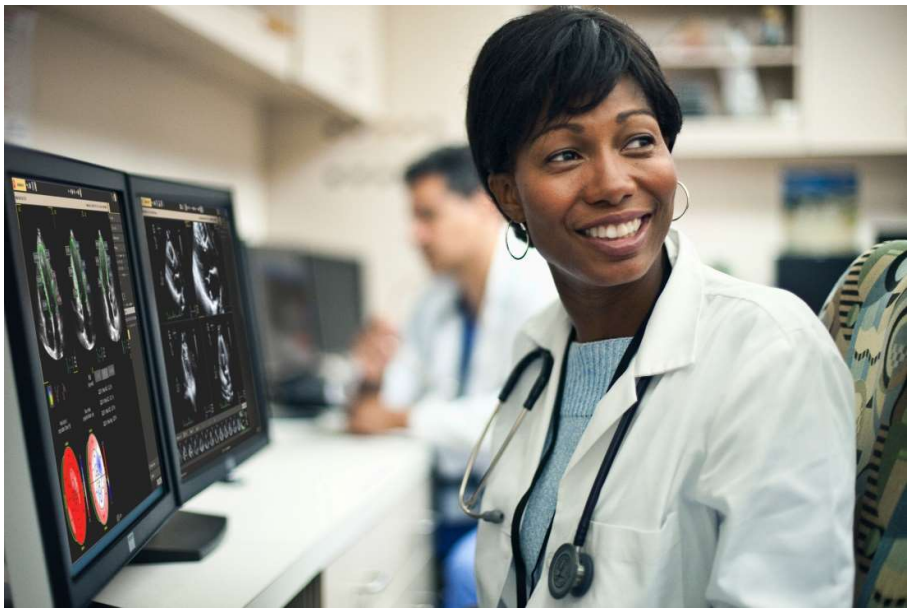
DICOM Conformance Statement

Ultrasound Workspace 7.0



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1. DICOM Conformance Statement Overview

The Ultrasound Workspace[1] is a self-contained networked computer system used for archiving and reviewing diagnostic medical images. It allows external systems to send images to it for permanent storage. It also supports querying a remote system for a list of DICOM objects that may then be retrieved to the local system.

Table 1: Network Services

SOP Class		User of Service (SCU)	Provider of Service (SCP)	Display
Name	**UID**			
Other				
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes	N/A
Query/Retrieve				
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes	N/A
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes	N/A
Transfer				
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes	Yes	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes	Yes

[1] Ultrasound Workspace is the commercial name of TOMTEC-ARENA (TTA). The following DICOM tag values remain to guarantee technical backwards compatibility: *TOMTEC, TomTec Imaging Systems GmbH, Tomtec, TOMTEC-ARENA AE, TTA, 99TOMTEC, TOMTEC Report, TomTec_Rep, TomTecArena v2*.

SOP Class		User of Service (SCU)	Provider of Service (SCP)	Display
Name	UID			
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes	Yes
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes	Yes	Yes
IVOCT Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1	Yes	Yes	Yes
IVOCT Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2	Yes	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes	Yes
Text SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.1	Yes	Yes	N/A
Audio SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.2	Yes	Yes	N/A
Detail SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.3	Yes	Yes	N/A
Comprehensive SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.4	Yes	Yes	N/A
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes	Yes
Toshiba US Private Data Storage	1.2.392.200036.9116.7.8.1.1.1	Yes	Yes	N/A
Hitachi Line Data 103	1.2.392.200039.103.9.2	Yes	Yes	N/A
Hitachi Line Data 105	1.2.392.200039.105.9.2	Yes	Yes	N/A
Hitachi Line Data 110	1.2.392.200039.110.9.2	Yes	Yes	N/A
Private HP Live 3D 01	1.2.840.113543.6.6.1.3.10001	Yes	Yes	N/A
Private HP Live 3D 02	1.2.840.113543.6.6.1.3.10002	Yes	Yes	N/A
Private Philips 3D Sub Page Store	1.3.46.670589.2.5.1.1	Yes	Yes	N/A

SOP Class		User of Service (SCU)	Provider of Service (SCP)	Display
Name	UID			
Workflow Management				
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	Yes	N/A

A table of Supported Media Storage Application Profiles (with roles) is provided.

Table 2: Media Services

Media Storage Application Profile	File-set Creator (FSC)	File-set Updater (FSU)	File-set Reader (FSR)
USB			
General Purpose USB Media Interchange with JPEG	Yes	No	No

2. Contents

3. Introduction

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

3.1. Revision History

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

Table 3: Revision History

Document Version	Date of Issue	Description of change
1.0	11-Aug-2025	First release for Ultrasound Workspace 7.0

3.2. Audience

This Conformance Statement is intended for:

- (Potential) customers
- System integrators of medical equipment
- Marketing staff interested in system functionality
- Software designers implementing DICOM interfaces

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

3.3. Remarks

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

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

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

- **New versions of the DICOM Standard**
  The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate

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

3.4. Definitions, Terms and Abbreviations

Table 4: Definitions, Terms and Abbreviations

Abbreviation/Term	Explanation
AE	Application Entity
ANSI	American National Standard Institute
AP	Application Profile
BOT	Basic Offset Table
CD	Compact Disc
CD-R	CD-Recordable
CD-M	CD-Medical
CR	Computed Radiography
CT	Computed Tomography
DCR	Dynamic Cardio Review
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
DX	Digital X-Ray
EBE	DICOM Explicit VR Big Endian
ELE	DICOM Explicit VR Little Endian
FSC	File-set Creator

Abbreviation/Term	Explanation
FSR	File-set Reader
FSU	File-set Updater
GUI	Graphic User Interface
HIS	Hospital Information System
HL7	Health Level Seven
ILE	DICOM Implicit VR Little Endian
IOD	Information Object Definition
ISIS	Information System - Imaging System
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association
NM	Nuclear Medicine
PDU	Protocol Data Unit
QA	Quality Analyst
RF	X-Ray Radiofluoroscopic
RIS	Radiology Information System
RT	Radiotherapy
RWA	Real-World Activity
SC	Secondary Capture
SCM	Study Component Management
SCP	Service Class Provider
SCU	Service Class User

Abbreviation/Term	Explanation
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
US	Ultrasound
USMF	Ultrasound Multi-frame
WLM	Worklist Management
XA	X-Ray Angiographic

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 22 (NEMA PS 3.1- PS 3.22),
National Electrical Manufacturers Association
1300 North 17th Street
Suite 900
Arlington, Virginia 22209
Internet: https://www.dicomstandard.org/current

4. Networking

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

4.1. Implementation model

The implementation model consists of three sections:

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

4.1.1. Application Data Flow

The division of Ultrasound Workspace into the separate DICOM Application Entities represents a somewhat arbitrary partitioning of functionality.
For the purpose of this document they are organized in this manner so as to detail their independent logical functionality.
By default, Ultrasound Workspace is configured so that the

- STORAGE-SCP AE
- STORAGE-SCU AE
- QUERY-RETRIEVE-SCU AE
- QUERY-RETRIEVE-SCP AE

share the same Application Entity Title (by default TTASRV).

The STORAGE-SCP AE can receive incoming DICOM images and add them to the Ultrasound Workspace database. It can respond to external C-ECHO requests.
The STORAGE-SCP AE can receive Composite SOP Instances. It can also handle Storage Commitment Push Model Requests. Thus, it can be used to query whether the Ultrasound Workspace will confirm ownership and responsibility for specific Composite SOP Instances.

The STORAGE-SCU AE can send Composite SOP Instances. It can send Storage and Verification Requests to a Remote AE to get confirmation of ownership and responsibility for a specific Composite SOP Instance.
The STORAGE-SCU AE functions as a C-STORE SCU and a user can request that images are sent to a Remote AE.

The QUERY-RETRIEVE-SCU AE can send C-FIND and C-MOVE requests. It handles queries for Patient, Study, Series, and Image data, and also sends Image retrieval requests to a Remote AE.
The QUERY-RETRIEVE-SCU AE functions as a C-FIND SCU and a C-MOVE SCU and a user can send queries and retrieval requests to a Remote AE.

The QUERY-RETRIEVE-SCP AE can handle incoming query and retrieve requests
The QUERY-RETRIEVE-SCP AE handles retrieval requests by issuing a command to the STORAGE-SCU AE to send the requested Images to the destination specified by the Remote AE. The QUERY-RETRIEVE-SCP AE functions as an SCP for C-FIND and C-MOVE requests.

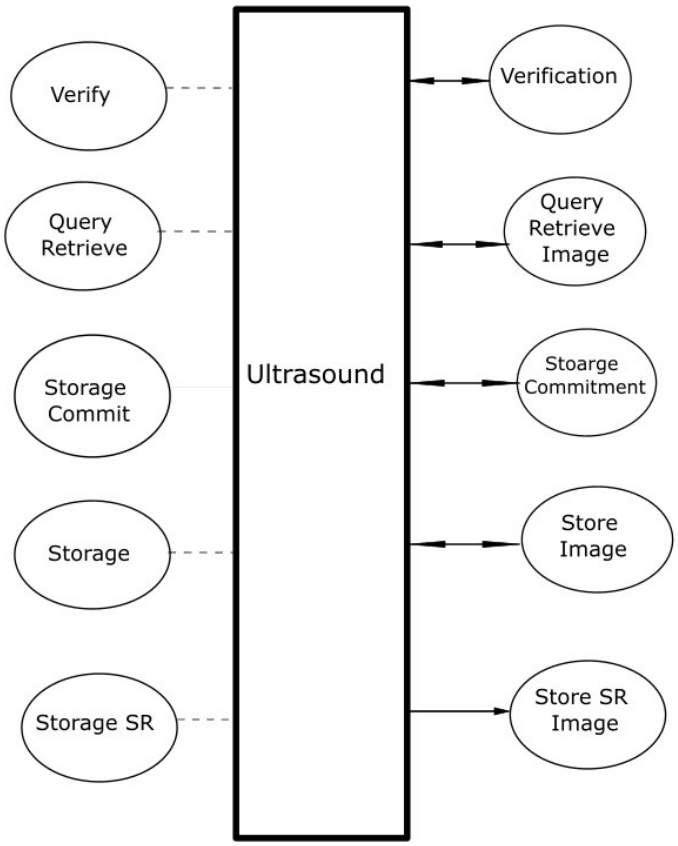

Figure 1: Application Data Flow

4.1.2. Functional Definition of AE's

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

4.1.2.1. Functional Definition of QR SCP AE

The QUERY-RETRIEVE-SCP AE waits for another application to connect at the presentation address configured for its Application Entity Title. When another application connects, the QUERY-RETRIEVE-SCP AE expects it to be a DICOM application. The QUERY-RETRIEVE-SCP AE will accept Associations with Presentation Contexts for SOP Classes of the Verification and Query/Retrieve Service Classes.
Once received a Retrieve (Move) request, Query/Retrieve Server AE will initiate a new association and send the requested instances to the Move Destination AE.

4.1.2.2. Functional Definition of QR SCU AE

The QUERY-RETRIEVE-SCU is activated through the user interface when a user selects a remote AE to query (from a pre-configured list), then initiates a query. The AE uses hierarchical queries and the extended negotiation is not supported. Queries are performed recursively from the study through the series and instance levels until all matching instances have been listed.

Additionally, the user can send a C-MOVE request to request the transfer of selected instances from the remote AE to the STORAGE-SCP AE.

4.1.2.3. Functional Definition of Storage SCP AE

The STORAGE-SCP AE waits for another application to connect at the presentation address configured for its Application Entity Title. When another application connects, the STORAGE-SCP AE expects it to be a DICOM application.

The STORAGE-SCP AE will accept Associations with Presentation Contexts for SOP Classes of the Verification and Storage Service Classes. Any images received on such Presentation Contexts will be added to the Ultrasound Workspace database.

4.1.2.4. Functional Definition of Storage SCU AE

The STORAGE-SCU AE is activated through the user interface when a user selects instances from the local database or the currently displayed instance, and requests that they be sent to a remote AE (selected from a pre-configured list).

Additionally, the STORAGE-SCU AE is used to transfer instances to remote AEs automatically. Depending on the configuration the STORAGE-SCU AE will request a N-EVENT-REPORT notification to confirm the ownership and responsibility of the sent instances from the remote AE.

4.2. AE Specifications

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

4.2.1. QR SCP AE

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

4.2.1.1. SOP Classes

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

Table 5: SOP Classes for QR SCP AE

SOP Class Name	SOP Class UID	SCP
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes

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

4.2.1.2. Association Policies

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

4.2.1.2.1 General

The DICOM standard application context is specified below.

Table 6: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.1.2.2 Number of Associations

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

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

Description	Value
Maximum number of simultaneous associations	100 (Configurable)

4.2.1.2.3 Asynchronous Nature

The implementation does not support asynchronous communication (multiple outstanding transactions over a single Association).
All Association requests must be completed and acknowledged before a new operation can be initiated.

Table 8: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	1

4.2.1.2.4 Implementation Identifying Information

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

Table 9: DICOM Implementation Class and Version for QR AE

Implementation Class UID	1.2.276.0.48.20000.2
Implementation Version Name	TomTecArena v2

4.2.1.2.5 Communication Failure Handling

The behavior of the AE during communication failure is summarized in table below:

Table 10: Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM Message Request (DIMSE level timeout).	The Association is aborted by issuing a DICOM A-ABORT. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Logs
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted by issuing a DICOM A-ABORT. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Logs
Association A-ABORT by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure).	The TCP/IP Socket is closed. Error indication message is output to the Service Logs.

