai	ISO_IR166	ISO_IR166	TIS 620-253 (1990)
		ISO_IR 6	ISO 646

Table 69: Single-Byte Characters Sets with Code Extension

Character Set Description	Defined Term	Standard for Code Extension	ESC sequence	ISO registration number	Character Set
Default repertoire	ISO 2022 IR 6	ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.1	ISO 2022 IR 100	ISO 2022	ESC 02/13 04/01	ISO-IR 100	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.2	ISO 2022 IR 101	ISO 2022	ESC 02/13 04/02	ISO-IR 101	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.3	ISO 2022 IR 109	ISO 2022	ESC 02/13 04/03	ISO-IR 109	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646
Latin alphabet No.4	ISO 2022 IR 110	ISO 2022	ESC 02/13 04/04	ISO-IR 110	Supplementary set
		ISO 2022	ESC 02/08 04/02	ISO-IR 6	ISO 646

Multi-Byte Character Sets without Code Extension

Table 70: Multi-Byte Character Sets without Code Extension

Character Set Description	Defined Term	ISO registration number	Character Set
Unicode	ISO_IR 192	ISO 10646	Unicode in UTF-8
Chinese	GB18030	GB18030	GB 18030-2000 (China Association for Standardization)

Table 71: Multi-Byte Character Sets with Code Extension

Character Set Description	Defined Term	Standard for Code Extension	ESC sequence	ISO registration number	Character Set
Japanese	ISO 2022 IR 159	ISO 2022	ESC 02/04 02/08 04/04	ISO-IR 159	JIS X 0212: Supplementary Kanji set
				ISO-IR 87	
Korean	ISO 2022 IR 149	ISO 2022	ESC 02/04 02/09 04/03	ISO-IR 149	KS X 1001: Hangul and Hanja

All Special Character Sets (SCS) listed above are supported for incoming Data. When creating new Instances, the system will use the default SCS (or SCS List) configured on the machine.

When there is a mismatch between the given character set in attribute (0008,0005) and the characters in an IOD received by the system, then the following measures are taken to make the characters DICOM conform:

- Convert each illegal character to '?'

There are three categories of character sets which have to be differentiated because of their different encoding formats:

- Conventional ISO character sets: ISO_IR 6, ISO 2022 IR 6, ISO_IR 100, etc.
  → encoded in ISO 2022
- ISO_IR 192 → encoded in UTF-8
- GB18030 → encoded in GB18030

It is not possible to recognize the following mismatches automatically on receiving or importing:

- An attribute value is encoded in ISO_IR 192 ←→ (0008,0005) contains a conventional ISO character set as primary character set
- An attribute value is encoded in GB18030 ←→ (0008,0005) contains a conventional ISO character set as primary character set
- An attribute value is encoded in ISO 2022 ←→ (0008,0005) contains ISO_IR 192
- An attribute value is encoded in ISO 2022 ←→ (0008,0005) contains GB18030

An IOD that contains one of the above mentioned inconsistencies is not DICOM conform. As these kinds of inconsistencies cannot be recognized by the system, the IOD will not be rejected but the character data might be corrupted.

The *syngo*® MR XA50A supports Kanji characters in the byte zones after 74 (79, 7A, 7B and 7C).

7 Attribute confidentiality profiles

7.1 De-identification

The *syngo*® MR XA50A application can de-identify attributes, when exporting to Media. Three different levels of de-identification are supported:

- Full de-identification
- Reduced de-identification
- Service de-identification

The user needs to select the appropriate de-identification level during export.

Handling public attributes during de-identification:

- Attributes listed in Table 72: Application Level Confidentiality Profile attributes (standard tags) will be de-identified as specified for the different levels. Attributes not listed in the table are not PII / PHI relevant and will not be de-identified.

Handling private attributes during de-identification:

- Full de-identification: private attributes are not included in anonymized studies
- Reduced de-identification: private attributes are not included in anonymized studies except for the tags listed in Table 73
- Service de-identification: all private attributes are included in anonymized studies except for the tags listed in Table 73

In the following table for attributes marked with:

- 'Yes' - data are anonymized
- 'No' - data are kept

Table 72: Application Level Confidentiality Profile attributes (standard tags)

DICOM Tag	Attribute Name	Full	Reduced	Service
(0000,1000)	Affected SOP Instance UID	Yes	No	No
(0000,1001)	Requested SOP Instance UID	Yes	No	No
(0002,0003)	Media Storage SOP Instance UID	Yes	No	No
(0004,1511)	Referenced SOP Instance UID in File	Yes	No	No
(0008,0014)	Instance Creator UID	Yes	No	No
(0008,0015)	Instance Coercion DateTime	Yes	No	No
(0008,0018)	SOP Instance UID	Yes	No	No
(0008,0020)	Study Date	Yes	No	No
(0008,0021)	Series Date	Yes	No	No
(0008,0022)	Acquisition Date	Yes	No	No
(0008,0023)	Content Date	Yes	No	No
(0008,0024)	Overlay Date	Yes	No	No
(0008,0025)	Curve Date	Yes	No	No
(0008,002A)	Acquisition DateTime	Yes	No	No
(0008,0030)	Study Time	Yes	No	No
(0008,0031)	Series Time	Yes	No	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0008,0032)	Acquisition Time	Yes	No	No
(0008,0033)	Content Time	Yes	No	No
(0008,0034)	Overlay Time	Yes	No	No
(0008,0035)	Curve Time	Yes	No	No
(0008,0050)	Accession Number	Yes	Yes	No
(0008,0058)	Failed SOP Instance UID List	Yes	No	No
(0008,0080)	Institution Name	Yes	Yes	No
(0008,0081)	Institution Address	Yes	Yes	No
(0008,0082)	Institution Code Sequence	Yes	Yes	No
(0008,0090)	Referring Physician's Name	Yes	Yes	Yes
(0008,0092)	Referring Physician's Address	Yes	Yes	Yes
(0008,0094)	Referring Physician's Telephone Numbers	Yes	Yes	Yes
(0008,0096)	Referring Physician's Identification Sequence	Yes	Yes	No
(0008,010D)	Context Group Extension Creator UID	Yes	No	No
(0008,0201)	Timezone Offset From UTC	Yes	No	No
(0008,1010)	Station Name	Yes	Yes	Yes
(0008,1030)	Study Description	Yes	Yes	No
(0008,103E)	Series Description	Yes	Yes	No
(0008,1040)	Institutional Department Name	Yes	Yes	No
(0008,1048)	Physician(s) of Record	Yes	Yes	Yes
(0008,1049)	Physician(s) of Record Identification Sequence	Yes	Yes	No
(0008,1050)	Performing Physicians' Name	Yes	Yes	Yes
(0008,1052)	Performing Physicians' Identification Sequence	Yes	Yes	No
(0008,1060)	Name of Physician(s) Reading Study	Yes	Yes	Yes
(0008,1062)	Physician Reading Study Identification Sequence	Yes	Yes	No
(0008,1070)	Operators' Name	Yes	Yes	Yes
(0008,1072)	Operators' Identification Sequence	Yes	Yes	No
(0008,1080)	Admitting Diagnoses Description	Yes	Yes	No
(0008,1084)	Admitting Diagnoses Code Sequence	Yes	Yes	No
(0008,1110)	Referenced Study Sequence	Yes	No	No
(0008,1111)	Referenced Performed Procedure Step Sequence	Yes	No	No
(0008,1120)	Referenced Patient Sequence	Yes	Yes	No
(0008,1140)	Referenced Image Sequence	Yes	No	No
(0008,1155)	Referenced SOP Instance UID	Yes	No	No
(0008,1195)	Transaction UID	Yes	No	No
(0008,2111)	Derivation Description	Yes	No	No
(0008,2112)	Source Image Sequence	Yes	No	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0008,3010)	Irradiation Event UID	Yes	No	No
(0008,4000)	Identifying Comments	Yes	Yes	No
(0008,9123)	Creator Version UID	Yes	No	No
(0010,0010)	Patient's Name	Yes	Yes	Yes
(0010,0020)	Patient ID	Yes	Yes	Yes
(0010,0021)	Issuer of Patient ID	Yes	Yes	No
(0010,0030)	Patient's Birth Date	Yes	Yes	Yes
(0010,0032)	Patient's Birth Time	Yes	Yes	No
(0010,0040)	Patient's Sex	Yes	No	No
(0010,0050)	Patient's Insurance Plan Code Sequence	Yes	Yes	Yes
(0010,0101)	Patient's Primary Language Code Sequence	Yes	Yes	Yes
(0010,0102)	Patient's Primary Language Modifier Code Sequence	Yes	Yes	Yes
(0010,1000)	Other Patient IDs	Yes	Yes	Yes
(0010,1001)	Other Patient Names	Yes	Yes	Yes
(0010,1002)	Other Patient IDs Sequence	Yes	Yes	Yes
(0010,1005)	Patient's Birth Name	Yes	Yes	Yes
(0010,1010)	Patient's Age	Yes	No	No
(0010,1020)	Patient's Size	Yes	No	No
(0010,1030)	Patient's Weight	Yes	No	No
(0010,1040)	Patient Address	Yes	Yes	Yes
(0010,1050)	Insurance Plan Identification	Yes	Yes	No
(0010,1060)	Patient's Mother's Birth Name	Yes	Yes	Yes
(0010,1080)	Military Rank	Yes	Yes	No
(0010,1081)	Branch of Service	Yes	Yes	No
(0010,1090)	Medical Record Locator	Yes	Yes	No
(0010,1100)	Referenced Patient Photo Sequence	Yes	Yes	No
(0010,2000)	Medical Alerts	Yes	Yes	No
(0010,2110)	Allergies	Yes	Yes	No
(0010,2150)	Country of Residence	Yes	Yes	No
(0010,2152)	Region of Residence	Yes	Yes	No
(0010,2154)	Patient's Telephone Number	Yes	Yes	Yes
(0010,2160)	Ethnic Group	Yes	No	No
(0010,2180)	Occupation	Yes	Yes	No
(0010,21A0)	Smoking Status	Yes	No	No
(0010,21B0)	Additional Patient's History	Yes	Yes	Yes
(0010,21C0)	Pregnancy Status	Yes	No	No
(0010,21D0)	Last Menstrual Date	Yes	No	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0010,21F0)	Patient's Religious Preference	Yes	Yes	No
(0010,2203)	Patient Sex Neutered	Yes	No	No
(0010,2297)	Responsible Person	Yes	Yes	No
(0010,2299)	Responsible Organization	Yes	Yes	No
(0010,4000)	Patient Comments	Yes	Yes	Yes
(0018,0010)	Contrast Bolus Agent	Yes	Yes	No
(0018,1000)	Device Serial Number	Yes	Yes	No
(0018,1002)	Device UID	Yes	No	No
(0018,1004)	Plate ID	Yes	Yes	No
(0018,1005)	Generator ID	Yes	Yes	No
(0018,1007)	Cassette ID	Yes	Yes	No
(0018,1008)	Gantry ID	Yes	Yes	No
(0018,1030)	Protocol Name	Yes	Yes	No
(0018,1400)	Acquisition Device Processing Description	Yes	Yes	No
(0018,2042)	Target UID	Yes	No	No
(0018,4000)	Acquisition Comments	Yes	Yes	No
(0018,700A)	Detector ID	Yes	Yes	No
(0018,9424)	Acquisition Protocol Description	Yes	Yes	No
(0018,9516)	Start Acquisition DateTime	Yes	No	No
(0018,9517)	End Acquisition DateTime	Yes	No	No
(0018,A003)	Contribution Description	Yes	Yes	No
(0020,000D)	Study Instance UID	Yes	No	No
(0020,000E)	Series Instance UID	Yes	No	No
(0020,0010)	Study ID	Yes	Yes	No
(0020,0052)	Frame of Reference UID	Yes	No	No
(0020,0200)	Synchronization Frame of Reference UID	Yes	No	No
(0020,3401)	Modifying Device ID	Yes	Yes	No
(0020,3404)	Modifying Device Manufacturer	Yes	Yes	No
(0020,3406)	Modified Image Description	Yes	Yes	No
(0020,4000)	Image Comments	Yes	Yes	No
(0020,9158)	Frame Comments	Yes	Yes	No
(0020,9161)	Concatenation UID	Yes	No	No
(0020,9164)	Dimension Organization UID	Yes	No	No
(0028,1199)	Palette Color Lookup Table UID	Yes	No	No
(0028,1214)	Large Palette Color Lookup Table UID	Yes	No	No
(0028,4000)	Image Presentation Comments	Yes	Yes	No
(0032,0012)	Study ID Issuer	Yes	Yes	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0032,1020)	Scheduled Study Location	Yes	Yes	No
(0032,1021)	Scheduled Study Location AE Title	Yes	Yes	No
(0032,1030)	Reason for Study	Yes	Yes	No
(0032,1032)	Requesting Physician	Yes	Yes	No
(0032,1033)	Requesting Service	Yes	Yes	No
(0032,1060)	Requested Procedure Description	Yes	Yes	No
(0032,1070)	Requested Contrast Agent	Yes	Yes	No
(0032,4000)	Study Comments	Yes	Yes	No
(0038,0004)	Referenced Patient Alias Sequence	Yes	Yes	No
(0038,0010)	Admission ID	Yes	Yes	No
(0038,0011)	Issuer of Admission ID	Yes	Yes	No
(0038,001E)	Scheduled Patient Institution Residence	Yes	Yes	No
(0038,0020)	Admitting Date	Yes	No	No
(0038,0021)	Admitting Time	Yes	No	No
(0038,0040)	Discharge Diagnosis Description	Yes	Yes	No
(0038,0050)	Special Needs	Yes	Yes	No
(0038,0060)	Service Episode ID	Yes	Yes	No
(0038,0061)	Issuer of Service Episode ID	Yes	Yes	No
(0038,0062)	Service Episode Description	Yes	Yes	No
(0038,0300)	Current Patient Location	Yes	Yes	No
(0038,0400)	Patient's Institution Residence	Yes	Yes	No
(0038,0500)	Patient State	Yes	Yes	No
(0038,4000)	Visit Comments	Yes	Yes	No
(0040,0001)	Scheduled Station AE Title	Yes	Yes	No
(0040,0002)	Scheduled Procedure Step Start Date	Yes	No	No
(0040,0003)	Scheduled Procedure Step Start Time	Yes	No	No
(0040,0004)	Scheduled Procedure Step End Date	Yes	No	No
(0040,0005)	Scheduled Procedure Step End Time	Yes	No	No
(0040,0006)	Scheduled Performing Physician Name	Yes	Yes	No
(0040,0007)	Scheduled Procedure Step Description	Yes	Yes	No
(0040,000B)	Scheduled Performing Physician Identification Sequence	Yes	Yes	No
(0040,0010)	Scheduled Station Name	Yes	Yes	No
(0040,0011)	Scheduled Procedure Step Location	Yes	Yes	No
(0040,0012)	Pre-Medication	Yes	Yes	No
(0040,0241)	Performed Station AE Title	Yes	Yes	No
(0040,0242)	Performed Station Name	Yes	Yes	No
(0040,0243)	Performed Location	Yes	Yes	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0040,0244)	Performed Procedure Step Start Date	Yes	No	No
(0040,0245)	Performed Procedure Step Start Time	Yes	No	No
(0040,0250)	Performed Procedure Step End Date	Yes	No	No
(0040,0251)	Performed Procedure Step End Time	Yes	No	No
(0040,0253)	Performed Procedure Step ID	Yes	Yes	No
(0040,0254)	Performed Procedure Step Description	Yes	Yes	No
(0040,0275)	Request Attributes Sequence	Yes	Yes	No
(0040,0280)	Comments on Performed Procedure Step	Yes	Yes	No
(0040,0555)	Acquisition Context Sequence	Yes	Yes	No
(0040,1001)	Requested Procedure ID	Yes	Yes	No
(0040,1004)	Patient Transport Arrangements	Yes	Yes	No
(0040,1005)	Requested Procedure Location	Yes	Yes	No
(0040,1010)	Names of Intended Recipient of Results	Yes	Yes	No
(0040,1011)	Intended Recipients of Results Identification Sequence	Yes	Yes	No
(0040,1101)	Person Identification Code Sequence	Yes	Yes	No
(0040,1102)	Person Address	Yes	Yes	No
(0040,1103)	Person Telephone Numbers	Yes	Yes	No
(0040,1400)	Requested Procedure Comments	Yes	Yes	No
(0040,2001)	Reason for Imaging Service Request	Yes	Yes	No
(0040,2008)	Order Entered By	Yes	Yes	No
(0040,2009)	Order Enterer Location	Yes	Yes	No
(0040,2010)	Order Callback Phone Number	Yes	Yes	No
(0040,2016)	Placer Order Number of Imaging Service Request	Yes	Yes	No
(0040,2017)	Filler Order Number of Imaging Service Request	Yes	Yes	No
(0040,2400)	Imaging Service Request Comments	Yes	Yes	No
(0040,3001)	Confidentiality Constraint on Patient Data Description	Yes	Yes	No
(0040,4005)	Scheduled Procedure Step Start DateTime	Yes	No	No
(0040,4010)	Scheduled Procedure Step Modification DateTime	Yes	No	No
(0040,4011)	Expected Completion Date Time	Yes	No	No
(0040,4023)	Referenced General Purpose Scheduled Procedure Step Transaction UID	Yes	No	No
(0040,4025)	Scheduled Station Name Code Sequence	Yes	Yes	No
(0040,4027)	Scheduled Station Geographic Location Code Sequence	Yes	Yes	No
(0040,4028)	Performed Station Name Code Sequence	Yes	Yes	No
(0040,4030)	Performed Station Geographic Location Code Sequence	Yes	Yes	No
(0040,4034)	Scheduled Human Performers Sequence	Yes	Yes	No
(0040,4035)	Actual Human Performers Sequence	Yes	Yes	No
(0040,4036)	Human Performers Organization	Yes	Yes	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0040,4037)	Human Performers Name	Yes	Yes	No
(0040,4050)	Performed Procedure Step Start DateTime	Yes	No	No
(0040,4051)	Performed Procedure Step End DateTime	Yes	No	No
(0040,4052)	Procedure Step Cancellation DateTime	Yes	No	No
(0040,A027)	Verifying Organization	Yes	Yes	No
(0040,A073)	Verifying Observer Sequence	Yes	Yes	No
(0040,A075)	Verifying Observer Name	Yes	Yes	No
(0040,A078)	Author Observer Sequence	Yes	Yes	No
(0040,A07A)	Participant Sequence	Yes	Yes	No
(0040,A07C)	Custodial Organization Sequence	Yes	Yes	No
(0040,A088)	Verifying Observer Identification Code Sequence	Yes	Yes	No
(0040,A123)	Person Name	Yes	Yes	No
(0040,A124)	UID	Yes	Yes	No
(0040,A171)	Observation UID	Yes	No	No
(0040,A172)	Referenced Observation UID (Trial)	Yes	No	No
(0040,A192)	Observation Date (Trial)	Yes	No	No
(0040,A193)	Observation Time (Trial)	Yes	No	No
(0040,A307)	Current Observer (Trial)	Yes	Yes	No
(0040,A352)	Verbal Source (Trial)	Yes	Yes	No
(0040,A353)	Address (Trial)	Yes	Yes	No
(0040,A354)	Telephone Number (Trial)	Yes	Yes	Yes
(0040,A358)	Verbal Source Identifier Code Sequence (Trial)	Yes	Yes	No
(0040,A402)	Observation Subject UID (Trial)	Yes	No	No
(0040,A730)	Content Sequence	Yes	Yes	No
(0040,DB0C)	Template Extension Organization UID	Yes	No	No
(0040,DB0D)	Template Extension Creator UID	Yes	No	No
(0070,0001)	Graphic Annotation Sequence	Yes	Yes	No
(0070,0084)	Content Creator's Name	Yes	Yes	No
(0070,0086)	Content Creator's Identification Code Sequence	Yes	Yes	No
(0070,031A)	Fiducial UID	Yes	No	No
(0088,0140)	Storage Media Fileset UID	Yes	No	No
(0088,0200)	Icon Image Sequence	Yes	Yes	No
(0088,0904)	Topic Title	Yes	Yes	No
(0088,0906)	Topic Subject	Yes	Yes	No
(0088,0910)	Topic Author	Yes	Yes	No
(0088,0912)	Topic Keywords	Yes	Yes	No
(0400,0100)	Digital Signature UID	Yes	Yes	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0400,0402)	Referenced Digital Signature Sequence	Yes	Yes	No
(0400,0403)	Referenced SOP Instance MAC Sequence	Yes	Yes	No
(0400,0404)	MAC	Yes	Yes	No
(0400,0550)	Modified Attributes Sequence	Yes	Yes	No
(0400,0561)	Original Attributes Sequence	Yes	Yes	Yes
(2030,0020)	Text String	Yes	Yes	No
(3006,0024)	Referenced Frame of Reference UID	Yes	No	No
(3006,00C2)	Related Frame of Reference UID	Yes	No	No
(3008,0105)	Source Serial Number	Yes	No	No
(300A,0013)	Dose Reference UID	Yes	No	No
(300E,0008)	Reviewer Name	Yes	Yes	No
(4000,0010)	Arbitrary	Yes	Yes	No
(4000,4000)	Text Comments	Yes	Yes	No
(4008,0042)	Results ID Issuer	Yes	Yes	No
(4008,0102)	Interpretation Recorder	Yes	Yes	No
(4008,010A)	Interpretation Transcriber	Yes	Yes	No
(4008,010B)	Interpretation Text	Yes	Yes	No
(4008,010C)	Interpretation Author	Yes	Yes	No
(4008,0111)	Interpretation Approver Sequence	Yes	Yes	No
(4008,0114)	Physician Approving Interpretation	Yes	Yes	No
(4008,0115)	Interpretation Diagnosis Description	Yes	Yes	No
(4008,0118)	Results Distribution List Sequence	Yes	Yes	No
(4008,0119)	Distribution Name	Yes	Yes	No
(4008,011A)	Distribution Address	Yes	Yes	No
(4008,0202)	Interpretation ID Issuer	Yes	Yes	No
(4008,0300)	Impressions	Yes	Yes	No
(4008,4000)	Results Comments	Yes	Yes	No
(50xx,xxxx)	Curve Data	Yes	Yes	No
(60xx,0100)	Overlay Bits Allocated	Yes	Yes	No
(60xx,0102)	Overlay Bit Position	Yes	Yes	No
(60xx,3000)	Overlay Data	Yes	Yes	No
(60xx,4000)	Overlay Comments	Yes	Yes	No
(FFFA,FFFA)	Digital Signatures Sequence	Yes	Yes	Yes
(FFFC,FFFC)	Data Set Trailing Padding	Yes	Yes	Yes

Table 73: Application Level Confidentiality Profile Attributes (private tags)

