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syngo® Imaging
syngo® Data Manager
VB36D

DICOM Conformance Statement

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Conformance Statement Overview

The ***syngo*® Data Manager** supports five different DICOM Application Entities:

- Workflow filtered AE
- Workflow unfiltered AE
- TEMP AE
- DICOM Archive User AE
- Dearchive AE

The Workflow filtered / unfiltered AE of ***syngo*® Data Manager** can be used to store images, query and retrieve these images. The two Application Entities differ from each other in the way they handle Query/Retrieve requests:

The **Workflow unfiltered AE** returns all objects which have been stored in the system at some point. This means that objects marked as "deleted" and objects associated only with discontinued examinations are also returned.

The **Workflow filtered AE** suppresses these matches (doesn't return these objects).

The **TEMP AE** can be used to store images temporary. Images sent to this AE are deleted after a while without being long-term archived. Storage Commitment is not supported for the TEMP AE.

The **DICOM Archive User AE** is used if the ***syngo*® Data Manager** archives its images to an external DICOM Archive. The archiving is done by using the Storage Service Class to send the DICOM objects and the Storage Commitment Service Class to ensure that these objects have securely been stored. The dearchiving is done with the Query/Retrieve Service Class by sending a C-MOVE-RQ referencing a set of images to be dearchived. These images are then received with the use of the Storage Service Class.

A remote DICOM node may trigger a dearchiving from nearline to online by sending a C-Move-RQ (Query/Retrieve Service Class) to the **Dearchive AE**. The objects listed within the C-Move-RQ are dearchived, but they are not sent to the destination AE indicated within the C-Move-RQ. The only purpose of this AE is the dearchiving from nearline to online.

Application Entity	DICOM Service supported	User of Service (SCU)	Provider of Service (SCP)
Workflow filtered/unfiltered AE	Verification	No	Yes
	Storage	Yes	Yes
	Storage Commitment	No	Yes
	Query/Retrieve	Yes	Yes
	Modality Performed Procedure Step (MPPS)	Yes	Yes
	Report Management	Yes	No

Table 1: Supported DICOM services for Workflow filtered / unfiltered AE

For further information on the specific SOP Classes supported by the Workflow filtered / unfiltered AE, please refer to Table 48.

Application Entity	DICOM Service supported	User of Service (SCU)	Provider of Service (SCP)
TEMP AE	Verification	No	Yes
	Storage	No	Yes

Table 2: Supported DICOM services for TEMP AE

The TEMP AE supports the same SOP Classes for storage as the Workflow filtered / unfiltered AE. It does not support Storage Commitment.

Application Entity	DICOM Service supported	User of Service (SCU)	Provider of Service (SCP)
DICOM Archive User	Verification	No	Yes
	Storage	Yes	Yes
	Storage Commitment	Yes	No
	Query/Retrieve	Yes	No

Table 3: Supported DICOM services for DICOM Archive User AE

For further information on the specific SOP classes supported by the DICOM Archive User AE, please refer to Table 49.

Application Entity	DICOM Service supported	User of Service (SCU)	Provider of Service (SCP)
Dearchive	Query/Retrieve	No	Yes

Table 4: Supported DICOM services for de-archive AE

For further information on the specific SOP classes supported by the de-archive AE, please refer to Table 50.

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1 Introduction

1.1 General

The Conformance Statement describes the DICOM interface for the Siemens syngo® Data Manager part of *syngo*® Imaging in terms of part 2 of [1].

1.2 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.

1.3 Remarks

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality as SCU and SCP, respectively.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Siemens and other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM 3.0 Standard [1]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing interconnectivity between Siemens and non-Siemens equipment.
- Test procedures should be defined and tests should be performed by the user to validate the connectivity desired. DICOM itself and the conformance parts do not specify this.
- The standard will evolve to meet the users' future requirements. Siemens is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

Siemens 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.

1.4 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:

ACR	American College of Radiology
AE	DICOM Application Entity
ASCII	American Standard Code for Information Interchange
DB	Database
DCS	DICOM Conformance Statement
DSA	Digital Subtraction Angiography
IIDC	Image-Intensifier Distortion Correction
IOD	DICOM Information Object Definition
ISO	International Standard Organization

LTS	Long Term Storage
NEMA	National Electrical Manufacturers Association
O	Optional Key Attribute
PDU	DICOM Protocol Data Unit
R	Required Key Attribute
RIS	Radiology Information System
SC	Storage Commitment
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
STS	Short Term Storage
U	Unique Key Attribute

1.5 References

[1] Digital Imaging and Communications in Medicine (DICOM), PS 3.1-2009 – PS 3.18-2009, National Electrical Manufacturers Association (NEMA).

[2] IHE Radiology Technical Framework, Vol. I – IV, http://www.ihe.net/Technical_Framework.

[3] DICOM Conformance Statement *syngo*® Imaging – *syngo*® Studio (Advanced) Workplace.

[4] DICOM Conformance Statement *syngo*® Workflow MLR.

[5] DICOM Conformance Statement *syngo*® Workflow SLR.

[6] DICOM Conformance Statement *syngo*® Dynamics (DCS for client and server available).

[7] DICOM Conformance Statement *syngo*® Imaging XS.

The Conformance Statement is based on a template taken from [1]:

All DICOM Conformance Statements can be obtained from www.siemens.com/dicom.

1.6 Structure

This Conformance Statement is subdivided into multiple parts, which relate to individual documents needed to declare Conformance according to the requirements of “Part 2 - Conformance” of the DICOM Standard.

Those parts are:

- “Network Conformance Statement” for Network related Services:
  - Storage - User/Provider (includes Verification - User/Provider)
  - Storage Commitment - User/Provider
  - Query/Retrieve - User/Provider
  - Modality Performed Procedure Step – User/Provider
  - *Private MITRA Report Management - User*
- A general Appendix.

1.7 Scope and Field

syngo® Suite offers advanced RIS, PACS, and Processing in a comprehensive package for all imaging needs in radiology and cardiology and comprises *syngo*® Workflow, *syngo*® Dynamics and *syngo*® Imaging.

- *syngo*® Workflow drives the radiological workflow from order entry to image and report distribution.
- *syngo*® Dynamics is a multi-modality, dynamic image review, diagnosis and archiving system for cardiology, general imaging and OB/GYN.
- *syngo*® Imaging XS is a scalable solution that gives access to the world of digital image management.
- *syngo*® Imaging is a modular, scalable PACS solution for highest customer demands with focus on workflow, speed and usability.

The *syngo*® Suite consist of mainly three DICOM capable components (*syngo*® Workflow MLR /SLR, *syngo*® Data Manager, *syngo*® Studio Advanced Workplace).

Figure 1 gives an overview about the capabilities of the different parts.

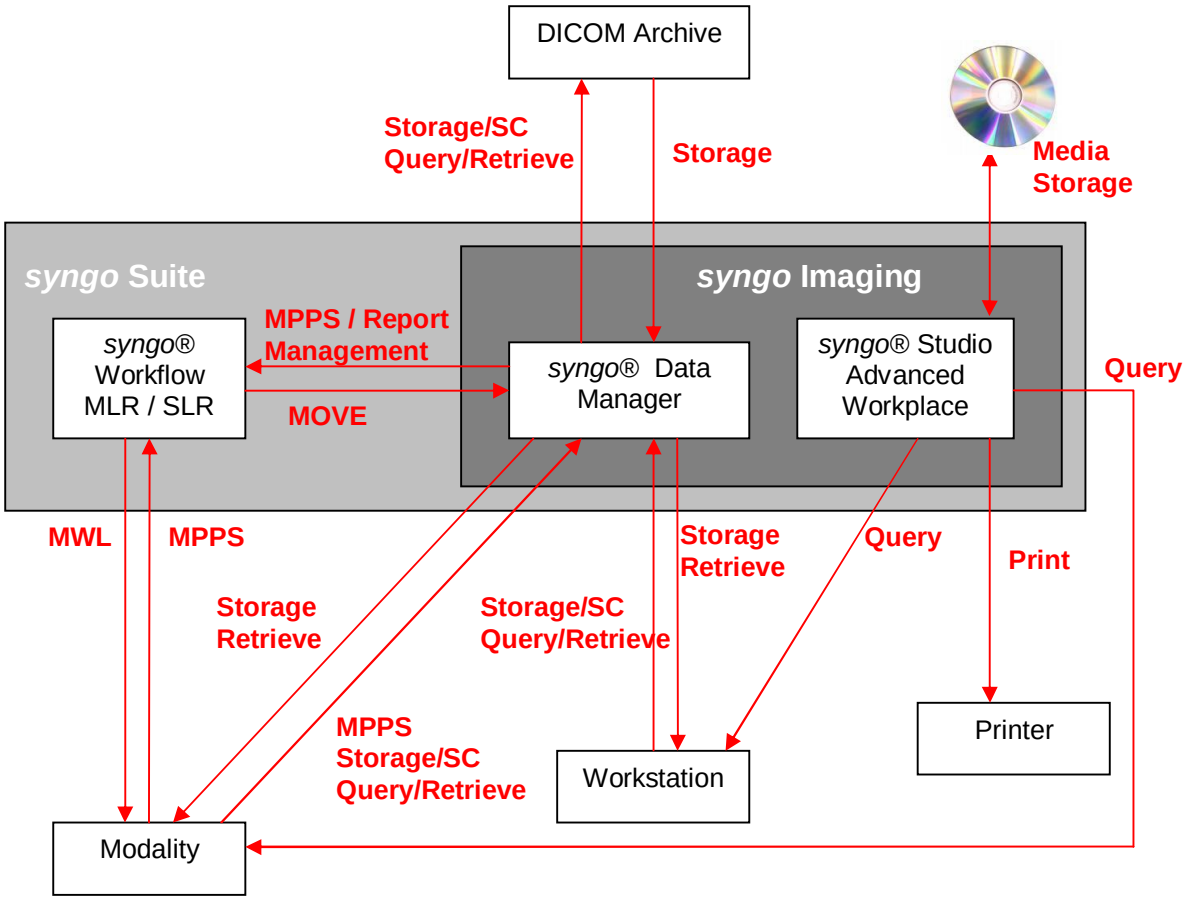

Figure 1: Overview about DICOM capabilities of *syngo*® Suite

syngo® Imaging consists of two DICOM-speaking components, the ***syngo*® Data Manger** and the *syngo*® Studio Workplace.

This document just describes the DICOM conformance of the syngo® Data Manager.

The ***syngo*® Data Manager** acts as SCU and SCP for the DICOM Storage, Query/Retrieve, MPPS and Storage Commitment services.

Please note that the DICOM Conformance of the other components/products of the *syngo*® Suite is described in separate documents:

- *syngo*® Imaging – *syngo*® Studio (Advanced) Workplace [3]
- *syngo*® Workflow MLR [4]
- *syngo*® Workflow SLR [5]
- *syngo*® Dynamics [6]
- *syngo*® Imaging XS [7]

2 Networking

2.1 Implementation Models

2.1.1 Application Data Flow

2.1.1.1 Workflow filtered / unfiltered AE

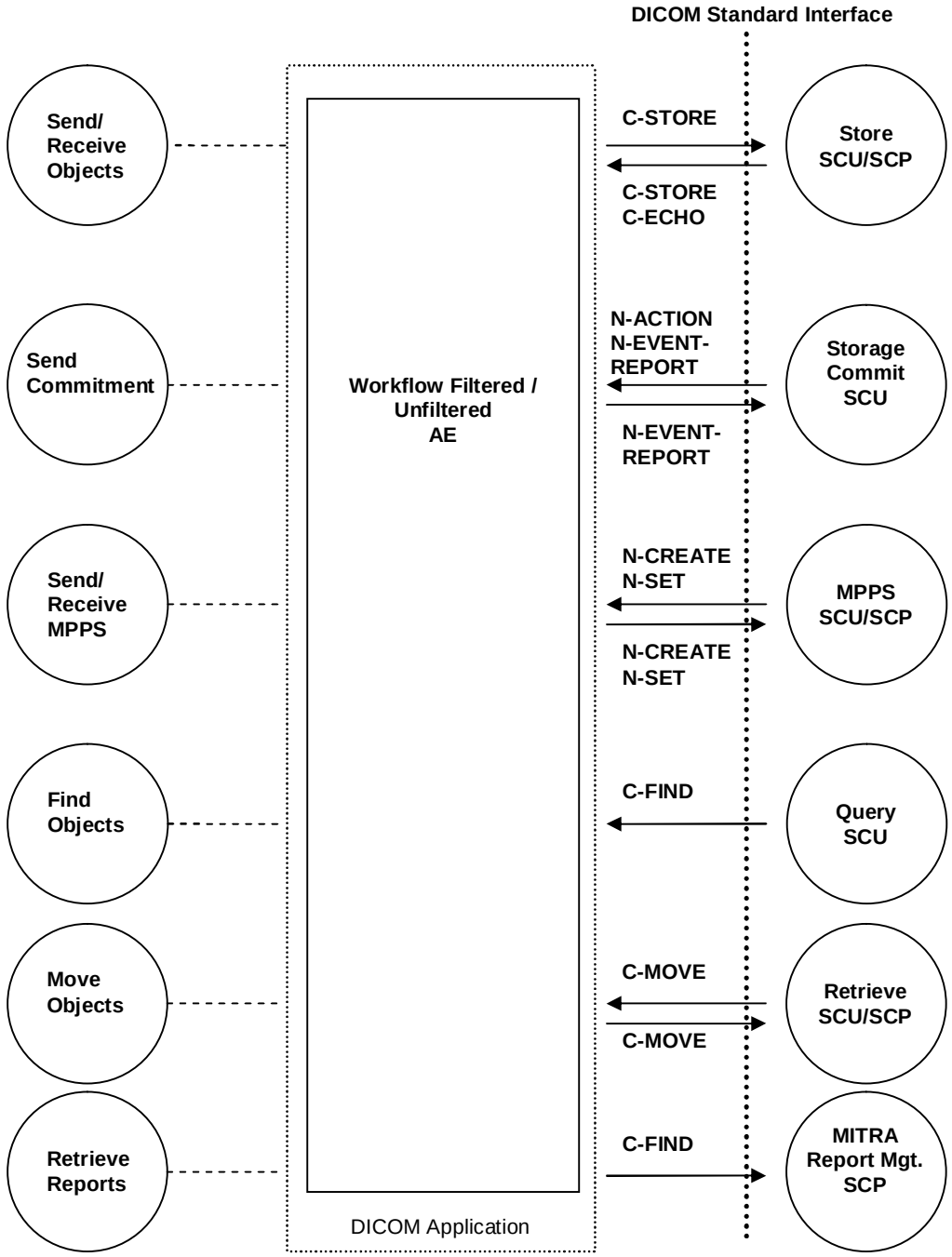

Figure 2: Application Data Flow Diagram – Workflow filtered / unfiltered AE

The Workflow filtered / unfiltered AE support the following real-world activities:

- Sending of DICOM objects (e.g. Images, Structured Reports, Presentation States)
    - The objects to be transferred are selected within the *syngo*® Studio Workplace and transfer is manually activated by the user. A proprietary trigger is issued from the Workplace to the ***syngo*® Data Manager**, which in turn stores the referenced objects to the remote DICOM node (Storage SCP).
- Receiving of DICOM objects (e.g. Images, Structured Reports, Presentation States)
    - Configured DICOM nodes may send at any time supported DICOM objects to the AE.
    - If the sending system is supporting Storage Commitment, it also may send a Storage Commitment request for the stored objects.
- Receiving Modality Performed Procedure Steps (MPPS)
    - Modalities may send MPPS to the ***syngo*® Data Manager**. This MPPS messages may be forwarded to any configured node.
- Forwarding Modality Performed Procedure Steps
    - ***syngo*® Data Manager** may be configured to forward MPPS messages received from the Modality to any configured node (typically the RIS). Forwarding is only supported to a single node.
- Reply to query and retrieval requests
    - ***syngo*® Data Manager** responds to query requests against the database. If a remote node sends retrieval requests to one or more available objects, ***syngo*® Data Manager** sends the referenced objects to the remote node. The requesting node may also ask to forward the objects to a third node. This is possible as far as the third node is correctly configured within ***syngo*® Data Manager.**
- Initiate retrieval
    - ***syngo*® Studio Workplace** may request the ***syngo*® Data Manager** to ask a remote node to retrieve a set of referenced DICOM objects. Therefore the ***syngo*® Data Manager** initiates a move request to the remote node, which in turn stores the requested objects to the ***syngo*® Data Manager**.
- Retrieve reports via MITRA service
    - ***syngo*® Data Manager** requests the Report Manager (typically the RIS) using a private SOP class to retrieve the content of a report.