4.2.1.3. Association Acceptance Policy

The behavior of this Application Entity is summarized in table below:

Table 11: Response Status Handler Behavior

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The remote Storage SCP has successfully stored the exported SOP Instance. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
Refused	A700 - A7FF	Out of Resources	This is treated as a permanent Failure. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.
Error	C000 - CFFF	Cannot Understand	This is treated as a permanent Failure. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.
Warning	B000	Coercion of Data Elements	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	B007	Data Set does not match SOP class	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	B006	Elements Discarded	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	0107	Attribute List Error	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	0116	Attribute Value Out of Range	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
*	Any other status code	*	This is treated as a permanent Failure. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.

The Application Entity will respond to a received Association rejection as shown in table below:

Table 12: Association Rejection response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	2 - application-context-name-not supported	The Association request contained an unsupported Application Context Name. An association request with the same parameters will NOT succeed at a later time.
		3 - calling-AE-title-not-recognized	The Association request contained an unrecognized Calling AE Title. An association request with the same parameters will NOT succeed at a later time unless configuration changes are made.
2 - rejected-transient	2 - DICOM UL service-provider (ACSE related function)	2 - protocol-version-not-supported	The (configurable) maximum number of simultaneous associations has been reached. An association request with the same parameters may succeed at a later time.

The behavior of the AE on receiving an Association abort is summarized in table below:

Table 13: Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
	1 - unrecognized-PDU	
	2 - unexpected-PDU	
	4 - unrecognized-PDU-parameter	
	5 - unexpected-PDU-parameter	
	6 - invalid-PDU-parameter-value	

4.2.1.3.1 (Real-World) Activity – FIND as SCP

4.2.1.3.1.1 Description and Sequencing of Activities

The Real World activity associated with the C-FIND-SCP is querying of the local data base based on C-FIND-RQ from the remote DICOM node. Ultrasound Workspace will issue a failure status if it is unable to process the query request.

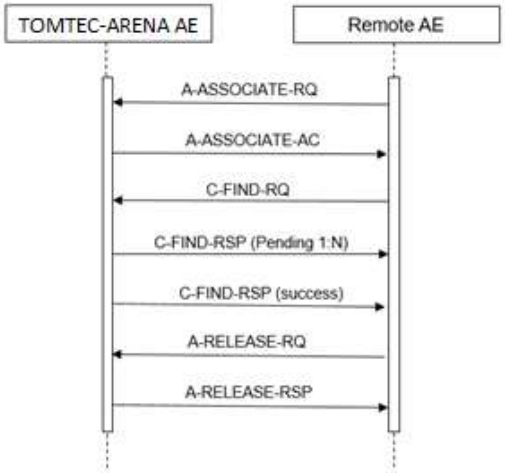

Figure 2: (Real World) Activity - Find as SCP

4.2.1.3.1.2 Accepted Presentation Contexts

The presentation contexts are defined in table below:

Table 14: Acceptable Presentation Contexts for (Real-World) Activity – FIND as SCP

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

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

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

4.2.1.3.1.3.1 Dataset Specific Conformance for Study Root QR Information Model - FIND SOP Class C-FIND-SCP

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

Ultrasound Workspace does not support Relational Search, a query that may contain any combination of keys at any level in the hierarchy. Starting at the top level in the Query/Retrieve Information Model, continuing until the Query/Retrieve level specified in the C-FIND request is reached.

All Required (R) and Unique (U) Study, Series and Image level keys for the Study Root Query/Retrieve Information Model are supported.

Unsupported fields will not be returned in the C-FIND response.

Table 15: Requested Query Keys for Study Root Information Model

Study Root Information Model				
Attribute Name	**Tag**	**VR**	**Type Of Matching**	**Comment**
Query/Retrieve Level	0008,0052	CS	Universal	STUDY, SERIES, IMAGE
Q/R Study level				
Study Date	0008,0020	DA	Range, Single Value, Universal	
Study Time	0008,0030	TM	Range, Single Value, Universal	
Accession Number	0008,0050	SH	Single Value, Universal, Wildcard	
Modalities in Study	0008,0061	CS	Single Value, Universal, Wildcard	
Patient's Name	0010,0010	PN	Single Value, Universal, Wildcard	
Patient ID	0010,0020	LO	Single Value, Universal, Wildcard	
Patient's Birth Date	0010,0030	DA	Range, Single Value, Universal	
Patient's Sex	0010,0040	CS	Single Value, Universal	
Study Instance UID	0020,000D	UI	Single Value, Universal	
Study ID	0020,0010	SH	Single Value, Universal, Wildcard	
Q/R Series level				
Study Instance UID	0020,000D	UI	Single Value, Universal	-

Series Instance UID	0020,000E	UI	Single Value, UID List	
Q/R Image level				
SOP Class UID	0008,0016	UI	Single Value, UID List	
SOP Instance UID	0008,0018	UI	Single Value, UID List	
Instance Number	0020,0013	IS	Single Value, Universal, Wildcard	
Study Instance UID	0020,000D	UI	Single Value, Universal	-
Series Instance UID	0020,000E	UI	Single Value, UID List	-

Some C-FIND responses will be forwarded before the C-FIND-CANCEL takes effect.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 16: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Matching is complete. No final identifier is supplied
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response on a query of the internal database. The appropriate Status will be sent in the C-FIND Response. Error indication message is output to the Service Log.
Pending	FF00	Matches are continuing and current match is supplied	Indicates that the search for further matches is continuing. This is returned when each successful match is returned and when further matches are forthcoming. Pending indication message is output to the Service Log.
Cancel	FE00	Matching terminated due to Cancel Request	The C-FIND SCU sent a Cancel Request. This has been acknowledged and the search for matches has been halted. Cancel indication message is output to the Service Log.

4.2.1.3.2 (Real-World) Activity – MOVE as SCP

4.2.1.3.2.1 Description and Sequencing of Activities

The Real-World activity associated with the C-MOVE command is retrieval of images from the disk and storage of the images to a remote system using a C-STORE command. Ultrasound Workspace will issue a failure status if it is unable to process the transfer request.

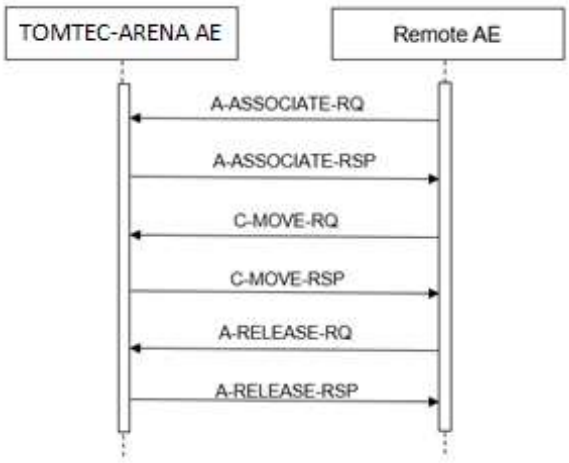

Figure 3: (Real World) Activity – Move as SCP

4.2.1.3.2.2 Accepted Presentation Contexts

The presentation contexts are defined in table below:

Table 17: Acceptable Presentation Contexts for (Real-World) Activity – FIND As SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

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

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

4.2.1.3.2.3.1 Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCP

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

Table 18: Supported keys for MOVE Study Root Information Model as SCP

Study Root QR Information Model - MOVE SOP Class			
Attribute Name	**Tag**	**VR**	**Comment**
Query/Retrieve Level	0008,0052	CS	STUDY, SERIES, IMAGE
Study Level Keys For The Study Root Query/Retrieve Information Model Module			
Study Instance UID	0020,000D	UI	
Series Level Attributes For The Study Root Query/Retrieve Information Model Module			
Study Instance UID	0020,000D	UI	
Series Instance UID	0020,000E	UI	
Composite Object Instance Level Keys For The Study Root Query/Retrieve Information Model Module			
SOP Instance UID	0008,0018	UI	
Study Instance UID	0020,000D	UI	
Series Instance UID	0020,000E	UI	

Ultrasound Workspace does not support relational C-MOVE requests. All images requested in the C-MOVE will be sent over a single association.

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

All details regarding the specific conformance, including response behavior of all status codes, both from an application level and communication errors are provided in the following table.

Table 19: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Matching is complete. No final identifier is supplied
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response on a query of the internal database. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.
	A702	Unable to perform sub operations	C-STORE sub-operations cannot be performed due to failure of an Association Request or a C-STORE Request. Error indication message is output to the Service Log.
	A801	Move Destination unknown	The Destination Application Entity named in the C-MOVE Request is unknown to Query/Retrieve SCP AE. Error indication message is output to the Service Log.
	A900	Identifier does not match SOP Class	The C-MOVE identifier contains invalid Elements or values, or is missing mandatory Elements or values for the specified SOP Class or retrieval level. Error indication message is output to the Service Log.
	Cxxx	Unable to process	The Move Destination AET is missing in the C-MOVE Request. Error indication message is output to the Service Log.

Service Status	Error Code	Further Meaning	Behavior
Pending	FF00	Matches are continuing and current match is supplied	Indicates that the search for further matches is continuing. This is returned when each successful match is returned and when further matches are forthcoming. Pending indication message is output to the Service Log.

4.2.2. QR SCU AE

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

4.2.2.1. SOP Classes

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

Table 20: SOP Classes for QR SCU AE

SOP Class Name	SOP Class UID	SCU
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes

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

4.2.2.2. Association Policies

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

4.2.2.2.1 General

The DICOM standard application context is specified below.

Table 21: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2 Number of Associations

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

Table 22: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	100 (Configurable)

4.2.2.2.3 Asynchronous Nature

The implementation does not support asynchronous communication (multiple outstanding transactions over a single Association).

All Association requests must be completed and acknowledged before a new operation can be initiated.

Table 23: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	1

4.2.2.2.4 Implementation Identifying Information

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

Table 24: DICOM Implementation Class and Version for QR AE

Implementation Class UID	1.2.276.0.48.20000.2
Implementation Version Name	TomTecArena v2

4.2.2.2.5 Communication Failure Handling

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

Table 25: Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM Message Request (DIMSE level timeout).	The Association is aborted by issuing a DICOM A-ABORT. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Logs
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted by issuing a DICOM AABORT. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Logs
Association A-ABORT by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure).	The TCP/IP Socket is closed. Error indication message is output to the Service Logs.

4.2.2.3. Association Initiation Policy

The behavior of this Application Entity is summarized in table below.

Table 26: Response Status Handler Behavior

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The remote Storage SCP has successfully stored the exported SOP Instance. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.

Service Status	Error Code	Further Meaning	Behavior
Failure	A700 - A7FF	Out of Resources	This is treated as a permanent Failure. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.
	A900	Identifier does not match SOP Class	This is treated as a permanent Failure. The appropriate Status will be sent in the C-FIND-RSP. Error indication message is output to the Service Log. Error code is recorded in application DICOM logs.
	C000 - CFFF	Cannot Understand	This is treated as a permanent Failure. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.
Warning	B000	Coercion of Data Elements	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	B007	Data Set does not match SOP class	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	B006	Elements Discarded	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	0107	Attribute List Error	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
	0116	Attribute Value Out of Range	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. Success indication message is output to the Service Log.
*	*	Any other status code	This is treated as a permanent Failure. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.

The Application Entity will respond to a received Association rejection as shown in table below.

Table 27: Association Rejection response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	2 - application-context-name-not supported	The Association request contained an unsupported Application Context Name. An association request with the same parameters will NOT succeed at a later time.
		3 - calling-AE-title-not-recognized	The Association request contained an unrecognized Calling AE Title. An association request with the same parameters will NOT succeed at a later time unless configuration changes are made.
2 - rejected-transient	2 - DICOM UL service-provider (ACSE related function)	2 - protocol-version-not-supported	The (configurable) maximum number of simultaneous associations has been reached. An association request with the same parameters may succeed at a later time.

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

Table 28: Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
	1 - unrecognized-PDU	
	2 - unexpected-PDU	
	4 - unrecognized-PDU-parameter	
	5 - unexpected-PDU-parameter	
	6 - invalid-PDU-parameter-value	

4.2.2.3.1 (Real-World) Activity – FIND as SCU

4.2.2.3.1.1 Description and Sequencing of Activities

Ultrasound Workspace initiates an association when the user clicks on one of the icons in the device's tool-bar. The Ultrasound Workspace searches (C-FIND) by Study Level following by Series level and, optionally (configurable), by Image Level.