DICOM Tag	Attribute Name	Full	Reduced	Service
(0019, SIEMENS CT VA0 COAD, 90)	Osteo offset	Yes	No	No
(0019, SIEMENS CT VA0 COAD, 92)	Osteo Regression Line Slope	Yes	No	No
(0019, SIEMENS CT VA0 COAD, 93)	Osteo Regression Line Intercept	Yes	No	No
(0019, SIEMENS CT VA0 COAD, 96)	Osteo Phantom Number	Yes	No	No
(0019, SIEMENS MED NM, 93)	Phase start time	Yes	No	No
(0019, SIEMENS MED NM, A1)	Number of Phases	Yes	No	No
(0019, SIEMENS MED NM, A5)	Number of repeats / phase	Yes	No	No
(0019, SIEMENS MED NM, A6)	Cycles Per Repeat	Yes	No	No
(0019, SIEMENS MED NM, A7)	Repeat Start time	Yes	No	No
(0019, SIEMENS MED NM, A8)	Repeat Stop time	Yes	No	No
(0019, SIEMENS MED NM, A9)	Effective Repeat Time	Yes	No	No
(0019, SIEMENS MED NM, AA)	Acquired Cycles Per Repeat	Yes	No	No
(0033, SIEMENS MED NM, 29)	Crystal Thickness	Yes	No	No
(0033, SIEMENS MED NM, 30)	Preset Name Used for Acquisition	Yes	No	No
(0033, SIEMENS MED NM, 38)	Pixel Scale factor	Yes	No	No
(0035, SIEMENS MED NM, 00)	Specialized TOMO Type	Yes	No	No
(0035, SIEMENS MED NM, 04)	Repeat ID	Yes	No	No
(0035, SIEMENS MED NM, 05)	Phase ID	Yes	No	No
(0041, SIEMENS MED NM, 01)	WholeBody Tomo Position Index	Yes	No	No
(0041, SIEMENS MED NM, 02)	WholeBody Tomo Number of Positions	Yes	No	No
(0041, SIEMENS MED NM, 10)	Effective Emission Energy	Yes	No	No
(0057, SIEMENS MED NM, 03)	NM Pixel Units	Yes	No	No
(0061, SIEMENS MED NM, 62)	Recon Output Type	Yes	No	No
(0061, SIEMENS MED NM, 70)	NM Reconstruction Algorithm	Yes	No	No
(0061, SIEMENS MED NM, 8D)	QSPECT Flag	Yes	No	No
(0065, SIEMENS MED NM, 01)	Original Detector Index	Yes	No	No
(0065, SIEMENS MED NM, 02)	Siemens Planar Data Organization	Yes	No	No
(7FE3, SIEMENS MED NM, 14)	Minimum pixel value in frame	Yes	No	No
(7FE3, SIEMENS MED NM, 15)	Maximum pixel value in frame	Yes	No	No
(7FE3, SIEMENS MED NM, 29)	Number of Rwaves in a frame	Yes	No	No
(0021, SIEMENS MR SDS 01, 19)	MR Phoenix Protocol	Yes	No	No
(0029, SIEMENS CT EXAM IMAGE,49)	Metal Artifact Reduction Type	Yes	No	No
(0029, SIEMENS CSA ENVELOPE, 10)	Syngo Report Data	Yes	No	No
(0029, SIEMENS CSA ENVELOPE, 11)	Syngo Report Presentation	Yes	No	No
(0029, SIEMENS CSA HEADER, 08)	Modality Image Header Type	Yes	No	No
(0029, SIEMENS CSA HEADER, 09)	Modality Image Header Version	Yes	No	No

DICOM Tag	Attribute Name	Full	Reduced	Service
(0029, SIEMENS CSA HEADER, 10)	Modality Image Header Info	Yes	No	No
(0029, SIEMENS CSA HEADER, 18)	Modality Series Header Type	Yes	No	No
(0029, SIEMENS CSA HEADER, 19)	Modality Series Header Version	Yes	No	No
(0029, SIEMENS CSA HEADER, 20)	Modality Series Header Info	Yes	No	No
(0029, SIEMENS MEDCOM HEADER, 40)	Application Header Sequence	Yes	No	No
(0029, SIEMENS MEDCOM HEADER, 41)	Application Header Type	Yes	No	No
(0029, SIEMENS MEDCOM HEADER, 42)	Application Header ID	Yes	No	No
(0029, SIEMENS MEDCOM HEADER, 43)	Application Header Version	Yes	No	No
(0029, SIEMENS MEDCOM HEADER, 44)	Application Header Info	Yes	No	No
(0029, SIEMENS CT APPL DATASET, 00)	Dual Energy Algorithm Parameters	Yes	No	No
(0029, SIEMENS CT APPL ALG PARAMS, 20)	Perfusion Result Set Id	Yes	No	No
(0029, SIEMENS CSA REPORT, 08)	*syngo* Report Type	Yes	No	No
(0029, SIEMENS CSA REPORT, 09)	*syngo* Report Version	Yes	No	No
(0029, SIEMENS CSA REPORT, 15)	SR Variant	Yes	No	No
(0029, SIEMENS CSA REPORT, 17)	SC SOP Instance UID	Yes	No	No
(0043, GEMS_PARM_01, 1E)	GE Delta Start Time	Yes	No	No
(0049, SIEMENS CT SPP HEADER, 10)	Raw Data Container	Yes	No	No
(0067, SIEMENS MED MI, 02)	Scanner Console Generation	Yes	No	No
(0067, SIEMENS MED MI, 03)	Recon Parameters	Yes	No	No
(0067, SIEMENS MED MI, 05)	Device IVK	Yes	No	No
(0067, SIEMENS MED MI, 14)	Raw Data Description	Yes	No	No
(0067, SIEMENS MED MI, 16)	Raw Data Series Instance UIDs	Yes	No	No
(0067, SIEMENS MED MI, 17)	Raw Data Referenced Series Instance UIDs	Yes	No	No
(0067, SIEMENS MED MI, 18)	Raw Data Blob Sequence	Yes	No	No
(0071, SIEMENS MED PT, 22)	Decay Correction DateTime	Yes	No	No
(0071, SIEMENS MED PT, 23)	Registration Matrix	Yes	No	No
(0071, SIEMENS MED PT, 24)	Table Motion	Yes	No	No
(0071, SIEMENS MED PT, 25)	Lumped Constant	Yes	No	No
(0071, SIEMENS MED PT, 26)	Histogramming Method	Yes	No	No
(0071, SIEMENS MED PT MU MAP, 01)	SOP Class of Source	Yes	No	No
(0071, SIEMENS MED PT MU MAP, 02)	Related Mu Map Series	Yes	No	No

8 Security

8.1 Security Profiles

8.1.1 Time Synchronization Profiles

Time Synchronization Profiles: The *syngo*® MR XA50A acts as an NTP Client in the Maintain Time Transaction.

8.1.2 Basic TLS Secure Transport Connection Profile

Basic TLS Secure Transport Connection Profile supports TLS version 1.0, 1.1 and 1.2 protocols with the following features:

Table 74: Secure Transport Connection Profiles

Supported TLS Feature	Mechanism
Entity Authentication	RSA based certificates
Exchange of Master Secrets	RSA
Data Integrity	SHA
Privacy	Triple DES EDE, CBC

The default secure DICOM port is 2762 (can be reconfigured).

8.2 Association Level Security

It is possible to configure whether the SCP will only answer to known AETs or to any AET.

8.3 Application Level Security

- User must login with own password
- For configuration and Maintenance, Service Technician must login with a separate password.

9 Annexes

9.1 IOD Contents

9.1.1 Created SOP Classes

9.1.1.1 Enhanced MR Image IOD

This chapter describes the DICOM attributes of Enhanced MR Image Instances performed by the MR acquisition.

IE	Module	Reference	Presence of Module
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
	MR Series	see chapter 9.1.1.1.5	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
	Enhanced General Equipment	see chapter 9.1.1.1.8	always
Image	Image Pixel	see chapter 9.1.1.1.9	always
	Enhanced Contrast/Bolus	see chapter 9.1.1.1.10	always
	Multi-frame Functional Groups	see chapter 9.1.1.1.11	always
	Multi-frame Dimension	see chapter 9.1.1.1.12	always
	Cardiac Synchronization	see chapter 9.1.1.1.14	in case of cardiac triggering
	Respiratory Synchronization	see chapter 9.1.1.1.15	in case of respiratory triggering
	Bulk Motion Synchronization	see chapter 9.1.1.1.16	in case of bulk motion triggering
	Supplemental Palette Color Lookup Table	see chapter 9.1.1.1.17	in case of Color LUTs
	Acquisition Context	see chapter 9.1.1.1.18	always
	Enhanced MR Image	see chapter 9.1.1.1.19	always
	MR Pulse Sequence	see chapter 9.1.1.1.20	always
	SOP Common	see chapter 9.1.1.1.22	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.1.1 Patient Module

Attribute Name	Tag	Supported Values
Patient's Name	(0010,0010)	RIS defined or set by creator

Attribute Name	Tag	Supported Values
Patient ID	(0010,0020)	RIS defined or set by creator
Issuer of Patient ID	(0010,0021)	RIS defined
Patient's Birth Date	(0010,0030)	RIS defined or set by creator
Patient`s Birth Time	(0010,0032)	RIS defined or set by creator
Patient's Sex	(0010,0040)	RIS defined or set by creator
Other Patient IDs	(0010,1000)	RIS defined or set by creator
Other Patient Names	(0010,1001)	RIS defined or set by creator
Ethnic Group	(0010,2160)	RIS defined or set by creator
Patient Comments	(0010,4000)	RIS defined or set by creator
Other Patient Names	(0010,1001)	RIS defined or set by creator
Patient Identity Removed	(0012,0062)	set by creator

9.1.1.1.2 General Study Module

Attribute Name	Tag	Supported Values
Study Instance UID	(0020,000D)	RIS defined or set by creator
Study Date	(0008,0020)	set by creator
Study Time	(0008,0030)	set by creator
Referring Physician's Name	(0008,0090)	RIS defined or set by creator
Requesting Physician	(0032,1032)	RIS defined or set by creator
Study ID	(0020,0010)	set by creator
Accession Number	(0008,0050)	RIS defined or set by creator
Study Description	(0008,1030)	set by creator
Procedure Code Sequence	(0008,1032)	RIS defined
>Code Value	(0008,0100)	RIS defined
>Code Scheme Designator	(0008,0102)	RIS defined
>Code Meaning	(0008,0104)	RIS defined

9.1.1.1.3 Patient Study Module

Attribute Name	Tag	Supported Values
Patient's Age	(0010,1010)	RIS defined or set by creator
Patient's Size	(0010,1020)	RIS defined or set by creator
Patient's Weight	(0010,1030)	RIS defined or set by creator

9.1.1.1.4 General Series Module

Attribute Name	Tag	Supported Values
Modality	(0008,0060)	MR

Attribute Name	Tag	Supported Values
Series Instance UID	(0020,000E)	set by creator
Series Number	(0020,0011)	set by creator
Series Date	(0008,0021)	set by creator
Series Time	(0008,0031)	set by creator
Performing Physicians' Name	(0008,1050)	RIS defined or set by creator
Protocol Name	(0018,1030)	set by creator
Series Description	(0008,103E)	set by creator
Referenced Performed Procedure Step Sequence	(0008,1111)	set by creator
>Referenced SOP Class UID	(0008,1150)	set by creator
>Referenced SOP Instance UID	(0008,1155)	set by creator
Body Part Examined	(0018,0015)	set by creator
Patient Position	(0018,5100)	set by creator
Request Attributes Sequence	(0040,0275)	RIS defined
>Requested Procedure ID	(0040,1001)	RIS defined
>Accession Number	(0008,0050)	RIS defined
>Study Instance UID	(0020,000D)	RIS defined
>Requested Procedure Description	(0032,1060)	RIS defined
>Scheduled Procedure Step ID	(0040,0009)	RIS defined
>Scheduled Procedure Step Description	(0040,0007)	RIS defined
> Referenced Study Sequence	(0008,1110)	RIS defined
>> Referenced SOP Class UID	(0008,1150)	RIS defined
>> Referenced SOP Instance UID	(0008,1155)	RIS defined
> Requested Procedure Code Sequence	(0032,1064)	RIS defined
>> Code Value	(0008,0100)	RIS defined
>> Code Scheme Designator	(0008,0102)	RIS defined
>> Code Meaning	(0008,0104)	RIS defined
> Scheduled Protocol Code Sequence	(0040,0008)	RIS defined
>> Code Value	(0008,0100)	RIS defined
>> Code Scheme Designator	(0008,0102)	RIS defined
>> Code Meaning	(0008,0104)	RIS defined
Performed Procedure Step ID	(0040,0253)	set by creator
Performed Procedure Step Start Date	(0040,0244)	set by creator
Performed Procedure Step Start Time	(0040,0245)	set by creator
Performed Procedure Step Description	(0040,0254)	set by creator

9.1.1.1.5 MR Series Module

Attribute Name	Tag	Supported Values
Modality	(0008,0060)	MR

9.1.1.1.6 Frame of Reference Module

Attribute Name	Tag	Supported Values
Frame of Reference UID	(0020,0052)	set by creator
Position Reference Indicator	(0020,1040)	empty

9.1.1.1.7 General Equipment Module

Attribute Name	Tag	Supported Values
Manufacturer	(0008,0070)	Siemens Healthineers
Institution Name	(0008,0080)	RIS defined or set by creator
Station Name	(0008,1010)	set by creator
Institution Address	(0008,0081)	RIS defined set by creator
Institutional Department Name	(0008,1040)	set by creator
Manufacturer's Model Name	(0008,1090)	set by creator
Device Serial Number	(0018,1000)	set by creator
Software Versions	(0018,1020)	set by creator

9.1.1.1.8 Enhanced General Equipment Module

Attribute Name	Tag	Supported Values
Manufacturer	(0008,0070)	Siemens Healthineers

9.1.1.1.9 Image Pixel Module

Attribute Name	Tag	Supported Values
Samples per Pixel	(0028,0002)	1
Photometric Interpretation	(0028,0004)	MONOCHROME2
Rows	(0028,0010)	set by creator
Columns	(0028,0011)	set by creator
Bits Allocated	(0028,0100)	16
Bits Stored	(0028,0101)	12 or 16
High Bit	(0028,0102)	11 or 15
Pixel Representation	(0028,0103)	0
Pixel Data	(7FE0,0010)	set by creator
Smallest Image Pixel Value	(0028,0106)	set by creator
Largest Image Pixel Value	(0028,0107)	set by creator
Pixel Data	(7FE0,0010)	set by creator

9.1.1.1.10 Enhanced Contrast/Bolus Module

Attribute Name	Tag	Supported Values
Contrast/Bolus Agent Sequence	(0018,0012)	set by creator
>Code Value	(0008,0100)	set by creator
>Code Scheme Designator	(0008,0102)	set by creator
>Code Meaning	(0008,0104)	set by creator
>Contrast/Bolus Agent Number	(0018,9337)	1
>Contrast/Bolus Administration Route Sequence	(0018,0014)	set by creator
>>Code Value	(0008,0100)	set by creator
>>Code Scheme Designator	(0008,0102)	set by creator
>>Code Meaning	(0008,0104)	set by creator
>Contrast/Bolus Ingredient Code Sequence	(0018,9338)	set by creator
>>Code Value	(0008,0100)	set by creator
>>Code Scheme Designator	(0008,0102)	set by creator
>>Code Meaning	(0008,0104)	set by creator
>Contrast/Bolus Volume	(0018,1041)	set by creator
>Contrast/Bolus Ingredient Concentration	(0018,1049)	set by creator

9.1.1.1.11 Multi-frame Functional Groups Module

Attribute Name	Tag	Supported Values
Instance Number	(0020,0013)	set by creator
Content Date	(0008,0023)	set by creator
Content Time	(0008,0033)	set by creator
Number of Frames	(0028,0008)	set by creator

9.1.1.1.12 Multi-frame Dimension Module

Attribute Name	Tag	Supported Values
Dimension Organization Sequence	(0020,9221)	set by creator
Dimension Index Sequence	(0020,9222)	set by creator

9.1.1.1.13 Enhanced MR Image Functional Groups

Functional Group Macro	Attribute Name	Tag	Supported Values
Pixel Measures	Pixel Measures Sequence	(0028,9110)	set by creator
	>Pixel Spacing	(0018,0030)	set by creator
	>Slice Thickness	(0028,0050)	set by creator
Frame Content	Frame Content Sequence	(0020,9111)	set by creator
	>Frame Acquisition Number	(0020,9156)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
	>Frame Reference Date Time	(0018,9151)	set by creator
	>Frame Acquisition Date Time	(0018,9074)	set by creator
	>Frame Acquisition Duration	(0018,9220)	set by creator
	>Dimension Index Values	(0020,9157)	set by creator
	>Temporal Position Index	(0020,9128)	set by creator
	>Stack ID	(0020,9056)	set by creator
	>In-Stack Position Number	(0020,9057)	set by creator
	>Frame Comments	(0020,9158)	set by creator
Plane Position	Plane Position Sequence	(0020,9113)	set by creator
	>Image Position (Patient)	(0020,0032)	set by creator
Plane Orientation	Plane Orientation Sequence	(0020,9116)	set by creator
	>Image Orientation (Patient)	(0020,0037)	set by creator
Referenced Image	Referenced Image Sequence	(0008,1140)	set by creator
	>Referenced SOP Class UID	(0008,1150)	set by creator
	>Referenced SOP Instance UID	(0008,1155)	set by creator
	>Referenced Frame Number	(0008,1160)	set by creator
	>Purpose of Referenced Code Sequence	(0040,A170)	set by creator
	>>Code Value	(0008,0100)	e.g. 121311
	>>Coding Scheme Designator	(0008,0102)	e.g. DCM
	>>Code Meaning	(0008,0104)	e.g. Localizer
Derivation Image	Derivation Image Sequence	(0008,9124)	set by creator
	>Derivation Code Sequence	(0008,9215)	set by creator
	>>Code Value	(0008,0100)	set by creator
	>>Coding Scheme Designator	(0008,0102)	set by creator
	>>Code Meaning	(0008,0104)	set by creator
	>Source Image Sequence	(0008,2112)	set by creator
	>>Referenced SOP Class UID	(0008,1150)	set by creator
	>>Referenced SOP Instance UID	(0008,1155)	set by creator
	>>Referenced Frame Number	(0008,1160)	set by creator
	>>Purpose of Referenced Code Sequence	(0040,A170)	set by creator
	>>>Code Value	(0008,0100)	set by creator
	>>>Coding Scheme Designator	(0008,0102)	set by creator
	>>>Code Meaning	(0008,0104)	set by creator
Cardiac Synchronization	Cardiac Synchronization Sequence	(0018,9118)	set by creator
	>Nominal Percentage of Cardiac Phase	(0020,9241)	set by creator
	>Nominal Cardiac Trigger Delay Time	(0020,9153)	set by creator
	>Actual Cardiac Trigger Delay Time	(0020,9252)	set by creator
	>Nominal Cardiac Trigger Time Prior to R-peak	(0020,9154)	set by creator
	>Actual Cardiac Trigger Time Prior to R-peak	(0020,9155)	set by creator
	>Intervals Acquired	(0018,1083)	set by creator
	>Intervals Rejected	(0018,1084)	set by creator
	>Heart Rate	(0018,1088)	set by creator
	>R-R Interval Time Nominal	(0020,9251)	set by creator
	>Low R-R Value	(0018,1081)	set by creator
	>High R-R Value	(0018,1082)	set by creator
Frame Anatomy	Frame Anatomy Sequence	(0020,9071)	set by creator
	>Frame Laterality	(0020,9072)	set by creator
	>Anatomic Region Sequence	(0008,2218)	set by creator
	>>Code Value	(0008,0100)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
	>>Coding Scheme Designator	(0008,0102)	set by creator
	>>Code Meaning	(0008,0104)	set by creator
Pixel Value Transformation	Pixel Value Transformation Sequence	(0028,9145)	set by creator
	>Rescale Intercept	(0028,1052)	set by creator
	>Rescale Slope	(0028,1053)	set by creator
	>Rescale Type	(0028,1054)	set by creator
Frame VOI LUT	Frame VOI LUT Sequence	(0028,9132)	set by creator
	>Window Center	(0028,1050)	set by creator
	>Window Width	(0028,1051)	set by creator
Real World Value Mapping	Real World Value Mapping Sequence	(0040,9096)	set by creator
	>Real World Value Intercept	(0040,9224)	set by creator
	>Real World Value Slope	(0040,9225)	set by creator
	>Measurement Units Code Sequence	(0040,08EA)	set by creator
	>>Code Value	(0008,0100)	set by creator
	>>Coding Scheme Designator	(0008,0102)	set by creator
	>>Code Meaning	(0008,0104)	set by creator
Contrast/Bolus Usage	Contrast/Bolus Usage Sequence	(0018,9341)	set by creator
	>Contrast/Bolus Agent Number	(0018,9337)	1
	>Contrast/Bolus Agent Administered	(0018,9342)	set by creator
	>Contrast/Bolus Agent Detected	(0018,9343)	set by creator
	>Contrast/Bolus Agent Phase	(0018,9344)	set by creator
MR Image Frame Type	MR Image Frame Type Sequence	(0018,9226)	set by creator
	>Frame Type	(0008,9007)	set by creator
	>Pixel Presentation	(0008,9205)	set by creator
	>Volumetric Properties	(0008,9206)	set by creator
	>Volume Based Calculation Technique	(0008,9207)	set by creator
	>Complex Image Component	(0008,9208)	set by creator
	>Acquisition Contrast	(0008,9209)	set by creator
	>Functional Settling Phase Frames Present	(0018,9622)	set by creator
MR Timing and Related Parameters	MR Timing and Related Parameters Sequence	(0018,9112)	set by creator
	>Repetition Time	(0018,0080)	set by creator
	>Flip Angle	(0018,1314)	set by creator
	>Echo Train Length	(0018,0091)	set by creator
	>RF Echo Train Length	(0018,9240)	set by creator
	>Gradient Echo Train Length	(0018,9241)	set by creator
	>Specific Absorption Rate Sequence[3]	(0018,9239)	set by creator
	>>Specific Absorption Rate Definition	(0018,9179)	set by creator
	>>Specific Absorption Rate Value[Fehler! Textmarke nicht definiert.]	(0018,9181)	set by creator
	>Gradient Output Type[3]	(0018,9180)	set by creator
	>Gradient Output[3]	(0018,9182)	set by creator
	>Operation Mode Sequence[Fehler! Textmarke nicht definiert.]	(0018,9176)	set by creator
	>>Operating Mode Type	(0018,9177)	set by creator
	>>Operating Mode[Fehler! Textmarke nicht definiert.]	(0018,9178)	set by creator
MR FOV/Geometry	MR FOV/Geometry Sequence	(0018,9125)	set by creator
	>In-plane Phase Encoding Direction	(0018,1312)	set by creator
	>MR Acquisition Frequency Encoding Steps	(0018,9058)	set by creator

[3] Specific Absorption Rate Sequence, Gradient Output Type, Gradient Output, and Operating Mode Sequence are not set for GRASP reconstructed images due to technical reasons. The values can be found in the related preview images of the GRASP acquisition.