2.1.1.2 TEMP AE

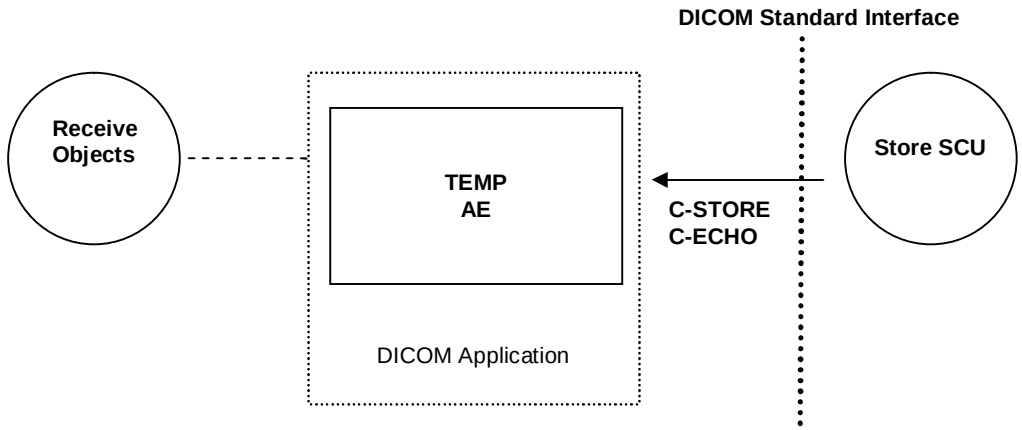

Figure 3: Application Data Flow Diagram – TEMP AE

The TEMP AE supports the following real-world activities:

- Receiving of DICOM objects (e.g. Images, Structured Reports, Presentation States)
  - Configured DICOM nodes may send at any time supported DICOM objects to the AE.

The TEMP AE does not support Storage Commitment. DICOM objects sent to this AE are deleted after a while without being archived. Even Storage Commitment requests sent to the Workflow filtered / unfiltered AE for images sent to the TEMP AE are not responded successfully.

2.1.1.3 DICOM Archive User AE

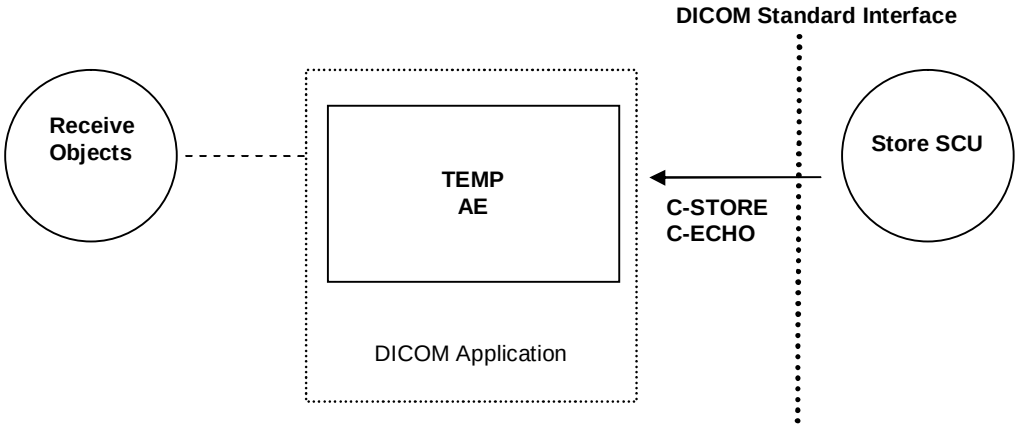

Figure 4: Application Data Flow Diagram – DICOM Archive User AE

The DICOM Archive User AE supports the following real-world activities:

- Sending of DICOM objects (e.g. Images, Structured Reports, Presentation States) for archiving purposes to a DICOM Archive
    - The storage is automatically triggered by internal archiving rules.
    - After transmitting the image the ***syngo*® Data Manager** requests a Storage Commitment from the DICOM Archive.
- Receiving of DICOM objects (e.g. Images, Structured Reports, Presentation States) in case of dearchiving
    - Based on a dearchiving trigger, the DICOM Archive User AE requests a set of formerly archived objects. In this version of ***syngo*® Data Manager** the AE only supports the retrieval of objects that have been archived by the AE. Other objects are silently ignored.

2.1.1.4 Dearchive AE

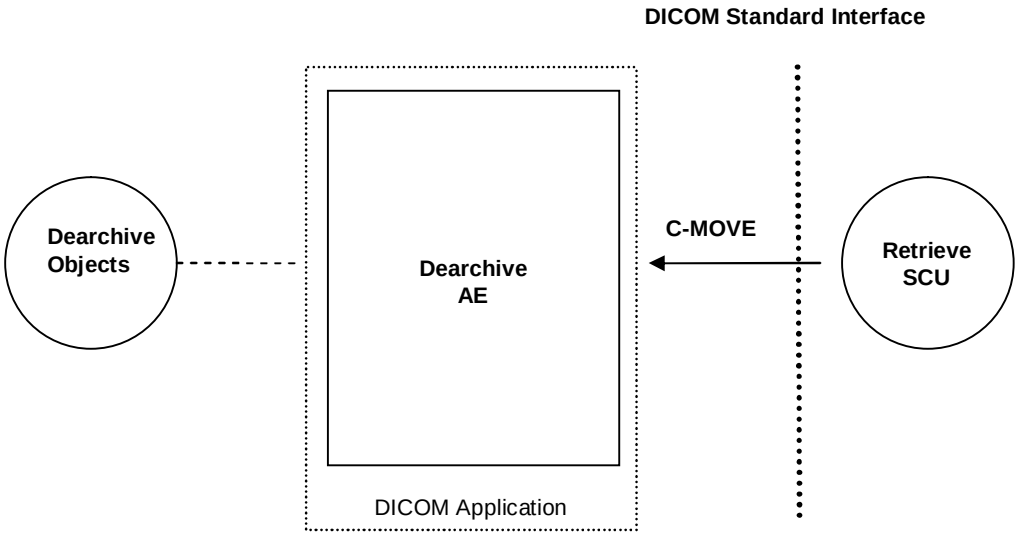

Figure 5: Application Data Flow Diagram – Dearchive

The Dearchive AE supports the following real-world activities:

- Reply to retrieval requests in order to dearchive DICOM objects (e.g. Images, Structured Reports, Presentation States)
    - The DICOM objects are only dearchived and are not sent to the remote DICOM AE referenced in the C-MOVE-RQ after they are ONLINE again.
    - In case the referenced DICOM objects are already ONLINE, no dearchive job is triggered.

2.1.2 Functional Definition of Application Entities

The SCP components of the Application Entities of the ***syngo*® Data Manager** are operating 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 request described in the following sections.

2.1.2.1 Functional Definition of Workflow filtered / unfiltered AE

2.1.2.1.1 Verification

Verification requests will be processed and responded by the Workflow filtered / unfiltered AE.

2.1.2.1.2 Storage

The Storage SCU of the Workflow filtered / unfiltered AE is invoked either internally by the Query/Retrieve Application Entity that is responsible for processing retrieve requests or by a trigger of the internal communication system. The request consists of data describing the composite image objects selected for storage and the destination AET. An association is negotiated with the destination AE and the image data is transferred using the C-STORE DIMSE-Service. The transfer status is reported to the initiator of the Storage request.

The Storage SCP of the Workflow filtered / unfiltered AE start to receive the Composite Image Objects and import them into the database after accepting an association with a negotiated Presentation Context.

2.1.2.1.3 Storage Commitment

Additional to each successfully completed send job, modalities should trigger a Storage Commitment request for the safekeeping of the images sent to the ***syngo*® Data Manager**.

There are two operation modes for Storage Commitment:

- **Shellproof Mode**: Positive Storage Commitment is only given, if the images were successfully archived to LTS.
- **Standard Mode**: Positive Storage Commitment is already given once the images were stored to STS.

In **Standard Mode** the Storage Commitment (N-EVENT-REPORT) is sent right after the N-ACTION-RQ was sent to the ***syngo*® Data Manager**. In case the corresponding images cannot be found in the internal database the commitment is rejected (N-EVENT-REPORT with failed SOP instances).

In **Shellproof Mode** the requests are persisted in an internal database, if they cannot be served right away (not all images are archived to LTS). Once the images are archived the positive Storage Commitment is sent. The Storage Commitment requests are removed from internal database, if the target device cannot be connected for a configurable amount of times. In case the images could not be archived within a reasonable time, a negative Storage Commitment is sent and the request is also removed from the internal database.

Remarks:

It is configurable for each device, if the N-EVENT-REPORT is sent through the initial association (where the N-ACTION-RQ was sent) or if a new association is opened. If the sending of the Storage Commitment on the same association fails, it is tried to send it on a new association.

The **Standard Mode** was the only mode available in former versions.

Storage Commitment requests sent to the Workflow filtered / unfiltered AE for images sent to the TEMP AE are not responded successfully. A negative Storage Commitment is sent for such temporary objects.

2.1.2.1.4 MPPS

The ***syngo*® Data Manager** MPPS SCP stores the information from the MPPS instance. The received MPPS messages can be forwarded to a single target destination.

2.1.2.1.5 Query/Retrieve

The ***syngo*® Data Manager** DICOM Retrieve SCU initiates a C-MOVE DIMSE request to the remote Retrieve SCP. The remote Retrieve SCP in turn starts C-STORE sub-operations to the ***syngo*® Data Manager** Storage SCP.

The ***syngo*® Data Manager** is only a Retrieve SCU, but not a Query SCU.

The ***syngo*® Data Manager** DICOM Query/Retrieve SCP responds to C-FIND DIMSE services from a remote SCU. C-MOVE requests involve the ***syngo*® Data Manager** DICOM Query/Retrieve SCP application to initiate a C-STORE sub-operation to send image objects to a remote Storage SCP.

For the difference between the Workflow filtered / unfiltered AE for the handling of Query/Retrieve requests please refer to the Conformance Statement Overview.

2.1.2.1.6 MITRA Report Management

The ***syngo*® Data Manager** uses the Report Management service class to fetch reports from the RIS acting as an SCU.

The ***syngo*® Data Manager** caches all reports. Reports are only fetched if no reports for the patient are found in the ***syngo*® Data Manager** cache and

- when the SDM receives a schedule for the patient (ORM message), or
- when the SDM receives an unsolicited report for the patient (ORU message), or
- when the SDM receives a report query from the SWP.

Then all reports for the patient are fetched.

Usually the ***syngo*® Data Manager** is actively notified by the RIS about new or updated reports via HL7 messages. Fetching reports from RIS via DICOM actively triggered by the ***syngo*® Data Manager** is only applied if no appropriate reports are found in the local report cache.

2.1.2.2 Functional Definition of TEMP AE

2.1.2.2.1 Verification

Verification requests will be processed and responded by the TEMP AE.

2.1.2.2.2 Storage

The Storage SCP of the TEMP AE starts to receive the Composite Image Objects and imports them into the database after accepting an association with a negotiated Presentation Context. The DICOM objects sent to the TEMP AE are internally marked as temporary and will be deleted after some time without being archived. When the same images are first sent to the TEMP AE and afterwards to the Workflow filtered AE, they will be handled the same way as they were initially sent to the Workflow Filtered AE (they will be long-term archived).

2.1.2.3 Functional Definition of DICOM Archive User AE

2.1.2.3.1 Storage

In case the ***syngo*® Data Manager** is configured to archive its images to an external DICOM Archive, the Storage SCU is invoked if the archiving is triggered by an internal event.

If the images could successfully be stored to the DICOM Archive, a subsequent Storage Commitment is necessary to secure the storage of these images. Subsequent C-STORE-RQ may follow for the same object if it could not successfully be stored.

The Storage SCP component of the DICOM Archive User AE is used for the dearchiving of images, which were archived at the external DICOM Archive. The images are requested by sending a C-MOVE after an internal dearchive event.

Images sent to the DICOM Archive User AE will only be stored if they have been archived by the AE (requested by a former C-MOVE-RQ). Only images known to the ***syngo*® Data Manager** will be stored permanently. However all other images will be accepted in the C-STORE-RQ but deleted immediately.

This means that the DICOM Archive User AE cannot be used for storage of new images!

2.1.2.3.2 Storage Commitment

For the successful archiving of a set of images it is necessary to get a successful storage response from the external DICOM Archive and also a successful storage commitment for these objects. The DICOM Archive User AE requests a Storage Commitment for a set of images by opening an association and issuing an N-ACTION-RQ to the DICOM Archive to which the objects were successfully stored before. The related N-EVENT-REPORT-RQ can be sent by the remote DICOM Archive on the same association or through a new association.
The timeout for closing the connection is configurable. The default value is 80 seconds. If the external DICOM Archive is always sending the N-EVENT-REPORT over a separate association, the timeout has to be set to a value of 0 seconds.

2.1.2.3.3 Query/Retrieve

The DICOM Archive User AE issues C-MOVE requests to dearchive a set of images from the external DICOM Archive where the objects were formerly archived (by using the Storage and Storage Commitment Service Classes). The remote DICOM Archive Retrieve SCP in turn starts C-STORE sub-operations to the DICOM Archive User Storage SCP.

2.1.2.4 Functional Definition of Dearchive AE

2.1.2.4.1 Query/Retrieve

The Dearchive AE responds to C-MOVE-RQ in order to dearchive the DICOM objects referenced in the request. No C-STORE suboperations are started to send the DICOM objects to a remote DICOM AE. The final C-MOVE-RSP is sent after the last DICOM object has been dearchived (either successfully or unsuccessfully).

If the C-MOVE request references DICOM objects which are ONLINE, these objects are assumed to be successfully dearchived within the C-MOVE response.

2.1.3 Sequencing of Real-World Activities of the Workflow filtered/unfiltered AE

The communication between ***syngo*® Imaging** and an external DICOM node in case of triggering the transfer of objects from ***syngo*® Imaging** to the external node is depicted in Figure 6 in more detail.

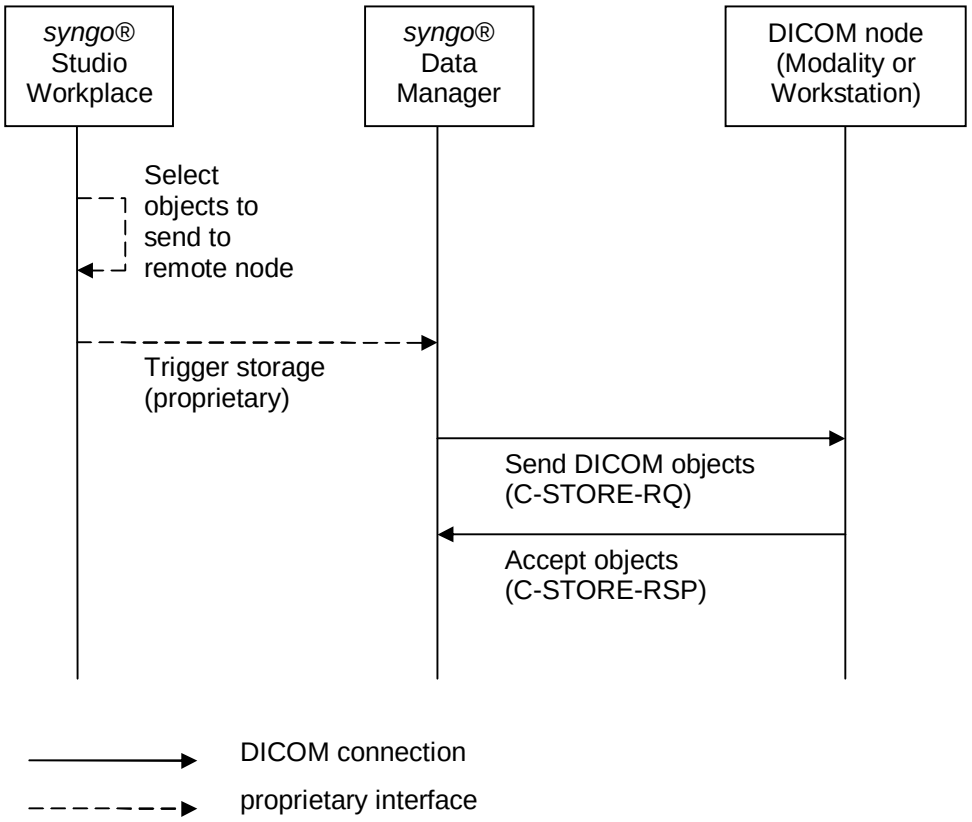

Figure 6: Sequence diagram of storage from ***syngo*® Imaging** to a remote node

Figure 7 depicts that query and retrieval is not done by one component of the syngo® Suite, but is distributed over two components - syngo® Data Manager and syngo® Studio (Advanced) Workplace.