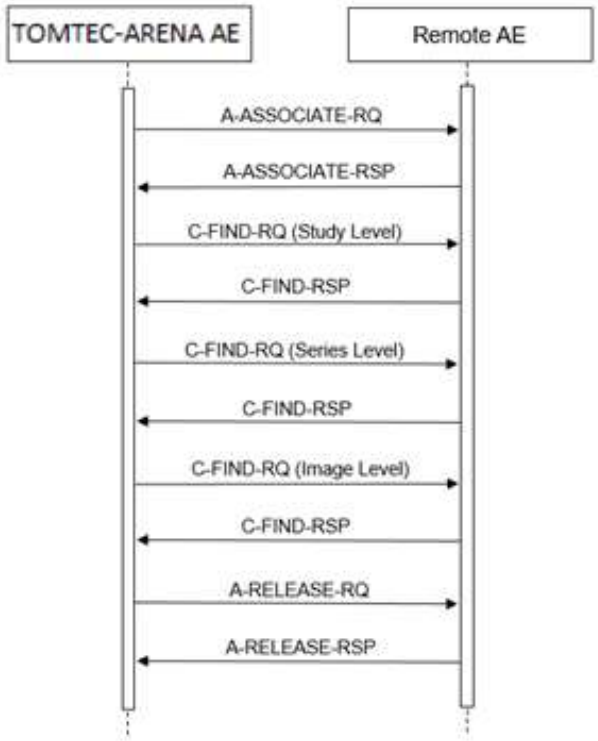

Figure 4: (Real World) Activity – Find as SCU

4.2.2.3.1.2 Proposed Presentation Contexts

The presentation contexts are defined in table below:

Table 29: Proposed Presentation Contexts for (Real-World) Activity – FIND As SCU

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

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

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

4.2.2.3.1.3.1 Dataset Specific Conformance for Study Root QR Information Model - FIND SOP Class C-FIND-SCU

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

Table 30: Supported Query Keys for Study Root Information Model

Study Root Information Model				
Attribute Name	**Tag**	**VR**	**Type Of Matching**	**Comment**
Query/Retrieve Level	0008,0052	CS	Universal	STUDY, SERIES, IMAGE
Q/R Study level				
Study Date	0008,0020	DA	Range, Single Value, Universal	-
Study Time	0008,0030	TM	Range, Single Value, Universal	-
Accession Number	0008,0050	SH	Single Value, Universal, Wildcard	-
Query/Retrieve Level	0008,0052	CS	Single Value, Universal	STUDY
Modalities in Study	0008,0061	CS	Single Value, Universal	-
Study Description	0008,1030	LO	Single Value, Universal, Wildcard	-
Patient's Name	0010,0010	PN	Single Value, Universal, Wildcard	-
Patient ID	0010,0020	LO	Single Value, Universal, Wildcard	-
Patient's Birth Date	0010,0030	DA	Range, Single Value, Universal	-
Patient's Sex	0010,0040	CS	Universal	-
Study Instance UID	0020,000D	UI	Single Value, Universal, Wildcard	-

Study ID	0020,0010	SH	Single Value, Universal, Wildcard	-
Referring Physician's name	0008,0090		Universal	-
Admission ID	0038,0010	LO	Universal	-
Q/R Series level				
Query/Retrieve Level	0008,0052	CS	Single Value, Universal	SERIES
Modality	0008,0060	CS	Single Value, Universal	-
Series Number	0020,0011	IS	Universal	-
Number of Series Related Instances	0020,1209	IS	Universal	-
Series Description	0008,103E	LO	Universal	-
Request Attributes Sequence	0040,0275	SQ	Universal	-
>Scheduled Procedure Step ID	0040,0009	SH	Universal	-
>Requested Procedure ID	0040,1001	SH	Universal	-
Performed Procedure Step Start Date	0040,0244	DA	Universal	-
Performed Procedure Step Start Time	0040,0245	TM	Universal	-
Series Instance UID	0020,000E	UI	Single Value, Universal	-
Study Instance UID	0020,000D	UI	Single Value, Universal	-
Q/R Image level				
Referenced File ID	0004,1500	CS	Single Value, Universal	-

SOP Class UID	0008,0016	UI	Single Value	-
SOP Instance UID	0008,0018	UI	Single Value	-
Query/Retrieve Level	0008,0052	CS	Single Value, Universal	IMAGE
Retrieve AE Title	0008,0054	AE	Single Value, Universal	-
Study Instance UID	0020,000D	UI	Single Value, Universal	-
Series Instance UID	0020,000E	UI	Single Value, Universal	-
Instance Number	0020,0013	IS	Single Value, Universal	-

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

Table 31: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Matching is complete. No final identifier is supplied
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response on a query of the internal database. The appropriate Status will be sent in the C-FIND Response. Error indication message is output to the Service Log.
Pending	FF00	Matches are continuing and current match is supplied	Indicates that the search for further matches is continuing. This is returned when each successful match is returned and when further matches are forthcoming. Pending indication message is output to the Service Log.
Cancel	FE00	Matching terminated due to Cancel Request	The C-FIND SCU sent a Cancel Request. This has been acknowledged and the search for matches has been halted. Cancel indication message is output to the Service Log.

4.2.2.3.2 (Real-World) Activity – MOVE as SCU

4.2.2.3.2.1 Description and Sequencing of Activities

The Move Remote Images involves the retrieve of images on a remote system by moving (copying) the matching images from the remote database to another database.

The operator is able to copy the selected images in a patient folder from a remote database to another, local or remote, database by means of the copy tool in the Ultrasound Workspace data handling facility. The Ultrasound Workspace initiates for each copy request an association to the selected peer entity (Remote AE) and uses it to send the Retrieve (C-MOVE) request (and receive the associated responses). The association is released after the final Retrieve (C-MOVE) response for the related request has been received with the status success / failure.

When the request is received with a matching key that is empty at each level of the Master SOP Class Ultrasound Workspace displays an empty value in each field that was requested.

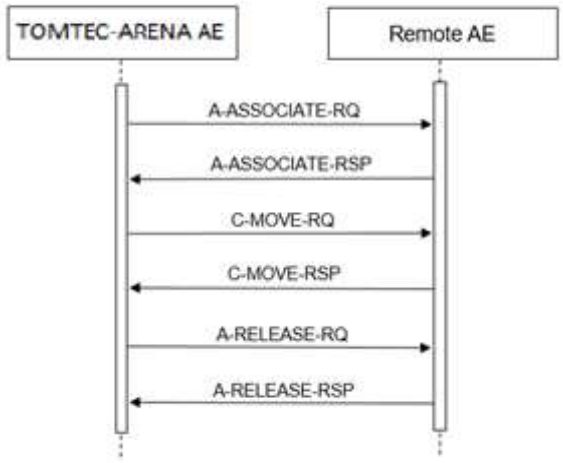

Figure 5: (Real World) Activity – Move as SCU

4.2.2.3.2.2 Proposed Presentation Contexts

The presentation contexts are defined in table below:

Table 32: Proposed Presentation Contexts for (Real-World) Activity – MOVE as SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

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

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

4.2.2.3.2.3.1 Dataset Specific Conformance for Study Root QR Information Model - MOVE SOP Class C-MOVE-SCU

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

Table 33: Identifiers for MOVE Study Root Information Model as SCU

Study Root Information Model			
Attribute Name	**Tag**	**VR**	**Comment**
Query/Retrieve Level	0008,0052	CS	STUDY
Q/R Study level			
Study Instance UID	0020,000D	UI	

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

Table 34: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	Matching is complete. No final identifier is supplied
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response on a query of the internal database. The appropriate Status will be sent in the C-MOVE Response. Error indication message is output to the Service Log.
	A702	Unable to perform sub operations	C-STORE sub-operations cannot be performed due to failure of an Association Request or a C-STORE Request. Error indication message is output to the Service Log.
	A801	Move Destination unknown	The Destination Application Entity named in the C-MOVE Request is unknown to Query/Retrieve SCP AE. Error indication message is output to the Service Log.
	A900	Identifier does not match SOP Class	The C-MOVE identifier contains invalid Elements or values or is missing mandatory Elements or values for the specified SOP Class or retrieval level. Error indication message is output to the Service Log.
	Cxxx	Unable to process	The Move Destination AET is missing in the C-MOVE Request. Error indication message is output to the Service Log.
	A701	Out of Resources – Unable to calculate number of matches	Ultrasound Workspace will not display any retrieve results. The reason is logged in log viewer. Retrieve job is failed in the job viewer.

Service Status	Error Code	Further Meaning	Behavior
Pending	FF00	Matches are continuing and current match is supplied	Indicates that the search for further matches is continuing. This is returned when each successful match is returned and when further matches are forthcoming. Pending indication message is output to the Service Log.
Cancel	FE00	Sun operation terminated due to cancel Indication	Ultrasound Workspace will not display any retrieve results. The reason is logged in log viewer. Retrieve job is failed in the job viewer.
Warning	B000	Sub Operations complete – One or More failures	Image transmission is considered successful. The appropriate PENDING or SUCCESS Status will be sent in the C-MOVE Response. The reason is logged in log viewer. Retrieve job is failed in the job viewer.

4.2.3. Storage SCP AE

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

4.2.3.1. SOP Classes

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

Table 35: SOP Classes for storage AE

SOP Class		Provider of Service (SCP)
Name	UID	
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes

SOP Class		Provider of Service (SCP)
Name	UID	
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes
IVOCT Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1	Yes
IVOCT Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes
Text SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.1	Yes
Audio SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.2	Yes
Detail SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.3	Yes
Comprehensive SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.4	Yes
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes
Toshiba US Private Data Storage	1.2.392.200036.9116.7.8.1.1.1	Yes
Hitachi Line Data 103	1.2.392.200039.103.9.2	Yes
Hitachi Line Data 105	1.2.392.200039.105.9.2	Yes
Hitachi Line Data 110	1.2.392.200039.110.9.2	Yes
Private HP Live 3D 01	1.2.840.113543.6.6.1.3.10001	Yes
Private HP Live 3D 02	1.2.840.113543.6.6.1.3.10002	Yes
Private Philips 3D Sub Page Store	1.3.46.670589.2.5.1.1	Yes

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

4.2.3.2. Association Policies

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

4.2.3.2.1 General

The DICOM standard application context is specified below.

Table 36: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.3.2.2 Number of Associations

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

Table 37: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	100 (Configurable)

4.2.3.2.3 Asynchronous Nature

The implementation does not support asynchronous communication (multiple outstanding transactions over a single Association).
All Association requests must be completed and acknowledged before a new operation can be initiated.

Table 38: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	1

4.2.3.2.4 Implementation Identifying Information

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

Table 39: DICOM Implementation Class and Version for storage AE

Implementation Class UID	1.2.276.0.48.20000.2
Implementation Version Name	TomTecArena v2

4.2.3.2.5 Communication Failure Handling

The behavior of the AE during communication failure is summarized in table below:

Table 40: Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM Message Request (DIMSE level timeout). I.e. The STORAGESCP AE is waiting for the next C-STORE Request on an open Association but the timer expires.	The Association is aborted by issuing a DICOM A-ABORT. Error message is output to the Service Log. If some Composite SOP Instances have already been successfully received, then they are maintained in the database. They are not automatically discarded because of a later failure.
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout). I.e. The STORAGE-SCP AE is waiting for the next C-STORE Data Set PDU but the timer expires.	The Association is aborted by issuing a DICOM A-ABORT. Error message is output to the Service Log. If a C-STORE Data Set has not been fully received, then the data already received is discarded. If some Composite SOP Instances have already been successfully received over the Association then they are maintained in the database.
Association aborted by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure)	Error message is output to the Service Log. If some Composite SOP Instances have already been successfully received, then they are maintained in the database. They are not automatically discarded because of a later failure.

4.2.3.3. Association Acceptance Policy

The behavior of this Application Entity is summarized in Table below.

Table 41: Response Status Handler Behavior

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The Composite SOP Instance was successfully received, verified and stored in the system repository.
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response from the internal database or a file system operation. The appropriate Status will be sent in the C-STORE Response. Error indication message is output to the Service Log.
Warning	B000	Coercion of Data Elements	This status is returned if one or more Attribute values were coerced/modified on reception. Image transmission is considered successful. The appropriate SUCCESS Status will be sent in the C-STORE Response. Warning indication message is output to the Service Log.
	B007	Data Set does not match SOP class	This status is returned if the C-STORE Request specifies Attributes that are not specific as part of the Storage SOP class. Image transmission is considered successful. The appropriate SUCCESS Status will be sent in the C-STORE Response. Warning indication message is output to the Service Log.

The Application Entity will respond to a received Association rejection as shown in table below:

Table 42: Association Rejection response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	2 - application-context-name-not supported	The Association request contained an unsupported Application Context Name. An association request with the same parameters will NOT succeed at a later time.
		3 - calling-AE-title-not-recognized	The Association request contained an unrecognized Calling AE Title. An association request with the same parameters will NOT succeed at a later time unless configuration changes are made.
2 - rejected-transient	2 - DICOM UL service-provider (ACSE related function)	2 - application-context-name-not-supported	The (configurable) maximum number of simultaneous associations has been reached. An association request with the same parameters may succeed at a later time.

The behavior of the AE on receiving an Association abort is summarized in table below:

Table 43: Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
	1- unrecognized-PDU	
	2 -unexpected-PDU	
	4- unrecognized-PDU-parameter	
	5 - unexpected-PDU-parameter	
	6 - invalid-PDU-parameter-value	

4.2.3.3.1 (Real-World) Activity – Image Import

4.2.3.3.1.1 Description and Sequencing of Activities

The real world activity associated with the C-STORE operation is the storage of the image in the memory of the system upon which Ultrasound Workspace is running in order to make it available for immediate processing by applications. Ultrasound Workspace will issue a failure status if it is unable to store the image in the memory.