Functional Group Macro	Attribute Name	Tag	Supported Values
	>MR Acquisition Phase Encoding Steps in-plane	(0018,9231)	set by creator
	>MR Acquisition Phase Encoding Steps out-of-plane	(0018,9232)	set by creator
	>Percent Sampling	(0018,0093)	set by creator
	>Percent Phase Field of View	(0018,0094)	set by creator
MR Echo	MR Echo Sequence	(0018,9114)	set by creator
	>Effective Echo Time	(0018,9082)	set by creator
MR Modifier	MR Modifier Sequence	(0018,9115)	set by creator
	>Inversion Recovery	(0018,9009)	set by creator
	>Inversion Times	(0018,9079)	set by creator
	>Flow Compensation	(0018,9010)	set by creator
	>Flow Compensation Direction	(0018,9183)	set by creator
	>Spoiling	(0018,9016)	set by creator
	>T2 Preparation	(0018,9021)	set by creator
	>Spectrally Selected Excitation	(0018,9026)	set by creator
	>Spatial Pre-saturation	(0018,9027)	set by creator
	>Partial Fourier	(0018,9081)	set by creator
	>Partial Fourier Direction	(0018,9036)	set by creator
	>Parallel Acquisition	(0018,9077)	set by creator
	>Parallel Acquisition Technique	(0018,9078)	set by creator
	>Parallel Reduction Factor In-plane	(0018,9069)	set by creator
	>Parallel Reduction Factor out-of-plane	(0018,9155)	set by creator
MR Imaging Modifier	MR Imaging Modifier Sequence	(0018,9006)	set by creator
	>Magnetization Transfer	(0018,9020)	set by creator
	>Blood Signal Nulling	(0018,9022)	set by creator
	>Tagging	(0018,9028)	set by creator
	>Tag Spacing First Dimension	(0018,9030)	set by creator
	>Tag Spacing Second Dimension	(0018,9218)	set by creator
	>Tag Angle First Axis	(0018,9019)	set by creator
	>Tag Angle Second Axis	(0018,9219)	set by creator
	>Tag Thickness	(0018,9035)	set by creator
	>Tagging Delay	(0018,9184)	set by creator
	>Transmitter Frequency	(0018,9098)	set by creator
	>Pixel Bandwidth	(0018,0095)	set by creator
MR Receive Coil	MR Receive Coil Sequence	(0018,9042)	set by creator
	>Receive Coil Name	(0018,1250)	set by creator
	>Receive Coil Manufacturer Name	(0018,9041)	set by creator
	>Receive Coil Type	(0018,9043)	set by creator
	>Quadrature Receive Coil	(0018,9044)	set by creator
	>Multi-Coil Definition Sequence	(0018,9045)	set by creator
	>>Multi-Coil Element Name	(0018,9047)	set by creator
	>>Multi-Coil Element Used	(0018,9048)	set by creator
MR Transmit Coil	MR Transmit Coil Sequence	(0018,9049)	set by creator
	>Transmit Coil Name	(0018,1251)	set by creator
	>Transmit Coil Manufacturer Name	(0018,9050)	set by creator
	>Transmit Coil Type	(0018,9051)	set by creator
MR Diffusion	MR Diffusion Sequence	(0018,9117)	set by creator
	>Diffusion b-value	(0018,9087)	set by creator
	>Diffusion Directionality	(0018,9075)	set by creator
	>Diffusion Gradient Direction Sequence	(0018,9076)	set by creator
	>>Diffusion Gradient Orientation	(0018,9089)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
	>Diffusion b-matrix Sequence	(0018,9601)	set by creator
	>>Diffusion b-value XX	(0018,9602)	set by creator
	>>Diffusion b-value XY	(0018,9603)	set by creator
	>>Diffusion b-value XZ	(0018,9604)	set by creator
	>>Diffusion b-value YY	(0018,9605)	set by creator
	>>Diffusion b-value YZ	(0018,9606)	set by creator
	>>Diffusion b-value ZZ	(0018,9607)	set by creator
MR Averages	MR Averages Sequence	(0018,9119)	set by creator
	>Number of Averages	(0018,0083)	set by creator
MR Velocity Encoding	MR Velocity Encoding Sequence	(0018,9197)	set by creator
	>Velocity Encoding Direction	(0018,9090)	set by creator
	>Velocity Encoding Minimum Value	(0018,9091)	set by creator
	>Velocity Encoding Maximum Value	(0018,9217)	set by creator
MR Arterial Spin Labeling	MR Arterial Spin Labeling Sequence	(0018,9251)	set by creator
	>ASL Technique Description	(0018,9252)	set by creator
	>ASL Context	(0018,9257)	set by creator
	>ASL Slab Sequence	(0018,9260)	set by creator
	>>ASL Slab Number	(0018,9253)	set by creator
	>>ASL Slab Thickness	(0018,9254)	set by creator
	>>ASL Slab Orientation	(0018,9255)	set by creator
	>>ASL Mid Slab Position	(0018,9256)	set by creator
	>>ASL Pulse Train Duration	(0018,9258)	set by creator
	>ASL Crusher Flag	(0018,9259)	set by creator
	>ASL Crusher Flow Limit	(0018,925A)	set by creator
	>ASL Crusher Description	(0018,925B)	set by creator
	>ASLBolus Cut-off Flag	(0018,925C)	set by creator
	>ASLBolus Cut-off Timing Sequence	(0018,925D)	set by creator
	>>ASL Bolus Cut-off Delay Time	(0018,925F)	set by creator
	>>ASL Bolus Cut-off Technique	(0018,925E)	set by creator

9.1.1.1.14 Cardiac Synchronization Module

Attribute Name	Tag	Supported Values
Cardiac Synchronization Technique	(0018,9037)	set by creator
Cardiac Signal Source	(0018,9085)	set by creator
Cardiac RR Interval Specified	(0018,9070)	set by creator
Low R-R Value	(0018,1081)	set by creator
High R-R Value	(0018,1082)	set by creator
Intervals Acquired	(0018,1083)	set by creator
Intervals Rejected	(0018,1084)	set by creator

9.1.1.1.15 Respiratory Synchronization Module

Attribute Name	Tag	Supported Values
Respiratory Motion Compensation Technique	(0018,9170)	set by creator

9.1.1.1.16 Bulk Motion Synchronization Module

Attribute Name	Tag	Supported Values
Bulk Motion Compensation Technique	(0018,9172)	set by creator
Bulk Motion Signal Source	(0018,9173)	set by creator

9.1.1.1.17 Supplemental Palette Color Lookup Table Module

Attribute Name	Tag	Supported Values
Red Palette Color Lookup Table Descriptor	(0028,1101)	set by creator
Green Palette Color Lookup Table Descriptor	(0028,1102)	set by creator
Blue Palette Color Lookup Table Descriptor	(0028,1103)	set by creator
Red Palette Color Lookup Table Data	(0028,1201)	set by creator
Green Palette Color Lookup Table Data	(0028,1202)	set by creator
Blue Palette Color Lookup Table Data	(0028,1203)	set by creator

9.1.1.1.18 Acquisition Context Module

Attribute Name	Tag	Supported Values
Acquisition Context Sequence	(0040,0555)	TID 99_3100

9.1.1.1.18.1 MR Acquisition Context TID 99_3100

The MR Acquisition Context TID 99_3100 is used in the Acquisition Context Sequence (0040,0555) of Enhanced MR Images.

Type: Extensible

VT	Concept Name	VM	Req Type	Value Set Constraint
CODE	EV (A-52, 99SMS_CTMR, “MR Technique")	1	M	DCID(A-200)

9.1.1.1.18.2 MR Technique Context Group A-200

Type: Extensible

Coding Scheme Designator (0008,0102)	Coding Scheme Version (0008,0103)	Code Value (0008,0100)	Code Meaning (0008,0104)
99SMS_CTMR	1.0	A-200	GRASP
99SMS_CTMR	1.0	A-202	FastView
99SMS_CTMR	1.0	A-204	Angio
99SMS_CTMR	1.0	A-206	BOLD
99SMS_CTMR	1.0	A-208	Diffusion
99SMS_CTMR	1.0	A-210	DTI
99SMS_CTMR	1.0	A-212	Perfusion
99SMS_CTMR	1.0	A-214	TWIST

9.1.1.1.19 Enhanced MR Image Module

Attribute Name	Tag	Supported Values
Acquisition Number	(0020,0012)	set by creator
Acquisition Date Time	(0008,002A)	set by creator
Acquisition Duration	(0018,9073)	set by creator
Content Qualification	(0018,9004)	set by creator
Resonant Nucleus	(0018,9100)	set by creator
k-space Filtering	(0018,9064)	set by creator
Magnetic Field Strength	(0018,0087)	set by creator
Applicable Safety Standard Agency	(0018,9174)	set by creator
Image Comments	(0020,4000)	set by creator
Image Type	(0008,0008)	set by creator
Pixel Presentation	(0008,9205)	set by creator
Volumetric Properties	(0008,9206)	set by creator
Volume Based Calculation Technique	(0008,9207)	set by creator
Complex Image Component	(0008,9208)	set by creator
Acquisition Contrast	(0008,9209)	set by creator
Samples per Pixel	(0028,0002)	1
Photometric Interpretation	(0028,0004)	MONOCHROME2
Bits Allocated	(0028,0100)	16
Bits Stored	(0028,0101)	12 or 16
High Bit	(0028,0102)	11 or 15
Pixel Representation	(0028,0103)	0
Burned In Annotation	(0028,0301)	NO
Lossy Image Compression	(0028,2110)	00
Presentation LUT Shape	(2050.0020)	IDENTITY

9.1.1.1.20 MR Pulse Sequence Module

Attribute Name	Tag	Supported Values
Pulse Sequence Name	(0018,9005)	set by creator
MR Acquisition Type	(0018,0023)	set by creator
Echo Pulse Sequence	(0018,9008)	set by creator
Multiple Spin Echo	(0018,9011)	set by creator
Multi-planar Excitation	(0018,9012)	set by creator
Phase Contrast	(0018,9014)	set by creator
Velocity Encoding Acquisition Sequence	(0018,9092)	set by creator
> Velocity Encoding Direction	(0018,9090)	set by creator
Time of Flight Contrast	(0018,9015)	set by creator
Arterial Spin Labeling Contrast	(0018,9250)	set by creator
Steady State Pulse Sequence	(0018,9017)	set by creator
Echo Planar Pulse Sequence	(0018,9018)	set by creator
Saturation Recovery	(0018,9024)	set by creator
Spectral Selected Suppression	(0018,9025)	set by creator
Oversampling Phase	(0018,9029)	set by creator
Geometry of k-Space Traversal	(0018,9032)	set by creator
Rectilinear Phase Encode Reordering	(0018,9034)	set by creator
Segmented k-Space Traversal	(0018,9033)	set by creator
Coverage of k-Space	(0018,9094)	set by creator
Number of k-Space Trajectories	(0018,9093)	set by creator

9.1.1.1.21 ICC Profile Module

Attribute Name	Tag	Supported Values
ICC Profile	(0028,2000)	set by creator
Color Space	(0028,2002)	SRGB

9.1.1.1.22 SOP Common Module

Attribute Name	Tag	Supported Values
SOP Class UID	(0008,0016)	Enhanced MR Storage SOP Class UID
SOP Instance UID	(0008,0018)	set by creator
Specific Character Set	(0008,0005)	set by creator
Instance Creation Date	(0008,0012)	date the SOP instance was created
Instance Creation Time	(0008,0013)	time the SOP instance was created

9.1.1.1.23 Common Instance Reference Module

Attribute Name	Tag	Supported Values
Referenced Series Sequence	(0008,1115)	set by creator
>Series Instance UID	(0020,000E)	set by creator
> Referenced Instance Sequence	(0008,114A)	set by creator
>>Referenced SOP Class UID	(0008,1150)	set by creator
>> Referenced SOP Instance UID	(0008,1155)	set by creator

9.1.1.2 Enhanced MR Color Image IOD

The Enhanced MR Color Image IOD supports the same DICOM attributes as the Enhanced MR Image IOD except for the Photometric Interpretation which is RGB. Also, Supplemental Palette Color Lookup Table module, Pixel Value Transformation Macro, Frame VOI LUT Macro, and Real World Value Mapping Macro are not part of this IOD.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
	MR Series	see chapter 9.1.1.1.5	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
	Enhanced General Equipment	see chapter 9.1.1.1.8	always
Image	Image Pixel	see chapter 9.1.1.2.19.1.1.1.9	always
	Enhanced Contrast/Bolus	see chapter 9.1.1.1.10	always
	Multi-frame Functional Groups	see chapter 9.1.1.1.11	always
	Multi-frame Dimension	see chapter 9.1.1.1.12	always
	Cardiac Synchronization	see chapter 9.1.1.1.14	in case of cardiac triggering
	Respiratory Synchronization	see chapter 9.1.1.1.15	in case of respiratory triggering
	Bulk Motion Synchronization	see chapter 9.1.1.1.16	in case of bulk motion triggering
	Acquisition Context	see chapter 9.1.1.1.18	always
	Enhanced MR Image	see chapter 9.1.1.1.19 and 9.1.1.2.2	always
	MR Pulse Sequence	see chapter 9.1.1.1.20	always
	ICC Profile	see chapter 9.1.1.1.21	always
	SOP Common	see chapter 9.1.1.1.22	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.2.1 Image Pixel Module

Attribute Name	Tag	Supported Values
Samples per Pixel	(0028,0002)	3
Photometric Interpretation	(0028,0004)	RGB
Rows	(0028,0010)	set by creator
Columns	(0028,0011)	set by creator
Bits Allocated	(0028,0100)	8
Bits Stored	(0028,0101)	8
High Bit	(0028,0102)	7
Pixel Representation	(0028,0103)	0
Planar Configuration	(0028,0006)	0
Pixel Data	(7FE0,0010)	set by creator

9.1.1.2.2 Enhanced MR Image Module

Attribute Name	Tag	Supported Values
Pixel Presentation	(0008,9205)	TRUE_COLOR

9.1.1.3 MR Spectroscopy IOD

This chapter describes the DICOM attributes of MR Spectroscopy Instances performed by the MR acquisition.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
	MR Series	see chapter 9.1.1.1.5	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
	Enhanced General Equipment	see chapter 9.1.1.1.8	always
MR Spectroscopy	Enhanced Contrast/Bolus	see chapter 9.1.1.1.10	always
	Multi-frame Functional Groups	see chapter 9.1.1.1.11	always
	Multi-frame Dimension	see chapter 9.1.1.1.12	always
	Cardiac Synchronization	see chapter 9.1.1.1.14	in case of cardiac triggering
	Respiratory Synchronization	see chapter 9.1.1.1.15	in case of respiratory triggering

IE	Module	Reference	Usage
	Bulk Motion Synchronization	see chapter 9.1.1.1.16	in case of bulk motion triggering
	Acquisition Context	see chapter 9.1.1.1.18	always
	MR Spectroscopy	see chapter 9.1.1.3.29.1.1.1.19	always
	MR Spectroscopy Pulse Sequence	see chapter 9.1.1.3.3	always
	MR Spectroscopy Data	see chapter 9.1.1.3.4	always
	SOP Common	see chapter 9.1.1.1.22	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.3.1 MR Spectroscopy Functional Groups

Functional Group Macro	Attribute Name	Tag	Supported Values
Pixel Measures	Pixel Measures Sequence	(0028,9110)	set by creator
	>Pixel Spacing	(0018,0030)	set by creator
	>Slice Thickness	(0028,0050)	set by creator
Frame Content	Frame Content Sequence	(0020,9111)	set by creator
	>Frame Acquisition Number	(0020,9156)	set by creator
	>Frame Reference Date Time	(0018,9151)	set by creator
	>Frame Acquisition Date Time	(0018,9074)	set by creator
	>Frame Acquisition Duration	(0018,9220)	set by creator
	>Dimension Index Values	(0020,9157)	set by creator
	>Temporal Position Index	(0020,9128)	set by creator
	>Stack ID	(0020,9056)	set by creator
	>In-Stack Position Number	(0020,9057)	set by creator
	>Frame Comments	(0020,9158)	set by creator
Plane Position	Plane Position Sequence	(0020,9113)	set by creator
	>Image Position (Patient)	(0020,0032)	set by creator
Plane Orientation	Plane Orientation Sequence	(0020,9116)	set by creator
	>Image Orientation (Patient)	(0020,0037)	set by creator
Referenced Image	Referenced Image Sequence	(0008,1140)	set by creator
	>Referenced SOP Class UID	(0008,1150)	set by creator
	>Referenced SOP Instance UID	(0008,1155)	set by creator
	>Referenced Frame Number	(0008,1160)	set by creator
	>Purpose of Referenced Code Sequence	(0040,A170)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
	>>Code Value	(0008,0100)	set by creator
	>>Coding Scheme Designator	(0008,0102)	set by creator
	>>Code Meaning	(0008,0104)	set by creator
Derivation Image	Derivation Image Sequence	(0008,9124)	set by creator
	>Derivation Code Sequence	(0008,9215)	set by creator
	>>Code Value	(0008,0100)	set by creator
	>>Coding Scheme Designator	(0008,0102)	set by creator
	>>Code Meaning	(0008,0104)	set by creator
	>Source Image Sequence	(0008,2112)	set by creator
	>>Referenced SOP Class UID	(0008,1150)	set by creator
	>>Referenced SOP Instance UID	(0008,1155)	set by creator
	>>Referenced Frame Number	(0008,1160)	set by creator
	>>Purpose of Referenced Code Sequence	(0040,A170)	set by creator
	>>>Code Value	(0008,0100)	set by creator
	>>>Coding Scheme Designator	(0008,0102)	set by creator
	>>>Code Meaning	(0008,0104)	set by creator
Frame Anatomy	Frame Anatomy Sequence	(0020,9071)	set by creator
	>Frame Laterality	(0020,9072)	set by creator
	>Anatomic Region Sequence	(0008,2218)	set by creator
	>>Code Value	(0008,0100)	set by creator
	>>Coding Scheme Designator	(0008,0102)	set by creator
	>>Code Meaning	(0008,0104)	set by creator
Contrast/Bolus Usage	Contrast/Bolus Usage Sequence	(0018,9341)	set by creator
	>Contrast/Bolus Agent Number	(0018,9337)	1
	>Contrast/Bolus Agent Administered	(0018,9342)	set by creator
	>Contrast/Bolus Agent Detected	(0018,9343)	set by creator
	>Contrast/Bolus Agent Phase	(0018,9344)	set by creator
MR Spectroscopy Frame Type	MR Spectroscopy Frame Type Sequence	(0018,9227)	set by creator
	>Frame Type	(0008,9007)	set by creator
	>Volumetric Properties	(0008,9206)	set by creator
	>Volume Based Calculation Technique	(0008,9207)	set by creator
	>Complex Image Component	(0008,9208)	set by creator
	>Acquisition Contrast	(0008,9209)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
MR Timing and Related Parameters	MR Timing and Related Parameters Sequence	(0018,9112)	set by creator
	>Repetition Time	(0018,0080)	set by creator
	>Flip Angle	(0018,1314)	set by creator
	>Echo Train Length	(0018,0091)	set by creator
	>RF Echo Train Length	(0018,9240)	set by creator
	>Gradient Echo Train Length	(0018,9241)	set by creator
	>Specific Absorption Rate Sequence	(0018,9239)	set by creator
	>>Specific Absorption Rate Definition	(0018,9179)	set by creator
	>>Specific Absorption Rate Value	(0018,9181)	set by creator
	>Gradient Output Type	(0018,9180)	set by creator
	>Gradient Output	(0018,9182)	set by creator
	>Operation Mode Sequence	(0018,9176)	set by creator
	>>Operating Mode Type	(0018,9177)	set by creator
	>>Operating Mode	(0018,9178)	set by creator
MR Spectroscopy FOV/Geometry	MR Spectroscopy FOV/Geometry Sequence	(0018,9103)	set by creator
	>Spectroscopy Acquisition Data Columns	(0018,9127)	set by creator
	>Spectroscopy Acquisition Phase Rows	(0018,9095)	set by creator
	>Spectroscopy Acquisition Phase Columns	(0018,9234)	set by creator
	>Spectroscopy Acquisition Out-of-Plane Phase Steps	(0018,9159)	set by creator
	>Percent Sampling	(0018,0093)	set by creator
	>Percent Phase Field of View	(0018,0094)	set by creator
MR Echo	MR Echo Sequence	(0018,9114)	set by creator
	>Effective Echo Time	(0018,9082)	set by creator
MR Modifier	MR Modifier Sequence	(0018,9115)	set by creator
	>Inversion Recovery	(0018,9009)	set by creator
	>Inversion Times	(0018,9079)	set by creator
	>Flow Compensation	(0018,9010)	set by creator
	>Flow Compensation Direction	(0018,9183)	set by creator
	>Spoiling	(0018,9016)	set by creator
	>T2 Preparation	(0018,9021)	set by creator
	>Spectrally Selected Excitation	(0018,9026)	set by creator
	>Spatial Pre-saturation	(0018,9027)	set by creator
	>Partial Fourier	(0018,9081)	set by creator
	>Partial Fourier Direction	(0018,9036)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
	>Parallel Acquisition	(0018,9077)	set by creator
	>Parallel Acquisition Technique	(0018,9078)	set by creator
	>Parallel Reduction Factor In-plane	(0018,9069)	set by creator
	>Parallel Reduction Factor out-of-plane	(0018,9155)	set by creator
MR Receive Coil	MR Receive Coil Sequence	(0018,9042)	set by creator
	>Receive Coil Name	(0018,1250)	set by creator
	>Receive Coil Manufacturer Name	(0018,9041)	set by creator
	>Receive Coil Type	(0018,9043)	set by creator
	>Quadrature Receive Coil	(0018,9044)	set by creator
	>Multi-Coil Definition Sequence	(0018,9045)	set by creator
	>>Multi-Coil Element Name	(0018,9047)	set by creator
	>>Multi-Coil Element Used	(0018,9048)	set by creator
MR Transmit Coil	MR Transmit Coil Sequence	(0018,9049)	set by creator
	>Transmit Coil Name	(0018,1251)	set by creator
	>Transmit Coil Manufacturer Name	(0018,9050)	set by creator
	>Transmit Coil Type	(0018,9051)	set by creator
MR Averages	MR Averages Sequence	(0018,9119)	set by creator
	>Number of Averages	(0018,0083)	set by creator

9.1.1.3.2 MR Spectroscopy Module

Attribute Name	Tag	Supported Values
Acquisition Number	(0020,0012)	set by creator
Acquisition Date Time	(0018,002A)	set by creator
Acquisition Duration	(0018,9073)	set by creator
Referenced Raw Data Sequence	(0008,9121)	set by creator
Content Qualification	(0018,9004)	set by creator
Resonant Nucleus	(0018,9100)	set by creator
k-space Filtering	(0018,9064)	set by creator
Magnetic Field Strength	(0018,0087)	set by creator
Applicable Safety Standard Agency	(0018,9174)	set by creator
Image Comments	(0020,4000)	set by creator
Image Type	(0008,0008)	set by creator
Volumetric Properties	(0008,9206)	set by creator
Volume Based Calculation Technique	(0008,9207)	set by creator

Attribute Name	Tag	Supported Values
Complex Image Component	(0008,9208)	set by creator
Acquisition Contrast	(0008,9209)	set by creator
Transmitter Frequency	(0018,9098)	set by creator
Spectral Width	(0018,9052)	set by creator
Chemical Shift Reference	(0018,9053)	set by creator
Volume Localisation Technique	(0018,9054)	set by creator
Volume Localization Sequence	(0018,9126)	set by creator
>Slab Thickness	(0018,9104)	set by creator
>Slab Orientation	(0018,9105)	set by creator
>Mid SlabPosition	(0018,9106)	set by creator
De-coupling	(0018,9059)	set by creator
De-coupling Nucleus	(0018,9060)	set by creator
De-coupling Frequency	(0018,9061)	set by creator
De-coupling Method	(0018,9062)	set by creator
De-coupling Chemical Shift Reference	(0018,9063)	set by creator
Time Domain Filtering	(0018,9065)	set by creator
Number Of Zero Fills	(0018,9066)	set by creator
Baseline Correction	(0018,9067)	set by creator
Frequency Correction	(0018,9101)	set by creator
First Order Phase Correction	(0018,9198)	set by creator
Water Referenced Phase Correction	(0018,9199)	set by creator
Water Reference Acquisition	(0018,9297)	set by creator
Referenced Instance Sequence	(0008,114A)	set by creator
>Purpose of Reference Code Sequence	(0040,A170)	set by creator

9.1.1.3.3 MR Spectroscopy Pulse Sequence Module

Attribute Name	Tag	Supported Values
Pulse Sequence Name	(0018,9005)	set by creator
MR Spectroscopy Acquisition Type	(0018,9200)	set by creator
Echo Pulse Sequence	(0018,9008)	set by creator
Multi Spin Echo	(0018,9011)	set by creator
Multi-planar Excitation	(0018,9012)	set by creator
Steady State Pulse Sequence	(0018,9017)	set by creator
Echo Planar Pulse Sequence	(0018,9018)	set by creator
Spectrally Selected Suppression	(0018,9025)	set by creator
Geometry of k-Space Traversal	(0018,9032)	set by creator
Rectilinear Phase Encode Reordering	(0018,9034)	set by creator
Segmented k-Space Traversal	(0018,9033)	set by creator
Coverage of k-Space	(0018,9094)	set by creator

Attribute Name	Tag	Supported Values
Number of k-Space Trajectories	(0018,9093)	set by creator
Echo Peak Position	(0018,9298)	set by creator

9.1.1.3.4 MR Spectroscopy Data Module

Attribute Name	Tag	Supported Values
Rows	(0028,0010)	set by creator
Columns	(0028,0011)	set by creator
Data Point Rows	(0028,9001)	set by creator
Data Point Columns	(0028,9002)	set by creator
Data Representation	(0028,9108)	set by creator
Signal Domain Columns	(0028,9003)	set by creator
Signal Domains Rows	(0028,9235)	set by creator
First Order Phase Correction Angle	(5600,0010)	set by creator
Spectroscopy Data	(5600,0020)	set by creator

9.1.1.4 MR Image

This chapter describes the DICOM attributes of MR Image instances created in interoperability mode. The following table lists the modules created by syngo® MR.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
Image	General Image	see chapter 9.1.1.4.1	always
	General Reference	see chapter 9.1.1.4.2	always
	Image Plane	see chapter 9.1.1.4.3	always
	Image Pixel	see chapter 9.1.1.1.9	always
	Contrast/Bolus	see chapter 9.1.1.4.4	always
	MR Image	see chapter 9.1.1.4.5	always
	Overlay Plane	see chapter 9.1.1.4.6	always
	VOI LUT	see chapter 9.1.1.4.7	always
	SOP Common	see chapter 9.1.1.1.22	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.4.1 General Image Module