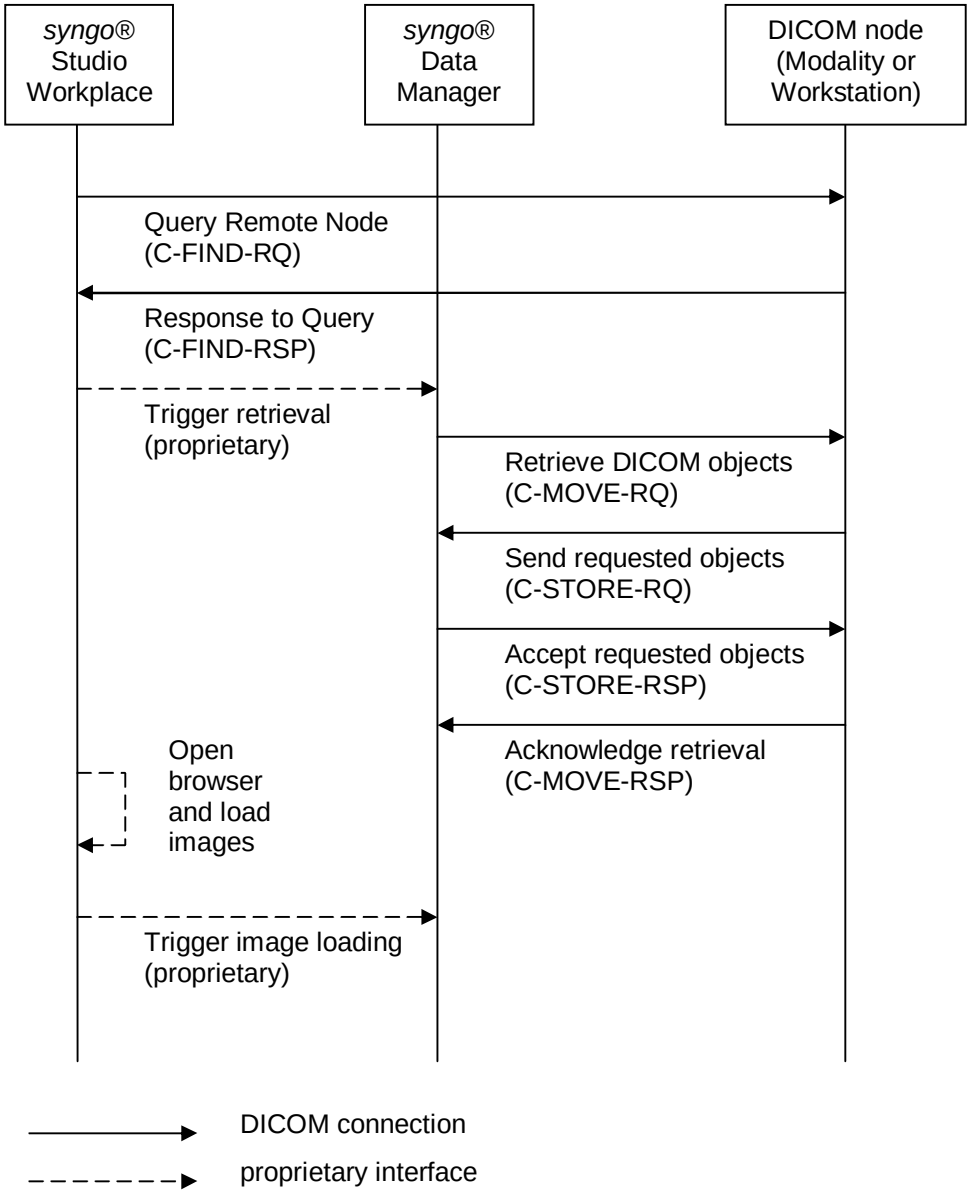

Figure 7: Sequence diagram - Query/Retrieve

2.1.4 Sequencing of Real-World Activities of the DICOM Archive User AE

The communication between the ***syngo*® Data Manager** and an external DICOM Archive is depicted in Figure 8 and Figure 9 in more detail.

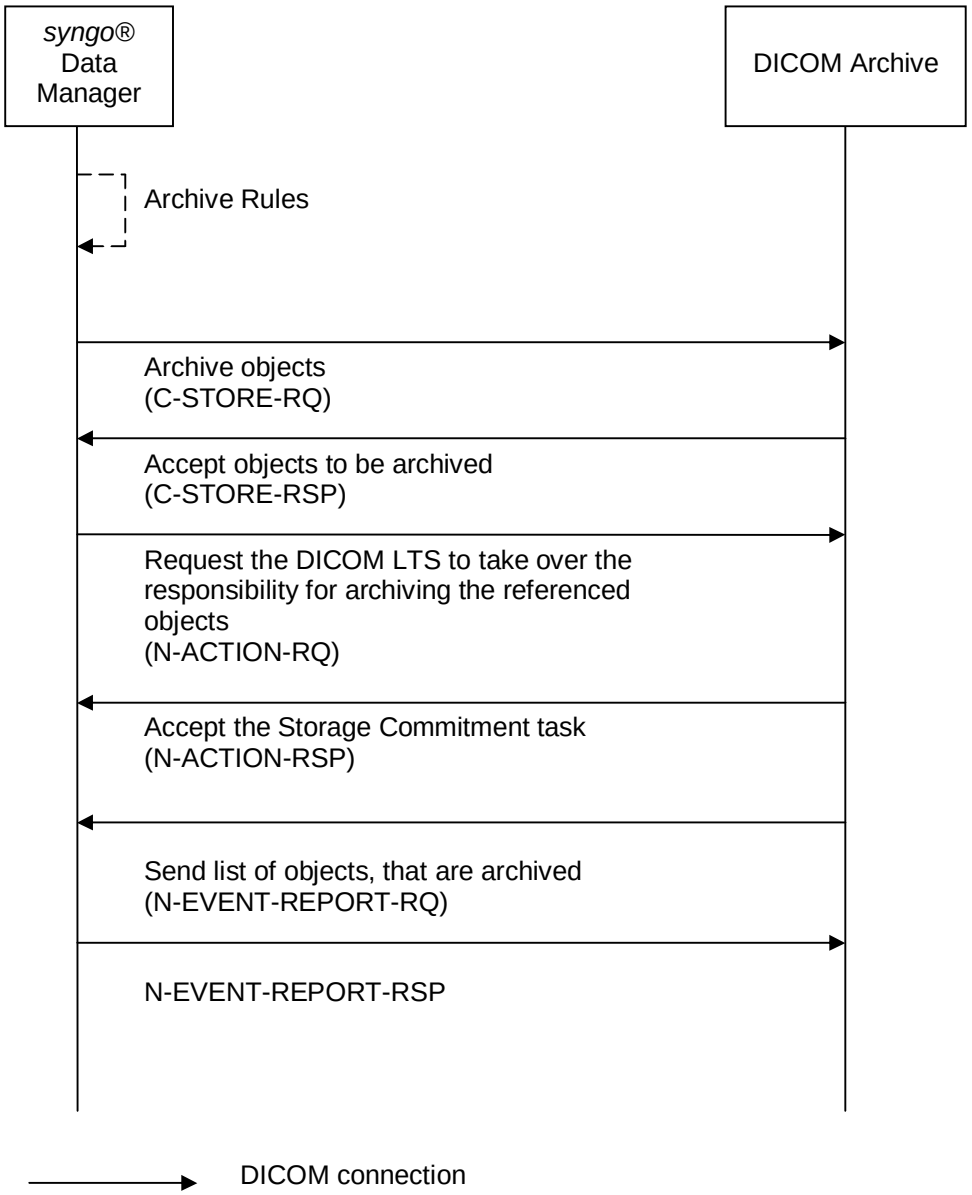

Figure 8: Archiving to an external DICOM Archive

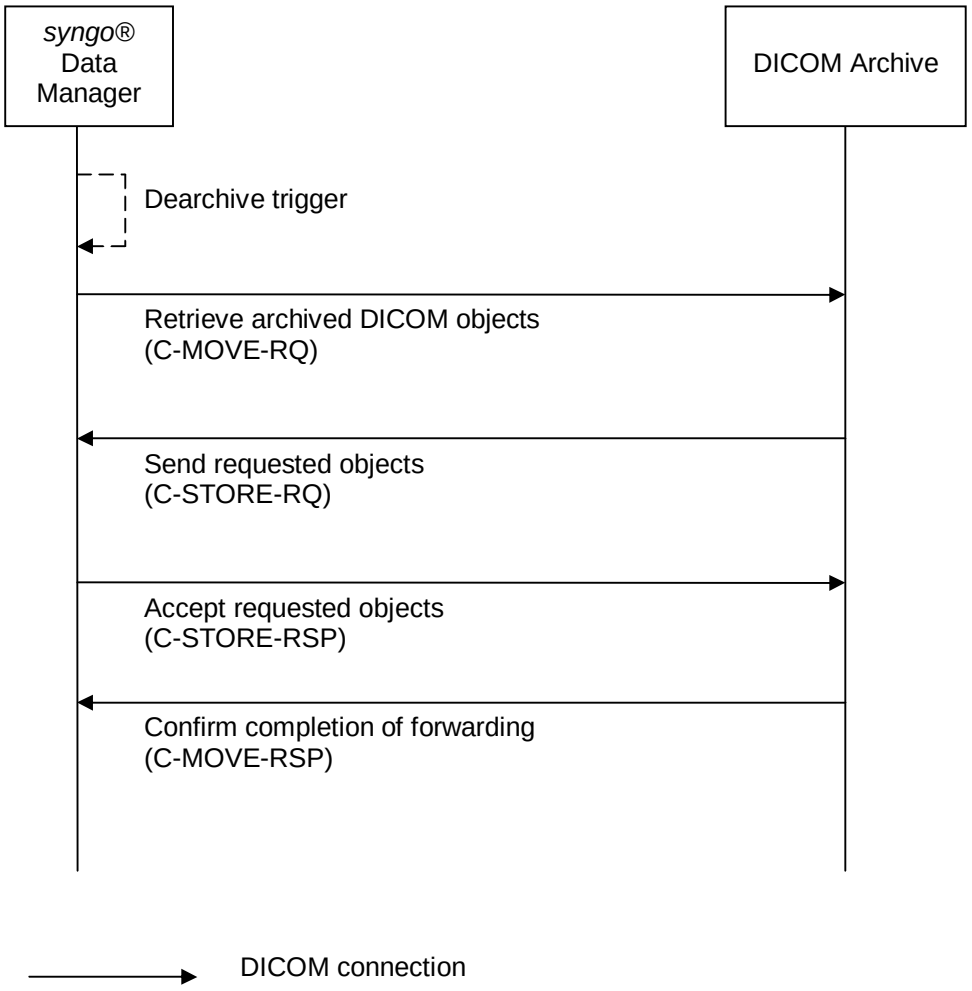

Figure 9: Dearchiving from external DICOM Archive

2.1.5 Sequencing of Real-World Activities of the Dearchive AE

The communication between the ***syngo*® Data Manager** and an external dearchiving node is depicted in Figure 10 in more detail.

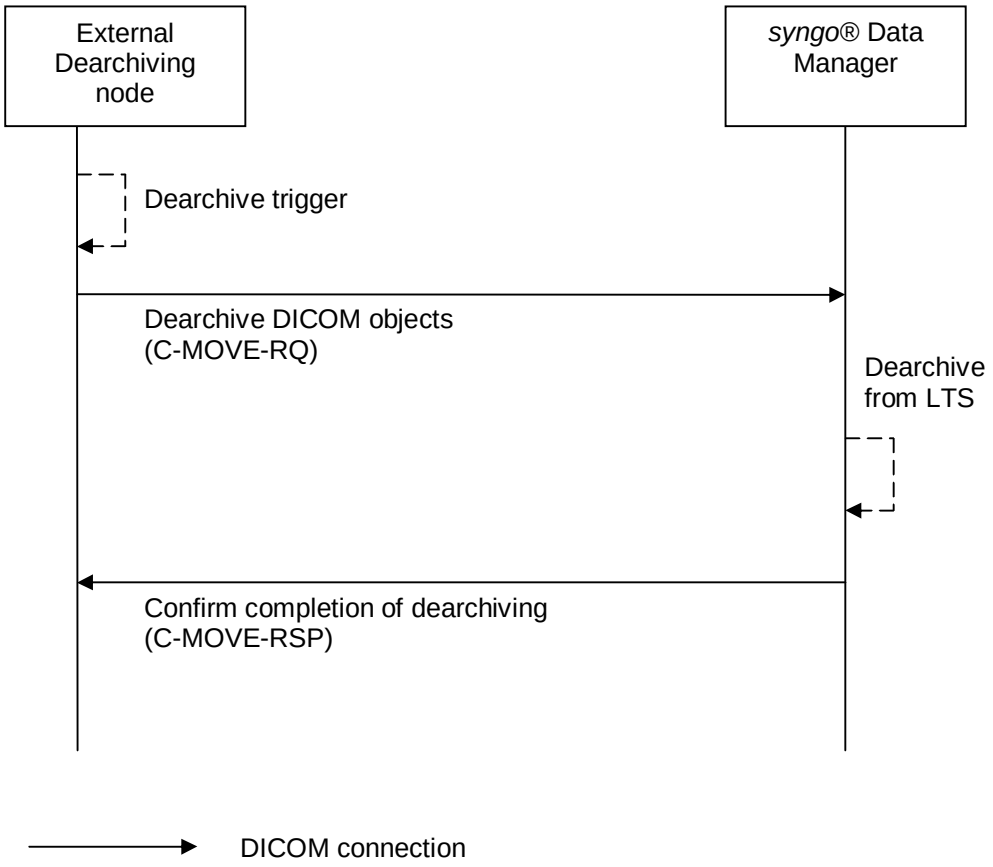

Figure 10: Usage of the Dearchive AE

2.2 AE Specifications

2.2.1 Workflow filtered / unfiltered AE

2.2.1.1 SOP Classes

This Application Entity provides Standard Conformance to the SOP Classes listed in chapter A.1 in Table 47 and in chapter A.2 in Table 48.

2.2.1.2 Association Policies

Application Context Name	1.2.840.10008.3.1.1.1	
PDU size	28 KB	
Maximum number of simultaneous associations as an association acceptor	50[1]	default, configurable
Maximum number of simultaneous associations as an association initiator	Storage[2]	No constraints
	MPPS[3]	1
	Retrieve[4]	No constraints
	Report Management[5]	No constraints
	Storage Commitment[6]	No constraints

Table 5: Association policies

2.2.1.2.1 Asynchronous Nature

The ***syngo*® Data Manager** does not support asynchronous communication (multiple outstanding transactions over a single association).

2.2.1.2.2 Implementation Identifying Information

The ***syngo*® Data Manager** provides a single Implementation Class UID and Version Name:

Implementation Class UID	1.3.12.2.1107.5.8.7

[1] If the number is reached, a newly required association will be rejected with ***reason=local-limit-exceeded*** until some associations are released. This transient rejection response is delayed to avoid immediate retries.
[2] The Workflow filtered / unfiltered AE (as Storage SCU) initiate a new association for each request regardless of the number of already open associations.
[3] As MPPS SCU the Workflow filtered / unfiltered AE initiate only one association to the destination in order to forward the received MPPS message.
[4] As Retrieve SCU the Workflow filtered / unfiltered AE initiate a new association for each request.
[5] As Report Management SCU the Workflow filtered/unfiltered AEs initiate a new association for each "Retrieve Report" request.
[6] As Storage Commitment SCP the Workflow filtered/unfiltered AEs initiates a new association to the SCU if the original association (over which the request has been sent) is already closed.