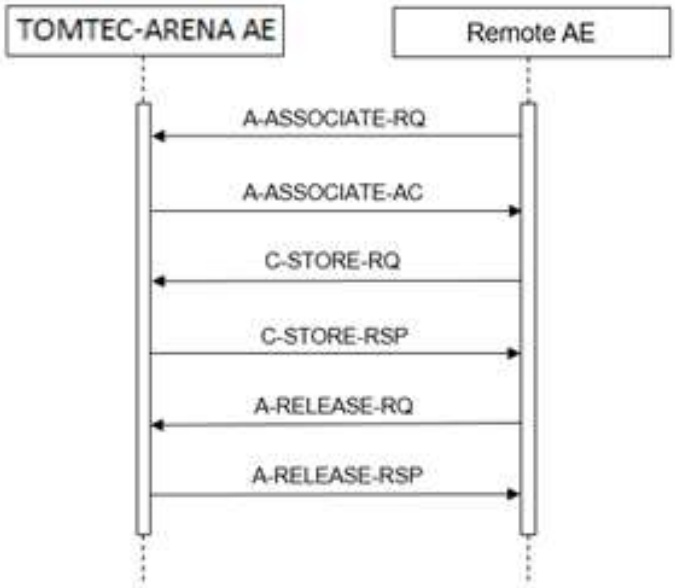

Figure 6: (Real World) Activity – Image Import

Ultrasound Workspace system has below specific functionalities:

- When Ultrasound Workspace imports two images each belonging to a different patient but with identical Patient ID values are stored on to the Ultrasound Workspace
- When patient data which contains an incorrect encoding of Unicode characters is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data encoded in a transfer syntax other than the one negotiated is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When a different SOP class is used in the C-Store-RQ command set than the one negotiated, during import. The SOP Class of the dataset is same as that negotiated is stored on to the Ultrasound Workspace
- When patient data with missing SOP Instance UID (0008,0018) is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data with missing Series Instance UID (0020,000E) is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data with missing Study Instance UID (0020,000D) is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data which contains an invalid Modality value is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data which contains an illegal Modality value is imported into the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data which contains an illegal SOP Instance UID value is imported into Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace

- When importing patient data after editing patient demographics information is imported on to the Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data with Retired format for Study Time is imported into Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When patient data with Retired format for Study Date is imported into Ultrasound Workspace, imported study is stored on to the Ultrasound Workspace
- When data with non-Philips private attributes is imported into system, imported study is stored on to the Ultrasound Workspace
- When duplicate patient data is imported into system, imported study is stored on to the Ultrasound Workspace
- When ultrasound workspace imports missing values for the attributes "Patient's Name" (0010,0010) and "Patient ID" (0010,0020), Patient Name & Patient Id is not displayed on the UI.
- When the study is imported twice without any modification the existing image is replaced and displayed patient on Ultrasound Workspace.

4.2.3.3.1.2 Accepted Presentation Contexts

The presentation contexts are defined in table below:

Table 44: Accepted Presentation Contexts for (Real-World) Activity – Image Import

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Ultrasound 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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Multi-frame True Color Secondary	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Capture Image Storage		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
IVOCT Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
IVOCT Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Text SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Audio SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Detail SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
	1.2.840.10008.5.1.4.1.1.88.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Comprehensive SR Storage - Trial (Retired)		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Toshiba US Private Data Storage	1.2.392.200036.9116.7.8.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Hitachi Line Data 103	1.2.392.200039.103.9.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Hitachi Line Data 105	1.2.392.200039.105.9.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Hitachi Line Data 110	1.2.392.200039.110.9.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

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		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Private HP Live 3D 01	1.2.840.113543.6.6.1.3.10001	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Private HP Live 3D 02	1.2.840.113543.6.6.1.3.10002	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
Private Philips 3D Sub Page Store	1.3.46.670589.2.5.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		

4.2.3.3.1.3 SOP Specific Conformance for Storage SOP Classes

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

4.2.3.3.1.3.1 Dataset Specific Conformance for C-STORE-RSP

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

Table 45: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The Composite SOP Instance was successfully received, verified, and stored in the system repository.
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response from the internal database or a file system operation. The appropriate Status will be sent in the C-STORE Response. Error indication message is output to the Service Log.
Warning	B000	Coercion of Data Elements	This status is returned if one or more Attribute values were coerced/ modified on reception. Image transmission is considered successful. The appropriate SUCCESS Status will be sent in the C-STORE Response. Warning indication message is output to the Service Log.

Service Status	Error Code	Further Meaning	Behavior
	B007	Data Set does not match SOP Class	This status is returned if the C-STORE Request specifies Attributes that are not specific as part of the Storage SOP class. Image transmission is considered successful. The appropriate SUCCESS Status will be sent in the C-STORE Response. Warning indication message is output to the Service Log.

4.2.3.3.2 (Real-World) Activity – Verification as SCP

4.2.3.3.2.1 Description and Sequencing of Activities

The Ultrasound Workspace AE will act as a Verification SCP for any remote SCU.
The Ultrasound Workspace AE accepts associations to verify application level communication using the C-ECHO command.

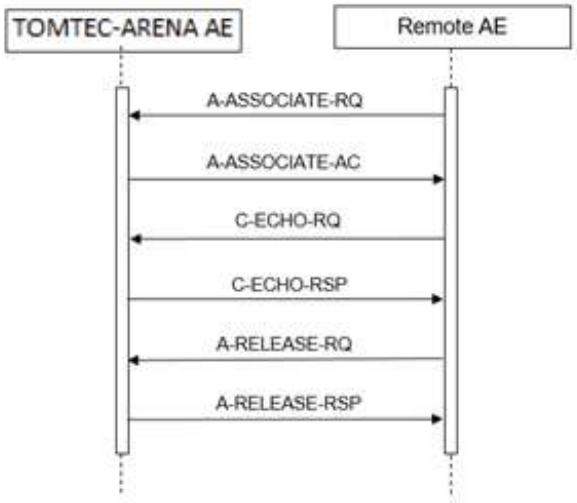

Figure 7: (Real World) Activity - Verification as SCP

4.2.3.3.2.2 Accepted Presentation Contexts

The presentation contexts are defined in table below:

Table 46: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

The order of the proposed transfer syntaxes is configurable. The preferred transfer syntax is ELE and shall be chosen in case multiple Transfer Syntaxes are proposed in the Association Negotiation.

4.2.3.3.2.3 SOP Specific Conformance for Verification SOP Classes

The Ultrasound Workspace provides standard conformance to Verification SOP class as an SCP.

4.2.3.3.2.3.1 Dataset Specific Conformance for Verification C-ECHO RSP

This section describes the dataset specific response behavior for Verification C-ECHO-RSP.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 47: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The C-ECHO request is accepted

Table 48: DICOM Command Communication Failure Behavior for C-ECHO RSP

Exception	Behavior
Reply Time-out	The verification request fails and association is aborted. The reason is logged.
Association Time-out SCU	The association is released.
Association aborted	The verification request fails. The reason is logged.

4.2.3.3.3 (Real-World) Activity – Storage Commitment Push Model AS SCP

4.2.3.3.3.1 Description and Sequencing of Activities

Storage Commitment AE will initiate a request to the Storage Commitment SCP.

When a successful response from the Storage Commitment SCP is received, Storage Commitment AE marks this as correctly working Storage Commitment SCP.

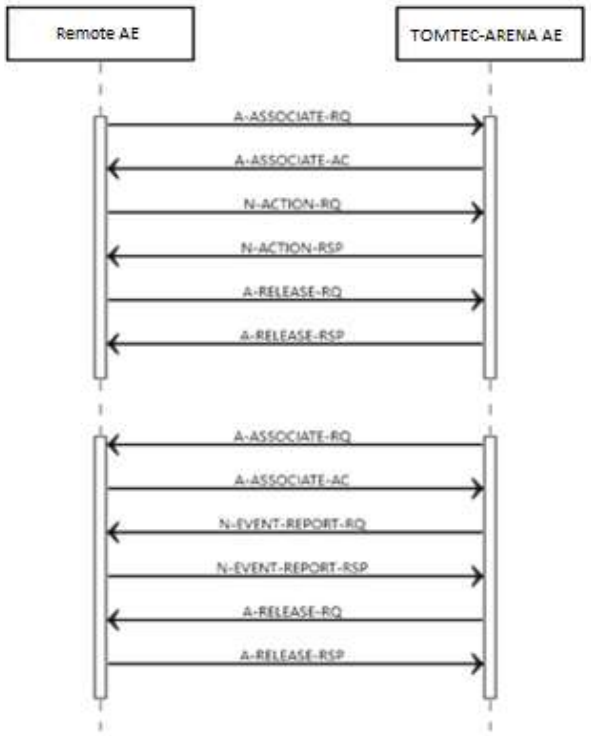

Figure 8: (Real World) Activity – Storage Commitment Push Model as SCP (Asynchronous)

4.2.3.3.3.2 Proposed Presentation Contexts

The presentation contexts proposed by Ultrasound Workspace for (Real-World) Activity - Storage Commitment as SCP are defined in the following table.

Table 49: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCP

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

4.2.3.3.3.3 SOP Specific Conformance for Storage Commitment Push Model SOP Class

Ultrasound Workspace provides standard conformance to the Storage Commitment Service Class using Push Model as an SCP.

Multiple N-ACTION-RQ can be performed over a single association. Multiple N-EVENT-REPORT-RQ can be accepted over a single association. After all N-ACTION-RQ that are waiting in the stack are issued, association will be closed with the timeout which is configured.

A remote system reports about storage commitment completion using an N-EVENT-REPORT-RQ command. The system accepts the N-EVENT-REPORT-RQ commands over a separate association initiated by the

remote system, using reverse role negotiation for the asynchronous behaviour after the earlier connection was timedout.

Storage Commitment for individual images are grouped into large "chunks" and issued as a single Storage Commitment request.

Table 50: DICOM Command Communication Failure Bahavior Storage Commitment

Exception	Behavior
Timeout expiry for an expected DICOM Message Request (DIMSE level timeout). I.e. The STORAGESCP AE is waiting for the next N-ACTION Request on an open Association but the timer expires.	The Association is aborted by issuing a DICOM AABORT. If some Composite SOP Instances have been successfully received over the same Association via the Storage Service, then they are maintained in the database. They are not automatically discarded because of a later Storage Commitment messaging failure. Any previously received Storage Commitment Push Model NACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted by issuing a DICOM AABORT. If some Composite SOP Instances have been successfully received over the same Association via the Storage Service, then they are maintained in the database. They are not automatically discarded because of a later Storage Commitment messaging failure. Any previously received Storage Commitment Push Model NACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.
Association A-ABORT by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure).	The TCP/IP socket is closed. If some Composite SOP Instances have been successfully received over the same Association via the Storage Service, then they are maintained in the database. They are not automatically discarded because of a later Storage Commitment messaging failure. Any previously received Storage Commitment Push Model NACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.

4.2.3.3.3.3.1 Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCP

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

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

Table 51: Storage Commitment Attribute for N-ACTION-RSP

Attribute Name	Tag	Comment
Storage Commitment Module		
Transaction UID	0008,1195	-
Referenced SOP Sequence	0008,1199	-
>Referenced SOP Class UID	0008,1150	-
>Referenced SOP Instance UID	0008,1155	-

Below the possible status Reponses for Storage commitment are listed:

Table 52: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has successfully received the Storage Commitment Push Model N-ACTION Request and can process the commitment request for the indicated SOP Instances.
Other than Success	XXXX	Problems with sending the N-ACTION Response	The request for storage commitment is marked as failed.

4.2.3.3.3.3.2 Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCU

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

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

Table 53: Storage Commitment N-EVENT-REPORT Behavior

Event Type Name	EVENT Type ID	Attribute Name	Tag	Comment
StorageCommitmentRequestSuccessful	1	Transaction UID	0008,1195	-
		Referenced SOP Sequence	0008,1199	-
		>Referenced SOP Class UID	0008,1150	-
		>Referenced SOP Instance UID	0008,1155	-
	1	Transaction UID	0008,1195	-

Event Type Name	EVENT Type ID	Attribute Name	Tag	Comment
StorageCommitmentRequestCompleteFailuresExist		Referenced SOP Sequence	0008,1199	-
		>Referenced SOP Class UID	0008,1150	-
		>Referenced SOP Instance UID	0008,1155	-
	2	Transaction UID	0008,1195	-
		Failed SOP Sequence	0008,1198	-
		>Referenced SOP Class UID	0008,1150	-
		>Referenced SOP Instance UID	0008,1155	-
		>Failure Reason	0008,1197	-

On receiving a storage commitment result with Event Type ID 1 (Storage Commitment Request Successful) the Application Entity will mark these images as committed.

On receiving a storage commitment result with Event Type ID 2 (Storage Commitment Request Complete - Failures Exist) the Application Entity will behave as described in next table.

Table 54: Storage Commitment N-EVENT-REPORT Failure Handling Behavior

Service Status	Error Code	Further Meaning	Description
Success	0000	Success	The SCU has successfully received the Storage Commitment Push Model N-EVENT-REPORT Request. Success indication message is output to the Service Logs.
Warning	0107	Attribute List Error	Transmission of Storage Commitment Push Model N-EVENT-REPORT Request is considered successful. Warning indication message is output to the Service Logs.
*	*	Any Other Code	This is treated as a permanent Failure.

4.2.4. Storage SCU AE

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

4.2.4.1. SOP Classes

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

Table 55: SOP Classes for Storage SCU AE

SOP Class		User of Service (SCU)
Name	UID	
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes
Enhanced XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes
IVOCT Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1	Yes
IVOCT Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes
Text SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.1	Yes
Audio SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.2	Yes
Detail SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.3	Yes
Comprehensive SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.4	Yes

SOP Class		User of Service (SCU)
Name	UID	
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Yes
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes
Toshiba US Private Data Storage	1.2.392.200036.9116.7.8.1.1.1	Yes
Hitachi Line Data 103	1.2.392.200039.103.9.2	Yes
Hitachi Line Data 105	1.2.392.200039.105.9.2	Yes
Hitachi Line Data 110	1.2.392.200039.110.9.2	Yes
Private HP Live 3D 01	1.2.840.113543.6.6.1.3.10001	Yes
Private HP Live 3D 02	1.2.840.113543.6.6.1.3.10002	Yes
Private Philips 3D Sub Page Store	1.3.46.670589.2.5.1.1	Yes

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

4.2.4.2. Association Policies

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

4.2.4.2.1 General

The DICOM standard application context is specified below.