Attribute Name	Tag	Supported Values
Instance Number	(0020,0013)	set by creator
Patient Orientation	(0020,0020)	set by creator
Content Date	(0008,0023)	set by creator
Content Time	(0008,0033)	set by creator
Image Type	(0008,0008)	set by creator
Acquisition Number	(0020,0012)	set by creator
Acquisition Date	(0008,0022)	set by creator
Acquisition Time	(0008,0032)	set by creator
Acquisition DateTime	(0008,002A)	set by creator
Image Comments	(0020,4000)	set by creator
Presentation LUT Shape	(2050,0020)	set by creator

9.1.1.4.2 General Reference Module

Attribute Name	Tag	Supported Values
Referenced Image Sequence	(0008,1140)	set by creator
>Referenced SOP Class UID	(0008,1150)	set by creator
>Referenced SOP Instance UID	(0008,1155)	set by creator
>Referenced Frame Number	(0008,1160)	If referenced SOP Instance is a multi-frame image

9.1.1.4.3 Image Plane Module

Attribute Name	Tag	Supported Values
Pixel Spacing	(0028,0030)	set by creator
Image Orientation (Patient)	(0020,0037)	set by creator
Image Position (Patient)	(0020,0032)	set by creator
Slice Thickness	(0018,0050)	set by creator
Slice Location	(0020,1041)	set by creator

9.1.1.4.4 Contrast/Bolus Module

Attribute Name	Tag	Supported Values
Contrast/Bolus Agent	(0018,0010)	set by creator
Contrast/Bolus Agent Sequence	(0018,0012)	set by creator
>Code Value	(0008,0100)	set by creator
>Coding Scheme Designator	(0008,0102)	set by creator

Attribute Name	Tag	Supported Values
>Coding Scheme Version	(0008,0103)	set by creator
>Code Meaning	(0008,0104)	set by creator
Contrast/Bolus Route	(0018,1040)	set by creator
Contrast/Bolus Administration Route Sequence	(0018,0014)	set by creator
>Code Value	(0008,0100)	set by creator
>Coding Scheme Designator	(0008,0102)	set by creator
>Coding Scheme Version	(0008,0103)	set by creator
>Code Meaning	(0008,0104)	set by creator
Contrast/Bolus Volume	(0018,1041)	set by creator
Contrast/Bolus Start Time	(0018,1042)	set by creator
Contrast/Bolus Stop Time	(0018,1043)	set by creator
Contrast/Bolus Total Dose	(0018,1044)	set by creator
Contrast Flow Rate	(0018,1046)	set by creator
Contrast Flow Duration	(0018,1047)	set by creator
Contrast/Bolus Ingredient	(0018,1048)	set by creator
Contrast/Bolus Ingredient Concentration	(0018,1049)	set by creator

9.1.1.4.5 MR Image Module

Attribute Name	Tag	Supported Values
Image Type	(0008,0008)	set by creator
Samples per Pixel	(0028,0002)	set by creator
Photometric Interpretation	(0028,0004)	set by creator
Bits Allocated	(0028,0100)	set by creator
Bits Stored	(0028,0101)	set by creator
High Bit	(0028,0102)	set by creator
Scanning Sequence	(0018,0020)	set by creator
Sequence Variant	(0018,0021)	set by creator
Scan Options	(0018,0022)	set by creator
MR Acquisition Type	(0018,0023)	set by creator
Repetition Time	(0018,0080)	set by creator
Echo Time	(0018,0081)	set by creator
Echo Train Length	(0018,0091)	set by creator
Inversion Time	(0018,0082)	set by creator
Trigger Time	(0018,1060)	set by creator
Sequence Name	(0018,0024)	set by creator
Angio Flag	(0018,0025)	set by creator
Number of Averages	(0018,0083)	set by creator
Imaging Frequency	(0018,0084)	set by creator
Imaged Nucleus	(0018,0085)	set by creator

Attribute Name	Tag	Supported Values
Echo Number(s)	(0018,0086)	set by creator
Magnetic Field Strength	(0018,0087)	set by creator
Spacing Between Slices	(0018,0088)	set by creator
Number of Phase Encoding Steps	(0018,0089)	set by creator
Percent Sampling	(0018,0093)	set by creator
Percent Phase Field of View	(0018,0094)	set by creator
Pixel Bandwidth	(0018,0095)	set by creator
Nominal Interval	(0018,1062)	set by creator
Beat Rejection Flag	(0018,1080)	set by creator
Low R-R Value	(0018,1081)	set by creator
High R-R Value	(0018,1082)	set by creator
Intervals Acquired	(0018,1083)	set by creator
Intervals Rejected	(0018,1084)	set by creator
PVC Rejection	(0018,1085)	set by creator
Skip Beats	(0018,1086)	set by creator
Heart Rate	(0018,1088)	set by creator
Cardiac Number of Images	(0018,1090)	set by creator
Trigger Window	(0018,1094)	set by creator
Reconstruction Diameter	(0018,1100)	set by creator
Receive Coil Name	(0018,1250)	set by creator
Transmit Coil Name	(0018,1251)	set by creator
Acquisition Matrix	(0018,1310)	set by creator
In-plane Phase Encoding Direction	(0018,1312)	set by creator
Flip Angle	(0018,1314)	set by creator
SAR	(0018,1316)	set by creator
Variable Flip Angle Flag	(0018,1315)	set by creator
dB/dt	(0018,1318)	set by creator
Temporal Position Identifier	(0020,0100)	set by creator
Number of Temporal Positions	(0020,0105)	set by creator
Temporal Resolution	(0020,0110)	set by creator
B1rms	(0018,1320)	set by creator

9.1.1.4.6 Overlay Plane Module

Attribute Name	Tag	Supported Values
Overlay Rows	(60xx,0010)	set by creator
Overlay Columns	(60xx,0011)	set by creator
Overlay Type	(60xx,0040)	set by creator
Overlay Origin	(60xx,0050)	set by creator
Overlay Bits Allocated	(60xx,0100)	set by creator

Attribute Name	Tag	Supported Values
Overlay Bit Position	(60xx,0102)	set by creator
Overlay Data	(60xx,3000)	set by creator
Overlay Description	(60xx,0022)	set by creator
Overlay Subtype	(60xx,0045)	set by creator
Overlay Label	(60xx,1500)	set by creator
ROI Area	(60xx,1301)	set by creator
ROI Mean	(60xx,1302)	set by creator
ROI Standard Deviation	(60xx,1303)	set by creator

9.1.1.4.7 VOI LUT Module

Attribute Name	Tag	Supported Values
VOI LUT Sequence	(0028,3010)	set by creator
>LUT Descriptor	(0028,3002)	set by creator
>LUT Explanation	(0028,3003)	set by creator
>LUT Data	(0028,3006)	set by creator
Window Center	(0028,1050)	set by creator
Window Width	(0028,1051)	set by creator
Window Center and Width Explanation	(0028,1055)	set by creator
VOI LUT Function	(0028,1056)	set by creator

9.1.1.5 Raw Data

Neuro Diffusion Tensor Imaging data are encoded in the Raw Data SOP Class.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
Image	Acquisition Context	see chapter 9.1.1.1.18	always
	Raw Data	see chapter 9.1.1.5.1	always
	SOP Common	see chapter 9.1.1.1.22	always

9.1.1.5.1 Raw Data Module

Attribute Name	Tag	Supported Values
Instance Number	(0020,0013)	set by creator
Content Date	(0008,0023)	set by creator
Content Time	(0008,0033)	set by creator
Image Type	(0008,0008)	set by creator
Acquisition DateTime	(0008,002A)	set by creator
Creator_Version UID	(0008,9123)	set by creator
Raw Data	(7FE1,SIEMENS MR IMA, 10))	set by creator

9.1.1.6 Multi-frame Grayscale Word Secondary Capture Image

For some use cases Multi-frame Grayscale Word SC Image instances are created for documentation and reporting purposes. The following table lists the modules created by *syngo*® MR XA50A.

IE	Module	Reference	Presence of Module
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
	SC Equipment	see chapter 9.1.1.6.1	always
Image	General Image	see chapter 9.1.1.4.1	always
	Image Pixel	see chapter 9.1.1.1.9	always
	Cine	n. a.	not used
	Multi-frame	see chapter 9.1.1.6.2	always
	Frame Pointers	see chapter 9.1.1.6.39.1.1.1.12	always
	Multi-frame Functional Groups	see chapter 9.1.1.6.4	always
	SC Image	see chapter 9.1.1.6.6	always
	SC Multi-frame Image	see chapter 9.1.1.6.7	always
	SC Multi-fame Vector	see chapter 9.1.1.6.8	always
	VOI LUT	see chapter 9.1.1.4.6	always
	SOP Common	see chapter 9.1.1.1.22	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.6.1 SC Equipment Module

Attribute Name	Tag	Supported Values
Conversion Type	(0008,0064)	set by creator
Modality	(0008,0060)	MR

9.1.1.6.2 Multi-frame Module

Attribute Name	Tag	Supported Values
Number of Frames	(0028,0008)	set by creator
Frame Increment Pointer	(0028,0009)	set by creator

9.1.1.6.3 Frame Pointers Module

Attribute Name	Tag	Supported Values
Representative Frame Number	(0028,6010)	set by creator
Frame Numbers of Interest (FOI)	(0028,6020)	set by creator
Frame of Interest Description	(0028,6022)	set by creator
Frame of Interest Type	(0028,6023)	set by creator

9.1.1.6.4 Multi-frame Functional Groups Module

Attribute Name	Tag	Supported Values
Shared Functional Groups Sequence	(5200,9229)	set by creator
Per-frame Functional Groups Sequence	(5200,9230)	set by creator
Instance Number	(0020,0013)	set by creator
Content Date	(0008,0023)	set by creator
Content Time	(0008,0033)	set by creator
Number of Frames	(0028,0008)	set by creator
Representative Frame Number	(0028,6010)	set by creator

9.1.1.6.5 Multi-frame Grayscale Word SC Image Functional Group Macros

Functional Group Macro	Attribute Name	Tag	Supported Values
Pixel Measures (if Plane Position (Patient) or Plane Orientation (Patient) Macros Present)	Pixel Measures Sequence	(0028,9110)	set by creator
	>Pixel Spacing	(0018,0030)	set by creator
	>Slice Thickness	(0028,0050)	set by creator
Plane Position (Patient) (if Pixel Measures or Plane Orientation (Patient) Macros Present)	Plane Position Sequence	(0020,9113)	set by creator
	>Image Position (Patient)	(0020,0032)	set by creator
Plane Orientation (Patient)	Plane Orientation Sequence	(0020,9116)	set by creator

Functional Group Macro	Attribute Name	Tag	Supported Values
(if Pixel Measures or Plane Position (Patient) Macros Present)	>Image Orientation (Patient)	(0020,0037)	set by creator

9.1.1.6.6 SC Image Module

Attribute Name	Tag	Supported Values
Date of Secondary Capture	(0018,1012)	set by creator
Time of Secondary Capture	(0018,1014)	set by creator
Nominal Scanned Pixel Spa	(0018,2010)	set by creator
Pixel Spacing	(0028,0030)	set by creator
Pixel Spacing Calibration Type	(0028,0A02)	set by creator
Pixel Spacing Calibration Description	(0018,1012)	set by creator

9.1.1.6.7 SC Multi-frame Image Module

Attribute Name	Tag	Supported Values
Burned In Annotation	(0028,0301)	set by creator
Recognizable Visual Features	(0028,0302)	set by creator
Presentation LUT Shape	(2050,0020)	set by creator
Illumination	(2010,015E)	set by creator
Reflected Ambient Light	(2010,0160)	set by creator
Rescale Intercept	(0028,1052)	set by creator
Rescale Slope	(0028,1053)	set by creator
Rescale Type	(0028,1054)	set by creator
Frame Increment Pointer	(0028,0009)	set by creator
Nominal Scanned Pixel Spacing	(0018,2010)	set by creator
Pixel Spacing	(0028,0030)	set by creator
Pixel Spacing Calibration Type	(0028,0A02)	set by creator
Pixel Spacing Calibration Description	(0028,0A04)	set by creator
Digitizing Device Transport Direction	(0018,2020)	set by creator
Rotation of Scanned Film	(0018,2030)	set by creator

9.1.1.6.8 SC Multi-frame Vector Module

Attribute Name	Tag	Supported Values
Frame Time Vector	(0018,1065)	set by creator
Page Number Vector	(0018,2001)	set by creator
Frame Label Vector	(0018,2002)	set by creator
Frame Primary Angle Vector	(0018,2003)	set by creator

Attribute Name	Tag	Supported Values
Frame Secondary Angle Vector	(0018,2004)	set by creator
Slice Location Vector	(0018,2005)	set by creator
Display Window Label Vector	(0018,2006)	set by creator

9.1.1.7 Secondary Capture Image

This chapter describes the DICOM attributes of Secondary Capture Image instances created in interoperability mode. The following table lists the modules created by *syngo*® MR XA50A.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
	SC Equipment	see chapter 9.1.1.6.1	always
Image	General Image	see chapter 9.1.1.4.1	always
	Image Pixel	see chapter 9.1.1.1.9	always
	SC Image	see chapter 9.1.1.6.6	always
	Overlay Plane	see chapter 9.1.1.4.6	always
	Modality LUT	see chapter 9.1.1.7.1	always
	VOI LUT	see chapter 9.1.1.4.7	always
	SOP Common	see chapter 9.1.1.1.22	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.7.1 Modality LUT Module

Attribute Name	Tag	Supported Values
Modality LUT Sequence	(0028,3000)	set by creator
>LUT Descriptor	(0028,3002)	set by creator
>LUT Explanation	(0028,3003)	set by creator
>Modality LUT Type	(0028,3004)	set by creator
>LUT Data	(0028,3006)	set by creator
Rescale Intercept	(0028,1052)	set by creator
Rescale Slope	(0028,1053)	set by creator
Rescale Type	(0028,1054)	set by creator

9.1.1.8 Grayscale Softcopy Presentation State

For some usecases Grayscale Softcopy Presentation State instances are created referencing Enhanced MR Image or Multi-frame Grayscale Word SC Image instances. The following table lists the modules created by the *syngo*® MR XA50A.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always
	Patient Study	see chapter 9.1.1.1.3	always
Series	General Series	see chapter 9.1.1.1.4	always
	Presentation Series	see chapter 9.1.1.8.1	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
Presentation State	Presentation State Identification	see chapter 9.1.1.8.2	always
	Presentation State Relationship	see chapter 9.1.1.8.3	always
	Displayed Area	see chapter 9.1.1.8.4	always
	Graphic Annotation	see chapter 9.1.1.8.5	always
	Spatial Transformation	see chapter 9.1.1.8.6	always
	Graphic Layer	see chapter 9.1.1.8.7	always
	Graphic Group	see chapter 9.1.1.8.8	always
	Modality LUT	see chapter 9.1.1.7.1	always
	Softcopy VOI LUT	see chapter 9.1.1.8.9	always
	SOP Common	see chapter 9.1.1.8.10	always
	Common Instance Reference	see chapter 9.1.1.1.23	always

9.1.1.8.1 Presentation Series Module

Attribute Name	Tag	Supported Values
Modality	(0008,0060)	PR

9.1.1.8.2 Presentation State Identification Module

Attribute Name	Tag	Supported Values
Presentation Creation Date	(0070,0082)	set by creator
Presentation Creation Time	(0070,0083)	set by creator
Instance Number	(0020,0013)	set by creator
Content Label	(0070,0080)	set by creator
Content Description	(0070,0081)	set by creator
Content Creator's Name	(0070,0084)	set by creator

9.1.1.8.3 Presentation State Relationship Module

Attribute Name	Tag	Supported Values
Referenced Series Sequence	(0008,1115)	set by creator
>Series Instance UID	(0020,000E)	set by creator
>Referenced Image Sequence	(0008,1140)	set by creator
>>Referenced SOP Class UID	(0008,1150)	set by creator
>>Referenced SOP Instance UID	(0008,1155)	set by creator
>>Referenced Frame Number	(0008,1160)	set by creator

9.1.1.8.4 Displayed Area Module

Attribute Name	Tag	Supported Values
Displayed Area Selection Sequence	(0070,005A)	set by creator
>Referenced Image Sequence	(0008,1140)	set by creator
>>Referenced SOP Class UID	(0008,1150)	set by creator
>>Referenced SOP Instance UID	(0008,1155)	set by creator
>>Referenced Frame Number	(0008,1160)	set by creator
>Pixel Origin Interpretation	(0048,0301)	set by creator
>Displayed Area Top Left Hand Corner	(0070,0052)	set by creator
>Displayed Area Bottom Right Hand Corner	(0070,0053)	set by creator
>Presentation Size Mode	(0070,0100)	set by creator
>Presentation Pixel Spacing	(0070,0101)	set by creator
>Presentation Pixel Aspect Ratio	(0070,0102)	set by creator
>Presentation Pixel Magnification Ratio	(0070,0103)	set by creator

9.1.1.8.5 Graphic Annotation Module

Attribute Name	Tag	Supported Values
Graphic Annotation Sequence	(0070,0001)	set by creator
>Referenced Image Sequence	(0008,1140)	set by creator
>>Referenced SOP Class UID	(0008,1150)	set by creator
>>Referenced SOP Instance UID	(0008,1155)	set by creator
>>Referenced Frame Number	(0008,1160)	set by creator
>Graphic Layer	(0070,0002)	set by creator
>Text Object Sequence	(0070,0008)	set by creator
>>Bounding Box Annotation Units	(0070,0003)	set by creator
>>Anchor Point Annotation Units	(0070,0004)	set by creator
>>Unformatted Text Value	(0070,0006)	set by creator
>>Text Style Sequence	(0070,0231)	set by creator
>>>Font Name	(0070,0227)	set by creator

Attribute Name	Tag	Supported Values
>>>Font Name Type	(0070,0228)	set by creator
>>>CSS Font Name	(0070,0229)	set by creator
>>>Text Color CIELab Value	(0070,0241)	set by creator
>>>Horizontal Alignment	(0070,0242)	set by creator
>>>Vertical Alignment	(0070,0243)	set by creator
>>>Shadow Style	(0070,0244)	set by creator
>>>Shadow Offset X	(0070,0245)	set by creator
>>>Shadow Offset Y	(0070,0246)	set by creator
>>>Shadow Color CIELab Val	(0070,0247)	set by creator
>>>Shadow Opacity	(0070,0258)	set by creator
>>>Underlined	(0070,0248)	set by creator
>>>Bold	(0070,0249)	set by creator
>>>Italic	(0070,0250)	set by creator
>>Bounding Box Top Left Hand Corner	(0070,0010)	set by creator
>>Bounding Box Bottom Right Hand Corner	(0070,0011)	set by creator
>>Bounding Box Text Horizontal Justification	(0070,0012)	set by creator
>>Anchor Point	(0070,0014)	set by creator
>>Anchor Point Visibility	(0070,0015)	set by creator
>>Compound Graphic Instance ID	(0070,0226)	set by creator
>>Graphic Group ID	(0070,0295)	set by creator
>Graphic Object Sequence	(0070,0009)	set by creator
>>Graphic Annotation Units	(0070,0005)	set by creator
>>Graphic Dimensions	(0070,0020)	set by creator
>>Number of Graphic Points	(0070,0021)	set by creator
>>Graphic Data	(0070,0022)	set by creator
>>Graphic Type	(0070,0023)	set by creator
>>Line Style Sequence	(0070,0232)	set by creator
>>>Pattern On Color CIELab Value;	(0070,0251)	set by creator
>>>Pattern Off Color CIELab Value	(0070,0252)	set by creator
>>>Pattern On Opacity	(0070,0284)	set by creator
>>>Pattern Off Opacity	(0070,0285)	set by creator
>>>Line Thickness	(0070,0253)	set by creator
>>>Line Dashing Style	(0070,0254)	set by creator
>>>Line Pattern	(0070,0255)	set by creator
>>>Shadow Style	(0070,0244)	set by creator
>>>Shadow Offset X	(0070,0245)	set by creator
>>>Shadow Offset Y	(0070,0246)	set by creator
>>>Shadow Color CIELab Value	(0070,0247)	set by creator
>>>Shadow Opacity	(0070,0258)	set by creator
>>Graphic Filled	(0070,0024)	set by creator

Attribute Name	Tag	Supported Values
>>Fill Style Sequence	(0070,0233)	set by creator
>>>Pattern On Color CIELab Value;	(0070,0251)	set by creator
>>>Pattern Off Color CIELab Value	(0070,0252)	set by creator
>>>Pattern On Opacity	(0070,0284)	set by creator
>>>Pattern Off Opacity	(0070,0285)	set by creator
>>>Fill Mode	(0070,0257)	set by creator
>>>Fill Pattern	(0070,0256)	set by creator
>>Compound Graphic Instance ID	(0070,0226)	set by creator
>>Graphic Group ID	(0070,0295)	set by creator
>Compound Graphic Sequence	(0070,0209)	set by creator
>>Compound Graphic Instance	(0070,0226)	set by creator
>>Compound Graphic Units	(0070,0282)	set by creator
>>Graphic Dimensions	(0070,0020)	set by creator
>>Number of Graphic Points	(0070,0021)	set by creator
>>Graphic Data	(0070,0022)	set by creator
>>Compound Graphic Type	(0070,0294)	set by creator
>Text Style Sequence	(0070,0231)	set by creator
>>>Font Name	(0070,0227)	set by creator
>>>Font Name Type	(0070,0228)	set by creator
>>>CSS Font Name	(0070,0229)	set by creator
>>>Text Color CIELab Value	(0070,0241)	set by creator
>>>Horizontal Alignment	(0070,0242)	set by creator
>>>Vertical Alignment	(0070,0243)	set by creator
>>>Shadow Style	(0070,0244)	set by creator
>>>Shadow Offset X	(0070,0245)	set by creator
>>>Shadow Offset Y	(0070,0246)	set by creator
>>>Shadow Color CIELab Value	(0070,0247)	set by creator
>>>Shadow Opacity	(0070,0258)	set by creator
>>>Underlined	(0070,0248)	set by creator
>>>Bold	(0070,0249)	set by creator
>>>Italic	(0070,0250)	set by creator
>>Line Style Sequence	(0070,0232)	set by creator
>>>Pattern On Color CIELab Value;	(0070,0251)	set by creator
>>>Pattern Off Color CIELab Value	(0070,0252)	set by creator
>>>Pattern On Opacity	(0070,0284)	set by creator
>>>Pattern Off Opacity	(0070,0285)	set by creator
>>>Line Thickness	(0070,0253)	set by creator
>>>Line Dashing Style	(0070,0254)	set by creator
>>>Line Pattern	(0070,0255)	set by creator
>>>Shadow Style	(0070,0244)	set by creator

Attribute Name	Tag	Supported Values
>>>Shadow Offset X	(0070,0245)	set by creator
>>>Shadow Offset Y	(0070,0246)	set by creator
>>>Shadow Color CIELab Value	(0070,0247)	set by creator
>>>Shadow Opacity	(0070,0258)	set by creator
>>Rotation Angle	(0070,0230)	set by creator
>>Rotation Point	(0070,0273)	set by creator
>>Gap Length	(0070,0261)	set by creator
>>Diameter of Visibility	(0070,0262)	set by creator
>>Major Ticks Sequence	(0070,0287)	set by creator
>>>Tick Position	(0070,0288)	set by creator
>>>Tick Label	(0070,0289)	set by creator
>>Tick Alignment	(0070,0274)	set by creator
>>Tick Label Alignment	(0070,0279)	set by creator
>>Show Tick Label	(0070,0278)	set by creator
>>Graphic Filled	(0070,0024)	set by creator
>>Fill Style Sequence	(0070,0233)	set by creator
>>>Pattern On Color CIELab Value;	(0070,0251)	set by creator
>>>Pattern Off Color CIELab Value	(0070,0252)	set by creator
>>>Pattern On Opacity	(0070,0284)	set by creator
>>>Pattern Off Opacity	(0070,0285)	set by creator
>>>Fill Mode	(0070,0257)	set by creator
>>>Fill Pattern	(0070,0256)	set by creator
>>Graphic Group ID	(0070,0295)	set by creator

9.1.1.8.6 Spatial Transformation Module

Attribute Name	Tag	Supported Values
Image Rotation	(0070,0042)	set by creator
Image Horizontal Flip	(0070,0041)	set by creator

9.1.1.8.7 Graphic Layer Module

Attribute Name	Tag	Supported Values
Graphic Layer Sequence	(0070,0060)	set by creator
>Graphic Layer	(0070,0002)	set by creator
>Graphic Layer Order	(0070,0062)	set by creator
>Graphic Layer Recommended Display Grayscale Value	(0070,0066)	set by creator
>Graphic Layer Recommended Display CIELab Value	(0070,0401)	set by creator
>Graphic Layer Description	(0070,0068)	set by creator

9.1.1.8.8 Graphic Group Module

Attribute Name	Tag	Supported Values
Graphic Group Sequence	(0070,0234)	set by creator
> Graphic Group ID	(0070,0295)	set by creator
> Graphic Group Label	(0070,0207)	set by creator
> Graphic Group Description	(0070,0208)	set by creator

9.1.1.8.9 Softcopy VOI LUT Module

Attribute Name	Tag	Supported Values
Softcopy VOI LUT Sequence	(0028,3110)	set by creator
>Referenced Image Sequence	(0008,1140)	set by creator
>>Referenced SOP Class UID	(0008,1150)	set by creator
>>Referenced SOP Instance UID	(0008,1155)	set by creator
>>Referenced Frame Number	(0008,1160)	set by creator
>VOI LUT Sequence	(0028,3010)	set by creator
>>LUT Descriptor	(0028,3002)	set by creator
>>LUT Explanation	(0028,3003)	set by creator
>>LUT Data	(0028,3006)	set by creator
>Window Center	(0028,1050)	set by creator
>Window Width	(0028,1051)	set by creator
>Window Center and Width Explanation	(0028,1055)	set by creator
>VOI LUT Function	(0028,1056)	set by creator

9.1.1.8.10 Softcopy Presentation LUT Module

Attribute Name	Tag	Supported Values
Presentation LUT Sequence	(2050,0010)	set by creator
>LUT Descriptor	(0028,3002)	set by creator
>LUT Explanation	(0028,3003)	set by creator
>LUT Data	(0028,3006)	set by creator
Presentation LUT Shape	(2050,0020)	set by creator

9.1.1.9 Enhanced and Comprehensive SR IOD

Enhanced and Comprehensive SR SOP Classes are used by applications e. g. cardiac analysis to store evaluated results in an Evidence Document.