Implementation Version Name	VB36D

Table 6: Implementation Identifying Information

2.2.1.3 Association Initiation Policy

***syngo*® Data Manager** initiates associations while processing the service operations and internal messages as shown below:

Operation or Real-World Activity	Association for
Send To	C-STORE
DIMSE N-ACTION (as Storage Commitment SCP)	N-EVENT-REPORT
DIMSE N-CREATE, N-SET (forwarding MPPS)	N-CREATE, N-SET
DIMSE C-MOVE (as SCP)	C-STORE
Retrieve Report	C-FIND (private MITRA SOP class)

Table 7: Association Initiation Policy – Workflow filtered / unfiltered AE

2.2.1.3.1 Activity "Send To"

2.2.1.3.1.1 Description and Sequencing of Activities

Storage of DICOM object is either triggered by a C-MOVE request initiated by an external DICOM AE to ***syngo*® Data Manager** or an internal "Send To" message from *syngo*® Studio Workplace to ***syngo*® Data Manager**.

If an association to a remote Application Entity could successfully be established, each image will be transferred one after another via the same open association.

No automatic retry mechanism is implemented.

2.2.1.3.1.2 Proposed Presentation Contexts

The ***syngo*® Data Manager** will propose Presentation Contexts for DICOM SOP classes as shown in Table 51.

The ***syngo*® *Data Manager*** will propose lossy Transfer Syntaxes only if the images to be transferred were lossy sent to the SDM. If they were sent uncompressed or in a lossless Transfer Syntax, the ***syngo*® *Data Manager*** does not propose any lossy Transfer Syntax.

2.2.1.3.1.3 SOP specific Conformance to Storage SOP classes

The ***syngo*® Data Manager** will not add or change private attributes, even in case objects are compressed or image header is updated according to IHE [2] Patient Information Reconciliation.

2.2.1.3.2 Activity “Reply to Commitment Requests on separate associations”

2.2.1.3.2.1 Description and Sequencing of Activities

In case the ***syngo*® Data Manager** has received a Storage Commitment request from an external node and the external node has closed the association, ***syngo*® Data Manager** initiates a new association in order to send the N-EVENT-REPORT-RQ to the SCU. In **Shellproof Mode** the new

association can also be opened long after the original N-ACTION-RQ was received as the images first need to be archived to LTS.

2.2.1.3.2.2 Proposed Presentation Contexts

The ***syngo*® Data Manager** will propose Presentation Contexts as shown in Table 8.

Presentation Context Table					
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 Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

Table 8: Proposed Presentation Contexts - SC on separate association

2.2.1.3.3 Activity "Forward MPPS"

2.2.1.3.3.1 Description and Sequencing of Activities

The Modality sends Modality Performed Procedure Step messages to ***syngo*® Data Manager**. If ***syngo*® Data Manager** is configured to forward the received MPPS messages to a further remote node, it directly opens an association to the third external node and transmits the MPPS message unchanged. The forwarding of the MPPS messages is a requirement for the PPS Manager specified by IHE [2].

2.2.1.3.3.2 Proposed Presentation Contexts

The ***syngo*® Data Manager** will propose Presentation Contexts as shown in Table 9.

Presentation Context Table					
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 Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

Table 9: Proposed Presentation Context – MPPS

2.2.1.3.3.3 SOP Specific Conformance to MPPS SOP classes

All attributes received by ***syngo*® Data Manager** will be sent without any changes, interpretation or validation. Therefore no list of supported attributes is given.

If the destination is not reachable or an error is returned, the ***syngo*® Data Manager** will not try to send the message again. The message will always be forwarded, even if the ***syngo*® Data Manager** returns an error to the SCU.

2.2.1.3.4 Activity “Retrieve objects from remote nodes”

2.2.1.3.4.1 Description and Sequencing of Activities

If ***syngo*® Data Manager** receives a "Retrieve From" request from the ***syngo*® Studio Workplace,** the Workflow filtered AE of ***syngo*® Data Manager** opens a new, dedicated association and issues a C-MOVE request with the query parameters received from the Workplace. "Pending Responses" are propagated back to the Workplace. After the C-MOVE request has been completed, the association is closed.

2.2.1.3.4.2 Proposed Presentation Contexts

The Workflow filtered AE will propose Presentation Contexts as shown in Table 10.

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1. 4.1.2.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1. 4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

Table 10: Proposed Presentation Contexts - Retrieve objects

2.2.1.3.4.3 SOP specific Conformance to Retrieve SOP classes

The ***syngo*® Data Manager** interprets the status codes listed in Table 11. If other codes are received they are considered to be failures of some kind. These failures are given back to the *syngo*® Studio Workplace.

Service Status	Meaning	Protocol Codes	Related Fields
Success	Suboperations complete – No failures or Warning	0000	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Canceled	Suboperations terminated due to Cancel Indication	FE00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Warning	Suboperations Complete - One or more failures	B000	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Pending	Suboperations are continuing	FF00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)

Table 11: Status codes for C-Move

2.2.1.3.5 Activity "Retrieve report information with MITRA service"

2.2.1.3.5.1 Description and Sequencing of Activities

The ***syngo*® Data Manager** has a cache for textual reports. This cache holds all reports for a given patient. The cache is filled with information obtained from configured RIS when

- a schedule for the patient (ORM message) is received or
- an unsolicited report for the patient (ORU message) is received or
- a report query is received via internal communication channels from the workplace.

No reports are fetched if there is already any report for the patient known.

→ This means that the cache either contains all or no reports for a given patient.

2.2.1.3.5.2 Proposed Presentation Contexts

The Workflow filtered AE of ***syngo*® Data Manager** will propose Presentation Contexts as shown in Table 12.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext.Neg.
Name	UID	Name List	UID List		
MITRA Report Management	1.2.840.113532.3 500.8	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

Table 12: Proposed Presentation Contexts - Retrieve Report Information

2.2.1.3.5.3 SOP Specific Conformance Statement to the private Report Management SOP class

The issued C-FIND request only contains values for the attributes "Patient's Name" and "Patient ID". Other attributes are not requested (i.e. no universal matching). However it is expected that all of the attributes listed below are returned. This contrasts to the usual behavior of DICOM query handling but conforms to the description of this SOP class.

Further information concerning the query can be obtained in Table 52.

2.2.1.4 Association Acceptance Policy

The ***syngo*® Data Manager** attempts to accept a new association for

- DIMSE C-ECHO
- DIMSE C-STORE
- DIMSE C-MOVE
- DIMSE C-FIND

- DIMSE C-CANCEL-FIND
- DIMSE C-CANCEL-MOVE
- DIMSE N-CREATE/N-SET (MPPS)
- DIMSE N-ACTION (Storage Commitment)

service operations.

Generally associations are accepted if all of the following conditions are true:

- The "called AET" matches one of the configured Application Entity Titles of the ***syngo*® Data Manager**. This check can be disabled. If this check is disabled and the called AET is unknown, the Workflow filtered AET is used.
- The "calling AET" is allowed to connect to ***syngo*® Data Manager**. This check can be disabled.
- The “calling AET” is allowed to use any of the service requested.
- The maximum number of incoming associations is not reached.
- At least one Presentation Context has been proposed with at least one suitable transfer syntax as defined by the "Presentation Context Tables" in the following subsections.

NOTE: Versions before VB30A also required a successful "reverse hostname lookup" which resolved the IP address of the peer into a human readable hostname. This check is disabled by default in version VB30A and following.

NOTE: If the calling AET requests for multiple services during association and at least one of the services requested is allowed, the association is accepted. However if the actual service requested after the association is not allowed, SDM sends failure status. The association is not aborted.

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

If a Proposed Presentation Context contains more than one Transfer Syntax, the one in the following priority list is chosen (if applicable for the SOP class):

1. JPEG 2000 Lossless Only
2. JPEG Lossless (Process 14)
3. RLE
4. JPEG 2000
5. Explicit VR Little Endian
6. Explicit VR Big Endian
7. Implicit VR Little Endian
8. JPEG Baseline
9. JPEG Extended Process 2 & 4

2.2.1.4.1 Activity “Receive Objects”

2.2.1.4.1.1 Description and Sequencing of Activities

The ***syngo*® Data Manager** receiving process will accept an association, receive any images transmitted on that association and store the images on disk. It will store some header attributes in the database in order to allow clients to query these attributes.

2.2.1.4.1.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** will accept Presentation Contexts as specified in Table 51.

2.2.1.4.1.3 SOP-specific Conformance Statement for Storage SOP classes

The ***syngo*® Data Manager** conforms to the Full Storage Class at Level 2.
In case of a successful C-STORE operation, the image has successfully been written on disk either in Explicit Little Endian format or in the compression format received.

Please refer to Table 13 for an explanation of the status codes returned for the C-STORE operation.

Service Status	Meaning	Protocol Code	Related Fields
Error	missing, empty or invalid attribute(s) Missing attribute is stored in *"Offending Element" (0000,0901)*	A900	"Offending Element" (0000,0901) "Error Comment" (0000,0902)
Error	Refused: Out of resources due to internal reconfiguration.	A700	"Error Comment" (0000,0902)
Processing Failure	1. Could not write to file system. 2. Could not write to database. 3. Could not translate metadata.	0110	"Error Comment" (0000,0902)
In the cases mentioned above the image is not stored, neither on file system nor in the database. The association will not be aborted.			
Success	Image is successfully stored on file system.	0000	None

Table 13: Status codes for Storage

The Workflow filtered / unfiltered AE of the ***syngo*® Data Manager** returns the status "success" when the data is stored to disk and a minimal image header validation has been performed.

The following header attributes must be available and filled:

- Patient Name,
- Study Instance UID,
- Series Instance UID and
- SOP Instance UID.

Restriction: successful operation does not guarantee storage of header data in the database.

2.2.1.4.1.4 Other SOP specific behavior

- The ***syngo*® Data Manager** is incorporating the actor "Image Manager/Archive" within the IHE Profile "Patient Information and Reconciliation" (PIR). Therefore patient and study information might be updated after successful storage based on IHE use case scenarios. For further information please refer to IHE [2].
- 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.

- The Patient ID is specified as a "type 2" attribute by DICOM. Therefore the attribute must be in the message but it may be empty. The ***syngo*® Data Manager** needs the Patient ID for internal processing. If the Patient ID is missing a new one will be inserted by the ***syngo*® Data Manager**.

- If the insertion of the image information to the database fails, a message will be generated and a system administrator has the possibility to correct these images or whatever might be useful. It is strongly recommended that modalities use the Storage Commitment service before deleting the images from their local databases. It is possible to configure sending the status Success after inserting the metadata to the database. This however has an impact on performance.

- Currently the Multi-frame Single Bit Secondary Capture Image Storage SOP class has the following restrictions: The image must contain only one frame or each frame must end on exact byte boundaries. Otherwise the image is rejected.

2.2.1.4.2 Activity "Receive Commitment Request"

2.2.1.4.2.1 Description and Sequencing of Activities

When receiving a Storage Commitment request the ***syngo*® Data Manager** will perform the necessary steps to check the received list of instances against the database.

2.2.1.4.2.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** will accept Presentation Contexts as shown in Table 14.

Presentation Context Table					
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 Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

Table 14: Proposed Presentation Contexts – Respond to SC Request

2.2.1.4.2.3 SOP-Specific Conformance Statement for SC SOP classes

There are only 2 different return status codes for the commitment request itself. They indicate only whether the request was successfully received or not. The real response is sent via N-EVENT-REPORT-RQ either on the same or on a different association.

Success or failure of Storage Commitment will be signaled via the N-EVENT-REPORT primitive.

The client application is responsible for creating a unique Transaction UID. The provider will not check, whether the UID is already in use or not.

It is configurable, if the Storage Commitment is sent after the images were stored on STS or only, if the images were archived to LTS. Please refer to chapter 2.1.2.1.3 for further explanation.

Service Status	Meaning	Protocol Codes	Related Fields
Processing failure	processing failure without comment	0110	(0000,0902)
Success	The request was successfully received	0000	none

Table 15: Return Codes for N-ACTION service

2.2.1.4.3 Activity "Receive MPPS"

2.2.1.4.3.1 Description and Sequencing of Activities

The modality sends Modality Performed Procedure Steps to ***syngo*® Data Manger.**

Multiple N-CREATE, N-SET requests over the same association are supported by ***syngo*® Data Manger**. The MPPS messages are not evaluated. They can be forwarded to any configured node.

2.2.1.4.3.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** will accept Presentation Contexts as shown below.

Presentation Context Table					
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 Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

Table 16: Proposed Presentation Contexts - Receive MPPS

2.2.1.4.3.3 SOP-specific Conformance Statement for MPPS SOP classes

2.2.1.4.3.3.1 Return Codes

The ***syngo*® Data Manager** returns the status codes listed in Table 17.

Service Status	Status Code	Meaning	Related Fields
Processing failure	0110	Application processing failure	(0000,0902)
Duplicate SOP instance	0111	The optional field contains the SOP Instance UID which was already allocated to another SOP Instance	(0000,1000)
Missing attribute	0120		Attribute List
Invalid attribute value	0106		Attribute List
Missing attribute value	0121		Attribute List
Success	0000	Matching is complete - No final Identifier is supplied	None

Table 17: N-SET/N-CREATE Return Status

2.2.1.4.4 Activity "Receive Find Request"

2.2.1.4.4.1 Description and Sequencing of Activities

The ***syngo*® Data Manager** responds to requests issued by an SCU with the query model Patient Root, Study Root and Patient/Study Only.

Hierarchical and relational retrieve operations are both supported.

With a C-FIND-CANCEL request the running query can be canceled at any time by the Query SCU.

2.2.1.4.4.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** will accept Presentation Contexts as shown in Table 18.

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
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	SCP	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Patient/Study Only Query/Retrieve Information Mode l- FIND	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	Yes
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 18: Accepted Presentation Contexts - Receive C-FIND request

2.2.1.4.4.3 SOP Specific Conformance Statement to Query SOP classes

The ***syngo*® Data Manager** Workflow filtered / unfiltered AE support queries with all mandatory and optional search keys. Table 53 describes the search keys for the four levels of query that the SCP supports.

The query attribute contents will be treated case-sensitive except all PN attributes which will always be treated case-insensitive.

The Workflow filtered / unfiltered AE of the ***syngo*® Data Manager** do not return any Media File-Set ID or UID, they always return the Retrieve AET (0008,0054). Furthermore, "Instance Availability" (0008,0056) is always returned.

Difference between Workflow filtered AE and Workflow unfiltered AE:

The Workflow filtered AE:

- Suppresses all matches (i.e. SOP Instances) which are invisible or belong to a discontinued examination.

The Workflow unfiltered AE:

- returns these matches.

2.2.1.4.4.4 Hierarchical and Relational Queries

Independent of the negotiation for relational queries, each C-FIND request is treated as if it was a relational query. The SCP allows any combination of keys at or above the provided Query/Retrieve level in the hierarchy. Keys below Query/Retrieve level are ignored.

2.2.1.4.4.5 Return Codes

The ***syngo*® Data Manager** returns the status codes listed in Table 19.

Service Status	Meaning	Protocol Codes	Related Fields
Processing failure	Parsing or translation of the DICOM request failed. A response could not be generated. The response could not be sent to the client. The query of the database failed.	C001	(0000,0902)
Cancel	Matching terminated due to a Cancel request	FE00	None
Success	Matching is complete - No final Identifier is supplied	0000	None
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier

Table 19: C-FIND SCP Return Status

The maximum number of matches returned can be configured. The status of the final response will always be SUCCESS whether the clipping occurred or not.

2.2.1.4.5 Activity "Move SCP"

2.2.1.4.5.1 Description and Sequencing of Activities

The Workflow filtered / unfiltered AE respond to retrieve requests of an SCU. They support the query models Patient Root, Study Root and Patient/Study Only.

2.2.1.4.5.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** will accept Presentation Contexts as shown in Table 20.