Table 56: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.4.2.2 Number of Associations

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

Table 57: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	100 (Configurable)

4.2.4.2.3 Asynchronous Nature

The implementation does not support asynchronous communication (multiple outstanding transactions over a single Association).
All Association requests must be completed and acknowledged before a new operation can be initiated.

Table 58: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	1

4.2.4.2.4 Implementation Identifying Information

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

Table 59: DICOM Implementation Class and Version for Storage AE

Implementation Class UID	1.2.276.0.48.20000.2
Implementation Version Name	TomTecArena v2

4.2.4.2.5 Communication Failure Handling

The behavior of the AE during communication failure is summarized in table below:

Table 60: Communication Failure Behavior

Exception	Behavior
Timeout expiry for an expected DICOM Message Request (DIMSE level timeout). I.e. The STORAGESCP AE is waiting for the next C-STORE Request on an open Association but the timer expires.	The Association is aborted by issuing a DICOM A-ABORT. Error message is output to the Service Log. If some Composite SOP Instances have already been successfully received, then they are maintained in the database. They are not automatically discarded because of a later failure.
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout). I.e. The STORAGE-SCP AE is waiting for the next C-STORE Data Set PDU but the timer expires.	The Association is aborted by issuing a DICOM A-ABORT. Error message is output to the Service Log. If a C-STORE Data Set has not been fully received, then the data already received is discarded. If some Composite SOP Instances have already been successfully received over the Association then they are maintained in the database.
Association aborted by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure)	Error message is output to the Service Log. If some Composite SOP Instances have already been successfully received, then they are maintained in the database. They are not automatically discarded because of a later failure.

4.2.4.3. Association Initiation Policy

The behavior of this Application Entity is summarized in table below:

Table 61: Response Status Handler Behavior

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The Composite SOP Instance was successfully received, verified and stored in the system repository.
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response from the internal database or a file system operation. The appropriate Status will be sent in the C-STORE Response. Error indication message is output to the Service Log.
	A701	Out Of Resources	Error is logged and export job Fails. Connection is Released
Warning	B000	Coercion of Data Elements	This status is returned if one or more Attribute values were coerced/modified on reception. Image transmission is considered successful. The appropriate SUCCESS Status will be sent in the C-STORE Response. Warning indication message is output to the Service Log.
	B007	Data Set does not match SOP class	This status is returned if the C-STORE Request specifies Attributes that are not specific as part of the Storage SOP class. Image transmission is considered successful. The appropriate SUCCESS Status will be sent in the C-STORE Response. Warning indication message is output to the Service Log.

The Application Entity will respond to a received Association rejection as shown in table below:

Table 62: Association Rejection response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	2 - application-context-name-not supported	The Association request contained an unsupported Application Context Name. An association request with the same parameters will NOT succeed at a later time.
		3 - calling-AE-title-not-recognized	The Association request contained an unrecognized Calling AE Title. An association request with the same parameters will NOT succeed at a later time unless configuration changes are made.
2 - rejected-transient	2 - DICOM UL service-provider (ACSE related function)	2 - application-context-name-not-supported	The (configurable) maximum number of simultaneous associations has been reached. An association request with the same parameters may succeed at a later time.

The behavior of the AE on receiving an Association abort is summarized in table below:

Table 63: Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	Error message is shown to user and the error is logged.
	1 - unrecognized-PDU	
	2 - unexpected-PDU	
	4 - unrecognized-PDU-parameter	
	5 - unexpected-PDU-parameter	
	6 - invalid-PDU-parameter-value	

4.2.4.3.1 (Real-World) Activity – Image Export

4.2.4.3.1.1 Description and Sequencing of Activities

The real world activity associated with the C-STORE operation is the storage of the image in the memory of the system upon which Ultrasound Workspace is running in order to make it available for immediate processing by applications. Ultrasound Workspace will issue a failure status if it is unable to store the image in the memory.

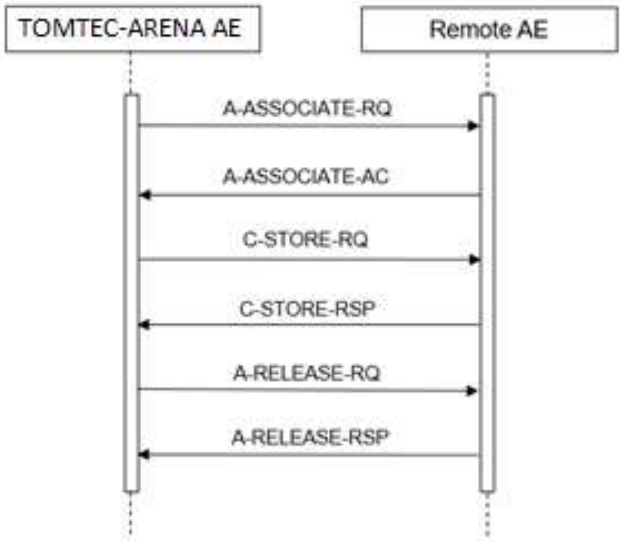

Figure 9: (Real World) Activity – Image Export

4.2.4.3.1.2 Proposed Presentation Contexts

The presentation contexts are defined in table below:

Table 64: Accepted Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound 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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		

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		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		

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		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
IVOCT Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.14.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		

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		
IVOCT Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.14.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Text SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Audio SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Detail SR Storage - Trial (Retired)	1.2.840.10008.5.1.4.1.1.88.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
	1.2.840.10008.5.1.4.1.1.88.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Comprehensive SR Storage - Trial (Retired)		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
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	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Toshiba US Private Data Storage	1.2.392.200036.9116.7.8.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Hitachi Line Data 103	1.2.392.200039.103.9.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	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 Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Hitachi Line Data 105	1.2.392.200039.105.9.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Hitachi Line Data 110	1.2.392.200039.110.9.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		

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		
Private HP Live 3D 01	1.2.840.113543.6.6.1.3.10001	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Private HP Live 3D 02	1.2.840.113543.6.6.1.3.10002	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		
Private Philips 3D Sub Page Store	1.3.46.670589.2.5.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian Retired	1.2.840.10008.1.2.2		
		JPEG baseline1	1.2.840.10008.1.2.4.50		
		JPEG Extended24	1.2.840.10008.1.2.4.51		
		JPEG Lossless Non Hierarchical14	1.2.840.10008.1.2.4.57		
		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		
		Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99		
		MPEG2	1.2.840.10008.1.2.4.100		
		RLE Lossless	1.2.840.10008.1.2.5		

4.2.4.3.1.3 SOP Specific Conformance for Storage SOP Classes

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

4.2.4.3.1.3.1 Dataset Specific Conformance for C-STORE-RQ

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

Table 65: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The Composite SOP Instance was successfully received, verified, and stored in the system repository.
Error	0110	Processing Failure	This status is returned due to internal errors such as a processing failure response from the internal database or a file system operation. The appropriate Status will be sent in the C-STORE Response. Error indication message is output to the Service Log.
	A702	Unable to perform sub operation	This status is returned due to internal errors such as a processing failure response from the internal database or a file system operation. The appropriate Status will be sent in the C-STORE Response. Error indication message is output to the Service Log.
	A701	Out of Resources	The System local database is full – recovery from this condition is left to the SCU. The LOCAL AE shall send a notification, and abort the association. The failure reason is logged.

4.2.4.3.2 (Real-World) Activity – Verification as SCU

4.2.4.3.2.1 Description and Sequencing of Activities

The Ultrasound Workspace AE will act as a Verification SCU for any remote SCP.
The Ultrasound Workspace AE sends associations to verify application level communication using the C-ECHO command.

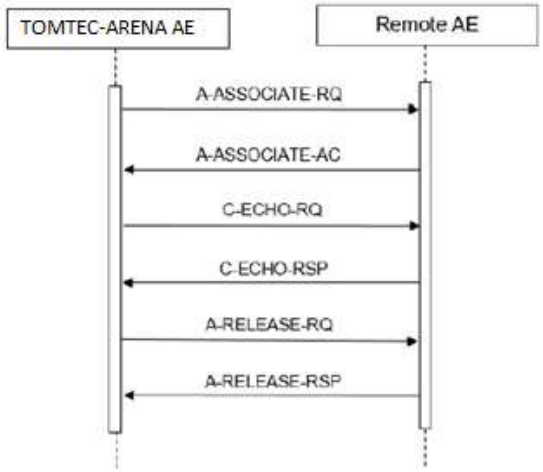

Figure 10: (Real World) Activity - Verification as SCU

4.2.4.3.2.2 Proposed Presentation Contexts

The presentation contexts are defined in table below:

Table 66: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

The order of the proposed transfer syntaxes is configurable. The preferred transfer syntax is ELE and shall be chosen in case multiple Transfer Syntaxes are proposed in the Association Negotiation.

4.2.4.3.2.3 SOP Specific Conformance for Verification SOP Classes

The Ultrasound Workspace provides standard conformance to Verification SOP class as an SCU.

4.2.4.3.2.3.1 Dataset Specific Conformance for Verification C-ECHO SCU

This section describes the dataset specific response behavior for Verification C-ECHO-SCU.

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

Table 67: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The C-ECHO request is accepted
Other than Success	<xxxx>	Problems with sending the C-ECHO	SCU fails to send the C-ECHO; User is notified.

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

4.2.4.3.3.1 Description and Sequencing of Activities

Ultrasound Workspace will attempt to initiate a new association when requested to commit the images that were stored on a remote device, which supports the storage Commitment Service.

The associated real world activity for the N-ACTION is a storage commitment request to the remote storage device.

The associated real world activity for the N-EVENT-REPORT operation is the completion of the storage commitment by the remote device.

This can be as Asynchronous storage commitment after the Release-RQ by the timeout is already sent to the remote system.

Ultrasound Workspace will issue a failure status if it is unable to properly handle the storage commitment report event.

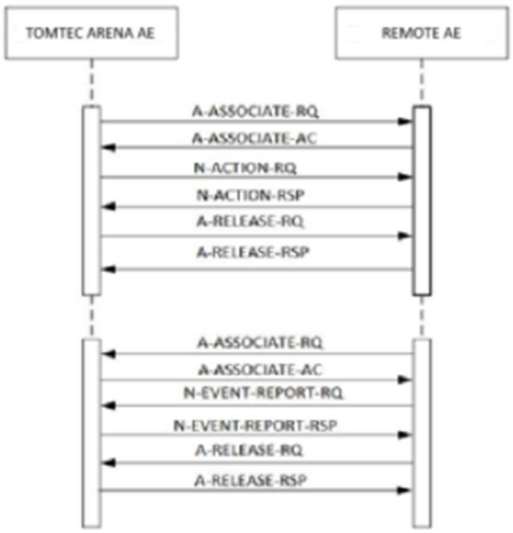

Figure 11: (Real World) Activity – Storage Commitment Push Model as SCU (Asynchronous)

4.2.4.3.3.2 Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of presentation contexts to be used on that association.

The presentation contexts proposed by Ultrasound Workspace for (Real-World) Activity - Storage Commitment as SCU are defined in the following table.

Table 68: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model AS SCU

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

4.2.4.3.3.3 SOP Specific Conformance for Storage Commitment Push Model SOP Class

Ultrasound Workspace provides standard conformance to the DICOM V3.0 Storage Commitment Service Class using Push Model as an SCU.

Multiple N-ACTION-RQ can be performed over a single association. Multiple N-EVENT-REPORT-RQ can be accepted over a single association. After all N-ACTION-RQ that are waiting in the stack are issued, association will be closed with the timeout which is configured.

A remote system reports about storage commitment completion using an N-EVENT-REPORT-RQ command. The system accepts the N-EVENT-REPORT-RQ commands over a separate association initiated by the remote system, using reverse role negotiation for the asynchronous behaviour after the earlier connection was timed out.

Storage Commitment for individual images are grouped into large "chunks" and issued as a single Storage Commitment request.

Table 69: DICOM Command Communication Failure Bahavior Storage Commitment

Exception	Behavior
Timeout expiry for an expected DICOM Message Request (DIMSE level timeout). I.e. The STORAGESCP AE is waiting for the next N-ACTION Request on an open Association but the timer expires.	The Association is aborted by issuing a DICOM AABORT. If some Composite SOP Instances have been successfully received over the same Association via the Storage Service, then they are maintained in the database. They are not automatically discarded because of a later Storage Commitment messaging failure. Any previously received Storage Commitment Push Model NACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.

Exception	Behavior
Timeout expiry for an expected DICOM PDU or TCP/IP packet (Low-level timeout).	The Association is aborted by issuing a DICOM AABORT. If some Composite SOP Instances have been successfully received over the same Association via the Storage Service, then they are maintained in the database. They are not automatically discarded because of a later Storage Commitment messaging failure. Any previously received Storage Commitment Push Model NACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.
Association A-ABORT by the SCU or the network layers indicate communication loss (i.e. low-level TCP/IP socket closure).	The TCP/IP socket is closed. If some Composite SOP Instances have been successfully received over the same Association via the Storage Service, then they are maintained in the database. They are not automatically discarded because of a later Storage Commitment messaging failure. Any previously received Storage Commitment Push Model NACTION Requests will still be fully processed. Error indication message is output to the Service Logs. No message is posted to the User Interface.