IE	Module	Reference	Usage
Patient	Patient	see chapter 9.1.1.1.1	always
Study	General Study	see chapter 9.1.1.1.2	always

IE	Module	Reference	Usage
	Patient Study	see chapter 9.1.1.1.3	always
Series	SR Document Series	see chapter 9.1.1.9.1	always
Frame of Reference	Frame of Reference	see chapter 9.1.1.1.6	always
Equipment	General Equipment	see chapter 9.1.1.1.7	always
Image	SR Document General	see chapter 9.1.1.9.2	always
	SR Document Content	see chapter 9.1.1.9.3	always
	SOP Common	see chapter 9.1.1.1.22	always

9.1.1.9.1 SR Document Series Module

Attribute Name	Tag	Supported Values
Modality	(0008,0060)	SR
Series Instance UID	(0020,000E)	set by creator
Series Number	(0020,0011)	set by creator
Series Date	(0008,0021)	set by creator
Series Time	(0008,0031)	set by creator
Protocol Name	(0018,1030)	set by creator
Series Description	(0008,103E)	set by creator
Referenced Performed Procedure Step Sequence	(0008,1111)	set by creator
>Referenced SOP Class UID	(0008,1150)	set by creator
>Referenced SOP Instance UID	(0008,1155)	set by creator

9.1.1.9.2 SR Document General Module

Attribute Name	Tag	Supported Values
Series Number	(0020,0011)	set by creator
Preliminary Flag	(0040,A496)	set by creator (PRELIMINARY/FINAL)
Completion Flag	(0040,A491)	set by creator (PARTIAL/FINAL)
Completion Flag Description	(0040,A492)	set by creator
Verification Flag	(0040,A493)	set by creator (UNVERIFIED)
Content Date	(0008,0023)	set by creator
Content Time	(0008,0033)	set by creator

9.1.1.9.3 SR Document Content Module

Attribute Name	Tag	Supported Values
Value Type	(0040,A040)	CONTAINER
Concept Name Code Sequence	(0040,A043)	set by creator
>Code Value	(0008,0100)	set by creator
>Coding Scheme Designator	(0008,0102)	set by creator
>Code Meaning	(0018,0104)	set by creator
Continuity of Content	(0008,103E)	set by creator
Content Template Sequence	(0040,A504)	set by creator
>Mapping Resource	(0008,0105)	set by creator
>Mapping Resource UID	(0008,0118)	set by creator
>Template Identifier	(0040,DB00)	set by creator
Content Sequence	(0040,A730)	set by creator
>Relationship Type	(0040,A010)	set by creator

9.1.1.9.4 Evidence Document Templates

The finding related results of applications are stored into the Content Sequence of a Structured Evidence Document. The Content Items of a Content Sequence are specified in Structured Reporting Templates.

Examples of Structured Reporting Templates are:

- BI-RADS reporting
- Cardiac reporting
- PI-RADS 2 reporting
- PhoenixZip documentation.

9.1.2 Usage of Attributes from received IODs

N/A

9.1.3 Attribute mapping

The following table describes the mapping from attributes received in DICOM Modality Worklist to other attributes:

Attribute Name	Tag	Mapped attribute / Notes
SOP Common		
Specific Character Set	(0008,0005)	
Scheduled Procedure Step		
Scheduled Procedure Step Sequence	(0040,0100)	Request Attributes Sequence (0040,0275)

Attribute Name	Tag	Mapped attribute / Notes
>Modality	(0008,0060)	not mapped
>Scheduled Station AE Title	(0040,0001)	not mapped
>Scheduled Procedure Step Start Date	(0040,0002)	not mapped
>Scheduled Procedure Step Start Time	(0040,0003)	not mapped
>Scheduled Procedure Step End Date	(0040,0004)	not mapped
>Scheduled Procedure Step End Time	(0040,0005)	not mapped
>Scheduled Performing Physician's Name	(0040,0006)	default for "Performing Physician's Name" (0008,1050)
>Scheduled Procedure Step Description	(0040,0007)	Scheduled Procedure Step Description, default for "Performed Procedure Step Description" (0040,0254)
>Scheduled Protocol Code Sequence **	(0040,0008)	not mapped
>Scheduled Procedure Step ID	(0040,0009)	"Scheduled Procedure Step ID" default for "Performed Procedure Step ID" (0040,0253)
>Scheduled Station Name	(0040,0010)	not mapped
>Scheduled Procedure Step Location	(0040,0011)	"Scheduled Procedure Step Location" is taken as default for "Performed Location"
>Scheduled Procedure Step Status	(0040,0020)	not mapped
>Comments on the Scheduled Procedure Step	(0040,0400)	not mapped
Requested Procedure		
Study Date	(0008,0020)	not mapped
Study Time	(0008,0030)	not mapped
Referenced Study Sequence	(0008,1110)	Referenced Study Sequence (0008,1110)
>Referenced SOP Class UID	(0008,1150)	>Referenced SOP Class UID (0008,1150)
>Referenced SOP Instance UID	(0008,1155)	not mapped
Study Instance UID	(0020,000D)	Study Instance UID
Requested Procedure Description	(0032,1060)	Requested Procedure Description in Request Attributes Sequence (0040,0275). Used to preselect examination program in scheduler (favourite list).
Requested Procedure Code Sequence	(0032,1064)	"Requested Procedure Code Sequence" in Request Attributes Sequence (0040,0275). Default for "Procedure Code Sequence" Used to preselect examination program in scheduler (favourite list).
>Code Value	(0008,0100)	mapped
>Coding Scheme Designator	(0008,0102)	mapped
>Coding Scheme Version	(0008,0103)	mapped
>Code Meaning	(0008,0104)	mapped

Attribute Name	Tag	Mapped attribute / Notes
Requested Procedure ID	(0040,1001)	"Requested Procedure ID" in Request Attributes Sequence (0040,0275) default for "Study ID"
Reason for the Requested Procedure	(0040,1002)	Reason for the Requested Procedure
Requested Procedure Priority	(0040,1003)	not mapped
Patient Transport Arrangements	(0040,1004)	not mapped
Confidentiality Code	(0040,1008)	not mapped
Reporting Priority	(0040,1009)	Reporting Priority
Names of intended Recipients of Results	(0040,1010)	not mapped
Requested Procedure Comments	(0040,1400)	Requested Procedure Comments
Imaging Service Request		
Accession Number	(0008,0050)	mapped
Referring Physician's Name	(0008,0090)	mapped
Requesting Physician	(0032,1032)	mapped
Requesting Service	(0032,1033)	not mapped
Issuing Date of Imaging Service Request	(0040,2004)	not mapped
Issuing Time of Imaging Service Request	(0040,2005)	not mapped
Placer Order Number / Imaging Service Request	(0040,2016)	mapped
Filler Order Number / Imaging Service Request	(0040,2017)	mapped
Order entered by ...	(0040,2008)	not mapped
Order Enterer's location	(0040,2009)	not mapped
Order Callback Phone Number	(0040,2010)	not mapped
Imaging Service Request Comments	(0040,2400)	not mapped
Visit Identification		
Admission ID	(0038,0010)	mapped
Issuer of Admission ID	(0038,0011)	not mapped
Institution Name	(0008,0080)	default for Institution Name
Institution Address	(0008,0081)	default for Institution Address
Visit Status		
Visit Status ID	(0038,0008)	mapped
Institution Address	(0008,0081)	mapped
Current Patient Location	(0038,0300)	mapped
Patient's Institution Residence	(0038,0400)	mapped
Visit Admission		
Admitting Diagnosis Description	(0008,1080)	mapped
Admitting Date	(0038,0020)	mapped
Patient Identification		
Patient's Name	(0010,0010)	mapped

Attribute Name	Tag	Mapped attribute / Notes
Patient ID	(0010,0020)	mapped
Issuer of Patient ID	(0010,0021)	mapped
Other Patient IDs	(0010,1000)	mapped
Other Patient Names	(0010,1001)	mapped
Patient's Birth Name	(0010,1005)	not mapped
Patient Demographic		
Patient's Birth Date	(0010,0030)	mapped
Patient's Birth Time	(0010,0032)	mapped
Patient's Sex	(0010,0040)	mapped
Patient's Insurance Plan Code Sequence	(0010,0050)	not mapped
Patient's Age	(0010,1010)	not mapped
Patient's Size	(0010,1020)	mapped
Patient's Weight	(0010,1030)	mapped
Patient's Address	(0010,1040)	mapped
Military Rank	(0010,1080)	mapped
Branch of Service	(0010,1081)	not mapped
Ethnic Group	(0010,2160)	mapped
Patient Comments	(0010,4000)	mapped
Patient Medical		
Medical Alerts	(0010,2000)	mapped
Allergies	(0010,2110)	mapped
Pregnancy Status	(0010,21C0)	mapped
Smoking Status	(0010,21A0)	mapped
Last Menstrual Date	(0010,21D0)	not mapped
Additional Patient History	(0010,21B0)	not mapped
Special Needs	(0038,0050)	mapped

9.1.4 Coerced / Modified fields

N/A

9.2 Data Dictionary of Private Attributes

Table 75 lists private attributes created by which may be included in instances generated by the *syngo*® MR XA50A. These private attributes may be deprecated or replaced with standard attributes in the future.

Table 75: Private Data Element Dictionary

DICOM Tag	Name	VR	VM
(0029,SIEMENS CSA ENVELOPE,10)	syngo Report Data	OB	1
(0029,SIEMENS CSA ENVELOPE,11)	syngo Report Presentation	OB	1
(0029,SIEMENS CSA HEADER,08)	Modality Image Header Type	CS	1
(0029,SIEMENS CSA HEADER,09)	Modality Image Header Version	LO	1
(0029,SIEMENS CSA HEADER,10)	Modality Image Header Info	OB	1
(0029,SIEMENS CSA HEADER,18)	Modality Series Header Type	CS	1
(0029,SIEMENS CSA HEADER,19)	Modality Series Header Version	LO	1
(0029,SIEMENS CSA HEADER,20)	Modality Series Header Info	OB	1
(0029,SIEMENS CSA NON-IMAGE,08)	Modality Data Header Type	CS	1
(0029,SIEMENS CSA NON-IMAGE,09)	Modality Data Header Version	LO	1
(0029,SIEMENS CSA NON-IMAGE,10)	Modality Data Header Info	OB	1
(7FE1,SIEMENS CSA NON-IMAGE,10)	Modality Data	OB	1
(0029,SIEMENS CSA REPORT,08)	syngo Report Type	CS	1
(0029,SIEMENS CSA REPORT,09)	syngo Report Version	LO	1
(0029,SIEMENS CSA REPORT,15)	SR Variant	US	1
(0029,SIEMENS CSA REPORT,17)	SC SOP Instance UID	UI	1
(0029,SIEMENS MEDCOM HEADER,40)	Application Header Sequence	SQ	1
(0029,SIEMENS MEDCOM HEADER,41)	Application Header Type	CS	1
(0029,SIEMENS MEDCOM HEADER,42)	Application Header ID	LO	1
(0029,SIEMENS MEDCOM HEADER,43)	Application Header Version	LO	1
(0029,SIEMENS MEDCOM HEADER,44)	Application Header Info	OB	1
(0029,SIEMENS MEDCOM HEADER,70)	Siemens Link Sequence	SQ	1-n
(0029,SIEMENS MEDCOM HEADER,71)	Referenced Tag	AT	1
(0029,SIEMENS MEDCOM HEADER,72)	Referenced Tag Type	CS	1
(0029,SIEMENS MEDCOM HEADER,73)	Referenced Value Length	UL	1
(0029,SIEMENS MEDCOM HEADER,74)	Referenced Object Device Type	CS	1
(0029,SIEMENS MEDCOM HEADER,75)	Referenced Object Device Location	OB	1
(0029,SIEMENS MEDCOM HEADER,76)	Referenced Object ID	OB	1
(0029,SIEMENS MEDCOM HEADER,77)	Referenced Object Offset	UL	1
(0029,SIEMENS MEDCOM HEADER2,60)	Series Work Flow Status	LO	1
(0029,SIEMENS SYNGO 3D FUSION MATRIX,08)	Object Series Instance UID	UI	1
(0029,SIEMENS SYNGO 3D FUSION MATRIX,09)	Model Series Instance UID	UI	1
(0029,SIEMENS SYNGO 3D FUSION MATRIX,10)	Matrix Referenced Series Instance UID	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,00)	Presentation Name	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,01)	Presentation Type	LO	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,02)	Advanced Presentation Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,03)	Time Point Sequence	SQ	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,04)	Base Image Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,05)	Overlay Image Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,06)	Registration Instance Sequence	SQ	0-1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,07)	Real World Value Mapping Instance Sequence	SQ	0-1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,08)	Measurement Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,09)	Measurement UID	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,10)	Segmentation Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,11)	Segmentation UID	SH	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,12)	Navigation Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,13)	Navigation Name	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,14)	Auto Navigation Direction	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,15)	Auto Navigation Frame Rate	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,16)	Auto Navigation Mode	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,17)	Auto Navigation Realtime Speed	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,18)	Auto Navigation Strategy	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,19)	Auto Navigation Realtime Flag	SH	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,20)	Index Navigation Current Index	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,21)	Index Auto Navigation Skipping Degree	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,22)	Volume Navigation Minimum Pixel Spacing	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,23)	Volume Navigation Scroll Unit	CS	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,24)	Volume Navigation Step Size	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,25)	Volume Navigation Jump Size	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,26)	Referenced Registration Number	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,27)	Real World Value Mapping UID	SH	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,28)	Channel Alpha Value	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,30)	Measurement Application Name	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,31)	Measurement Data Sequence	SQ	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,32)	Measurement Type	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,33)	Measurement Frame of Reference UID	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,34)	Measurement Uid	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,35)	Measurement Application Number	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,36)	Measurement Application Number Prefix Text	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,37)	Measurement Graphic Is Visible Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,38)	Referenced Syngo Uid	UI	4
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,39)	Clinical Finding Uid	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,3A)	Measurement Evaluation String Value	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,3B)	Measurement Evaluation Integer Value	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,3C)	Measurement Evaluation Decimal Value	FL	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,3D)	Measurement Line Show Center Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,3E)	Measurement Angle Show ArrowTip Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,3F)	Camera Home Settings Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,40)	Camera Zoom	DS	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,41)	Camera Position	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,42)	Camera Orientation	DS	4
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,43)	Camera Far Clip Plane	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,44)	Camera Near Clip Plane	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,46)	Camera ViewPort Size	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,47)	Camera Aspect Ratio	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,48)	Camera Projection Type	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,49)	Camera Field of View	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,4A)	Camera Image Plane Distance	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,4B)	Camera Image Maximum Height	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,4C)	Camera Image Minimum Height	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,4D)	ParallelShift Interval MM	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,4E)	Measurement ArrowTip Size	FL	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,4F)	Measurement ArrowTip Size ScalingFactor	FL	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,50)	Renderer Vertex Is Characteristic Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,51)	Renderer Thickness Usage Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,52)	Renderer Threshold	DS	2
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,53)	Renderer Material	DS	4-8
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,54)	Renderer DirectionalLight Color	DS	4
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,55)	Renderer DirectionalLight Direction	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,56)	Renderer DirectionalLight TwoSide Usage Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,57)	Renderer PWL TransferFunction Sequence	SQ	0-n

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,58)	Renderer PWL Vertex Index	IS	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,59)	Renderer PWL Vertex Color	DS	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,5A)	Renderer Is Camera Required Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,5B)	Renderer Do Depth Test Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,5C)	Renderer DirectionalLight Usage Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,5D)	Renderer Thickness Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,5E)	Renderer Slice Spacing Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,5F)	Renderer Sampling Distance	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,60)	Renderer Initial Sampling Distance	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,61)	Segmentation Display Data Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,62)	Segmentation Display Data UID	ST	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,63)	Segmentation Display Parameter Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,64)	Segmentation Display Parameter Type	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,65)	Segmentation Display Visibility	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,66)	Segmentation Display Color	DS	4
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,67)	Segmentation Display Is Selected Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,68)	Segmentation Additional Information Blob	OB	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,69)	Hash Code Value	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,6A)	Segmentation Version Identifier	LO	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,6B)	Segmentation Lock Mode	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,70)	Segmentation Volume Size	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,7A)	Segmentation Volume StorageDataType	DS	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,7B)	Segmentation Volume Model Matrix	FL	16
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,7C)	Segmentation Display Is Applied Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,7D)	Display Representation Instance Identifier	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,71)	Registration Referenced Frames	UI	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,72)	Registration Referenced Registrations	UI	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,73)	Registration Creation Algorithm Name	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,74)	ECG Graphic Type	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,75)	Hidden Pixel Spacing	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,76)	Renderer Edge Enhancement Param	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,77)	Renderer Gradient Modulated Opacity Param	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,78)	Renderer Volume Smoothing Param	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,7E)	Fused Presentation LUT Shape	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,7F)	Overlay Graphic VisibleFlag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,80)	Camera Rotation Axis	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,81)	Overlay Hidden Display Attributes	SL	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,82)	Presentation State Group Identifier	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,83)	Temporary Smallest Image Pixel Value	US	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,84)	Camera Rotation Center	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,85)	Camera Rotation Center Usage Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,86)	Camera Parallel Epiped	DS	12
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,87)	Camera Max Zoom In Factor	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,88)	Camera Min Zoom In Factor	DS	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,89)	Temporary Largest Image Pixel Value	US	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,8A)	Camera Rotation Axis Usage Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,8B)	Measurement Surface Normal	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,8C)	Measurement Ellipsoid Model Matrix	FL	16
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,8D)	Measurement Evaluation DataRole ID	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,8E)	Measurement Algorithm Type	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,91)	Measurement Evaluation DataRole Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,93)	Measurement Evaluation Sequence	SQ	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,94)	Measurement Evaluation Value	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,95)	Measurement Evaluation ID	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,96)	Measurement Data Points	FL	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,97)	Measurement Data Angles	FL	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,98)	Measurement Data Slice	FD	9
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,99)	Measurement Data Slice Thickness	FL	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,9A)	Measurement Referenced Frames Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,9B)	Measurement Evaluation Longest Distance	DS	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,9C)	Measurement Evaluation Centroid	DS	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,9D)	Measurement Data Bounding Box	FL	6
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,9E)	Measurement Text	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,9F)	Measurement Diameter	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A0)	Image Rotation Fractional	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A1)	Preset Name	LO	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A2)	Fusion LUT Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A3)	Fusion LUT Is Active Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A4)	Scale To Fit Type	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A5)	Syngo UID	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A6)	Presentation Version Identifier	UI	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A7)	Presentation Module Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A8)	Presentation Module Type	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,A9)	Presentation State Sequence	SQ	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,AA)	LUT Inverted Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,AB)	Softcopy Voi Lut Viewing Index	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,AC)	Displayed Area Bottom Right Hand Corner Fractional	FD	2
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,AD)	Displayed Area Top Left Hand Corner Fractional	FD	2
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,AE)	Measurement Alpha	FL	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,AF)	Measurement Bitmap	OB	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B0)	Current Frame Number	US	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B1)	ImageText View Name	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B2)	ImageText View Content Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B3)	ImageText Line Names	LO	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B4)	ImageText Line Values	LO	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B5)	Measurement Evaluation Text Position Sequence	SQ	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B6)	Measurement Link Evaluation Text Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B7)	Measurement Evaluation Text Position Vector	DS	3

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B8)	ImageText Alpha Blending Line Value	OB	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,B9)	ImageText Visibility	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,BA)	ImageText Reduced	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,BB)	ImageText Minimal	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,BC)	ImageText ViewID	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,BD)	Unlinked Image Text View Name	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C1)	Task Data Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C2)	Task Data Type	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C3)	Task Data Version	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C4)	Task Data Description	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C5)	Task Data	OB	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C6)	Task Data Size	IS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C7)	True Size Type	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C8)	Image Graphics Visibility	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,C9)	Clip Plane Sequence	SQ	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,CA)	Clip Plane Center	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,CB)	Clip Plane Normal	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,CC)	Clip Plane Scale	DS	2
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,CD)	Clip Plane Use Thickness Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,CE)	Clip Plane Thickness	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,CF)	Image Sequence	SQ	1-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D0)	Clip Plane Enable Clip	CS	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D1)	Clip Plane Handle Ratio	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D2)	Clip Plane Bounding Points	DS	24
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D3)	Clip Plane Motion Matrix	DS	16
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D4)	Clip Plane Shift Velocity	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D5)	Clip Plane Enabled Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D6)	Clip Plane Rotate Velocity	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,D7)	Clip Plane Show Graphics Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E0)	Crop Box Size	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E1)	Crop Box Enabled Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E2)	Crop Box Absolute Origin	DS	3
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E3)	Crop Box Show Graphics Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E4)	Renderer Filter Settings Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E5)	Renderer Energy Conversion Lut	OF	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E6)	Apply Fusion	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,E7)	RepresentationId	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,EE)	Advanced Display Representation Sequence	SQ	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,EF)	Measurement Visibility In View	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F0)	Measurement Label Text	ST	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F1)	Curved Camera Coordinates	DS	0-n
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F2)	Curved Camera Point Of Interest	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F3)	Curved Camera Point Of Interest Usage Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F4)	Curved Camera Thickness	DS	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F5)	Curved Camera Extrusion Length	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F6)	Curved Camera Rotation Axis Mode	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F7)	Curved Camera Roll Rotation Axis	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F8)	Curved Camera View Port Height	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,F9)	Curved Camera Cut Direction	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,FA)	Curved Camera Pan Vector	DS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,FB)	Clinical Finding ID	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,FC)	Measurement Is Circle Flag	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,FD)	Measurement Application TypeID	LO	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,FE)	Measurement Default Evaluation Text Visibility	CS	1
(0029,SIEMENS SYNGO ADVANCED PRESENTATION,FF)	Measurement Font Height	SL	1
(002B,SIEMENS SYNGO ADVANCED PRESENTATION,00)	Measurement Min Threshold Value	SL	1
(002B,SIEMENS SYNGO ADVANCED PRESENTATION,01)	Measurement Max Threshold Value	SL	1
002B,SIEMENS SYNGO ADVANCED PRESENTATION,06	Measurement Roi Binary Mask	UT	1
002B,SIEMENS SYNGO ADVANCED PRESENTATION,08	Segmentation Double Threshold	DS	1
002B,SIEMENS SYNGO ADVANCED PRESENTATION,09	Serialized Custom Attributes	UT	1
(0029,SIEMENS SYNGO ALPHA CAD,10)	Automatic Landmarking and Parsing of Human Anatomy Version	CS	1
(0029,SIEMENS SYNGO ALPHA CAD,12)	Automatic Landmarking and Parsing of Human Anatomy Body Regions	SQ	1
(7FDF,SIEMENS SYNGO DATA PADDING,FC)	Pixel Data Leading Padding	OB	1
(0087,SIEMENS SYNGO ENCAPSULATED DOCUMENT DATA,20)	Study Model	OB	1
(0087,SIEMENS SYNGO ENCAPSULATED DOCUMENT DATA,30)	Report XML Schema	OB	1
(0087,SIEMENS SYNGO ENCAPSULATED DOCUMENT DATA,40)	Report Identifier	OB	1
(0027,SIEMENS SYNGO ENHANCED IDATASET API,01)	Business Unit Code	CS	1