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	Yes
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	Yes
Patient/Study Only Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	Yes

Table 20: Accepted Presentation Contexts – Move SCP

2.2.1.4.5.3 SOP Specific Conformance Statement for Move SCP Classes

Difference between Workflow filtered AE and Workflow unfiltered AE:

The Workflow filtered AE:

- Suppresses to transfer all matches (i.e. SOP Instances) which are invisible or belong to a discontinued examination.

The Workflow unfiltered AE:

- Will transfer all matches stored on the system.

If the C-MOVE operation is aborted or cancelled, the C-STORE suboperations triggered by the C-MOVE are also aborted.

2.2.1.4.5.4 Hierarchical and Relational Queries

Independent of the negotiation for relational queries, each C-FIND request is treated as if it was a relational query. The SCP allows any combination of keys at or above the provided Query/Retrieve level in the hierarchy. Keys below Query/Retrieve level return an error.

But if for example a series level attribute is requested in a study level query, an error will be returned by ***syngo*® Data Manager** (code “0106”).

2.2.1.4.5.5 Return Codes

The ***syngo*® Data Manager** returns the status codes listed in Table 21.

Service Status	Meaning	Protocol Codes	Related Fields
Missing Attribute	The Query Retrieve Level attribute is missing	0120	(0000,1005)
Invalid Attribute Value	Attributes below the Q/R level have been found.	0106	n/a
Processing Failure	unexpected error (The complete Image Move Command had been aborted)	C001	(0000,0902)
Refused	Move Destination unknown	A801	(0000,0902)
Cancel	Sub-operations terminated due to Cancel Indication	FE00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Warning	Sub-operations Complete - One or more Failures or Warnings	B000	(0000,1021) (0000,1022) (0000,1023)
Pending	Sub-operations are continuing	FF00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Success	Sub-operations Complete - No Failures or Warning	0000	(0000,1021) (0000,1022) (0000,1023)

Table 21: C-MOVE Return Status

2.2.2 TEMP AE

2.2.2.1 SOP Classes

This Application Entity provides Standard Conformance to the SOP Classes listed in chapter A.1 in Table 47 as SCP.

2.2.2.2 Association Policies

Application Context Name	1.2.840.10008.3.1.1.1	
PDU size	28 KB	
Maximum number of simultaneous associations as an association acceptor	50[1]	default, configurable

Table 22: Association policies

2.2.2.2.1 Asynchronous Nature

The ***syngo*® Data Manager** does not support asynchronous communication (multiple outstanding transactions over a single association).

2.2.2.2.2 Implementation Identifying Information

The ***syngo*® Data Manager** provides a single Implementation Class UID and Version Name:

Implementation Class UID	1.3.12.2.1107.5.8.7
Implementation Version Name	VB36D

Table 23: Implementation Identifying Information

2.2.2.3 Association Initiation Policy

The ***syngo*® Data Manager** TEMP AE does not initiate any associations to remote DICOM devices.

2.2.2.4 Association Acceptance Policy

The ***syngo*® Data Manager** attempts to accept a new association for

- DIMSE C-ECHO
- DIMSE C-STORE

service operations.

For further information, refer to 2.2.1.4.

2.2.2.4.1 Activity “Receive Objects”

2.2.2.4.1.1 Description and Sequencing of Activities

[1] If the number is reached, a newly required association will be rejected with ***reason=local-limit-exceeded*** until some associations are released. This transient rejection response is delayed to avoid immediate retries.

The ***syngo*® Data Manager** receiving process will accept an association, receive any images transmitted on that association and store the images on disk. It will store some header attributes in the database in order to allow clients to query these attributes. The images are also marked for temporary storage, which means that they will be deleted after some time without being long-term archived. The time after which the images shall be deleted is configurable.

2.2.2.4.1.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** will accept Presentation Contexts as specified in Table 51.

2.2.2.4.1.3 SOP-specific Conformance Statement for Storage SOP classes

The ***syngo*® Data Manager** conforms to the Full Storage Class at Level 2.

In case of a successful C-STORE operation, the image has successfully been written on disk either in Explicit Little Endian format or in the compression format received.
Please refer to Table 13 for an explanation of the status codes returned for the C-STORE operation.

Service Status	Meaning	Protocol Code	Related Fields
Error	missing, empty or invalid attribute(s) Missing attribute is stored in *"Offending Element" (0000,0901)*	A900	"Offending Element" (0000,0901) "Error Comment" (0000,0902)
Error	Refused: Out of resources due to internal reconfiguration.	A700	"Error Comment" (0000,0902)
Processing Failure	4. Could not write to file system. 5. Could not write to database. 6. Could not translate metadata.	0110	"Error Comment" (0000,0902)
In the cases mentioned above the image is not stored, neither on file system nor in the database. The association will not be aborted.			
Success	Image is successfully stored on file system.	0000	None

Table 24: Status codes for Storage

The TEMP AE of the ***syngo*® Data Manager** returns the status "success" when the data is stored to disk and a minimal image header validation has been performed.

The following header attributes must be available and filled:

- Patient Name,
- Study Instance UID,
- Series Instance UID and
- SOP Instance UID.

Restriction: successful operation does not guarantee storage of header data in the database.

2.2.2.4.1.4 Other SOP specific behavior

- The ***syngo*® Data Manager** is incorporating the actor "Image Manager/Archive" within the IHE Profile "Patient Information and Reconciliation" (PIR). Therefore patient and

study information might be updated after successful storage based on IHE use case scenarios. For further information please refer to IHE [2].

- 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. If the same image is first sent to the TEMP AE and afterwards to the Workflow filtered AE, the temporary information is removed and the image will be long-term archived.

- The Patient ID is specified as a "type 2" attribute by DICOM. Therefore the attribute must be in the message but it may be empty. The ***syngo*® Data Manager** needs the Patient ID for internal processing. If the Patient ID is missing a new one will be inserted by the ***syngo*® Data Manager**.

- If the insertion of the image information to the database fails, a message will be generated and a system administrator has the possibility to correct these images or whatever might be useful.

- Currently the Multi-frame Single Bit Secondary Capture Image Storage SOP class has the following restrictions: The image must contain only one frame or each frame must end on exact byte boundaries. Otherwise the image is rejected.

2.2.3 DICOM Archive User AE

2.2.3.1 SOP Classes

This Application Entity provides Standard Conformance to the SOP Classes listed in Table 49 and in Table 47 in chapter A.1.

2.2.3.2 Association Policies

The association policies are identical to the Workflow filtered / unfiltered AE.

For further information, please refer to chapter 2.2.1.2.

The differences are listed in the following subchapters.

2.2.3.2.1 Number of Associations

Application Context Name	1.2.840.10008.3.1.1.1	
PDU size	28 KB	
Maximum number of simultaneous associations as an association acceptor	50[1]	default, configurable
Maximum number of simultaneous associations as an association initiator	Storage[2]	default 5
	Retrieve[3]	default 5
	Storage Commitment[1]	default 5

[1] If the number is reached, a newly required association will be rejected with ***reason=local-limit-exceeded*** until some associations are released. This transient rejection response might be delayed to avoid immediate retries.
[2] The DICOM Archive User AE (as Storage SCU) can initiate a maximum of five concurrent associations in the default configuration.
[3] The DICOM Archive User AE (as Retrieve SCU) can also initiate a maximum of five concurrent associations in the default configuration.

Table 25: Association policies

2.2.3.3 Association Initiation Policy

The DICOM Archive User AE of ***syngo*® Data Manager** initiates associations while processing the service operations and internal messages as shown in Table 26.

Operation or Real-World Activity	Association for
DICOM Archive: Store	C-STORE
DICOM Archive: Commit	N-ACTION
DICOM Archive: Dearchive	C-MOVE

Table 26: Association Initiation Policy – DICOM Archive User AE

2.2.3.3.1 Activity "DICOM Archive: Store"

2.2.3.3.1.1 Description and Sequencing of Activities

The archiving of DICOM objects to an external DICOM Archive is triggered by internal processes.

If the DICOM objects could not be successfully sent to the remote DICOM Archive (e.g. Association could not be opened, C-STORE failed, etc.) these objects are sent again until the C-STORE-RSP has the status SUCCESS.

The number of retries is configurable. The sending is also repeated if the subsequent Storage Commitment for this image is not successful.

2.2.3.3.1.2 Proposed Presentation Contexts

The DICOM Archive User AE proposes the same Presentation Contexts as already depicted for the Workflow filtered / unfiltered AE (refer to Table 51).

2.2.3.3.1.3 SOP Specific Conformance for Storage SOP Classes

The SOP specifics are also identical to the Workflow filtered / unfiltered AE, please refer to 2.2.1.3.1.3.

2.2.3.3.2 Activity "DICOM Archive: Request Commit"

2.2.3.3.2.1 Description and Sequencing of Activities

The DICOM Archive User AE stores DICOM objects to an external DICOM Archive. After that the responsibility for these images is passed to the DICOM Archive. This is done via the Storage Commitment service.

If the Storage Commitment request for the DICOM objects could not be sent to the remote DICOM Archive or the objects are not committed within a configurable period of time, the Storage Commitment request is sent again until the Commitment was replied successfully by the DICOM Archive.

2.2.3.3.2.2 Proposed Presentation Contexts

The DICOM Archive AE will propose Presentation Contexts as shown in Table 27.

[1] The DICOM Archive User AE (as Storage Commitment SCU) initiates a new association to request commitments for the archiving of DICOM objects. The number of concurrent associations is configurable (The default configuration is five).

Presentation Context Table					
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 Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	No

Table 27: Proposed Presentation Contexts - Request Commitment

2.2.3.3.3 Activity "DICOM Archive: Dearchive"

2.2.3.3.3.1. Description and Sequencing of Activities

The DICOM Archive User will open a new association to issue a C-MOVE request to the remote DICOM Archive if a set of DICOM objects should be dearchived. If the requested DICOM objects are not received, the DICOM Archive User retries the C-MOVE request again for a configurable number of times.

2.2.3.3.3.2 Proposed Presentation Contexts

The DICOM Archive AE will propose Presentation Contexts as shown in Table 28.

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

Table 28: Proposed Presentation Contexts - Retrieve for Dearchiving

2.2.3.3.3.3 SOP Specific Conformance Statement for Retrieve SOP Classes

Failures in dearchiving are detected by checking if the correct images are received or not. The information from the C-MOVE responses is ignored.

2.2.3.4 Association Acceptance Policy

The DICOM Archive User AE accepts new associations for

- DIMSE C-ECHO
- DIMSE C-STORE
- DIMSE N-EVENT-REPORT (Storage Commitment)

service operations.

For further information, refer to 2.2.1.4.

2.2.3.4.1 Activity "Receive Objects from DICOM Archive"

2.2.3.4.1.1 Description and Sequencing of Activities

The DICOM Archive User AE sends a C-MOVE-RQ to the Archive and expects the C-STORE-RQ on a different association. The requested images are received and stored on disk.

Received images that have not been requested are silently ignored.

2.2.3.4.1.2 Accepted Presentation Contexts

The DICOM Archive User AE will accept the same Presentation Contexts as the Workflow filtered / unfiltered AE. They are listed in more detail in Table 51.

2.2.3.4.1.3 SOP Specific Conformance for SOP Classes

Same behavior as with the Workflow filtered / unfiltered AE regarding

- Presentation Context
- Level of Storage Class
- Return Codes (Table 13)
- Check of header attributes

Exception: if the received image has not been requested by the DICOM Archive User AE via a C-MOVE-RQ, it will be deleted. Nevertheless a successful response will be sent.

2.2.3.4.2 Activity "Receive Commitment Notification from DICOM Archive"

2.2.3.4.2.1 Description and Sequencing of Activities

When receiving a Storage Commitment notification the DICOM Archive User AE will update the archiving state for each image referenced in the notification.

2.2.3.4.2.2 Accepted Presentation Contexts

The DICOM Archive User AE will propose Presentation Contexts as shown in Table 29.

Presentation Context Table					
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 Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	No

Table 29: Accepted Presentation Contexts - SC SCU

2.2.4 Dearchive AE

2.2.4.1 SOP Classes

This Application Entity provides Standard Conformance to the SOP Classes listed in Table 50.

2.2.4.2 Association Policies

Application Context Name	1.2.840.10008.3.1.1.1	
PDU size	28 KB	
Maximum number of simultaneous associations as an association acceptor	50[1]	default, configurable

Table 30: Association policies

2.2.4.2.1 Asynchronous Nature

The ***syngo*® Data Manager** does not support asynchronous communication (multiple outstanding transactions over a single association).

2.2.4.2.2 Implementation Identifying Information

The ***syngo*® Data Manager** DICOM software provides a single Implementation Class UID and Version Name:

Implementation Class UID	1.3.12.2.1107.5.8.7
Implementation Version Name	VB36D

Table 31: Implementation Identifying Information

2.2.4.3 Association Initiation Policy

The ***syngo*® Data Manager** Dearchive AE does not initiate any associations to remote DICOM devices.

2.2.4.4 Association Acceptance Policy

The ***syngo*® Data Manager** Dearchive AE attempts to accept a new association for

- DIMSE C-MOVE

service operation.

For further information, refer to 2.2.1.4.

2.2.4.4.1 Activity “Move SCP”

2.2.4.4.1.1 Description and Sequencing of Activities

[1] If the number is reached, a newly required association will be rejected with ***reason=local-limit-exceeded*** until some associations are released. This transient rejection response might be delayed to avoid immediate retries.

The Dearchive AE responds to retrieve requests of an SCU. The requests are used to dearchive the referenced images, which means to bring them from a nearline state to an online state. The Dearchive AE supports the query models Patient Root, Study Root and Patient/Study Only.

2.2.4.4.1.2 Accepted Presentation Contexts

The ***syngo*® Data Manager** Dearchive AE will accept Presentation Contexts as shown in Table 32.

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	Yes
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	Yes
Patient/Study Only Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	Yes

Table 32: Accepted Presentation Contexts – Move SCP

2.2.4.4.1.3 SOP Specific Conformance Statement for Move SCP Classes

At association establishment time the C-MOVE presentation context shall be negotiated. When the C-MOVE-RQ is processed, the Move Destination attribute (receiver of images) is ignored. However the Move Destination AE must conform to the DICOM conventions (value representation AE).

The Dearchive AE sends continuously C-MOVE responses to indicate progress about the dearchiving of images. The C-MOVE-RSP contains the Service parameters listed in Table 33.

Attribute	Meaning
Number Of Remaining Sub-Operation	Is sent if the C-MOVE-RSP has the status Pending. Indicates the number of images which have not yet been dearchived.
Number Of Completed Sub-Operation	Indicates the number of images which are ONLINE, either if they have been dearchived or were ONLINE before the C-MOVE-RQ was sent.
Number Of Failed Sub-Operation	Always 0.
Number Of Warning Sub-Operation	Always 0.

Table 33: C-MOVE-RSP Service Parameters

The final C-MOVE-RSP is sent after all images have been dearchived either successfully or unsuccessfully. No C-STORE operations are done in series of a C-MOVE-RQ for the Dearchive AE.

2.2.4.4.1.4 Hierarchical and Relational Queries

Independent of the negotiation for relational queries, each C-FIND request is treated as if it was a relational query. The SCP allows any combination of keys at or above the provided Query/Retrieve level in the hierarchy. Keys below Query/Retrieve level return an error.

But if for example a series level attribute is requested in a study level query, an error will be returned by ***syngo*® Data Manager** (code “0106”).

2.2.4.4.1.5 Return Codes

The ***syngo*® Data Manager** returns the status codes listed in Table 34.

Service Status	Meaning	Protocol Codes	Related Fields
Missing Attribute	The Query Retrieve Level attribute is missing	0120	(0000,1005)
Invalid Attribute Value	Attributes below the Q/R level have been found.	0106	n/a
Processing Failure	unexpected error (The complete Image Move Command had been aborted)	C001	(0000,0901)
Refused	Move Destination unknown (next increment)	A801	(0000,0902)
Cancel	Sub-operations terminated due to Cancel Indication (next increment)	FE00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Warning	Sub-operations Complete - One or more Failures or Warnings	B000	(0000,1021) (0000,1022) (0000,1023)
Pending	Sub-operations are continuing	FF00	(0000,1020) (0000,1021) (0000,1022) (0000,1023)
Success	Sub-operations Complete - No Failures or Warning	0000	(0000,1021) (0000,1022) (0000,1023)

Table 34: C-MOVE Return Status

2.3 Network Interfaces

2.3.1 Physical Network Interface

The ***syngo*® Data Manager** is independent to the physical medium over which TCP/IP executes; it inherits this from the OS system upon which it executes.