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

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in following tables for N-ACTION.

Table 70: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Success	The SCP has successfully received the Storage Commitment Push Model N-ACTION Request and can process the commitment request for the indicated SOP Instances.
Other than Success	XXXX	Problems with sending the N-ACTION Request	The request for storage commitment is marked as failed.

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

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in following tables for N-EVENT-REPORT.

Table 71: Storage Commitment N-EVENT-REPORT Behavior

Event Type Name	Event Type	Behavior
Storage Commitment Request Successful	1	Awaiting Storage Commitment request will be moved to complete in Queue Manager.
Storage Commitment Request Complete - Failures Exist	2	Awaiting Storage Commitment request will be moved to fail in Queue Manager.

Table 72: Storage Commitment N-EVENT-REPORT Failure Handling Behavior

Service Status	Error Code	Further Meaning	Description
Success	0000	Success	The SCU has successfully received the Storage Commitment Push Model N-EVENT-REPORT Request. Success indication message is output to the Service Logs.
Warning	0107	Attribute List Error	Transmission of Storage Commitment Push Model N-EVENT-REPORT Request is considered successful. Warning indication message is output to the Service Logs.
*	*	Any Other Code	This is treated as a permanent Failure. Error indication message is output to the Service Logs.

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

The System provides only DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the standard.
TCP/IP is the only protocol stack supported.
Supported physical medium include:
IEEE 802.3-1995, 10BASE-T
IEEE 802.3-1995, 100BASE-TX (Fast Ethernet)
IEEE 802.3, 1000BASE-X (Fiber Optic Gigabit Ethernet).

The TCP/IP Stack as supported by the underlying Operating System.
The API is the WinSock 2 interface as supported by the underlying Operating System.

4.3.2. Additional Protocols

DNS can be used for address resolution. If a DNS server is not used all addresses have to be specified as IPv4/IPv6 addresses.

4.3.3. IPv4 and IPv6 Support

The Ultrasound Workspace supports both IPv4 and IPv6. It does not utilize any of the optional configuration identification or security features of IPv6.

4.4. Configuration

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

4.4.1. AE Title/Presentation Address Mapping

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

4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified as:

Table 73: AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
QUERY-RETRIEVE-SCP AE	TTASRV	50145/2762
QUERY-RETRIEVE-SCU AE	TTASRV	50145/2762
STORAGE-SCP AE	TTASRV	50145/2762
STORAGE-SCU AE	TTASRV	50145/2762

The mapping from AE Title to TCP/IP addresses and ports is configurable and set at the time of installation by Installation Personnel.

- AE title.
- Hostname or IP address (or both). Use "localhost" (127.0.0.1) for the complete local system. If the AE should only be associated with a specific network adapter, don't specify the host name and use the IP address of this network adapter.
- Port number.

4.4.1.2. Remote AE Title/Presentation Address Mapping

The configuration of the remote application is specified here.

The mapping of external AE Titles to TCP/IP addresses and ports is configurable and set at the time of installation by installation personnel.
One or more remote AE's may be configured. The following AE specific information must be available to configure a remote AE:

- AE title.
- Hostname or IP address (or both).
- Port number.

4.4.2. Parameters

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

Table 74: Configuration Parameters Table

Parameter	Configurable	Default Value
General Parameters		
PDU Size	No	16kB

Parameter	Configurable	Default Value
Connection Timeout	Yes	none
Request Timeout	Yes	none
Accept Timeout	Yes	none
Release Timeout	Yes	none
Response Timeout	Yes	none
Retrieve Timeout	Yes	none
Idle Timeout	Yes	none
AE Specific Parameters		
SOP Class support	No	All supported SOP Classes always proposed and accepted
Transfer Syntax support	No	All supported Transfer Syntaxes always proposed and accepted

5. Media Interchange

5.1. Implementation model

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

5.1.1. Application Data Flow Diagram

The Ultrasound Workspace is capable of exporting studies to DICOM media.
As part of the implementation model, an application data flow diagram is included. The next Figure shows the media interchange application data flow as a functional overview of the Media AE for DICOM USB.

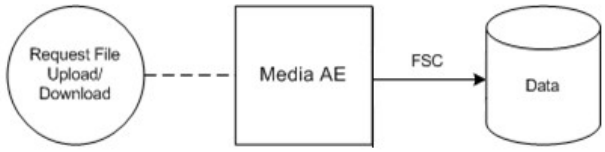

Figure 12: Media Interchange Application Data Flow Diagram

The Media AE acts as a FSC for USB, when writing the selected images in a patient folder onto the medium.

5.1.2. Functional Definitions of AE's

This section contains the functional definition of each individual local Media Application Entity.
The Ultrasound Workspace implements the following functions for DICOM media.

- Write a DICOM file-set onto the medium and create a DICOMDIR.

5.1.2.1. Media Import - FSR

Not Applicable.

5.1.2.2. Media Export - FSC

The Media Export application entity is able to create a new DICOMDIR. Furthermore, DICOM image or structured report instances can also be stored to media on user interaction.

5.1.3. Sequencing of Real World Activities

Not Applicable.

5.2. AE Specifications

All FSR activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

5.2.1. Media - Import

The Media Import application entity provides standard conformance to the DICOM Interchange Option of the Media Storage Service Class.

5.2.1.1. Activity: Read DICOMDIR from DICOM Media

The studies can only be viewed upon importing the data from DICOM media to Ultrasound Workspace database.

5.2.2. Media - Export

The Media Export AE implements the Interchange Option of the DICOM Media Storage functionality. It does not support the Directory Information Module. It can play the following roles at handling with file sets:

- File Set Creator (FSC) role,

The Media Export functionality provides Standard Conformance to the DICOM Media Storage Service (PS.3.10). It generates a File-Set under the STD-US class of Application Profiles (PS.3.11). It provides standard conformance to the SOP Classes listed in the DICOM V3.0 Standard (PS.3 3) in Table 5.2-6. The specific character set and encoding used by Ultrasound Workspace when exporting is UTF-8 (ISO_IR 192).

5.2.2.1. File Meta Information for the Application Activity

This section contains the values of the file Meta Information that pertain to the Application Entity (see PS 3.10). These are:

- Source Application Entity Title,
- Private Information Creator UID,
- Private Information.

The Application Entity title is registered into the DICOM File Meta Information header and is supported by the CD/DVD-Writer (CD/DVD write option) acting as a FSC.

Table 75: File Meta Information for the media

Implementation Class UID	1.2.276.0.48.20000.2
Implementation Version Name	TomTecArena v2

5.2.2.2. Real-World Activities

Activity: Export Study or some Study Components to DICOM Media.
Studies can be exported by selecting the study and choosing the Export option in the study selection dialog.
The AE specification contains a description of the Real-World Activities, which invoke the particular AE.

5.2.2.2.1 RWA - Read File-set

Not Applicable.

5.2.2.2.1.1 Media Storage Application Profile

Not Applicable.

####### 5.2.2.2.1.1.1 Options

Not applicable.

5.2.2.2.2 RWA - Create File-set

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

When an image transfer to USB is initiated then the Media AE acts as an FSC using the interchange option to export SOP Instances from the local database to a USB medium.

5.2.2.2.2.1 Media Storage Application Profile

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

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

5.2.2.2.2.1.1 Options

Not applicable.

5.3. Augmented and Private Application Profiles

Not applicable.

5.4. Media Configuration

Not applicable.

6. Support of Character Sets

Ultrasound Workspace supports a couple of extended character sets defined in the DICOM 3.0 standard, including single byte and multi-byte character sets as well as code extension techniques using ISO 2022 escapes.

Support extends to correctly decoding and displaying the correct symbol for all names and strings found in the DICOMDIR, in storage instances from media and received over the network, and in the local database. No specific support for sorting of strings other than in the default character set is provided in the browsers.

Table 76: Supported DICOM Character Sets

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
Latin alphabet No. 1	ISO_IR 100	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/01	ISO-IR 100	G1	Supplementary set of ISO 8859
Latin alphabet No. 2	ISO_IR 101	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/01	ISO-IR 101	G1	Supplementary set of ISO 8859
Latin alphabet No. 3	ISO_IR 109	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/01	ISO-IR 109	G1	Supplementary set of ISO 8859
Latin alphabet No. 4	ISO_IR 110	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/01	ISO-IR 110	G1	Supplementary set of ISO 8859
Latin alphabet No. 5	ISO_IR 148	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/13	ISO-IR 148	G1	Supplementary set of ISO 8859
ASCII	ISO_IR 6	-	-	-	-
UTF-8	ISO_IR 192	-	-	-	-
Cyrillic	ISO 2022 IR 144	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/12	ISO-IR 144	G1	Supplementary set of ISO 8859
Arabic	ISO 2022 IR 127	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/07	ISO-IR 127	G1	Supplementary set of ISO 8859
Greek	ISO_IR 126	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
		ESC 02/13 04/06	ISO-IR 126	G1	Supplementary set of ISO 8859
Hebrew	ISO_IR 138	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/08	ISO-IR 138	G1	Supplementary set of ISO 8859
Chinese	GB18030	-	-	-	-
Default repertoire	ISO 2022 IR 6	-	ISO-IR 6	G0	ISO 646
Japanese	ISO_IR 13	ESC 02/08 04/10	ISO-IR 14	G0	JIS X 0201: Romaji
		ESC 02/09 04/09	ISO-IR 13	G1	JIS X 0201: Katakana
Japanese	ISO 2022 IR 87	-	ISO-IR 87	G0	JIS X 0208: Kanji
Korean	ISO 2022 IR 149	-	ISO-IR 149	G1	KS X 1001: Hangul and Hanja
Japanese	ISO 2022 IR 159	-	ISO-IR 159	G0	JIS X 0212: Supplementary Kanji set

7. Security

7.1. Introduction

The security section describes security features implemented by this product. It includes description of non-DICOM network protocols, list of supported DICOM security profiles as well other applicable security related profiles.

7.2. DICOM Security Profile Support

7.2.1. Secure Use and User Identity Profiles

7.2.1.1. DICOM Security Profiles Details

Not Applicable.

7.2.1.2. Audit Trail Messages

Not Applicable.

7.2.2. Security Transport Connection Profiles

Ultrasound Workspace supports BCP 195 TLS Secure Transport Connection Profile.

Table 77: Secure Transport Connections Profiles

Profile	Secured AE	Sender	Receiver
BCP195 TLS Secure Transport Connection	ALL	Y	Y

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

- Choose the certificate according to Common Name (CN) value in the Subject-field.
- This name is case-sensitive. All present certificates should have unique CN names.

The client verifies:

- That the server certificate is a X.509 certificate which is not tampered with
- That the server certificate is in the list of trusted certificates
- That the server certificate has the correct purpose (at least Server Authentication purpose)

No verification is done on:

- Revocation of certificates

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

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

Ultrasound Workspace can read certificates from the certificate stores of Windows, specifically Windows-MY, Windows-ROOT and can also read certificates from PKCS12 files. It is the responsibility of the Hospital to setup and maintain the certificate stores. This includes the removal of revoked certificates and certificate updates prior to their expiration.

The following figure presents the message flow of TLS handshake

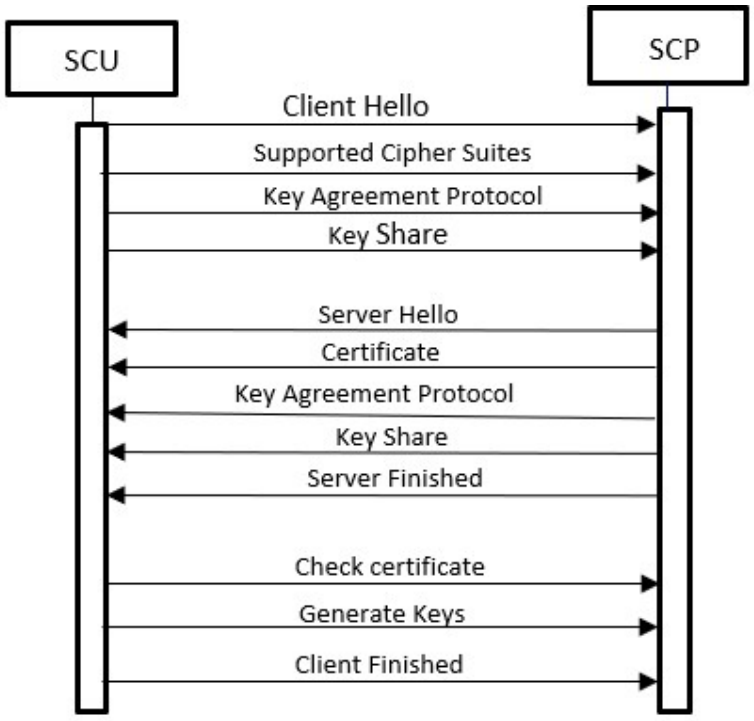

Figure 13: Message flow of TLS handshake

Ultrasound Workspace supports Secure communication as a “mode of operation”. This functionality will be used by the DICOM nodes, which can authenticate each other before they exchange DICOM information. For secure communication, the TLS protocol 1.2 and 1.3 are used which provides message authentication, integrity, confidentiality, and replay protection. Confidentiality is optional and can be controlled by the encryption settings. The system supports a secure negotiation using the following Cipher Suites.