DICOM Tag	Name	VR	VM
(0027,SIEMENS SYNGO ENHANCED IDATASET API,02)	Application Type	LO	1
(0027,SIEMENS SYNGO ENHANCED IDATASET API,03)	Application Attributes Sequence	SQ	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,10)	Evidence Document Template ID	LO	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,11)	Evidence Document Template Version	DS	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,20)	Evidence Document Clinical Finding Data	OB	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,21)	Evidence Document Metadata	OB	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,30)	Evidence Document Implementation Version	DS	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,40)	Evidence Document Predecessor	OB	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,50)	Evidence Document Logical ID	LO	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,60)	Evidence Document Application Data	OB	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,70)	Evidence Document Owner Clinical Task Name	LO	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,71)	Evidence Document Owner Task Name	LO	1
(0077,SIEMENS SYNGO EVIDENCE DOCUMENT DATA,80)	Evidence Document Owner Supported Templates	OB	1
(0029,SIEMENS SYNGO FRAME SET,10)	Image Frame Sequence	SQ	1-n
(0029,SIEMENS SYNGO FRAME SET,12)	Type of Progression	CS	1
(0029,SIEMENS SYNGO FRAME SET,14)	Representation Level	IS	1
(0029,SIEMENS SYNGO FRAME SET,16)	Representation Information Sequence	SQ	1-n
(0029,SIEMENS SYNGO FRAME SET,18)	Number of Representations	IS	1
(0029,SIEMENS SYNGO FRAME SET,20)	Representation Pixel Offset	IS	1
(0029,SIEMENS SYNGO FUNCTION ASSIGNMENT,01)	Data Reference	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,20)	Object Insertion Date	DA	1
(0009,SIEMENS SYNGO INDEX SERVICE,30)	Instance Object States	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,31)	Series Object States	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,40)	Last Access Time	DT	1
(0009,SIEMENS SYNGO INDEX SERVICE,41)	Delete Protected Status	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,42)	Received from Archive Status	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,43)	Archive Status	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,44)	Location	AE	1

DICOM Tag	Name	VR	VM
(0009,SIEMENS SYNGO INDEX SERVICE,45)	Logical Deleted Status	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,46)	Insert Time	DT	1
(0009,SIEMENS SYNGO INDEX SERVICE,47)	Visible Instances on Series Level	IS	1
(0009,SIEMENS SYNGO INDEX SERVICE,48)	Series Archived	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,49)	Visible Instances on Study Level	IS	1
(0009,SIEMENS SYNGO INDEX SERVICE,4A)	Series Completed	IS	1
(0009,SIEMENS SYNGO INDEX SERVICE,4B)	Delete Protection Time	DT	1
(0009,SIEMENS SYNGO INDEX SERVICE,4C)	Delete Protection User	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,4D)	Study Marked Time	DT	1
(0009,SIEMENS SYNGO INDEX SERVICE,4E)	Study Marked User	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,4F)	Series Delete Protected	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,50)	Hidden Instance	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,51)	Frame Number	UL	1-n
(0009,SIEMENS SYNGO INDEX SERVICE,60)	Data Handling Status	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,61)	Result Status	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,62)	Clinical Result Attribute	US	1
(0009,SIEMENS SYNGO INDEX SERVICE,63)	Instance Origin	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,64)	DM file relative location for store	LT	1
(0009,SIEMENS SYNGO INDEX SERVICE,70)	Header Offset	UL	1
(0009,SIEMENS SYNGO INDEX SERVICE,71)	Study Archived	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,72)	Study Exported	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,73)	Series Exported	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,74)	Instance Exported	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,75)	Study Corrected	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,76)	Study Marked	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,77)	Review	SL	1
(0009,SIEMENS SYNGO INDEX SERVICE,78)	Isotope Module Level	SL	1
(0009,SIEMENS SYNGO INDEX SERVICE,79)	Radionuclide Total Dose on Series level	DS	1
(0009,SIEMENS SYNGO INDEX SERVICE,7A)	Radionuclide Total Dose on Instance level	DS	1
(0009,SIEMENS SYNGO INDEX SERVICE,7B)	Series Radiopharmaceutical Information Sequence	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,7C)	Instance Radiopharmaceutical Information Sequence	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,80)	Workflow Attribute Sequence	SQ	1-n
(0009,SIEMENS SYNGO INDEX SERVICE,81)	Patient's Name Attribute Sequence	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,82)	Other Patient Names Attribute Sequence	SQ	1-n
(0009,SIEMENS SYNGO INDEX SERVICE,83)	Name of Physician(s) Reading Study Attribute Sequence	SQ	1-n

DICOM Tag	Name	VR	VM
(0009,SIEMENS SYNGO INDEX SERVICE,84)	Requesting Physician Attribute Sequence	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,85)	Referring Physician's Name Attribute Sequence	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,86)	Performing Physician's Name Attribute Sequence	SQ	1-n
(0009,SIEMENS SYNGO INDEX SERVICE,87)	Family Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,88)	Given Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,89)	Middle Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,8A)	Prefix	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,8B)	Suffix	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,8C)	Degree	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,8D)	Ideographic Family Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,8E)	Ideographic Given Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,8F)	Ideographic Middle Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,90)	Ideographic Prefix	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,91)	Ideographic Suffix	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,92)	Ideographic Degree	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,93)	Phonetic Family Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,94)	Phonetic Given Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,95)	Phonetic Middle Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,96)	Phonetic Prefix	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,97)	Phonetic Suffix	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,98)	Phonetic Degree	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,99)	Study Printed	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,9A)	Series Printed	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,9B)	Instance Printed	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,9C)	User Specified Worklist	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,9D)	User Specified Worklist Study Registration Time	DT	1
(0009,SIEMENS SYNGO INDEX SERVICE,9E)	User Specified Worklist Study Registration User	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,9F)	User Specified Worklist Sequence	SQ	1-n
(0009,SIEMENS SYNGO INDEX SERVICE,A0)	Sender System Device Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,A1)	Instance Repetition Time	DS	1
(0009,SIEMENS SYNGO INDEX SERVICE,A2)	Instance Effective Echo Time	FD	1
(0009,SIEMENS SYNGO INDEX SERVICE,A3)	Instance Inversion Times	FD	1-n
(0009,SIEMENS SYNGO INDEX SERVICE,A4)	Instance Nominal Cardiac Trigger Delay Time	FD	1
(0009,SIEMENS SYNGO INDEX SERVICE,A5)	Instance Diffusion b-value	FD	1
(0009,SIEMENS SYNGO INDEX SERVICE,A6)	Instance Creator Entity	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,A7)	Data Source	AE	1
(0009,SIEMENS SYNGO INDEX SERVICE,A8)	Study Availability	SL	1

DICOM Tag	Name	VR	VM
(0009,SIEMENS SYNGO INDEX SERVICE,AC)	Detector View Code Sequence	SQ	1
(0009,SIEMENS SYNGO INDEX SERVICE,AD)	Detector Information Code Value	SH	1-2
(0009,SIEMENS SYNGO INDEX SERVICE,AE)	Detector Information Code Meaning	LO	1-2
(0009,SIEMENS SYNGO INDEX SERVICE,AF)	Detector Information Coding Scheme Designator	SH	1-2
(0009,SIEMENS SYNGO INDEX SERVICE,B0)	Relevant Body Part Examined	CS	1
(0009,SIEMENS SYNGO INDEX SERVICE,B1)	Relevant Protocol Name	LO	1
(0009,SIEMENS SYNGO INDEX SERVICE,B2)	Relevant Modality	CS	1
(0009,SIEMENS SYNGO INSTANCE MANIFEST,00)	Temporary Original Header Sequence	SQ	1
(0009,SIEMENS SYNGO INSTANCE MANIFEST,10)	syngo Index Source AE Title	AE	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,02)	Hanging Protocol Excellence Rank	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,06)	Data Sharing Flag	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,08)	Bagging Operations Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,10)	Synchronization Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,12)	Custom Filter Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,14)	Custom Sorter Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,20)	Selector DT Value	DT	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,22)	Selector DA Value	DA	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,24)	Selector TM Value	TM	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,26)	Selector UI Value	UI	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,30)	Custom Property Sequence	SQ	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,32)	Custom Property Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,34)	Custom Property Name	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,36)	Custom Property Value	LT	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,38)	Layout Property Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,40)	Synchronization Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,60)	Viewport Definitions Sequence	SQ	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,62)	Protocol Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,70)	Display Protocol Name	SH	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,72)	Display Protocol Description	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,74)	Display Protocol Level	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,76)	Display Protocol Creator	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,78)	Display Protocol Creation Datetime	DT	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,7A)	Referenced Data Protocol	UI	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,7B)	Original Display Protocol	UI	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,7C)	Display Protocol Excellence Rank	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,7E)	Layout Sequence	SQ	1-n

DICOM Tag	Name	VR	VM
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,80)	Layout Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,82)	Layout Description	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,84)	Segment Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,86)	Segment Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,88)	Segment Description	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,8A)	Segment Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,8C)	Tile Horizontal Dimension	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,8E)	Tile Vertical Dimension	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,90)	Fill Order	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,92)	Segment Small Scroll Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,94)	Segment Small Scroll Amount	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,96)	Segment Large Scroll Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,98)	Segment Large Scroll Amount	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,9A)	Segment Overlap Priority	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,9C)	Data Role View Sequence	SQ	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,9E)	Data Role View Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,A2)	Referenced Data Role	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,A4)	Sharing Enabled	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,A8)	Referenced Data Role Views	US	2-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,B0)	Data Protocol Name	SH	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,B2)	Data Protocol Description	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,B4)	Data Protocol Level	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,B6)	Data Protocol Creator	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,B8)	Data Protocol Creation Datetime	DT	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,BA)	Data Protocol Excellence Rank	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,BC)	Data Protocol Definition Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,BE)	Data Role Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,C0)	Data Role Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,C2)	Data Role Name	SH	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,C4)	IsSystem	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,C6)	Selector Operations Sequence	SQ	0-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,C8)	Selector Usage Flag	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,CA)	Select by Attribute Presence	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,CC)	Select by Category	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,CE)	Select by Operator	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,D0)	Custom Selector Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,D2)	Selector Operator	CS	1

DICOM Tag	Name	VR	VM
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,D4)	Reformatting Required	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,D6)	Registration Data Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,D8)	Reference Data Role Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,DA)	Model Data Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,DC)	Model Data Role Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,DE)	Fusion Display Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,E0)	Transparency	FD	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,E2)	Time Point	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,E4)	First Time Point Token	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,E6)	Last Time Point Token	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,E8)	Intermediate Time Point Token	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,EA)	Data Processor Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,EC)	Data Processor Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,EE)	Template Data Role Sequence	SQ	1-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,F0)	View Sequence	SQ	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,F4)	View Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,F6)	Custom Bagging Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,F8)	Referenced Display Segment Number	US	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,FA)	Data Role Type	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,46)	Internal Flag	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,FC)	Unassigned Flag	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,FE)	Initial Display Scroll Position	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,04)	Template Data Role ID	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,16)	Reference Template Data Role ID	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,18)	Model Template Data Role ID	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,28)	Referenced Template Data Role	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,42)	Presentation Creator Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,44)	Cine Navigation Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,48)	Semantic Naming Strategy	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,50)	Parameter String	LO	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,52)	Sorting Order	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,54)	syngo Template Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,56)	Sorter Type	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,58)	Data Display Protocol Version	SH	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,64)	TemplateSelectorSequence	SQ	0-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,66)	DefaultTemplate	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,68)	IsPreferred	CS	1

DICOM Tag	Name	VR	VM
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,6A)	TimepointInitialValueSequence	SQ	0-n
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,6C)	TimepointVariable	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,5A)	TimepointValue	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,5B)	SharingGroupSequence	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,5C)	TemplateSelectorOperator	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,5D)	SharingType	CS	1
(0073,SIEMENS SYNGO LAYOUT PROTOCOL,FF)	VRT Preset	LO	1
(0029,SIEMENS SYNGO MODULES,51)	Incomplete Frame	CS	1
(0029,SIEMENS SYNGO MODULES,52)	Presentation UserData	UT	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,00)	syngo Graphic Object Sequence	SQ	1-n
(0071,SIEMENS SYNGO OBJECT GRAPHICS,01)	Fill Style Version	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,02)	Fill Background Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,03)	Fill Foreground Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,04)	Siemens Fill Mode	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,05)	Siemens Fill Pattern	OB	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,06)	Line Style Version	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,07)	Line Background Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,08)	Line Foreground Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,09)	Line Type	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,10)	Siemens Line Thickness	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,11)	Line Shadow X Offset	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,12)	Line Shadow Y Offset	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,13)	Siemens Shadow Style	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,14)	Shadow Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,15)	Stipple Pattern	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,16)	Line Anti Aliasing	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,17)	Line-Z-Blend Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,18)	Text Style Version	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,19)	Text Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,1A)	Connection Line Width Selected	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,1B)	Connection Line Stipple Pattern	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,1C)	Connection Line Width	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,20)	Text Horizontal Align	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,21)	Text Vertical Align	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,22)	Text Shadow X Offset	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,23)	Text Shadow Y Offset	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,24)	Text Shadow Style	SL	1

DICOM Tag	Name	VR	VM
(0071,SIEMENS SYNGO OBJECT GRAPHICS,25)	Text Shadow Color	FL	4
(0071,SIEMENS SYNGO OBJECT GRAPHICS,26)	Text Log Font	CS	1-n
(0071,SIEMENS SYNGO OBJECT GRAPHICS,27)	Text-Z-Blend Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,28)	syngo Graphic Bit Mask	OB	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,29)	Visibility Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,30)	syngo Graphic Sensitivity	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,31)	syngo Graphic Pick Mode Type	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,32)	syngo Graphic Layer	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,33)	syngo Graphic Object Version	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,34)	syngo Graphic Coordinate System	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,35)	syngo Graphic Custom Attributes	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,36)	syngo Graphic Custom Attributes Key	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,37)	syngo Graphic Custom Attributes Value	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,38)	syngo Graphic View Name	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,39)	syngo Graphic Data	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,40)	syngo Graphic Type	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,41)	Number of syngo Graphic Points	US	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,42)	Axis Main Tick Length	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,43)	Axis Detail Tick Length	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,44)	Axis Main Tick Spacing	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,45)	Axis Detail Tick Spacing	DS	1-n
(0071,SIEMENS SYNGO OBJECT GRAPHICS,46)	Axis Main Tick Count	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,47)	Axis Detail Tick Count	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,48)	Axis Tick Behavior	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,49)	Axis Tick Alignment	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,50)	Axis Step	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,51)	Axis Step Index	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,52)	Axis Text Format	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,53)	Axis Show Center Text Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,54)	Axis Show Tick Text Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,55)	Bitmap X Orientation	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,56)	Bitmap Y Orientation	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,57)	syngo Graphic Blob	OB	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,58)	syngo Graphic Interpolation	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,59)	syngo Graphic Angle	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,60)	syngo Graphic Size	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,61)	Cut Line Side	CS	1

DICOM Tag	Name	VR	VM
(0071,SIEMENS SYNGO OBJECT GRAPHICS,62)	syngo Graphic Tip Length	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,63)	Cut Line Arrow Length	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,64)	Line Gap Length	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,65)	syngo Graphic Circle Radius	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,66)	Line Distance Move	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,67)	Line Marker Length	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,68)	syngo Graphic Center	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,69)	Range Center Area Top Left	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,70)	Range Center Area Bottom Right	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,71)	Range Tilt	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,72)	Range Minimum Tilt	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,73)	Range Maximum Tilt	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,74)	syngo Graphic Width	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,75)	Range Minimum Width	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,76)	Range Maximum Width	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,77)	syngo Graphic Height	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,78)	Range Feed	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,79)	Range Direction	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,80)	Range Show Scans	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,81)	Range Minimum Scan Distance	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,82)	Range Orthogonal Height	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,83)	syngo Graphic Position	DS	3
(0071,SIEMENS SYNGO OBJECT GRAPHICS,84)	syngo Graphic Closed Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,85)	Range Line Tip Mode	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,86)	syngo Graphic List Count	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,87)	Axis Flip Text Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,88)	Curve Diagram Type	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,89)	syngo Graphic Start Angle	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,90)	syngo Graphic End Angle	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,91)	Live Wire Smoothness	IS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,92)	Live Wire Spline Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,93)	Ellipse Circle Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,94)	syngo Graphic Square Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,95)	Curve Section Start Index	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,96)	Curve Section End Index	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,97)	Marker Alpha	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,98)	Table Row Count	IS	1

DICOM Tag	Name	VR	VM
(0071,SIEMENS SYNGO OBJECT GRAPHICS,99)	Table Column Count	IS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,9A)	Table Row Height	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,9B)	Table Column Width	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,9C)	Rectangle Selection Segment Offset	IS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,9D)	syngo Graphic Text	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A0)	Axis Tick Spacing Coordinate System	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A1)	Axis Diagram Grid Type	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A2)	Polar Plot Circle Count	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A3)	Polar Plot Lines-per-Circle	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A4)	Polar Plot Compartment Count	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A5)	Polar Plot Radius Weight	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A6)	Circle Segment Outer Radius	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A7)	Circle Segment Clockwise Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A8)	Axis Diagram Auto Resize Flag	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,A9)	Axis Diagram Step Start	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B0)	Group Root	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B1)	Group Name	ST	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B2)	syngo Graphic Annotation Sequence	SQ	1-n
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B3)	Text Minimum Height	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B4)	Text Font Scaling Factor	DS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B5)	Text Maximum Extensions	SL	2
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B6)	Text Segment Size	CS	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,B7)	Graphic Object Reference Label	SL	1
(0071,SIEMENS SYNGO OBJECT GRAPHICS,C4)	Show Grid	CS	1
(0029,SIEMENS SYNGO PRINT SERVICE,10)	Sheet Number	IS	1
(0071,SIEMENS SYNGO REGISTRATION,20)	Registered Image Sequence	SQ	1
(0071,SIEMENS SYNGO REGISTRATION,21)	Registration Is Validated Flag	CS	1
(0071,SIEMENS SYNGO REGISTRATION,22)	Deformable Registration Inverse Grid Sequence	SQ	1
(0029,SIEMENS SYNGO RWVM,50)	RWVM Version	LO	1
(0029,SIEMENS SYNGO SEGMENTATION,10)	Segmentation Inverted	CS	1
(0029,SIEMENS SYNGO SEGMENTATION,11)	Segmentation Uneditable by User	CS	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,12)	Surface Mesh Private Data	SQ	0-1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,13)	Surface Mesh Private Data Task name	CS	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,14)	Surface Mesh Private Data Version Number	LO	1

DICOM Tag	Name	VR	VM
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,15)	Surface Mesh ImagePlane Sequence	SQ	0-N
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,16)	ImagePlane Sequence Identifier	LO	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,17)	ImagePlane Sequence Identification Code Sequence	SQ	0-1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,18)	ImagePlane Sequence Identification Code Value	SH	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,19)	ImagePlane Sequence Identification Coding Scheme Designator	SH	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,20)	ImagePlane Sequence Identification Code Meaning	LO	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,21)	Surface Mesh ImagePlane	SQ	1-N
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,22)	ImagePlane	FL	9
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,23)	ImagePlane Type	CS	0-1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,24)	ImagePlane Description	LO	0-1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,25)	Surface Mesh Point List Sequence	SQ	0-N
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,26)	Point List Identifier	LO	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,27)	Point List Identification Code Sequence	SQ	0-1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,28)	Point List Identification Code Value	SH	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,29)	Point List Identification Coding Scheme Designator	SH	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,30)	Point List Identification Code Meaning	LO	1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,31)	Point List Description	LO	0-1
(0029,SIEMENS SYNGO SEGMENTATION DICOM MESH PRIVATEDATA,32)	Point List	FL	1-N
(0031,SIEMENS SYNGO SOP CLASS PACKING,10)	SOP Class Packing Sequence	SQ	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,20)	Packing Version	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,21)	Packing Originator	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,30)	Original SOP Class UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,31)	Original Study Instance UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,32)	Original Series Instance UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,33)	Original SOP Instance UID	UI	1

DICOM Tag	Name	VR	VM
(0031,SIEMENS SYNGO SOP CLASS PACKING,34)	Original Transfer Syntax UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,40)	Attributes to Set to zero-length	AT	1-n
(0031,SIEMENS SYNGO SOP CLASS PACKING,41)	Attributes to Remove	AT	1-n
(0031,SIEMENS SYNGO SOP CLASS PACKING,50)	Original Rows	US	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,51)	Original Columns	US	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,58)	Original Image Type	CS	2-n
(0031,SIEMENS SYNGO SOP CLASS PACKING,60)	Original Modality	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,70)	Sequence of original stream chunks	SQ	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,71)	Start tag of a stream chunk	AT	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,72)	End tag of a stream chunk	AT	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,73)	Stream chunk is a PAYLOAD	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,80)	Stream chunk	OB	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,10)	SOP Class Packing Sequence	SQ	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,20)	Packing Version	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,21)	Packing Originator	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,30)	Original SOP Class UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,31)	Original Study Instance UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,32)	Original Series Instance UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,33)	Original SOP Instance UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,34)	Original Transfer Syntax UID	UI	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,40)	Attributes to Set to zero-length	AT	1-n
(0031,SIEMENS SYNGO SOP CLASS PACKING,41)	Attributes to Remove	AT	1-n
(0031,SIEMENS SYNGO SOP CLASS PACKING,50)	Original Rows	US	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,51)	Original Columns	US	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,58)	Original Image Type	CS	2-n
(0031,SIEMENS SYNGO SOP CLASS PACKING,60)	Original Modality	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,70)	Sequence of original stream chunks	SQ	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,71)	Start tag of a stream chunk	AT	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,72)	End tag of a stream chunk	AT	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,73)	Stream chunk is a PAYLOAD	CS	1
(0031,SIEMENS SYNGO SOP CLASS PACKING,80)	Stream chunk	OB	1
(0029,SIEMENS SYNGO TIME POINT SERVICE,01)	Time Point ID	LO	1
(0029,SIEMENS SYNGO TIME POINT SERVICE,02)	Time Point Information	LO	1
(0029,SIEMENS SYNGO TIME POINT SERVICE,50)	Studies in Time Point Sequence	SQ	1