2.4 Configuration

2.4.1 AE Title/Presentation Address Mapping

To ensure unique identification within the network the hostname should be used as part of the AE Titles (see examples below). 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 DICOM [1].

For security reasons the AET of the TEMP AE must contain the substring “TEMP” as a prefix.

2.4.1.1 Local AE Title

The ***syngo*® Data Manager** provides five Application Entities. The title for all Application Entities can be configured in the *syngo*® Imaging Service software.

- The default for the Workflow filtered AET is the first part of the hostname in upper case.
- The default for the Workflow unfiltered AET is the AET of the workflow filtered AET with the suffix _ALL.
- The default for the TEMP AET is the AET of the workflow filtered AET with the prefix TEMP_.
- The default for the DICOM Archive User AET is the AET of the Workflow filtered AET with the suffix _DAU.
- The default for the Dearchive AET is the AET of the Workflow filtered AET with the suffix _DAR.

If the suffixes appended to the hostname are longer than 16 characters, characters of the hostname are removed from the beginning. This is necessary because the AET may not exceed 16 characters.

Example:

Hostname: sdm.healthcare-site.org

Application Entity	Default AE Title	Default TCP/IP Port
Workflow filtered AE	SDM	Port: 2002
Workflow unfiltered AE	SDM_ALL	Port: 2002
TEMP AE	TEMP_SDM	Port: 2004
DICOM Archive User AE	SDM_DAU	Port: 2003
Dearchive AE	SDM_DAR	Port: 2002

Table 35: Example Application Entity Titles

The port number for all Application Entities is configurable in the *syngo*® Imaging Service application. The port number for the DICOM Archive User AE may not be the same as the port number for the Workflow filtered / unfiltered AE. The port number for the TEMP AE should not be the same as the port number for the Workflow filtered / unfiltered AE in order to have a second criterion for distinction between these AEs.

Changing the local Application Entities requires a restart of the processes.

2.4.1.2 Remote AE Title/Presentation Address Mapping

The mapping of external AE Titles to TCP/IP addresses and ports is configurable and set at the time of installation by Installation Personnel. The Application Entity Titles, host names and port numbers of remote nodes are configured using the ***syngo*® Imaging** Service software.

Remote Application Entities can be configured without restarting the process.

Limitations: the external AE acting as DICOM Archive should have a single AET for C-MOVE and C-STORE.

2.4.2 Parameters

Table 36 lists configuration parameters, which are true for all four Application Entities.

Parameter	Configurable	Default Value
max PDU size	Yes	28672 Bytes
time-out for accepting/rejecting an association request	Yes	60 s
time-out for responding to an association open/close request	Yes	60 s
time-out for accepting a message over network	Yes	60 s
time-out for waiting for data between TCP/IP-packets	Yes	60 s
time-outs for waiting for a Service Request/Response message from the remote node (Storage SCP/SCU)	Yes	600 s
time-outs for waiting for a Service Request/Response message from the remote node (Query/Retrieve SCP/SCU)	Yes	600 s
number of image collection before saving to database	Yes	20
max matches querylimit	Yes	unlimited
max number of parallel associations	Yes	50
DICOM Archive User specific parameters:		
Maximum number of store attempts.	Yes	10
Store target AET.	Yes	STORESCP
Seconds between store attempts.	Yes	600
Maximum number of commit attempts.	Yes	10
Commit target AET.	Yes	COMMITSCP
Seconds between commit attempts.	Yes	600
Milliseconds to wait for event on N-ACTION association.	Yes	80000
Maximum number of move attempts.	Yes	10
Seconds between move attempts.	Yes	300
Retrieve level.	Yes	IMAGE

Table 36: Parameter List

3 Support of Character Sets

3.1 Character Sets for *syngo*® Data Manager

The ***syngo*® Data Manager** supports the ISO 8859 Latin 1 (ISO-IR 100) character set.

In case the incoming images do not contain the attribute “Specific Character Set” (0008,0005) a configurable value is inserted (default: ISO-IR 100).

The ***syngo*® Data Manager** does not support multiple character sets within the attribute “Specific Character Set” (0008,0005) and no multi-byte character sets with code extensions. For example the attribute (0008,0005) specified as

ISO 2022 IR 13\ISO 2022 IR 6\ ISO 2022 IR 87

is **not** supported.

3.2 Component Group handling for *syngo*® Data Manager

A DICOM attribute with Value Representation PN can exist with three component groups (Alphabetic, Ideographic and Phonetic).

The ***syngo*® Data Manager** only supports one single component group for storage. In case PN attributes of images contain more than one component group, only a single component group is stored in the following preferred order.

1. Ideographic
2. Phonetic
3. Alphabetic

Images retrieved from the ***syngo*® Data Manager** will then contain the PN attributes with one component group. The original values are not retained.

Also there is no support for “Fuzzy semantic matching of person names” for Query/Retrieve.

4 Extensions / Specializations / Privatizations

4.1 Standard Extended / Specialized / Private SOPs

4.1.1 SIEMENS Private Non-Image IOD

For encoding binary data-streams not representing image data, Siemens has created a private “Non-Image IOD” according to the rules governed by the DICOM Standard. The following section will roll-out the definition of this Private IOD. It can be communicated with Network Storage Service and Offline Media Storage Services.

The Siemens “Non-Image IOD” is identified by a private Non-Image Storage SOP Class UID of „1.3.12.2.1107.5.9.1“.

4.1.1.1 Siemens Non-Image IOD – E-R Model

The E-R model in A.1.2 depicts those components of the DICOM Information Model which directly refer to the Siemens Non-Image IOD. The Frame of Reference IE, Overlay IE, Modality Lookup-Table IE, VOI Lookup-Table IE and Curve IE are not components of the Siemens Non-Image IOD.

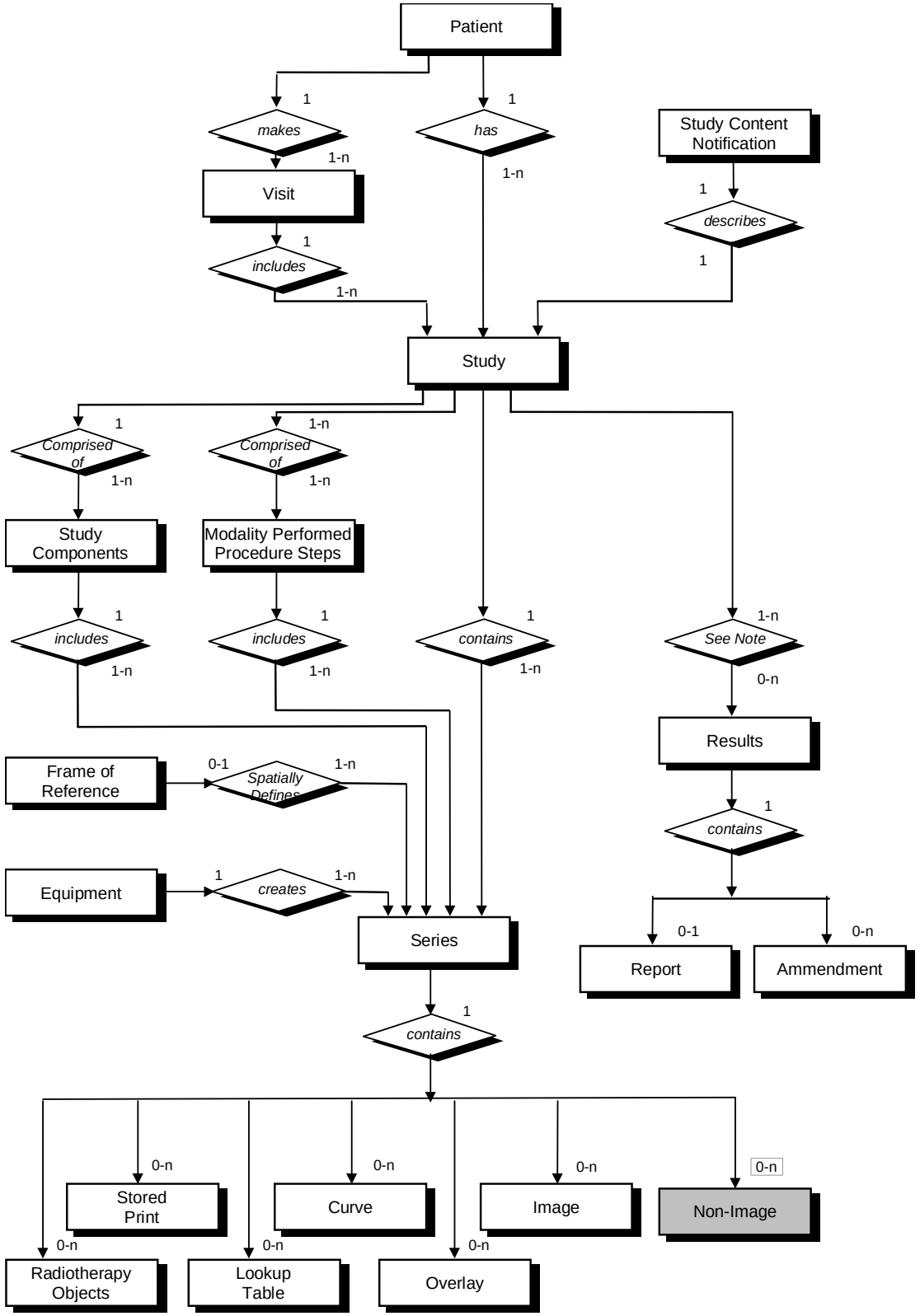

Figure 11: Information Model

4.1.1.2 Siemens Non-Image IOD - Module Table

IE	Module	Reference	Usage
Patient	Patient	[1] PS3.3 C.7.1.1	M
Study	General Study	[1] PS3.3 C.7.2.1	M
	Patient Study	[1] PS3.3 C.7.2.2	U
Series	General Series	[1] PS3.3 C.7.3.1	M
Equipment	General Equipment	[1] PS3.3 C.7.5.1	U
CSA	CSA Image Header	A.2.1	U
	CSA Series Header	A.2.2	U
	MEDCOM Header	A.2.3	U
	CSA Non-Image	A.1.3.1	M
	SOP Common	[1] PS3.3 C.12.1	M

Table 37: Siemens Non-Image IOD Module Table

4.1.1.3 Siemens Non-Image IOD - Modules

4.1.1.3.1 CSA Non-Image Module

The table in this section contains private IOD Attributes that describe CSA Non-Images.

Attribute Name	Tag	Owner	Type	Notes
Image Type	(0008,0008)	-	3	Image identification characteristics.
Acquisition Date	(0008,0022)	-	3	The date the acquisition of data that resulted in this data set started.
Acquisition Time	(0008,0032)	-	3	The time the acquisition of data that resulted in this data set started.
Conversion Type	(0008,0064)	-	3	Describes the kind of image conversion. Defined Terms: DV = Digitized Video, DI = Digital Interface, DF = Digitized Film, WSD = Workstation.
Referenced Image Sequence	(0008,1140)	-	3	A sequence which provides reference to a set of Image SOP Class/Instance identifying other images significantly related to this data set. Encoded as sequence of items: (0008,1150) and (0008,1155).
Derivation Description	(0008,2111)	-	3	A text description of how this data set was derived.
Source Image Sequence	(0008,2112)	-	3	A Sequence which identifies the set of Image SOP Class/Instance pairs of the Images which were used to derive this data set. Zero or more Items may be included in this Sequence. Encoded as sequence of items: (0008,1150) and (0008,1155).
Patient Position	(0018,5100)	-	3	Patient position descriptor relative to the equipment.
Acquisition Number	(0020,0012)	-	3	A number identifying the single continuous gathering of data over a period of time which resulted in this data set.
Image Number	(0020,0013)	-	3	A number that identifies this data set.
Frame of Reference UID	(0020,0052)	-	3	Uniquely identifies the frame of reference for a Series.
Image Comments	(0020,4000)	-	3	User-defined comments about the image.
Quality Control Image	(0028,0300)	-	3	Indicates whether or not this image is a quality control or phantom

Attribute Name	Tag	Owner	Type	Notes
				image. If this Attribute is absent, then the image may or may not be a quality control or phantom image. Enumerated Values: YES, NO.
Burned in Annotation	(0028,0301)	-	3	Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired. If this Attribute is absent, then the image may or may not contain burned in annotation. Enumerated Values: YES, NO.
Lossy Image Compression	(0028,2110)	-	3	Specifies whether an Image has undergone lossy compression. Enumerated Values: 00 = Image has NOT been subjected to lossy compression, 01 = Image has been subjected to lossy compression.
Lossy Image Compression Ratio	(0028,2112)	-	3	Describes the approximate lossy compression ratio(s) that have been applied to this image. May be multi valued if successive lossy compression steps have been applied.
CSA Data Type	(0029,xx08)	SIEMENS CSA NON-IMAGE	1	CSA Data identification characteristics. Defined Terms: BSR REPORT = Study Report Data 3D EDITOR 3D FLY PATH = Fly Through Data 3D FLY VRT = Fly Through Data 3D FUSION MATRIX = Fusion Data RAW DATA NUM 4 = NUMARIS/ Raw Data RAW DATA SOM 5 = SOMARIS/ Raw Data RT3D CONFIG = InSpaceIS Data SPEC NUM 4 = NUMARIS/4 Spectroscopy
CSA Data Version	(0029,xx09)	SIEMENS CSA NON-IMAGE	3	Version of CSA Data Info (0029,xx10) format and CSA Non-Image Data (7FE1,xx10) format.
CSA Data Info	(0029,xx10)	SIEMENS CSA NON-IMAGE	3	Information to describe the CSA Data (7FE1,xx10).
CSA Data	(7FE1,xx10)	SIEMENS CSA NON-IMAGE	2	Binary data as byte stream.

Table 38: CSA Non-Image Module

4.1.1.4 Siemens Standard Extended Modules

IE	Module	Reference	Usage	Note
Image	CSA Image Header	A.2.1	U	private GG information
	CSA Series Header	A.2.2	U	
	MEDCOM Header	A.2.3	U	private ***syngo***® information
	MEDCOM OOG	A.2.4	U	if object graphics is attached to image

Table 39: Siemens Standard Extended Modules

4.1.1.4.1 CSA Image Header Module

The table in this section contains private IOD Attributes that describe the CSA Image Header:

Attribute Name	Tag	Owner	Type	Notes
CSA Image Header Type	(0029,xx08)	SIEMENS CSA HEADER	1	CSA Image Header identification characteristics. Defined Terms: NUM 4 = NUMARIS/4 SOM 5 = SOMARIS/5
CSA Image Header Version	(0029,xx09)	SIEMENS CSA HEADER	3	Version of CSA Image Header Info (0029,xx10) format.
CSA Image Header Info	(0029,xx10)	SIEMENS CSA HEADER	3	Manufacturer model dependent information.

Table 40: CSA Image Header Module

4.1.1.4.2 CSA Series Header Module

The table in this section contains private IOD Attributes that describe the CSA Series Header:

Attribute Name	Tag	Owner	Type	Notes
CSA Series Header Type	(0029,xx18)	SIEMENS CSA HEADER	1	CSA Series Header identification characteristics. Defined Terms: NUM 4 = NUMARIS/4
CSA Series Header Version	(0029,xx19)	SIEMENS CSA HEADER	3	Version of CSA Series Header Info (0029,xx20) format.
CSA Series Header Info	(0029,xx20)	SIEMENS CSA HEADER	3	Manufacturer model dependent information.