Table 78: Secure Transport Connections and Cipher Suites

Profile	Cipher Suite
BCP 195 TLS Secure Transport Connection	TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256 TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 TLS_DHE_RSA_WITH_AES_256_GCM_SHA384 TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256 TLS_DHE_RSA_WITH_AES_128_GCM_SHA256 TLS_AES_256_GCM_SHA384 TLS_AES_128_GCM_SHA256 TLS_CHACHA20_POLY1305_SHA256 TLS_RSA_WITH_AES_256_GCM_SHA384 TLS_RSA_WITH_AES_128_GCM_SHA256 TLS_RSA_WITH_AES_256_CBC_SHA256 TLS_RSA_WITH_AES_128_CBC_SHA256 TLS_RSA_WITH_AES_256_CBC_SHA TLS_RSA_WITH_AES_128_CBC_SHA

Note: Cipher suites that include cryptographic MD5, RC4, DES or 3DES are not supported by the system.

7.2.3. Media Storage Security Profiles
Not applicable.

7.2.4. Attribute Confidentiality Profiles
Not applicable.

7.2.5. Digital Signature Profiles
Not applicable.

7.2.6. Basic Network Address Management Profiles
Not applicable.

7.2.7. Application Configuration Management Profiles
Not applicable.

7.2.8. Time Synchronization Profiles
Not applicable.

7.3. Association Level Security

Any Calling AE Titles and/or IP addresses may open an Association for verification.
Only AE Titles that own a license and are known to Ultrasound Workspace will be allowed to open an association for storage purposes.

7.4. Application Level Security

Not Supported.

8. Annexes of application "Ultrasound Workspace"

8.1. IOD Contents

8.1.1. Created SOP Instance

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

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

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

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

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

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

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

8.1.1.1. List of created SOP Classes

Table 79: List of created SOP Classes

SOP Class Name	SOP Class UID
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1

8.1.1.1.1 Secondary Capture Image Storage IOD

Table 80: IOD of Created Secondary Capture Image Storage SOP Instance

Information Entity	Module	Presence of Module
Patient	Patient	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
Equipment	General Equipment	ALWAYS
	SC Equipment	ALWAYS
Image	General Image	ALWAYS
	General Reference Module	ALWAYS
	Image Pixel	ALWAYS
	SC Image	ALWAYS
	SOP Common	ALWAYS

Table 81: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Issuer of Patient ID	0010,0021	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Patient’s Birth Time	0010,0032	TM		VNAP	COPY	

Table 82: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Physician(s) of Record	0008,1048	PN		ANAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	

Table 83: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	DA		ANAP	COPY, USER	
Admission ID	0038,0010	LO		VNAP	COPY	

Table 84: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	OT	ALWAYS	FIXED	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI	using 1.2.276.0.48 as prefix	ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 85: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	(TOMTEC, TomTec Imaging Systems GmbH)	ALWAYS	FIXED	
Institution Name	0008,0080	LO	CONFIG (hospital Name)	ANAP	COPY	
Station Name	0008,1010	SH	TTA	ANAP	CONFIG	
Institutional Department Name	0008,1040	LO	CONFIG (Department)	ANAP	COPY	
Manufacturer's Model Name	0008,1090	LO	Ultrasound Workspace (For TIMS DLL: TIMS)	ALWAYS	FIXED	
Software Version(s)	0018,1020	LO	UWS7.0-Release-YY:XX(For TIMS DLL:1.0.0.YY\TTSR/1)	ALWAYS	FIXED	Where XX is optional module name (e.g. IMAGE-COM) and YY is software build Version

Table 86: SC Equipment Module

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

Table 87: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA	Generated	ALWAYS	AUTO	
Content Time	0008,0033	TM	Generated	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	
Patient Orientation	0020,0020	CS		ANAP	USER	

Burned In Annotation	0028,0301	CS		ANAP	USER	

Table 88: General Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Source Image Sequence	0008,2112	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 89: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Photometric Interpretation	0028,0004	CS	RGB, YBR_FULL_422	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ANAP	AUTO	
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Planar Configuration	0028,0006	US		ANAP	AUTO	
Pixel Aspect Ratio	0028,0034	IS		ANAP	AUTO	

Table 90: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Private Creator	7FDF,0050		TomTec	ALWAYS	FIXED	

Date of Secondary Capture	0018,1012	DA		ANAP	AUTO	
Time of Secondary Capture	0018,1014	TM		ANAP	AUTO	

Table 91: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Specific Character Set	0008,0005	CS	ISO_IR 100, ISO_IR 192	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	
Instance Creation Date	0008,0012	DA	Generated	ANAP	AUTO	
Instance Creation Time	0008,0013	TM	Generated	ANAP	AUTO	

8.1.1.1.2 Multi-Frame True Color Secondary Capture Image Storage IOD

Table 92: IOD of Created Multi-Frame Color Secondary Capture Image Storage SOP Instance

Information Entity	Module	Presence of Module
Patient	Patient	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	General Series	ALWAYS
Equipment	General Equipment	ALWAYS
	SC Equipment	ALWAYS
Image	General Image	ALWAYS
	General Reference Module	ALWAYS
	Image Pixel	ALWAYS
	Cine	CONDITIONAL

Information Entity	Module	Presence of Module
	SC Image	ALWAYS
	Multi-frame	ALWAYS
	Multi-frame Functional Groups Module	ALWAYS
	SC Multi-frame Image	ALWAYS
	SC Multi-frame Vector Module	CONDITIONAL
	SOP Common	ALWAYS

Table 93: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Issuer of Patient ID	0010,0021	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Patient’s Birth Time	0010,0032	TM		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAP	COPY	
Other Patient Names	0010,1001	PN		ANAP	COPY	
Patient Comments	0010,4000	LT		VNAP	COPY	

Table 94: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	

Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	

Table 95: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	DA		ANAP	COPY, USER	
Patient's Size	0010,1020	TM		ANAP	COPY, USER	
Patient's Weight	0010,1030	SH		ANAP	COPY, USER	
Admission ID	0038,0010	LO		VNAP	COPY	

Table 96: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	OT	ALWAYS	FIXED	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI	using 1.2.276.0.48 as prefix	ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 97: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	(TOMTEC, TomTec Imaging Systems GmbH)	ALWAYS	FIXED	

Institution Name	0008,0080	LO	CONFIG (hospital Name)	ANAP	COPY	
Station Name	0008,1010	SH	TTA	ANAP	CONFIG	
Institutional Department Name	0008,1040	LO	CONFIG (Department)	ANAP	COPY	
Manufacturer's Model Name	0008,1090	LO	Ultrasound Workspace (For TIMS DLL: TIMS)	ALWAYS	FIXED	
Software Version(s)	0018,1020	LO	UWS7.0-Release-YY:XX (For TIMS DLL: 1.0.0.YY\TTSR/1)	ALWAYS	FIXED	Where XX is optional module name (e.g. IMAGE-COM) and YY is software build Version

Table 98: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	
Modality	0008,0060	CS	OT	ANAP	FIXED	

Table 99: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA	Generated	ALWAYS	AUTO	
Content Time	0008,0033	TM	Generated	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	
Patient Orientation	0020,0020	CS		ANAP	USER	
Burned In Annotation	0028,0301	CS		ANAP	USER	
Lossy Image Compression	0028,2110	CS		ANAP	AUTO	
Lossy Image Compression Ratio	0028,2112	DS		ANAP	AUTO	

Lossy Image Compression Method	0028,2114	CS		ANAP	AUTO	

Table 100: General Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Source Image Sequence	0008,2112	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 101: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Photometric Interpretation	0028,0004	CS	RGB, YBR_FULL_422	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ANAP	AUTO	
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US		ALWAYS	AUTO	
Bits Stored	0028,0101	US		ALWAYS	AUTO	
High Bit	0028,0102	US		ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Planar Configuration	0028,0006	US		ANAP	AUTO	
Pixel Aspect Ratio	0028,0034	IS		ANAP	AUTO	

Table 102: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ANAP	AUTO	
Time of Secondary Capture	0018,1014	TM		ANAP	AUTO	

Table 103: Cine Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Time Vector	0018,1065	DS		ANAP	AUTO	

Table 104: Multi Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS		ALWAYS	AUTO	
Frame Increment Pointer	0028,0009	AT		ALWAYS	AUTO	
Stereo Pairs Present	0022,0028	CS		ANAP	AUTO	

Table 105: Multi-frame Functional Groups Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA	Generated	ALWAYS	AUTO	
Content Time	0008,0033	TM	Generated	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Number of Frames	0028,0008	IS		ALWAYS	AUTO	
Shared Functional Groups Sequence	5200,9229	SQ		ALWAYS	AUTO	
Per-frame Functional Groups Sequence	5200,9230	SQ		ANAP	AUTO	

Table 106: SC Multi Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Burned In Annotation	0028,0301	CS		ALWAYS	AUTO	
Frame Increment Pointer	0028,0009	AT		ANAP	AUTO	

Table 107: SC Multi Frame Vector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Time Vector	0018,1065	DS		ANAP	AUTO	

Table 108: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Specific Character Set	0008,0005	CS	ISO_IR 100, ISO_IR 192	ALWAYS	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	
Instance Creation Date	0008,0012	DA	Generated	ANAP	AUTO	
Instance Creation Time	0008,0013	TM	Generated	ANAP	AUTO	

8.1.1.1.3 Comprehensive Structured Report Image Storage IOD

Table 109: IOD of Created Comprehensive Structured Report Image Storage SOP Instance

Information Entity	Module	Presence of Module
Patient	Patient	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	SR Document Series	ALWAYS
Equipment	General Equipment	ALWAYS
Document	SR Document General	ALWAYS
	SR Document Content	ALWAYS

Information Entity	Module	Presence of Module
	SOP Common	ALWAYS

Table 110: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Issuer of Patient ID	0010,0021	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Patient’s Birth Time	0010,0032	TM		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAP	COPY	
Other Patient Names	0010,1001	PN		ANAP	COPY	
Patient Comments	0010,4000	LT		VNAP	COPY	

Table 111: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Description	0008,1030	LO		ANAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	
Name of Physician(s) Reading Study	0008,1060	PN		ANAP	COPY	

Table 112: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	DA		ANAP	COPY, USER	
Patient's Size	0010,1020	TM		ANAP	COPY, USER	
Patient's Weight	0010,1030	SH		ANAP	COPY, USER	
Admission ID	0038,0010	LO		VNAP	COPY	

Table 113: SR Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	SR	ALWAYS	FIXED	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI	using 1.2.276.0.48 as prefix	ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 114: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	(TOMTEC, TomTec Imaging Systems GmbH)	ALWAYS	FIXED	
Institution Name	0008,0080	LO	CONFIG (hospital Name)	ANAP	COPY	
Station Name	0008,1010	SH	UWS	ANAP	FIXED	

Institutional Department Name	0008,1040	LO	CONFIG (Department)	ANAP	COPY	
Manufacturer's Model Name	0008,1090	LO	Ultrasound Workspace (For TIMS DLL: TIMS)	ALWAYS	FIXED	
Software Version(s)	0018,1020	LO	UWS7.0-Release-YY(For TIMS DLL:1.0.0.YY\TTSR/1)	ALWAYS	FIXED	Where YY is software build Version

Table 115: SR Document General Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Completion Flag	0040,A491	CS	PARTIAL/COMPLETED	ALWAYS	AUTO	
Verification Flag	0040,A493	CS	VERIFIED / UNVERIFIED	ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Verifying Observer Sequence	0040,A073	SQ		ANAP	AUTO	
>Verifying Observer Name	0040,A075	PN		ALWAYS	USER, COPY	
>Verifying Observer Identification Code Sequence	0040,A088	SQ		VNAP	AUTO	
>>Code Value	0008,0100	SH		ANAP	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ANAP	AUTO	
>>Coding Scheme Version	0008,0103	SH		ANAP	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
>>Code Meaning	0008,0104	LO		ALWAYS	AUTO	
>Verifying Organization	0040,A027	LO		ALWAYS	COPY	
>Verification DateTime	0040,A030	DT		ALWAYS	AUTO	
Performed Procedure Code Sequence	0040,A372	SQ		VNAP	AUTO	

Table 116: SR Document Content Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Value Type	0040,A040	CS	CONTAINER	ALWAYS	AUTO	
Concept Name Code Sequence	0040,A043	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	AUTO	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>Coding Scheme Version	0008,0103	SH		ANAP	AUTO	
>Code Meaning	0008,0104	LO		ANAP	AUTO	
Continuity Of Content	0040,A050	CS	SEPARATE	ALWAYS	AUTO	
Content Template Sequence	0040,A504	SQ		ANAP	AUTO	
>Mapping Resource	0008,0105	CS	DCMR	ALWAYS	AUTO	
>Template Identifier	0040,DB00	CS	5200	ALWAYS	AUTO	
Content Sequence	0040,A730	SQ		ANAP	AUTO	

Table 117: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Specific Character Set	0008,0005	CS	ISO_IR 100, ISO_IR 192	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA	Generated	ANAP	AUTO	
Instance Creation Time	0008,0013	TM	Generated	ANAP	AUTO	
Instance Creator UID	0008,0014	UI		ANAP	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	

8.1.1.1.4 Encapsulated PDF Image Storage IOD

Table 118: IOD of created Encapsulated PDF Image Storage SOP Instance

Information Entity	Module	Presence of Module
Patient	Patient	ALWAYS
Study	General Study	ALWAYS
	Patient Study	ALWAYS
Series	Encapsulated Document Series	ALWAYS
Equipment	General Equipment	ALWAYS
	SC Equipment	ALWAYS
Encapsulated Document	Encapsulated Document	ALWAYS
	SOP Common	ALWAYS