DICOM Tag	Name	VR	VM
(7FD1,SIEMENS SYNGO ULTRA-SOUND TOYON DATA STREAMING,01)	Padding	OB	1
(7FD1,SIEMENS SYNGO ULTRA-SOUND TOYON DATA STREAMING,09)	Version ID	OB	1
(7FD1,SIEMENS SYNGO ULTRA-SOUND TOYON DATA STREAMING,10)	Payload	LO	1
(7FD1,SIEMENS SYNGO ULTRA-SOUND TOYON DATA STREAMING,11)	After Payload	LO	1
(0029,SIEMENS SYNGO VOLUME,12)	Slices	US	1
(0029,SIEMENS SYNGO VOLUME,18)	Volume Level	IS	1
(0029,SIEMENS SYNGO VOLUME,30)	Voxel Spacing	DS	3
(0029,SIEMENS SYNGO VOLUME,32)	Volume Position (Patient)	DS	3
(0029,SIEMENS SYNGO VOLUME,37)	Volume Orientation (Patient)	DS	9
(0029,SIEMENS SYNGO VOLUME,40)	Resampling Flag	CS	1
(0029,SIEMENS SYNGO VOLUME,42)	Normalization Flag	CS	1
(0029,SIEMENS SYNGO VOLUME,44)	SubVolume Sequence	SQ	1-n
(0029,SIEMENS SYNGO VOLUME,46)	Histogram Number Of Bins UL	UL	1
(0029,SIEMENS SYNGO VOLUME,47)	Volume Histogram Data	OB	1
(0029,SIEMENS SYNGO VOLUME,48)	Volume Histogram BinBase	SL	1
(0029,SIEMENS SYNGO VOLUME,50)	Volume Version	LO	1
(0029,SIEMENS SYNGO VOLUME,60)	Total Frame Count Of Referenced Instance	IS	0-1
(0031,SIEMENS SYNGO WORKFLOW,10)	WF Internal Patient UID	UI	1
(0031,SIEMENS SYNGO WORKFLOW,11)	WF Patients Death Indicator	SH	1
(0031,SIEMENS SYNGO WORKFLOW,12)	WF Patients Death Date	DA	1
(0031,SIEMENS SYNGO WORKFLOW,13)	WF Patients Death Time	TM	1
(0031,SIEMENS SYNGO WORKFLOW,14)	WF VIP Indicator	SH	1
(0031,SIEMENS SYNGO WORKFLOW,15)	WF Emergency Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,16)	Source	US	1
(0031,SIEMENS SYNGO WORKFLOW,20)	WF Internal Visit UID	SH	1
(0031,SIEMENS SYNGO WORKFLOW,25)	WF Internal ISR UID	SH	1
(0031,SIEMENS SYNGO WORKFLOW,32)	WF Control State	SH	1
(0031,SIEMENS SYNGO WORKFLOW,34)	WF Local Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,36)	WF Referenced Studies	UI	1-n
(0031,SIEMENS SYNGO WORKFLOW,40)	WF Workflow ID	LO	1
(0031,SIEMENS SYNGO WORKFLOW,41)	WF Workflow Description	LO	1
(0031,SIEMENS SYNGO WORKFLOW,42)	WF Workflow Control State	LO	1
(0031,SIEMENS SYNGO WORKFLOW,43)	WF Workflow Ad Hoc Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,44)	WF Hybrid Flag	US	1

DICOM Tag	Name	VR	VM
(0031,SIEMENS SYNGO WORKFLOW,45)	WF Workflow Read State	LO	1
(0031,SIEMENS SYNGO WORKFLOW,50)	WF Workitem ID	LO	1
(0031,SIEMENS SYNGO WORKFLOW,51)	WF Workitem Name	LO	1
(0031,SIEMENS SYNGO WORKFLOW,52)	WF Workitem Type	LO	1
(0031,SIEMENS SYNGO WORKFLOW,53)	WF Workitem Roles	LO	1-n
(0031,SIEMENS SYNGO WORKFLOW,54)	WF Workitem Description	LO	1
(0031,SIEMENS SYNGO WORKFLOW,55)	WF Workitem Control State	LO	1
(0031,SIEMENS SYNGO WORKFLOW,56)	WF Claiming User	LO	1
(0031,SIEMENS SYNGO WORKFLOW,57)	WF Claiming Host	LO	1
(0031,SIEMENS SYNGO WORKFLOW,58)	WF Taskflow ID	LO	1
(0031,SIEMENS SYNGO WORKFLOW,59)	WF Taskflow Name	LO	1
(0031,SIEMENS SYNGO WORKFLOW,5A)	WF Failed Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,5B)	WF Scheduled Time	DT	1
(0031,SIEMENS SYNGO WORKFLOW,5C)	WF Workitem Ad Hoc Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,5D)	WF Patient Update Pending Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,5E)	WF Patient Mixup Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,60)	WF Client ID	LO	1
(0031,SIEMENS SYNGO WORKFLOW,61)	WF Template ID	LO	1
(0031,SIEMENS SYNGO WORKFLOW,70)	WF E-mail	LO	1
(0031,SIEMENS SYNGO WORKFLOW,81)	WF Institution Name	LO	1
(0031,SIEMENS SYNGO WORKFLOW,82)	WF Institution Address	ST	1
(0031,SIEMENS SYNGO WORKFLOW,83)	WF Institution Code Sequence	SQ	1
(0031,SIEMENS SYNGO WORKFLOW,90)	WF Issuer of Master Patient ID	UI	1
(0031,SIEMENS SYNGO WORKFLOW,A0)	Patient History Sequence	SQ	1-n
(0031,SIEMENS SYNGO WORKFLOW,A1)	Procedure Marked Deleted Flag	US	1
(0031,SIEMENS SYNGO WORKFLOW,A2)	ContextfolderId	LT	1
(0031,SIEMENS SYNGO WORKFLOW,A3)	Visible DataRoles	UT	1
(0031,SIEMENS SYNGO WORKFLOW,A4)	Preloaded	US	1
(0031,SIEMENS SYNGO WORKFLOW,A5)	TaskflowTechnology	SL	1
(0031,SIEMENS SYNGO WORKFLOW,A6)	WfWorkflowType	SH	1
(0031,SIEMENS SYNGO WORKFLOW,A7)	NumberOfRequestedProcedures	SL	1
(0031,SIEMENS SYNGO WORKFLOW,A8)	External Master Patient ID	LT	1
(0031,SIEMENS SYNGO WORKFLOW,A9)	Not To Be Archived	US	1
(0031,SIEMENS SYNGO WORKFLOW,B0)	WorklistItemCheckSum	ST	1
(0019,SIEMENS MED NM,0F)	ICON Data Type	SL	1
(0019,SIEMENS MED NM,16)	Number of views	SS	1
(0019,SIEMENS MED NM,93)	Phase start time	SL	1-n

DICOM Tag	Name	VR	VM
(0019,SIEMENS MED NM,A1)	Number of Phases	SS	1
(0019,SIEMENS MED NM,A5)	Number of repeats / phase	SS	1-n
(0019,SIEMENS MED NM,A6)	Cycles Per Repeat	SS	1-n
(0019,SIEMENS MED NM,A7)	Repeat Start time	SL	1-n
(0019,SIEMENS MED NM,A8)	Repeat Stop time	SL	1-n
(0019,SIEMENS MED NM,A9)	Effective Repeat Time	SL	1-n
(0019,SIEMENS MED NM,AA)	Acquired Cycles Per Repeat	SS	1-n
(0023,SIEMENS MED NM,01)	DICOM Reader Flag	US	1
(0033,SIEMENS MED NM,00)	Flood correction matrix Detector 1 ESoft To SR2_0	FL	n
(0033,SIEMENS MED NM,01)	Flood correction matrix Detector 2 ESoft To SR2_0	FL	n
(0033,SIEMENS MED NM,10)	COR Data for Detector 1	FL	n
(0033,SIEMENS MED NM,11)	COR Data for Detector 2	FL	n
(0033,SIEMENS MED NM,14)	MHR Y Shift data for detector 1	FL	1
(0033,SIEMENS MED NM,15)	MHR Y Shift data for detector 2	FL	1
(0033,SIEMENS MED NM,18)	NCO Data for detector 1	FL	n
(0033,SIEMENS MED NM,19)	NCO Data for detector 2	FL	n
(0033,SIEMENS MED NM,20)	Bed correction angle	FL	1
(0033,SIEMENS MED NM,21)	Gantry correction angle	FL	1
(0033,SIEMENS MED NM,22)	Bed U/D correction data	SS	n
(0033,SIEMENS MED NM,23)	Gantry L/R correction data	SS	n
(0033,SIEMENS MED NM,24)	BackProjection Correction angle head 1	FL	1
(0033,SIEMENS MED NM,25)	BackProjection Correction angle head 2	FL	1
(0033,SIEMENS MED NM,28)	Number point sources used for NCO and MHR Calibrations	SL	1
(0033,SIEMENS MED NM,29)	Crystal thickness	FL	n
(0033,SIEMENS MED NM,30)	Preset Name Used for Acquisition	LO	1
(0033,SIEMENS MED NM,31)	Camera Configuration Angle	FL	1
(0033,SIEMENS MED NM,32)	Crystal Type Starburst Or Not	LO	1
(0033,SIEMENS MED NM,33)	Gantry step for COIN acquisitions	SL	1
(0033,SIEMENS MED NM,34)	Bed step for wholebody or Coin acquisitions	FL	1
(0033,SIEMENS MED NM,35)	Transaxial acceptance width For coincidence	FL	1
(0033,SIEMENS MED NM,36)	Coincidence weight factor table	FL	n
(0033,SIEMENS MED NM,37)	Starburst Flags	SL	1
(0033,SIEMENS MED NM,38)	Pixel Scale factor	FL	1
(0035,SIEMENS MED NM,00)	Specialized TOMO Type	LO	1
(0035,SIEMENS MED NM,01)	Energy window type	LO	1
(0035,SIEMENS MED NM,02)	Wing position	SS	2

DICOM Tag	Name	VR	VM
(0035,SIEMENS MED NM,03)	Loid of BlankScan Image	LO	1
(0035,SIEMENS MED NM,04)	Repeat ID	SS	1
(0035,SIEMENS MED NM,05)	Phase ID	SS	1
(0035,SIEMENS MED NM,06)	Siemens Profile 2 Image Sub type	LO	1
(0037,SIEMENS MED NM,00)	Flood correction matrix for Detector 1	OW	n
(0037,SIEMENS MED NM,80)	Flood correction matrix for Detector 2	OW	n
(0039,SIEMENS MED NM,00)	Toshiba CBF activity results	LT	1
(0039,SIEMENS MED NM,01)	Related CT Series Instance UID	LT	1
(0041,SIEMENS MED NM,01)	Whole Body Tomo Position Index	SL	1
(0041,SIEMENS MED NM,02)	Whole Body Tomo Number of Positions	SL	1
(0041,SIEMENS MED NM,03)	Horizontal Table Position of CT Scan	FL	1
(0041,SIEMENS MED NM,04)	Effective Energy of CT Scan	FL	1
(0041,SIEMENS MED NM,05)	Long Linear Drive Information for Detector 1	FD	1-n
(0041,SIEMENS MED NM,06)	Long Linear Drive Information for Detector 2	FD	1-n
(0041,SIEMENS MED NM,07)	Trunnion Information for Detector 1	FD	1-n
(0041,SIEMENS MED NM,08)	Trunnion Information for Detector 2	FD	1-n
(0041,SIEMENS MED NM,09)	Broad beam factor	FL	1
(0041,SIEMENS MED NM,0A)	Original Wholebody Position	FD	1
(0041,SIEMENS MED NM,0B)	Wholebody Scan Range	FD	1
(0041,SIEMENS MED NM,10)	Effective Emission Energy	FL	n
(0041,SIEMENS MED NM,11)	Tomo Frame View Duration	FL	1-n
(0043,SIEMENS MED NM,01)	Detector View Angle	FL	1-n
(0043,SIEMENS MED NM,02)	FOV Transformation Matrix	FD	16
(0043,SIEMENS MED NM,03)	View Dependent Y Shift MHR for Detector 1	FL	1-n
(0043,SIEMENS MED NM,04)	View Dependent Y Shift MHR for Detector 2	FL	1-n
(0045,SIEMENS MED NM,01)	Planar Processing String	LO	1-n
(0045,SIEMENS MED NM,03)	Framing Parameters	UT	1
(0045,SIEMENS MED NM,04)	Scan Parameters	UT	1
(0045,SIEMENS MED NM,05)	Total Counts	SL	1
(0045,SIEMENS MED NM,21)	Collimator Type ID	US	1-n
(0045,SIEMENS MED NM,22)	Point Source Number	US	1
(0045,SIEMENS MED NM,23)	Calibration Type	LO	1
(0045,SIEMENS MED NM,24)	Camera Configuration	LO	1
(0055,SIEMENS MED NM,03)	View start time	SL	1
(0055,SIEMENS MED NM,04)	Prompt Window Width for Coincidence	SS	1
(0055,SIEMENS MED NM,05)	Random Window Width for Coincidence	SS	1
(0055,SIEMENS MED NM,7E)	Collimator Thickness	FL	1-n

DICOM Tag	Name	VR	VM
(0055,SIEMENS MED NM,7F)	Collimator Angular Resolution	FL	1-n
(0055,SIEMENS MED NM,C0)	Useful Field of View	SS	1-n
(0057,SIEMENS MED NM,01)	Original ImageType	LO	1
(0057,SIEMENS MED NM,02)	Dose calibration factor	FL	1
(0057,SIEMENS MED NM,03)	NM Pixel Units	LO	1
(0057,SIEMENS MED NM,04)	Decay Correction	LO	1
(0057,SIEMENS MED NM,05)	Radio Nuclide Half Life	FL	n
(0057,SIEMENS MED NM,06)	Rescale Intercept	FL	1
(0057,SIEMENS MED NM,07)	Rescale Slope	FL	1
(0057,SIEMENS MED NM,08)	Frame Reference Time	FL	n
(0057,SIEMENS MED NM,09)	Number original PET data Radiopharmaceutical Info Sequence items	SL	1
(0057,SIEMENS MED NM,0A)	Decay Factor	FL	n
(0057,SIEMENS MED NM,0B)	Counts Source	LO	1
(0057,SIEMENS MED NM,0C)	Radionuclide Positron Fraction	FL	n
(0057,SIEMENS MED NM,0E)	Trigger Time of CT Slice	FD	1-n
(0057,SIEMENS MED NM,0F)	QSPECT Compliant Flag	SS	1
(0061,SIEMENS MED NM,01)	X Principal Ray Offset Detector 1	FL	1-n
(0061,SIEMENS MED NM,02)	X Principal Ray Offset Detector 2	FL	1-n
(0061,SIEMENS MED NM,05)	Y Principal Ray Offset Detector 1	FL	1-n
(0061,SIEMENS MED NM,06)	Y Principal Ray Offset Detector 2	FL	1-n
(0061,SIEMENS MED NM,09)	X Principal Ray Angle	FL	1-n
(0061,SIEMENS MED NM,0A)	Y Principal Ray Angle	FL	1-n
(0061,SIEMENS MED NM,0B)	X Short Focal Length	FL	1-n
(0061,SIEMENS MED NM,0C)	Y Short Focal Length	FL	1-n
(0061,SIEMENS MED NM,0D)	X Long Focal Length	FL	1-n
(0061,SIEMENS MED NM,0E)	Y Long Focal Length	FL	1-n
(0061,SIEMENS MED NM,0F)	X Focal Scaling	FL	1-n
(0061,SIEMENS MED NM,10)	Y Focal Scaling	FL	1-n
(0061,SIEMENS MED NM,11)	X Motion Correction Shift Detector 1	FL	1-n
(0061,SIEMENS MED NM,12)	X Motion Correction Shift Detector 2	FL	1-n
(0061,SIEMENS MED NM,15)	Y Motion Correction Shift Detector 1	FL	1-n
(0061,SIEMENS MED NM,16)	Y Motion Correction Shift Detector 2	FL	1-n
(0061,SIEMENS MED NM,19)	X Heart Center	FL	1
(0061,SIEMENS MED NM,1A)	Y Heart Center	FL	1
(0061,SIEMENS MED NM,1B)	Z Heart Center	FL	1
(0061,SIEMENS MED NM,1C)	Image Pixel Content Type	LO	1

DICOM Tag	Name	VR	VM
(0061,SIEMENS MED NM,1D)	Auto Save Corrected Series	SS	1
(0061,SIEMENS MED NM,1E)	Distorted Series Instance UID	LT	1
(0061,SIEMENS MED NM,21)	Recon Range	SS	1-n
(0061,SIEMENS MED NM,22)	Recon Orientation	LO	1
(0061,SIEMENS MED NM,23)	Recon Selected Angular Range	FL	1-n
(0061,SIEMENS MED NM,24)	Recon Transverse Angle	FL	1
(0061,SIEMENS MED NM,25)	Recon Sagittal Angle	FL	1
(0061,SIEMENS MED NM,26)	Recon X Mask Size	FL	1
(0061,SIEMENS MED NM,27)	Recon Y Mask Size	FL	1
(0061,SIEMENS MED NM,28)	Recon X Image Center	FL	1
(0061,SIEMENS MED NM,29)	Recon Y Image Center	FL	1
(0061,SIEMENS MED NM,2A)	Recon Z Image Center	FL	1
(0061,SIEMENS MED NM,2B)	Recon X Zoom	FL	1
(0061,SIEMENS MED NM,2C)	Recon Y Zoom	FL	1
(0061,SIEMENS MED NM,2D)	Recon Threshold	FL	1
(0061,SIEMENS MED NM,2E)	Recon Output Pixel Size	FL	1
(0061,SIEMENS MED NM,2F)	Scatter Estimation Method	LO	1-n
(0061,SIEMENS MED NM,30)	Scatter Estimation Method Mode	LO	1-n
(0061,SIEMENS MED NM,31)	Scatter Estimation Lower Window Weights	FL	1-n
(0061,SIEMENS MED NM,32)	Scatter Estimation Upper Window Weights	FL	1-n
(0061,SIEMENS MED NM,33)	Scatter Estimation Window Mode	LO	1-n
(0061,SIEMENS MED NM,34)	Scatter Estimation Filter	LO	1-n
(0061,SIEMENS MED NM,35)	Recon RawTomo Input Uid	LO	1-n
(0061,SIEMENS MED NM,36)	Recon CT Input Uid	LO	1
(0061,SIEMENS MED NM,37)	Recon Z Mask Size	FL	1
(0061,SIEMENS MED NM,38)	Recon X Mask Center	FL	1
(0061,SIEMENS MED NM,39)	Recon Y Mask Center	FL	1
(0061,SIEMENS MED NM,3A)	Recon Z Mask Center	FL	1
(0061,SIEMENS MED NM,3B)	Recon First slice index	SL	1
(0061,SIEMENS MED NM,3C)	Non Image UID	LT	1
(0061,SIEMENS MED NM,3D)	Non Image Series UID	LT	1
(0061,SIEMENS MED NM,3E)	Non Image Associated Parent Series UID	LT	1-n
(0061,SIEMENS MED NM,3F)	Raw Bin Times	FL	1-n
(0061,SIEMENS MED NM,51)	Raw Tomo Series UID	LT	1
(0061,SIEMENS MED NM,52)	LowRes CT Series UID	LT	1
(0061,SIEMENS MED NM,53)	HighRes CT Series UID	LT	1
(0061,SIEMENS MED NM,54)	Vector Map Offset	FL	1-4

DICOM Tag	Name	VR	VM
(0061,SIEMENS MED NM,55)	Collimator Hole Length	FL	1-n
(0061,SIEMENS MED NM,56)	Collimator Entry Hole Diameter	FL	1-n
(0061,SIEMENS MED NM,57)	Collimator Exit Hole Diameter	FL	1-n
(0061,SIEMENS MED NM,58)	Collimator Front Padding Distance	FL	1-n
(0061,SIEMENS MED NM,59)	Collimator Back Spacing Distance	FL	1-n
(0061,SIEMENS MED NM,5A)	Collimator Mean Hole Area	FL	1-n
(0061,SIEMENS MED NM,5B)	Collimator Field of view	FL	1-n
(0061,SIEMENS MED NM,5C)	Collimator Septal Penetration	FL	1-n
(0061,SIEMENS MED NM,5D)	Collimator Sensitivity	FL	1-n
(0061,SIEMENS MED NM,5E)	Crystal Distance to the Interaction Plane	FL	1-2
(0061,SIEMENS MED NM,5F)	Crystal Intrinsic Resolution	FL	1-n
(0061,SIEMENS MED NM,60)	Detector 1 Focus Point - IQSPECT Heart Offset	FL	1-n
(0061,SIEMENS MED NM,61)	Detector 2 Focus Point - IQSPECT Heart Offset	FL	1-n
(0061,SIEMENS MED NM,62)	Recon Output Type	LT	1
(0061,SIEMENS MED NM,63)	NM Recon Input CT UID	LT	1
(0061,SIEMENS MED NM,64)	NM Recon Input NM UID	LT	1
(0061,SIEMENS MED NM,65)	NM Recon Input Raw UID	LT	1
(0061,SIEMENS MED NM,66)	Recon Decay Corrected Date and Time	LT	1
(0061,SIEMENS MED NM,67)	Recon Attenuation Correction Temporal Relationship	LT	1
(0061,SIEMENS MED NM,68)	Recon Attenuation Correction Source	LT	1
(0061,SIEMENS MED NM,69)	Detector Normalization Correction	SS	1
(0061,SIEMENS MED NM,6A)	Recon Sensitivity Calibrated	SS	1
(0061,SIEMENS MED NM,6B)	Recon Image Filter	LT	1
(0061,SIEMENS MED NM,6C)	Number of Subsets	SL	1
(0061,SIEMENS MED NM,6D)	Number of Iterations	SL	1
(0061,SIEMENS MED NM,6E)	Recon Iterative Method	LT	1
(0061,SIEMENS MED NM,6F)	Reconstruction Angle	FL	2
(0061,SIEMENS MED NM,70)	NM Reconstruction Algorithm	LT	1
(0061,SIEMENS MED NM,71)	CT Transformation Matrix	FD	16
(0061,SIEMENS MED NM,72)	Adv Acquisition Zone Paramaters	FD	n
(0061,SIEMENS MED NM,73)	Adv Acquisition Zone Paramaters DataType	LT	1
(0061,SIEMENS MED NM,74)	Advanced Acq Frame Start Time	SL	1-n
(0061,SIEMENS MED NM,75)	Advanced Acq Frame End Time	SL	1-n
(0061,SIEMENS MED NM,76)	QC Motion Vector	FL	1-n
(0061,SIEMENS MED NM,77)	Acquisition Uncorrected Raw Frame Series UID	LT	1
(0061,SIEMENS MED NM,78)	Acquisition Uncorrected Raw Frame Image UID	LT	1

DICOM Tag	Name	VR	VM
(0061,SIEMENS MED NM,79)	NM Recon Recon Type	LT	1
(0061,SIEMENS MED NM,7A)	Initial Assay Dose	FD	1
(0061,SIEMENS MED NM,7B)	Assay Dose Date Time	DT	1
(0061,SIEMENS MED NM,7C)	Effective Dose - OBSOLETE	FD	1
(0061,SIEMENS MED NM,7D)	Residual Dose	FD	1
(0061,SIEMENS MED NM,7E)	Residual Dose Date Time	DT	1
(0061,SIEMENS MED NM,7F)	Recon Volume Sensitivity	FD	1
(0061,SIEMENS MED NM,80)	Recon Parameter Block	LT	1
(0061,SIEMENS MED NM,81)	Legacy Corrected Series UID	LT	1
(0061,SIEMENS MED NM,82)	Legacy Corrected Image UID	LT	1
(0061,SIEMENS MED NM,83)	Collimator Septal Thickness	FL	1-n
(0061,SIEMENS MED NM,85)	View Start Times	DT	1-n
(0061,SIEMENS MED NM,86)	View Pause Durations	SL	1-n
(0061,SIEMENS MED NM,87)	Reconstruction Performance Range	SL	1
(0061,SIEMENS MED NM,88)	Injection Dose Date Time	DT	1
(0061,SIEMENS MED NM,89)	Effective Dose Date Time	DT	1
(0061,SIEMENS MED NM,8A)	Sensitivity Calibration Distance (Detector 1)	FD	1
(0061,SIEMENS MED NM,8B)	Sensitivity Calibration Distance (Detector 2)	FD	1
(0061,SIEMENS MED NM,8C)	QSPECT UTC Time zone offset	LO	1
(0061,SIEMENS MED NM,8D)	QSPECT Flag	SS	1
(0063,SIEMENS MED NM,01)	System Sensitivity Detector 1	FL	1-n
(0063,SIEMENS MED NM,02)	System Sensitivity Detector 2	FL	1-n
(0063,SIEMENS MED NM,03)	Assay Dose Detector 1	FL	1-n
(0063,SIEMENS MED NM,04)	Assay Dose Detector 2	FL	1-n
(0063,SIEMENS MED NM,05)	Residual Dose Detector 1	FL	1-n
(0063,SIEMENS MED NM,06)	Residual Dose Detector 2	FL	1-n
(0063,SIEMENS MED NM,07)	Count Pass Detector 1	FL	1-n
(0063,SIEMENS MED NM,08)	Count Pass Detector 2	FL	1-n
(0063,SIEMENS MED NM,09)	Volume Sensitivity Factor	FD	1-n
(0063,SIEMENS MED NM,0A)	Volume Sensitivity Factor Version	LO	1-n
(0063,SIEMENS MED NM,0B)	Volume Sensitivity Factor Volume	FD	1-n
(0063,SIEMENS MED NM,0C)	xSpect Quant Source Labels	LO	1-n
(0063,SIEMENS MED NM,0D)	Broadquant Volume Array	FL	1-n
(0063,SIEMENS MED NM,0E)	Broadquant Organ Names	LO	1-n
(0063,SIEMENS MED NM,0F)	Broadquant Zone Values	SS	1-n
(0063,SIEMENS MED NM,10)	Broadquant Zone Statistics	FL	1-n
(0063,SIEMENS MED NM,11)	Isotope Half Life	FL	1-n