Table 41: CSA Series Header Module

4.1.1.4.3 MEDCOM Header Module

The table in this section contains private IOD Attributes that describe MEDCOM Header:

Attribute Name	Tag	Owner	Type	Notes
MedCom Header Type	(0029,xx08)	SIEMENS MEDCOM HEADER	1C	MedCom Header identification characteristics. Defined Terms: MEDCOM 1 (Required if MedCom Header Info (0029,xx10) present.)
MedCom Header Version	(0029,xx09)	SIEMENS MEDCOM HEADER	2C	Version of MedCom Header Info (0029,xx10) format. (Required if MEDCOM Header Info (0029,xx10) present.)
MedCom Header Info	(0029,xx10)	SIEMENS MEDCOM HEADER	3	Manufacturer model dependent information. The value of the attribute MedCom Header Info (0029,xx10) can be build up in each user defined format.
MedCom History Information	(0029,xx20)	SIEMENS MEDCOM HEADER	3	MedCom defined Patient Registration history information. See A.2.3.1.
PMTF Information 1	(0029,xx31)	SIEMENS MEDCOM HEADER	3	Transformation Information
PMTF Information 2	(0029,xx32)	SIEMENS MEDCOM HEADER	3	Transformation Information
PMTF Information 3	(0029,xx33)	SIEMENS MEDCOM HEADER	3	Transformation Information
PMTF Information 4	(0029,xx34)	SIEMENS MEDCOM HEADER	3	Transformation Information
PMTF Information 5	(0029,xx35)	SIEMENS MEDCOM HEADER	3	Transformation Information
Application Header Sequence	(0029,xx40)	SIEMENS MEDCOM HEADER	3	Sequence of Application Header items. Zero or more items are possible.
>Application Header Type	(0029,xx41)	SIEMENS MEDCOM HEADER	1C	Application Header identification characteristics. Required, if Sequence is sent.

Attribute Name	Tag	Owner	Type	Notes
>Application Header ID	(0029,xx42)	SIEMENS MEDCOM HEADER	3	Identification of an application header
>Application Header Version	(0029,xx43)	SIEMENS MEDCOM HEADER	3	Version of CSA Series Header Info (0029,xx44) format.
>Application Header Info	(0029,xx44)	SIEMENS MEDCOM HEADER	3	Application dependent information.
Workflow Control Flags	(0029,xx50)	SIEMENS MEDCOM HEADER	3	Eight free definable flags.
Archive Management Flag Keep Online	(0029,xx51)	SIEMENS MEDCOM HEADER	3	Flag to control remote archive management system to keep the image always online (also when already archived). Enumerated Values: 00 = remote control not required 01 = keep image online
Archive Management Flag Do Not Archive	(0029,xx52)	SIEMENS MEDCOM HEADER	3	Flag to control remote archive management system not to archive the related image. Enumerated Values: 00 = remote control not required 01 = don't archive image
Image Location Status	(0029,xx53)	SIEMENS MEDCOM HEADER	3	Image location status to control retrieving. Defined Terms: ONLINE = retrieving has to be done as usual, NEARLINE = move request to SCP and delay according to value of Estimated Retrieve Time (0029,xx54), OFFLINE = invoking a retrieve operation initiates an operator request, INVALID = invoking a retrieve operation would always result in an error.
Estimated Retrieve Time	(0029,xx54)	SIEMENS MEDCOM HEADER	3	Estimated retrieve time in seconds. A value less then zero (< 0) indicates location is OFFLINE or INVALID.
Data Size of Retrieved Images	(0029,xx55)	SIEMENS MEDCOM HEADER	3	Data size of images in MByte.
Siemens Link Sequence	(0029,xx70)	SIEMENS MEDCOM HEADER	3	Sequence of link items. Each item identify the location of one missing tag. One or more items can be included in this sequence.
Referenced Tag	(0029,xx71)	SIEMENS MEDCOM HEADER	1	The referenced tag. The value of this tag is in the Child Data Object (CDO). Currently it is always Pixel Data (7FE0,0010).
Referenced Tag Type	(0029,xx72)	SIEMENS MEDCOM HEADER	1	The Value Representation (type) of the missing tag (e.g. OW). Enumerated values are all DICOM defined Value Representations.
Referenced Value Length	(0029,xx73)	SIEMENS MEDCOM HEADER	1	The length of the referenced tag value in bytes.
Referenced Object Device Type	(0029,xx74)	SIEMENS MEDCOM HEADER	1	The Device Type that stores the Child Data Object (CDO) with the referenced tag value. Currently it should be "SHMEM". In future, "SDM", "LOID" or "FILE" are also imaginable. Defined Terms are SHMEM = Shared Memory SDM = Series Data Management LOID = Database FILE
Referenced Object Device Location	(0029,xx75)	SIEMENS MEDCOM HEADER	2	The Location of the device that stores the Child Data Object (CDO) with the referenced tag value. For the "SHMEM" case, it is the shared memory directory. Can be empty, then the default directory will be taken. In future, for "SDM" this will be the SDM_ID, for FILE it will be the directory name and for "LOID" it will be the database name.

Attribute Name	Tag	Owner	Type	Notes
Referenced Object ID	(0029,xx76)	SIEMENS MEDCOM HEADER	1	The ID of the object that contains the Child Data Object (CDO) with the referenced tag value. In case of "SHMEM" it is the shared memory ID. In future, for "SDM" this will be a Sirius OID, for "FILE" the file name, for "DB" the LOID.
Series Work Flow Status	(0029,xx60)	SIEMENS MEDCOM HEADER2	3	***syngo*®** Patient Browser specific flags used for clinical work: • com = completed • rea = read • ver = verified

Table 42: MEDCOM Header Module

4.1.1.4.4 MEDCOM History Information

The value of the attribute MEDCOM History Information (0029,xx20) is defined as follows.

Part	Name	Type	Bytes	Notes
header	Identifier	string	32	Always "CSA HISTORY"
	Version	string	32	e.g. "V1.10"
n Items	Class Name	string	64	
	Modification String	string	1024	

Table 43: MEDCOM History Information

4.1.1.4.5 MEDCOM OOG Module

The table in this section contains private IOD Attributes that describe MEDCOM Object Oriented Graphics (OOG). This module is used whenever object graphics is drawn on the image and need to be stored as graphic object properties. Given the condition that the module contents was not removed by other modalities, the graphic objects remain re-animatable if such an image was transferred and is then retrieved back

Attribute Name	Tag	Owner	Type	Notes
MedCom OOG Type	(0029,xx08)	SIEMENS MEDCOM OOG	1	MEDCOM Object Oriented Graphics (OOG) identification characteristics. Defined Terms: MEDCOM OOG 1 MEDCOM OOG 2
MedCom OOG Version	(0029,xx09)	SIEMENS MEDCOM OOG	3	Version of MEDCOM OOG Info (0029,xx10) format.
MedCom OOG Info	(0029,xx10)	SIEMENS MEDCOM OOG	3	MEDCOM Object Oriented Graphics (OOG) data.

Table 44: MEDCOM OOG Module

The graphics objects are also fully drawn in the Image Overlay Plane for compatibility with other products, which do not support the MedCom OOG module. Any system not supporting the MedCom OOG module shall remove the OOG module and its contents when modifying the image overlay plane content.

4.1.1.4.6 syngo® Report Data

The module contains private IOD Attributes that describe ***syngo*®** reports. This module is used when ***syngo*®** report data are added to DICOM SR and DICOM SC objects.

Attribute Name	Tag	Owner	Type	Notes
***syngo*®** Report Type	(0029,xx08)	SIEMENS CSA REPORT	1	***syngo*®** report characteristics, e.g. report creating application.

				Defined Terms: CT_LUNGCARE MR_ARGUS This attribute value will be used to identify the corresponding application during generic extension dll management. A restricted character set is used: only A-Z and underscore are supported.
***syngo*®** Report Version	(0029,xx09)	SIEMENS CSA REPORT	3	Version of ***syngo*®** Report Data (0029,xx10) format.
***syngo*®** Report Data	(0029,xx10)	SIEMENS CSA ENVELOPE	3	A representation of DICOM SR Attribute Content Sequence (0040,A730). This includes the document relationship and document content. This data will typically be represented using an XML encoding according to a Siemens private scheme.
***syngo*®** Report Presentation	(0029,xx11)	SIEMENS CSA ENVELOPE	3	A representation of the recommended presentation for the ***syngo*®** Report Data (0029,xx10). This presentation will typically be encoded in XSLT.
SR Variant	(0029,xx15)	SIEMENS CSA REPORT		DICOM SR variant. Enumerated Values: 0 = Basic Text SR (1.2.840.10008.5.1.4.1.1.88.11) 1 = Enhanced SR (1.2.840.10008.5.1.4.1.1.88.22) 2 = Comprehensive SR (1.2.840.10008.5.1.4.1.1.88.33) 3 = Mammography CAD SR (1.2.840.10008.5.1.4.1.1.88.50) 4 = Key Object Selection Document (1.2.840.10008.5.1.4.1.1.88.59) 5 = 4 = Chest CAD SR (1.2.840.10008.5.1.4.1.1.88.65)
SC SOP Instance UID	(0029,xx17)	SIEMENS CSA REPORT	3	DICOM SOP Instance UID of ***syngo*®** based SC Image representing the ***syngo*®** report object. This UID will be used to identify the Resulting SC object after SR to SC conversion.

Table 45: *syngo*® Report Data

4.1.1.4.7 *syngo*® Report Info

The module ***syngo*®** Report Info contains all DICOM SR attributes except the Contents Sequence 0040,A730). This module is only used during SR to SC conversion.

Tag	Private Owner Code	Name	VR	VM
(0029,xx08)	SIEMENS CSA NON-IMAGE	CSA Data Type	CS	1
(0029,xx09)	SIEMENS CSA NON-IMAGE	CSA Data Version	LO	1
(0029,xx10)	SIEMENS CSA NON-IMAGE	CSA Data Info	OB	1
(0029,xx08)	SIEMENS CSA HEADER	CSA Image Header Type	CS	1
(0029,xx09)	SIEMENS CSA HEADER	CSA Image Header Version	LO	1
(0029,xx10)	SIEMENS CSA HEADER	CSA Image Header Info	OB	1
(0029,xx18)	SIEMENS CSA HEADER	CSA Series Header Type	CS	1
(0029,xx19)	SIEMENS CSA HEADER	CSA Series Header Version	LO	1
(0029,xx20)	SIEMENS CSA HEADER	CSA Series Header Info	OB	1
(0029,xx08)	SIEMENS CSA REPORT	***syngo*®** Report Type	CS	1
(0029,xx09)	SIEMENS CSA REPORT	***syngo*®** Report	LO	1
(0029,xx15)	SIEMENS CSA REPORT	SR Variant	US	1

(0029,xx17)	SIEMENS CSA REPORT	SC SOP Instance UID	UI	1
(0029,xx10)	SIEMENS CSA ENVELOPE	***syngo*®** Report Data	OB	1
(0029,xx11)	SIEMENS CSA ENVELOPE	***syngo*®** Report Presentation	OB	1
(0029,xx08)	SIEMENS MEDCOM HEADER	MedCom Header Type	CS	1
(0029,xx09)	SIEMENS MEDCOM HEADER	MedCom Header Version	LO	1
(0029,xx10)	SIEMENS MEDCOM HEADER	MedCom Header Info	OB	1
(0029,xx20)	SIEMENS MEDCOM HEADER	MedCom History Information	OB	1
(0029,xx31)	SIEMENS MEDCOM HEADER	PMTF Information 1	LO	1
(0029,xx32)	SIEMENS MEDCOM HEADER	PMTF Information 2	UL	1
(0029,xx33)	SIEMENS MEDCOM HEADER	PMTF Information 3	UL	1
(0029,xx34)	SIEMENS MEDCOM HEADER	PMTF Information 4	CS	1
(0029,xx35)	SIEMENS MEDCOM HEADER	PMTF Information 5	UL	1
(0029,xx40)	SIEMENS MEDCOM HEADER	Application Header Sequence	SQ	1
(0029,xx41)	SIEMENS MEDCOM HEADER	Application Header Type	CS	1
(0029,xx42)	SIEMENS MEDCOM HEADER	Application Header ID	LO	1
(0029,xx43)	SIEMENS MEDCOM HEADER	Application Header Version	LO	1
(0029,xx44)	SIEMENS MEDCOM HEADER	Application Header Info	OB	1
(0029,xx50)	SIEMENS MEDCOM HEADER	Workflow Control Flags	LO	8
(0029,xx51)	SIEMENS MEDCOM HEADER	Arch. Management Flag Keep Online	CS	1
(0029,xx52)	SIEMENS MEDCOM HEADER	Arch. Mgmnt Flag Do Not Archive	CS	1
(0029,xx53)	SIEMENS MEDCOM HEADER	Image Location Status	CS	1
(0029,xx54)	SIEMENS MEDCOM HEADER	Estimated Retrieve Time	DS	1
(0029,xx55)	SIEMENS MEDCOM HEADER	Data Size of Retrieved Images	DS	1
(0029,xx70)	SIEMENS MEDCOM HEADER	Siemens Link Sequence	SQ	1
(0029,xx71)	SIEMENS MEDCOM HEADER	Referenced Tag	AT	1
(0029,xx72)	SIEMENS MEDCOM HEADER	Referenced Tag Type	CS	1
(0029,xx73)	SIEMENS MEDCOM HEADER	Referenced Value Length	UL	1
(0029,xx74)	SIEMENS MEDCOM HEADER	Referenced Object Device Type	CS	1
(0029,xx75)	SIEMENS MEDCOM HEADER	Referenced Object Device Location	OB	1
(0029,xx76)	SIEMENS MEDCOM HEADER	Referenced Object ID	OB	1
(0029,xx60)	SIEMENS MEDCOM HEADER2	Series Work Flow Status	LO	1
(0029,xx08)	SIEMENS MEDCOM OOG	MedCom OOG Type	CS	1
(0029,xx09)	SIEMENS MEDCOM OOG	MedCom OOG Version	LO	1
(0029,xx10)	SIEMENS MEDCOM OOG	MedCom OOG Info	OB	1
(7FE1,xx10)	SIEMENS CSA NON-IMAGE	CSA Data	OB	1

Table 46: Registry of DICOM Data Elements

4.1.2 Private Key Image Note objects

In order to synchronize private database information between two different ***syngo*® Data Manager** systems, a Key Image Note object that is decorated with some private DICOM attributes can be sent from one system to the other. The target system reads the private information from the Key Image Note object and applies the information to its local database.

The private attributes used for this synchronization are listed in Table 54.

4.1.3 Other private attributes

Multiframe index table

Since VB36C an index table containing frame offsets is stored as a private attribute in the DICOM header. This is done for all DICOM objects regardless if they are multiframe images, images or non-image objects. Please refer to Table 54 for the definition of the private attribute.

Also the preamble will contain (starting at offset zero) three long values (“group8StartIndex”, “offsetTableStartIndex”, “pixelStartIndex”) and one integer value (“size of offset table”).

5 Open Issues

N.a.

Annex A Tables

A.1. Supported Storage SOP Classes of Workflow filtered / unfiltered, TEMP and DICOM Archive User AE

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Supported Storage SOP Classes			
Computed Radiography Object Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
US Multi-frame Object Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
US Multi-frame Object Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes	Yes
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes	Yes
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Stand-Alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Yes	Yes
Stand-Alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Yes	Yes
Stand-Alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Yes	Yes
Stand-Alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Yes	Yes
Pseudo-Color Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.3	Yes	Yes
Blending Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.4	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	Yes	Yes
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Yes	Yes
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Yes	Yes
Stored Print Storage	1.2.840.10008.5.1.1.27	Yes	Yes
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Yes	Yes
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Yes	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	Yes

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Yes	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
Stand-Alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Yes	Yes
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Yes	Yes
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Yes	Yes
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Yes	Yes
RT Ion Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.9	Yes	Yes
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes
Mammography CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes
Key Object Selection Document Storage	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
Chest CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.65	Yes	Yes
Basic Structured Display Storage	1.2.840.10008.5.1.4.1.1.131	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	Yes
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	Yes
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Yes	Yes
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Yes	Yes
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Yes	Yes
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes	Yes
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	Yes	Yes
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Yes	Yes
Comprehensive 3D SR Storage	1.2.840.10008.5.1.4.1.1.88.34	Yes	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	Yes	Yes
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Yes	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Yes	Yes
Supported private Storage SOP Classes			
CSA Non- Image Storage	1.3.12.2.1107.5.9.1	Yes	Yes
Acuson KinetDX SR	1.2.840.10008.5.1.4.1.1.88.3	Yes	Yes

Table 47: Storage SOP Classes supported by Workflow filtered/unfiltered, TEMP and DICOM Archive User AE

A.2. Supported Non-Storage SOP Classes of Workflow filtered / unfiltered AE

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Supported Verification SOP Classes			
Verification	1.2.840.10008.1.1	No	Yes
Supported Storage Commitment SOP Classes			
Storage Commitment Push Model	1.2.840.10008.1.20.1	No	Yes
Supported MPPS SOP Classes			
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	Yes
Supported Query/Retrieve SOP Classes			
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	No	Yes
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	Yes
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	No	Yes
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	No	Yes
Patient/Study Only Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2	No	Yes
Supported private Report Management SOP Classes			
MITRA Report Management	1.2.840.113532.3500.8	Yes	No

Table 48: Non-Storage SOP Classes supported by Workflow filtered / unfiltered AE

A.3. Supported Non-Storage SOP Classes of DICOM Archive User AE

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Supported Verification SOP Classes			
Verification	1.2.840.10008.1.1	No	Yes
Supported Storage Commitment SOP Classes			
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No
Supported Query/Retrieve SOP Classes			
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

Table 49: Non-Storage SOP Classes supported by DICOM Archive User AE

A.4. Supported SOP Classes of Dearchive AE

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
Supported Query/Retrieve SOP Classes			
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	No	Yes
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	No	Yes
Patient/Study Only Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	No	Yes

Table 50: SOP Classes supported by Dearchive AE

A.5. Supported Presentation Contexts for Storage service of Workflow filtered / unfiltered AE, DICOM Archive User AE and TEMP AE.