DICOM Tag	Name	VR	VM
(0063,SIEMENS MED NM,12)	System Sensitivity Date Time	DT	1
(0063,SIEMENS MED NM,13)	Assay Sensitivity Date Time	DT	1
(0063,SIEMENS MED NM,14)	Residual Sensitivity Date Time	DT	1
(0063,SIEMENS MED NM,15)	Front End Count Rate for Detector 1	FL	1-n
(0063,SIEMENS MED NM,16)	Front End Count Rate for Detector 2	FL	1-n
(0063,SIEMENS MED NM,80)	Assay Dose List	FL	1-n
(0063,SIEMENS MED NM,81)	Assay Dose Date Time List	DT	1-n
(0065,SIEMENS MED NM,01)	Original Detector Index	SS	1
(0065,SIEMENS MED NM,02)	Siemens Planar Data Organization	LO	1
(6001,SIEMENS MED NM,00)	Data 1 for ROI 1	US	1-n
(6001,SIEMENS MED NM,01)	Data 1 for ROI 2	US	1-n
(6001,SIEMENS MED NM,02)	Data 1 for ROI 3	US	1-n
(6001,SIEMENS MED NM,03)	Data 1 for ROI 4	US	1-n
(6001,SIEMENS MED NM,04)	Data 1 for ROI 5	US	1-n
(6001,SIEMENS MED NM,05)	Data 1 for ROI 6	US	1-n
(6001,SIEMENS MED NM,06)	Data 1 for ROI 7	US	1-n
(6001,SIEMENS MED NM,07)	Data 1 for ROI 8	US	1-n
(6001,SIEMENS MED NM,08)	Data 1 for ROI 9	US	1-n
(6001,SIEMENS MED NM,09)	Data 1 for ROI 10	US	1-n
(6001,SIEMENS MED NM,0A)	Data 1 for ROI 11	US	1-n
(6001,SIEMENS MED NM,0B)	Data 1 for ROI 12	US	1-n
(6001,SIEMENS MED NM,0C)	Data 1 for ROI 13	US	1-n
(6001,SIEMENS MED NM,0D)	Data 1 for ROI 14	US	1-n
(6001,SIEMENS MED NM,0E)	Data 1 for ROI 15	US	1-n
(6001,SIEMENS MED NM,0F)	Data 1 for ROI 16	US	1-n
(6001,SIEMENS MED NM,10)	Data 2 for ROI 1	FL	1-n
(6001,SIEMENS MED NM,11)	Data 2 for ROI 2	FL	1-n
(6001,SIEMENS MED NM,12)	Data 2 for ROI 3	FL	1-n
(6001,SIEMENS MED NM,13)	Data 2 for ROI 4	FL	1-n
(6001,SIEMENS MED NM,14)	Data 2 for ROI 5	FL	1-n
(6001,SIEMENS MED NM,15)	Data 2 for ROI 6	FL	1-n
(6001,SIEMENS MED NM,16)	Data 2 for ROI 7	FL	1-n
(6001,SIEMENS MED NM,17)	Data 2 for ROI 8	FL	1-n
(6001,SIEMENS MED NM,18)	Data 2 for ROI 9	FL	1-n
(6001,SIEMENS MED NM,19)	Data 2 for ROI 10	FL	1-n
(6001,SIEMENS MED NM,1A)	Data 2 for ROI 11	FL	1-n
(6001,SIEMENS MED NM,1B)	Data 2 for ROI 12	FL	1-n

DICOM Tag	Name	VR	VM
(6001,SIEMENS MED NM,1C)	Data 2 for ROI 13	FL	1-n
(6001,SIEMENS MED NM,1D)	Data 2 for ROI 14	FL	1-n
(6001,SIEMENS MED NM,1E)	Data 2 for ROI 15	FL	1-n
(6001,SIEMENS MED NM,1F)	Data 2 for ROI 16	FL	1-n
(7FE3,SIEMENS MED NM,14)	Minimum pixel value in frame	OW	n
(7FE3,SIEMENS MED NM,15)	Maximum pixel value in frame	OW	n
(7FE3,SIEMENS MED NM,16)	Total counts in frame	OW	n
(7FE3,SIEMENS MED NM,17)	View Duration	OW	n
(7FE3,SIEMENS MED NM,1B)	Pixel Overflow flag	OW	n
(7FE3,SIEMENS MED NM,1C)	Buffer Overflow	OW	n
(7FE3,SIEMENS MED NM,1E)	Frame start time	OW	n
(7FE3,SIEMENS MED NM,29)	Number of Rwaves in a frame	OW	n
(0067,SIEMENS MED MI,01)	MI Scan ID	LT	1
(0067,SIEMENS MED MI,02)	Scanner Console Generation	LO	1
(0067,SIEMENS MED MI,03)	Recon Parameters	OB	1
(0067,SIEMENS MED MI,04)	Group Reconstruction ID	LO	1
(0067,SIEMENS MED MI,05)	Device IVK	ST	1
(0067,SIEMENS MED MI,14)	Raw Data Description	LO	1
(0067,SIEMENS MED MI,16)	Raw Data Series instance UIDs	UI	1
(0067,SIEMENS MED MI,17)	Raw Data Referenced Series instance UIDs	UI	1
(0067,SIEMENS MED MI,18)	Raw Data Blob Sequence	SQ	1
(0071,SIEMENS MED PT,21)	Reference To Registration	LO	1
(0071,SIEMENS MED PT,22)	Decay Correction DateTime	DT	1
(0071,SIEMENS MED PT,23)	Registration Matrix	FD	16
(0071,SIEMENS MED PT,24)	Table Motion	CS	1
(0071,SIEMENS MED PT,25)	Lumped Constant	FD	1
(0071,SIEMENS MED PT,26)	Histogramming Method	CS	1
(0071, SIEMENS MED PT MU MAP, 01)	SOP Class of Source	UI	1
(0071, SIEMENS MED PT MU MAP, 02)	Related Mu Map Series	UI	1
(0021, SIEMENS MR SDS 01, 0C)	Positive PCS Directions	SH	1
(0021, SIEMENS MR SDS 01, 5E)	Field Of View Text	LO	1
(0021, SIEMENS MR SDS 01, 5F)	Relative Table Position Text	SH	1
(0021, SIEMENS MR SDS 01, FE)	Series Data Sequence	SQ	1
(0021, SIEMENS MR SDI 02, 4F)	Coil String	LO	1
(0021, SIEMENS MR SDI 02, 56)	PAT Mode Text	LO	1
(0021, SIEMENS MR SDI 02, 58)	Acquisition Matrix Text	SH	1
(0021, SIEMENS MR SDI 02, 88)	Slice Position	DS	1

DICOM Tag	Name	VR	VM
(0021, SIEMENS MR SDI 02, 89)	Slice Position Text	SH	1
(0021, SIEMENS MR SDI 02, FE)	Image Data Sequence	SQ	1
(0021, SIEMENS MR SDR 01, 01)	Creator Identifier	LO	1
(0021, SIEMENS MR SDR 01, 02)	Application Identifier	LO	1
(0021, SIEMENS MR SDR 01, 03)	Cause Identifier	LO	1
(0051, SIEMENS MR HEADER, 0A)	Meas Duration	LO	1
(0051, SIEMENS MR HEADER, 0C)	Field Of View	LO	1
(0051, SIEMENS MR HEADER, 0D)	Slice Position	SH	1
(0051, SIEMENS MR HEADER, 12)	Rel Table Position	SH	1
(0051, SIEMENS MR HEADER, 13)	Positive PCS Directions	SH	1
(7FE1, SIEMENS MR IMA, 10)	Raw Data	OB	1

Interpretation of the DICOM Tags from the above table:
(gggg, pp,ee) -> (gggg, ppee)
gggg - odd group number
pp - private creator identification code
ee - private element

9.3 Coded Terminology and Templates

9.3.1 Context Groups

N/A

9.3.2 Template Specifications

N/A

9.3.3 Private Code definitions

N/A

9.4 Grayscale Image Consistency

The high resolution TFT display monitor option of syngo® MR XA50A comes with a DICOM Grayscale Standard Display Function (GSDF) compliant factory pre-setting. A typical working environment setup is assumed for ambient light.

9.5 Standard Extended / Specialized / Private SOP Classes

N/A

9.6 Private Transfer Syntaxes

No private Transfer Syntaxes are defined for or requested by syngo® MR XA50A DICOM application.

9.7 DICOM Print SCU – detailed status displays

The following tables document the behavior of the *syngo*® MR XA50A DICOM Print AE in response to messages received for the printer SOP class and the print job SOP class.
Definitions of camera symbols:

- Idle: Camera is installed and ready; idle icon is displayed.
- Interact: The user has to react in near future, but not immediately.
  Example: A camera was low in 8x10 clear sheets: LOW 8x10 CLR was sent by N-EVENT-REPORT.
- Queue Stopped: The user has to react immediately. Either the camera needs immediate interaction or a job has been aborted.
  Example: A camera is out of 8x10 clear sheets, or camera is down, or a film job is aborted.

Note: different camera symbols are displayed according to the Printer Status Info.

9.7.1 Common Status Information

Table 76: Common Printer Status Information

Printer Status Info / Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI / 'camera symbol'
NORMAL	Camera is ready	Camera is ready	<None>/idle
BAD RECEIVE MGZ	There is a problem with the film receive magazine. Films from the printer cannot be transported into the magazine.	Problem with receive magazine.	<None>/interact
BAD SUPPLY MGZ	There is a problem with the film supply magazine. Films from this magazine cannot be transported into the printer.	Problem with supply magazine.	<None>/interact
CALIBRATING	Printer is performing self-calibration, it is expected to be available for normal operation shortly.	Self-calibration. Please wait.	<None>/idle
CALIBRATION ERR	An error in the printer calibration has been detected, quality of processed films may not be optimal.	Problem in calibration. Film quality may not be optimal.	<None>/interact
CHECK CHEMISTRY	A problem with the processor chemicals has been detected, quality of processed films may not be optimal.	Problem with chemistry. Film quality may not be optimal.	<None>/interact
CHECK SORTER	There is an error in the film sorter	Error in film sorter.	<None>/interact
CHEMICALS EMPTY	There are no processing chemicals in the processor, films will not be printed and processed until the processor is back to normal.	Camera chemistry empty. Please check.	<None>/interact
CHEMICALS LOW	The chemical level in the processor is low, if not corrected, it will probably shut down soon.	Camera chemistry low. Please check.	<None>/interact
COVER OPEN	One or more printer or processor covers, drawers, doors are open.	Camera cover, drawer or door open.	<None>/interact
ELEC CONFIG ERR	Printer configured improperly for this job.	Camera configured improperly for this job. Queue stopped.	Queue for this camera will be STOPPED/ Queue stopped

Printer Status Info / Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI / 'camera symbol'
ELEC DOWN	Printer is not operating due to some unspecified electrical hardware problem.	Camera electrical hardware Problem.	<None>/interact
ELEC SW ERROR	Printer not operating for some unspecified software error.	Camera software problem. Queue stopped.	Queue for this camera will be STOPPED/ Queue stopped
EMPTY 8X10	The 8x10 inch film supply magazine is empty.	8x10 film supply empty.	<None>/interact
EMPTY 8X10 BLUE	The 8x10 inch blue film supply magazine is empty.	8x10 blue film supply empty.	<None>/interact
EMPTY 8X10 CLR	The 8x10 inch clear film supply magazine is empty.	8x10 clear film supply empty.	<None>/interact
EMPTY 8X10 PAPR	The 8x10 inch paper supply magazine is empty.	8x10 paper supply empty.	<None>/interact
EMPTY 10X12	The 10x12 inch film supply magazine is empty.	10x12 film supply empty.	<None>/interact
EMPTY 10X12 BLUE	The 10x12 inch blue film supply magazine is empty.	10x12 blue film supply empty.	<None>/interact
EMPTY 10X12 CLR	The 10x12 inch clear film supply magazine is empty.	10x12 clear film supply empty.	<None>/interact
EMPTY 10X12 PAPR	The 10x12 inch paper supply magazine is empty.	10x12 paper supply empty.	<None>/interact
EMPTY 10X14	The 10x14 inch film supply magazine is empty.	10x14 film supply empty.	<None>/interact
EMPTY 10X14 BLUE	The 10x14 inch blue film supply magazine is empty.	10x14 blue film supply empty.	<None>/interact
EMPTY 10X14 CLR	The 10x14 inch clear film supply magazine is empty.	10x14 clear film supply empty.	<None>/interact
EMPTY 10X14 PAPR	The 10x14 inch paper supply magazine is empty.	10x14 paper supply empty.	<None>/interact
EMPTY 11X14	The 11x14 inch film supply magazine is empty.	11x14 film supply empty.	<None>/interact
EMPTY 11X14 BLUE	The 11x14 inch blue film supply magazine is empty.	11x14 blue film supply empty.	<None>/interact
EMPTY 11X14 CLR	The 11x14 inch clear film supply magazine is empty.	11x14 clear film supply empty.	<None>/interact
EMPTY 11X14 PAPR	The 11x14 inch paper supply magazine is empty.	11x14 paper supply empty.	<None>/interact
EMPTY 14X14	The 14x14 inch film supply magazine is empty.	14x14 film supply empty.	<None>/interact
EMPTY 14X14 BLUE	The 14x14 inch blue film supply magazine is empty.	14x14 blue film supply empty.	<None>/interact
EMPTY 14X14 CLR	The 14x14 inch clear film supply magazine is empty.	14x14 clear film supply empty.	<None>/interact

Printer Status Info / Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI / 'camera symbol'
EMPTY 14X14 PAPR	The 14x14 inch paper supply magazine is empty.	14x14 paper supply empty.	<None>/interact
EMPTY 14X17	The 14x17 inch film supply magazine is empty.	14x17 film supply empty.	<None>/interact
EMPTY 14X17 BLUE	The 14x17 inch blue film supply magazine is empty.	14x17 blue film supply empty.	<None>/interact
EMPTY 14X17 CLR	The 14x17 inch clear film supply magazine is empty.	14x17 clear film supply empty.	<None>/interact
EMPTY 14X17 PAPR	The 14x17 inch paper supply magazine is empty.	14x17 paper supply empty.	<None>/interact
EMPTY 24X24	The 24x24 inch film supply magazine is empty.	24x24 film supply empty.	<None>/interact
EMPTY 24X24 BLUE	The 24x24 inch blue film supply magazine is empty.	24x24 blue film supply empty.	<None>/interact
EMPTY 24X24 CLR	The 24x24 inch clear film supply magazine is empty.	24x24 clear film supply empty.	<None>/interact
EMPTY 24X24 PAPR	The 24x24 inch paper supply magazine is empty.	24x24 paper supply empty	<None>/interact
EMPTY 24X30	The 24x30 inch film supply magazine is empty.	24x30 film supply empty.	<None>/interact
EMPTY 24X30 BLUE	The 24x30 inch blue film supply magazine is empty.	24x30 blue film supply empty.	<None>/interact
EMPTY 24X30 CLR	The 24x30 inch clear film supply magazine is empty.	24x30 clear film supply empty.	<None>/interact
EMPTY 24X30 PAPR	The 24x30 inch paper supply magazine is empty.	24x30 paper supply empty.	<None>/interact
EMPTY A4 PAPR	The A4 paper supply magazine is empty.	A4 paper supply empty	<None>/interact
EMPTY A4 TRANS	The A4 transparency supply magazine is empty.	A4 transparency supply empty.	<None>/interact
EXPOSURE FAILURE	The exposure device has failed due to some unspecified reason.	Exposure device has failed.	<None>/interact
FILM JAM	A film transport error has occurred and a film is jammed in the printer or processor.	Film jam.	<None>/interact
FILM TRANSP ERR	There is a malfunction with the film transport, there may or may not be a film jam.	Film transport problem.	<None>/interact
FINISHER EMPTY	The finisher is empty.	Finisher is empty.	<None>/interact
FINISHER ERROR	The finisher is not operating due to some unspecified reason	Finisher problem.	<None>/interact
FINISHER LOW	The finisher is low on supplies.	Finisher low.	<None>/interact
LOW 8X10	The 8x10 inch film supply magazine is low.	8x10 film supply low.	<None>/interact
LOW 8X10 BLUE	The 8x10 inch blue film supply magazine is low.	8x10 blue film supply low.	<None>/interact

Printer Status Info / Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI / 'camera symbol'
LOW 8X10 CLR	The 8x10 inch clear film supply magazine is low.	8x10 clear film supply low.	<None>/interact
LOW 8X10 PAPR	The 8x10 inch paper supply magazine is low.	8x10 paper supply low.	<None>/interact
LOW 10X12	The 10x12 inch film supply magazine is low.	10x12 film supply low.	<None>/interact
LOW 10X12 BLUE	The 10x12 inch blue film supply magazine is low.	10x12 blue film supply low.	<None>/interact
LOW 10X12 CLR	The 10x12 inch clear film supply magazine is low.	10x12 clear film supply low.	<None>/interact
LOW 10X12 PAPR	The 10x12 inch paper supply magazine is low.	10x12 paper supply low.	<None>/interact
LOW 10X14	The 10x14 inch film supply magazine is low.	10x14 film supply low.	<None>/interact
LOW 10X14 BLUE	The 10x14 inch blue film supply magazine is low.	10x14 blue film supply low.	<None>/interact
LOW 10X14 CLR	The 10x14 inch clear film supply magazine is low.	10x14 clear film supply low.	<None>/interact
LOW 10X14 PAPR	The 10x14 inch paper supply magazine is low.	10x14 paper supply low.	<None>/interact
LOW 11X14	The 11x14 inch film supply magazine is low.	11x14 film supply low.	<None>/interact
LOW 11X14 BLUE	The 11x14 inch blue film supply magazine is low.	11x14 blue film supply low.	<None>/interact
LOW 11X14 CLR	The 11x14 inch clear film supply magazine is low.	11x14 clear film supply low.	<None>/interact
LOW 11X14 PAPR	The 11x14 inch paper supply magazine is low.	11x14 paper supply low.	<None>/interact
LOW 14X14	The 14x14 inch film supply magazine is low.	14x14 film supply low.	<None>/interact
LOW 14X14 BLUE	The 14x14 inch blue film supply magazine is low.	14x14 blue film supply low.	<None>/interact
LOW 14X14 CLR	The 14x14 inch clear film supply magazine is low.	14x14 clear film supply low.	<None>/interact
LOW 14X14 PAPR	The 14x14 inch paper supply magazine is low.	14x14 paper supply low.	<None>/interact
LOW 14X17	The 14x17 inch film supply magazine is low.	14x17 film supply low.	<None>/interact
LOW 14X17 BLUE	The 14x17 inch blue film supply magazine is low.	14x17 blue film supply low.	<None>/interact
LOW 14X17 CLR	The 14x17 inch clear film supply magazine is low.	14x17 clear film supply low.	<None>/interact
LOW 14X17 PAPR	The 14x17 inch paper supply magazine is low.	14x17 paper supply low.	<None>/interact

Printer Status Info / Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI / 'camera symbol'
LOW 24X24	The 24x24 inch film supply magazine is low.	24x24 film supply low.	<None>/interact
LOW 24X24 BLUE	The 24x24 inch blue film supply magazine is low.	24x24 blue film supply low.	<None>/interact
LOW 24X24 CLR	The 24x24 inch clear film supply magazine is low.	24x24 clear film supply low.	<None>/interact
LOW 24X24 PAPR	The 24x24 inch paper supply magazine is low.	24x24 paper supply low.	<None>/interact
LOW 24X30	The 24x30 inch film supply magazine is low.	24x30 film supply low.	<None>/interact
LOW 24X30 BLUE	The 24x30 inch blue film supply magazine is low.	24x30 blue film supply low.	<None>/interact
LOW 24X30 CLR	The 24x30 inch clear film supply magazine is low.	24x30 clear film supply low.	<None>/interact
LOW 24X30 PAPR	The 24x30 inch paper supply magazine is low.	24x30 paper supply low.	<None>/interact
LOW A4 PAPR	The A4 paper supply magazine is low.	A4 paper supply low.	<None>/interact
LOW A4 TRANS	The A4 transparency supply magazine is low.	A4 transparency supply low.	<None>/interact
NO RECEIVE MGZ	The film receive magazine is not available.	Film receiver not available.	<None>/interact
NO RIBBON	The ribbon cartridge needs to be replaced.	Replace ribbon cartridge.	<None>/interact
NO SUPPLY MGZ	The film supply magazine is not available.	Film supply not available.	<None>/interact
CHECK PRINTER	The printer is not ready at this time, operator intervention is required to make the printer available.	Check camera.	<None>/interact
CHECK PROC	The processor is not ready at this time, operator intervention is required to make the printer available.	Check processor.	<None>/interact
PRINTER DOWN	The printer is not operating due to some unspecified reason.	Camera down.	<None>/interact
PRINTER INIT	The printer is not ready at this time, it is expected to become available without intervention. For example, it may be in a normal warm-up state.	Camera initializing.	<None>/Idle
PRINTER OFFLINE	The printer has been disabled by an operator or service person.	Camera off-line.	<None>/interact
PROC DOWN	The processor is not operating due to some unspecified reason.	Processor down.	<None>/interact
PROC INIT	The processor is not ready at this time, it is expected to become available without intervention. For example, it may be in a normal warm-up state.	Processor initializing.	<None>/Idle
PROC OVERFLOW FL	Processor chemicals are approaching the overflow full mark.	Processor chemicals near overflow.	<None>/interact

Printer Status Info / Execution Status Info	Description	Message string visible in 'Status Bar'	Other action for UI / 'camera symbol'
PROC OVERFLOW HI	Processor chemicals have reached the overflow full mark.	Processor chemicals overflow.	<None>/interact
QUEUED	Print job in Queue	--	<None>/Idle
RECEIVER FULL	The film receive magazine is full.	Receiver full.	<None>/interact
REQ MED NOT INST	The requested film, paper, or other media supply magazine is installed in the printer but may be available with operator intervention.	Install media supply.	<None>/interact
REQ MED NOT AVAI	The requested film, paper, or other media requested is not available on this printer.	Media supply not available on this camera. Queue stopped. Change camera.	Queue for this camera will be STOPPED/ Queue stopped
RIBBON ERROR	There is an unspecified problem with the print ribbon.	Error with print ribbon.	<None>/interact
SUPPLY EMPTY	The printer is out of film.	Camera out of film.	<None>/interact
SUPPLY LOW	The film supply is low.	Film supply low.	<None>/interact
UNKNOWN	There is an unspecified problem.	Unspecified problem with camera.	<None>/interact

9.7.2 Additional DICOM Execution Status Information

Printer Status Info and Execution Status Info are defined terms and can therefore be extended or reduced by camera manufacturers. Therefore *syngo*® MR XA50A shall be flexible.

If any other printer status info or execution status info is received (as described in Table Table 77, *syngo*® MR XA50A will react as shown in the following table:

Table 77: Additional Printer Status Information

Printer Status / Execution	Printer / Execution Status Info	Description	Message string visible in the Job status bar	Other action for syngo / camera symbol
WARNING	<any other>	<not defined status info>	Camera info: <status info>	<None>/Interact
FAILURE	<any other>	<not defined status info>	Camera info: <status info> Queue stopped.	Queue for this camera will be STOPPED/Queue stopped

Annex A: Index of Tables

Annex B: Table of Figures

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In the interest of complying with legal requirements concerning the environmental compatibility of our products (protection of natural resources and waste conservation), we recycle certain components. Using the same extensive quality assurance measures as for factory- new components, we guarantee the quality of these recycled components.

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