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Computed Radiography Object Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Digital Intra-oral X-Ray	1.2.840.10008.5.1.4.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Image Storage - For Processing	1.1.1.3.1	Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
US Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
		RLE Lossless	1.2.840.10008.1.2.5		
US Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		RLE Lossless	1.2.840.10008.1.2.5		
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
		RLE Lossless	1.2.840.10008.1.2.5		
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Lossless	1.2.840.10008.1.2.4.70		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
		RLE Lossless	1.2.840.10008.1.2.5		
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		JPEG 2000	1.2.840.10008.1.2.4.91		
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
X-Ray Angiographic Bi-Plane Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.12.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2	1.2.840.10008.1.2.4.51		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		& 4)			
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Stored Print Storage	1.2.840.10008.5.1.1.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
	27	Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
MR Spectroscopy	1.2.840.10008.5.1.4.1.1.4.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Enhanced MR Color Image Storage	1.2.840.10008.5.1.4.1.1.4.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Pseudo-Color Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Blending Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Basic Structured Display Storage	1.2.840.10008.5.1.4.1.1.131	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Brachy Treatment	1.2.840.10008.5.1.4.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Record Storage	1.1.481.6	Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Ion Plan Storage	1.2.840.10008.5.1.4.1.1.481.8	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
RT Ion Beams Treatment Storage	1.2.840.10008.5.1.4.1.1.481.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Baseline	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Enhanced XRF Image Storage	1.2.840.10008.5.1.4.1.1.12.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless	1.2.840.10008.1.2.4.70		
		JPEG 2000 Lossless Only	1.2.840.10008.1.2.4.90		
		JPEG 2000	1.2.840.10008.1.2.4.91		
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Comprehensive 3D SR Storage	1.2.840.10008.5.1.4.1.1.88.34	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Segmentation SOP Class	1.2.840.10008.5.1.4.1.1.66.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Surface Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.5	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Real World Value Mapping Storage	1.2.840.10008.5.1.4.1.1.67	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Supported private Storage SOP Classes					
CSA Non Image	1.3.12.2.1107.5.9.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
Acuson KinetDX SR	1.2.840.10008.5.1.4.1.1.88.3	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU/SCP	None

Table 51: Supported Presentation Contexts for Storage service

A.6. Private MITRA Report Management Query

Attribute Name	Attribute Tag	Usage SCU
Patient's Name	(0010,0010)	supplied value
Patient ID	(0010,0020)	supplied value
Accession Number	(0008,0050)	
Requested Procedure ID	(0040,1001)	

Attribute Name	Attribute Tag	Usage SCU
Study Instance UID	(0020,000D)	
Requested Procedure Description	(0032,1060)	
Requested Procedure Code Sequence	(0032,1064)	
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Code Meaning	(0008,0104)	
Requesting Physician's Name	(0032,1032)	
Referring Physician's Name	(0008,0090)	
Reason for Study	(0032,1030)	
Patient's Birth Date	(0010,0030)	
Patient's Sex	(0010,0040)	
Patient's Weight	(0010,1030)	
Confidentiality Constraint on Patient Data Description	(0040,3001)	
Pregnancy Status	(0010,21C0)	
Medical Alerts	(0010,2000)	
Contrast Allergies	(0010,2110)	
Study Description	(0008,1030)	
Study Date	(0008,0020)	
Study Time	(0008,0030)	
Record Date	(4008,0100)	
Record Time	(4008,0101)	
Interpretation Recorder	(4008,0102)	
Transcription Date	(4008,0108)	
Transcription Time	(4008,0109)	
Interpretation Transcriber	(4008,010A)	
Interpretation Author	(4008,010C)	
Approver Sequence	(4008,0111)	
> Approval Date	(4008,0112)	
> Approval Time	(4008,0113)	
> Physicians Appr.	(4008,0114)	
Interpretation Text	(4008,0115)	
Interpretation ID	(4008,0200)	
Interpretation Type	(4008,0210)	
Interpretation Status ID	(4008,0212)	

Table 52: Attributes for Report Content Query

A.7. Supported attributes of C-FIND services

Attribute name	Tag	Usage SCU	Matching
Patient Level Attributes			
Patient Name	(0010,0010)	O	single value, wildcard, universal
Patient ID	(0010,0020)	U (Patient Root, Patient/Study only) R (Study Root)	single value, wildcard, universal

Attribute name	Tag	Usage SCU	Matching
Patient's Birth Date	(0010,0030)	O	single value, range, universal
Patient's Sex	(0010,0040)	O	single value, wildcard, universal
Other Patient IDs	(0010,1000)	O	single value, wildcard, universal, multiple values
Other Patient Names	(0010,1001)	O	multiple values
Patient Comments	(0010,4000)	O	universal
Number of Patient Related Studies	(0020,1200)	return key only	no matching
Number of Patient Related Series	(0020,1202)	return key only	no matching
Number of Patient Related Instances	(0020,1204)	return key only	no matching
Instance Availability	(0008,0056)	return key only	no matching
Study Level Attributes			
Study Instance UID	(0020,000D)	U	single value, list of UID
Study ID	(0020,0010)	O	single value, wildcard, universal
Study Date	(0008,0020)	O	single value, range, universal
Study Time	(0008,0030)	O	single value, range, universal
Accession Number	(0008,0050)	O	single value, wildcard, universal
Modalities in Study	(0008,0061)	O	universal, single value, multiple value
Referring Physician's Name	(0008,0090)	O	single value, wildcard, universal
Study Description	(0008,1030)	O	single value, wildcard, universal
Procedure Code Sequence	(0008,1032)	O	sequence matching
Number of Study Related Series	(0020,1206)	return key only	no matching
Number of Study Related Instances	(0020,1208)	return key only	no matching
Instance Availability	(0008,0056)	return key only	no matching
Series Level Attributes			
Series Instance UID	(0020,000E)	U	single value, list of UID
Series Number	(0020,0011)	O	single value, wildcard, universal
Modality	(0008,0060)	O	single value, wildcard, universal
Body Part Examined	(0018,0015)	O	single value, wildcard, universal
Series Date	(0008,0021)	O	single value, range, universal
Series Time	(0008,0031)	O	single value, range, universal
Series description	(0008,103E)	O	single value, wildcard, universal
Number of Series Related Instances	(0020,1209)	return key only	no matching
Performing Physician's Name	(0008,1050)	O	single value, wildcard, universal
Performed Procedure Step Start Date	(0040,0244)	O	single value, range, universal
Performed Procedure Step Start Time	(0040,0245)	O	single value, range, universal
Performed Procedure Step ID	(0040,0253)	O	single value, wildcard, universal
Performed Procedure Step Description	(0040,0254)	O	single value, wildcard, universal
Request Attribute Sequence	(0040,0275)	O	sequence matching
>Requested Procedure ID	(0040,1001)	O	single value, wildcard, universal
>Scheduled Procedure Step ID	(0040,0009)	O	single value, wildcard, universal

Attribute name	Tag	Usage SCU	Matching
Instance Availability	(0008,0056)	return key only	no matching
Instance Level Attributes (The following table is valid for different types of content documents (Images, SRs, GSPS, Key Image Notes). Some attributes are valid only for special instances - the usage is described in the Usage SCU column.)			
SOP Instance UID	(0008,0018)	U	single value, list of UID
SOP Class UID	(0008,0016)	O	single value, list of UID
Content Date	(0008,0023)	O	single value, range, universal
Content Time	(0008,0033)	O	single value, range, universal
Acquisition Number	(0020,0012)	O	single value, universal
Instance Number	(0020,0013)	O	single value, universal
Patient Orientation	(0020,0020)	O	single value, universal
Samples per Pixel	(0028,0002)	O	single value, universal
Photometric Interpretation	(0028,0004)	O	single value, universal
Number of Frames	(0028,0008)	O	single value, universal
Rows	(0028,0010)	O	single value, universal
Columns	(0028,0011)	O	single value, universal
Bits Allocated	(0028,0100)	O	single value, universal
Bits Stored	(0028,0101)	O	single value, universal
Operators' Name	(0008,1070)	query RT ION Plan	single value, universal
RT Plan Label	(300A,0002)	query RT ION Plan	single value, universal
RT Plan Name	(300A,0003)	query RT ION Plan	single value, universal
RT Plan Description	(300A,0004)	query RT ION Plan	single value, universal
RT Plan Date	(300A,0006)	query RT ION Plan	single value, range, universal
RT Plan Time	(300A,0007)	query RT ION Plan	single value, range, universal
Plan Intent	(300A,000A)	query RT ION Plan	single value, universal
Prescription Description	(300A,000E)	query RT ION Plan	single value, universal
Approval Status	(300E,0002)	query RT ION Plan	single value, universal
Completion Flag	(0040,A491)	query SR	single value, universal
Concept Name Code Sequence	(0040,A043)	query SR	sequence
> Code Value	(0008,0100)	query SR	single value, universal
> Code Scheme Designator	(0008,0102)	query SR	single value, universal
> Code Scheme Version	(0008,0103)	query SR	single value, universal
> Code Meaning	(0008,0104)	query SR	single value, universal
Observation Date Time	(0040,A032)	query SR	single value, range, universal
Verifying Observer Sequence	(0040,A073)	query SR	sequence
> Verifying Organization	(0040,A027)	query SR	single value, universal
> Verifying Date Time	(0040,A030)	query SR	single value, universal
> Verifying Observer Name	(0040,A075)	query SR	single value, universal
> Verifying Observer Identification Code Sequence	(0040,A088)	query SR	single value, universal
Referenced Request Sequence	(0040,A370)	query SR	sequence
> Study Instance UID	(0020,000D)	query SR	single value, universal
> Accession Number	(0008,0050)	query SR	single value, universal
> Requested Procedure ID	(0040,1001)	query SR	single value, universal
> Requested Procedure Code Sequence	(0032,1064)	query SR	single value, universal

Attribute name	Tag	Usage SCU	Matching
> Code Value	(0008,0100)	query SR	single value, universal
> Code Scheme Designator	(0008,0102)	query SR	single value, universal
> Code Scheme Version	(0008,0103)	query SR	single value, universal
> Code Meaning	(0008,0104)	query SR	single value, universal
Verification Flag	(0040,A493)	query SR	single value, universal
Content Template Sequence	(0040,A504)	query SR	sequence
>Template Identifier	(0040,DB00)	query SR	single value, universal
Presentation Label	(0070,0080)	query GSPS	single value, universal
Presentation Description	(0070,0081)	query GSPS	single value, universal
Presentation Creation Date	(0070,0082)	query GSPS	single value, range, universal
Presentation Creator's Name	(0070,0084)	query GSPS	single value, universal
Referenced Series Sequence	(0008,1115)	query GSPS	sequence
> Series Instance UID	(0020,000E)	query GSPS	single value, universal, list
> Referenced Image Sequence	(0008,1140)	query GSPS	single value, universal, list
>> Referenced SOP Class UID	(0008,1150)	query GSPS	single value, universal, list
>> Referenced SOP Instance UID	(0008,1155)	query GSPS	single value, universal, list
Instance Availability	(0008,0056)	return key only	no matching

Table 53: C-Find-Response attributes

A.8. Data dictionary of private attributes

The ***syngo*® Data Manager** reserves private attribute values in group 0089. The private attributes added to created SOP instances are listed in Table 54.

Attribute Name	Tag	VR	VM	Description
Private Creator	(0089,00xx)	LO	1	SYNGO_IMAGING
Private attributes used for Key Image Note synchronization				
Private Creator	(0089,00xx)	LO	1	SYNGO_IMAGING
Private Syngo Imaging Attributes Sequence	(0089,xx01)	SQ	1	Sequence containing all private syngo Imaging attributes relevant for Key Image Notes.
>Referenced Series Sequence	(0008,1115)	SQ	1	Private Information about all series (and all images) of the study the KIN belongs to.
>>Series Instance UID	(0020,000E)	UI	1	Series Instance UID
>>Token Order	(0089,xx02)	IS	1	Indicates the order of series token.
>>Referenced SOP Sequence	(0008,1199)	SQ	1	Private Information about all images of the series.
>>>Referenced SOP Class UID	(0008,1150)	UI	1	SOP Class UID of the referenced image.
>>>Referenced SOP Instance UID	(0008,1155)	UI	1	SOP Instance UID of the referenced image.
>>>Token Order	(0089,xx02)	IS	1	Indicates the order of instance token.
>>>Invisible	(0089,xx03)	SH	1	Indicates the visibility of this DICOM object (identified by SOP Instance UID): true: invisible, false: visible
>Medical Alerts	(0010,2000)	LO	1	Medical Alerts
>Reason for Study	(0032,1030)	LO	1	Reason for Study
>Study Comments	(0032,4000)	LT	1	Study Comments
>Current Patient Location	(0038,0300)	LO	1	Current Patient Location.
>Patients State	(0038,0500)	LO	1	Patients State
>Performed Procedure Step ID	(0040,0253)	SH	1	Performed Procedure Step ID
>Comments on the Performed Procedure Step	(0040,0280)	ST	1	Comments on the Performed Procedure Step
>Placer Order Number	(0040,2016)	LO	1	Placer Order Number
>Filler Order Number	(0040,2017)	LO	1	Filler Order Number

>General Purpose Scheduled Procedure Step Priority	(0040,4003)	CS	1	Priority of the Procedure Step
>Scheduled Workitem Code Sequence	(0040,4018)	SQ	1	The current Workitem code for this Procedure Step. Only one item is allowed.
>>Code Value	(0008,0100)	SH	1	Code Value
>>Coding Scheme Designator	(0008,0102)	SH	1	Coding Scheme Designator
>>Code Meaning	(0008,0104)	LO	1	Code Meaning
>Current Human Performer's Name	(0040,4037)	PN	1	The name of the last Human Performer for the Procedure Step.
>Procedure Step Comments Sequence	(0089,xx10)	SQ	1	History of Procedure Step comments.
>>Comments on the Performed Procedure Step	(0040,0280)	ST	1	The Procedure Step comment value.
>>Performed Workitem Code Sequence	(0040,4019)	SQ	1	The Workitem code for this Procedure Step comment. Only one item is allowed.
>>>Code Value	(0008,0100)	SH	1	Code Value
>>>Coding Scheme Designator	(0008,0102)	SH	1	Coding Scheme Designator
>>>Code Meaning	(0008,0104)	LO	1	Code Meaning
>>Human Performer's Name	(0040,4037)	PN	1	The name of the Human Performer who put the comment on the Procedure Step.
>>Creation Date Time	(0089,xx50)	DT	1	Creation data time of the Procedure Step comment.
>Performing Ward	(0089,xx51)	LO	1	Performing Ward
>Requesting Ward	(0089,xx52)	LO	1	Requesting Ward
>Laterality for SI	(0089,xx53)	LO	1	Laterality containing description information for the procedure.
Private attributes used for Single File Format				
Offset Table	(0089,xx54)	OB	1	Index table (frame offsets) for DICOM objects.

Table 54: Private attributes used by *syngo*® Data Manager