Table 119: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Issuer of Patient ID	0010,0021	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	

Patient's Birth Time	0010,0032	TM		VNAP	COPY	
Other Patient Names	0010,1001	PN		ANAP	COPY	
Patient Comments	0010,4000	LT		VNAP	COPY	

Table 120: General Study Module

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

Table 121: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	DA		ANAP	COPY, USER	
Admission ID	0038,0010	LO		ANAP	COPY	

Table 122: Encapsulated Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	DOC	ALWAYS	FIXED	
Series Instance UID	0020,000E	UI	using 1.2.276.0.48 as prefix	ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 123: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	(TOMTEC, TomTec Imaging Systems GmbH)	ALWAYS	FIXED	
Institution Name	0008,0080	LO	CONFIG (hospital Name)	ANAP	COPY	
Station Name	0008,1010	SH	UWS	ANAP	FIXED	
Institutional Department Name	0008,1040	LO	CONFIG (Department)	ANAP	COPY	
Manufacturer's Model Name	0008,1090	LO	Ultrasound Workspace (For TIMS DLL: TIMS)	ALWAYS	FIXED	
Software Version(s)	0018,1020	LO	UWS7.0-Release-YY:XX(For TIMS DLL:1.0.0.YY\TTS R/1)	ALWAYS	FIXED	Where YY is software build Version

Table 124: SC Equipment Module

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

Table 125: Encapsulated Document Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Acquisition DateTime	0008,002A	DT		ALWAYS	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Burned In Annotation	0028,0301	CS	YES	ALWAYS	AUTO	
Document Title	0042,0010	ST	Title of Report	VNAP	AUTO	
Concept Name Code Sequence	0040,A043	SQ		ALWAYS	AUTO	
>Code Value	0008,0100	SH	REPORT	ALWAYS	FIXED	
>Coding Scheme Designator	0008,0102	SH	99TOMTEC	ALWAYS	FIXED	
>Code Meaning	0008,0104	SH	TOMTEC Report	ALWAYS	FIXED	
Source Instance Sequence	0042,0013	LO		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		VNAP	AUTO	
>Referenced SOP Instance UIDN	0008,1155	UI		VNAP	AUTO	
Verification Flag	0040,A493	CS	VERIFIED / UNVERIFIED	ALWAYS	USER	
MIME Type of Encapsulated Document	0042,0012	LO	application/pdf	ALWAYS	FIXED	
Encapsulated Document	0042,0011	OB		ALWAYS	AUTO	
Document Title	0042,0010	ST		VNAP	AUTO	

Table 126: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Specific Character Set	0008,0005	CS	ISO_IR 100, ISO_IR 192	ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA	Generated	ANAP	AUTO	
Instance Creation Time	0008,0013	TM	Generated	ANAP	AUTO	

Instance Number	0020,0013	IS		ANAP	AUTO	

8.1.2. Usage of Attributes from Received IOD

Not applicable.

8.1.3. Attribute Mapping

Not applicable.

8.1.4. Coerced/Modified fields

Not applicable.

8.2. Data Dictionary of Private Attributes

Table 127: Attribute mapping during Modality Workflow

Attribute Name	Tag	Value
Private Creator	(7FDF,0050)	TomTec
Bookmark Information VR:OB VM:1	(7FDF,5050)	proprietary data
Bookmark Content VR:OB VM:1	(7FDF,5051)	proprietary data
Private Creator	(7FDF,0040)	TomTec_Rep
Report Data Information VR:OB VM:1	(7FDF,4050)	proprietary data
Report Data Content VR:OB VM:1	(7FDF,4051)	proprietary data

Use cases where Private Creator (7FDF, 0050) can exist

- Bookmark creation

  Below SOP class object is created

Secondary Capture Image Storage	SOP class: 1.2.840.10008.5.1.4.1.1.7

  Secondary Capture can be created in multiple scenarios, however Private tag can only exist when a Secondary Capture is created via "Bookmark".

- Export measurement details

  Below SOP class object is created

Comprehensive SR Storage	SOP class: 1.2.840.10008.5.1.4.1.1.88.33

  Private tag is added when the user has opted to export measurement details on study export.

Use cases where Private creator (7FDF, 0040) can exist

- Generate Report

  Below SOP class object is created

Encapsulated PDF Storage	SOP class: 1.2.840.10008.5.1.4.1.1.104.1

  Private creator is added to identify the Report generated by the Ultrasound Workspace .
  Exported DICOM object has the report PDF encapsulated within a DICOM Information Object.

8.3. Coded Terminology and Templates

Not applicable.

8.3.1. Context Groups

Not applicable.

8.3.2. Template Specifications

Ultrasound Workspace can optionally create and stores, upon completion of the study, a DICOM Comprehensive SR object.

8.3.2.1. Comprehensive SR IOD Templates

This section describes the content of all the templates used in the Comprehensive SR IOD Template.

Table 128: Used Templates for Comprehensive SR Reporting

Template Name	Template ID
Echocardiography Procedure Report	TID 5200
Vascular Ultrasound Report	TID 5100
Pediatric Fetal & Congenital Cardiac Ultrasound Report (Ultrasound Workspace supports Pediatric only)	TID 5220

8.3.2.1.1 TID 5200

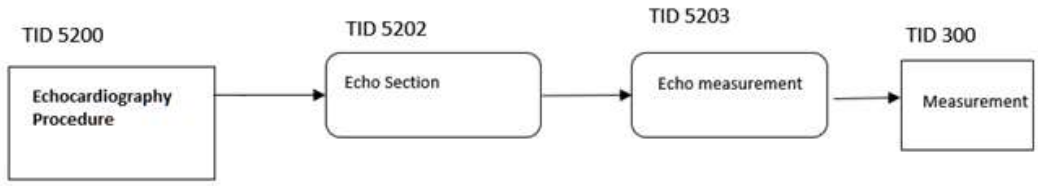

Figure 14: TID 5200 - Echocardiography Procedure Report SR IOD Template Structure

Table 129: Echocardiography Procedure Report

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		EV (125200, DCM, Adult Echocardiography Procedure Report")	CONTAINER	1	ALWAYS	
>	CONTAINS	DTID 5202 “Echo Section”	INCLUDE	1	ALWAYS	DCID 12204 “Echocardiography Right Ventricle”
>	CONTAINS	DTID 5202 “Echo Section”	INCLUDE	1	ALWAYS	DCID 12200 “Echocardiography Left Ventricle”

Table 130: TID 5202 Echo Section

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		EV(121070,DCM,”Findings”)	CONTAINER	1	ALWAYS	
>	HAS CONCEPT MOD	EV(G-C0E3,SRT,”Finding Site”)	CODE	1	ALWAYS	
>	HAS CONCEPT MOD	DT(125007,DCM,”Measurement Group”)	CONTAINER	1	ALWAYS	
>	CONTAINS	DTID 5203 “Echo Measurement”	INCLUDE	1-n	ALWAYS	

Table 131: TID 5203 Echo Measurement

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		DTID 300 “Measurement”	INCLUDE	1	ALWAYS	
>	HAS ACQ CONTEXT	EV(G-0373,SRT,”Image Mode”)	CODE	1	USER DEFINED	

Table 132: TID 300 Measurement

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
	CONTAINS	(18154-5, LN, "Interventricular Septum Diastolic Thickness)	NUM	1	ALWAYS	
>	HAS CONCEPT MOD	(G-C036, SRT, "Measurement Method")	CODE	1	USER DEFINED	

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
	CONTAINS	(29436-3, LN, "Left Ventricle Internal End Diastolic Dimension")	NUM	1	USER DEFINED	
>	HAS CONCEPT MOD	(G-0373, SRT, "Image Mode")	CODE	1	USER DEFINED	

8.3.2.1.2 TID 5100

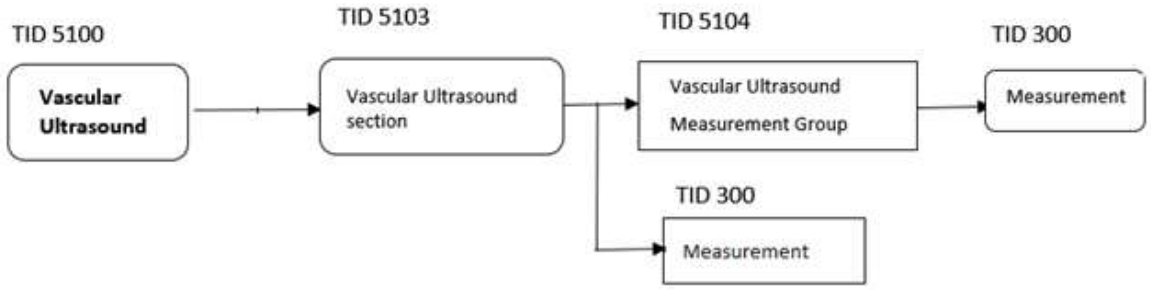

Figure 15: TID 5100 - Vascular Ultrasound Report SR IOD Template Structure

Table 133:TID 5100 Vascular Ultrasound Report

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		BCID 12100 “Vascular Ultrasound Report Document Title”	CONTAINER	1	ALWAYS	
>	CONTAINS	DTID 5103 “Vascular Ultrasound Section”	INCLUDE	1	USER DEFINED	

Table 134: TID 5103. Vascular Ultrasound Section

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		(121070, DCM, "Findings)	CONTAINER	1	ALWAYS	
>	HAS CONCEPT MOD	EV (G-C0E3, SRT , "Finding Site")	CODE	1	ALWAYS	
>	HAS CONCEPT MOD	EV (G-C171, SRT, "Laterality”)	CODE	1	ALWAYS	
>	CONTAINS	DTID 5104 “Vascular Ultrasound Measurement Group”	INCLUDE	1	ALWAYS	

Table 135: TID 5104. Vascular Ultrasound Measurement Group

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		(T-45100, SRT, "Common Carotid Artery")	CONTAINER	1	ALWAYS	$Anatomy = DCID 12105 “Intracranial Cerebral Vessel”
>	HAS CONCEPT MOD	(G-A1F8, SRT, "Topographical modifier")	CODE	1	USER DEFINED	
>	CONTAINS	(11726-7, LN, "Peak Velocity")	NUM	1	USER DEFINED	
>	CONTAINS	DTID 300 “Measurement	INCLUDE	1	ALWAYS	$Measurement = DCID 12119 “Vascular Ultrasound Property”
		[(R-4089A, SRT, "Cardiac Cycle Point")]	CODE	1	USER DEFINED	

Table 136: TID 300 Measurement

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		$Measurement	NUM	1	ALWAYS	
>	HAS CONCEPT MOD	EV (R-4089A, SRT, "Cardiac Cycle Point")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	EV(125105, DCM, "Measurement Orientation")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(G-0373, SRT, "Image Mode")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(G-0364, SRT, "Vessel lumen diameter")	NUM	1	USER DEFINED	

8.3.2.1.3 TID 5220

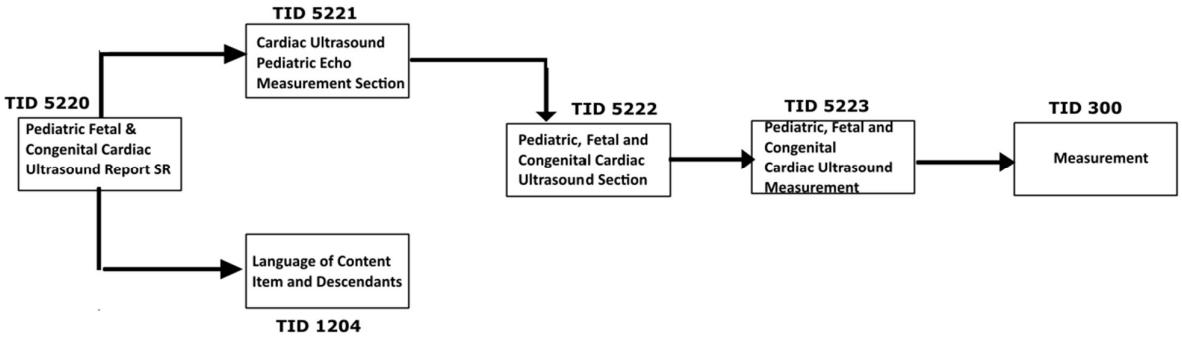

Figure 16: TID 5220 - Pediatric Fetal & Congenital Cardiac Ultrasound Report SR IOD Template Structure

Table 137: Pediatric Fetal & Congenital Cardiac Ultrasound Report (Ultrasound Workspace supports Pediatric only)

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		(125195, DCM, "Pediatric Cardiac Ultrasound Report")	CONTAINER	1	ALWAYS	
>		DTID 5221 "Cardiac Ultrasound Pediatric Echo Measurement Section	CONTAINS	1	USER DEFINED	
	HAS CONCEPT MOD	DTID 1204 "Language of Content Item and Descendants	INCLUDE	1	ALWAYS	

Table 138: TID 5221. Cardiac Ultrasound Pediatric Echo Measurement Section

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>		DTID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section"	INCLUDE	1-n	USER DEFINED	$SectionSubject = DCID 12286 "Cardiac Ultrasound Interventricular Septum Finding Site" $MeasType = DCID 12269 "Cardiac Ultrasound Interventricular Septum Measurement"

Table 139: TID 5222. Pediatric, Fetal and Congenital Cardiac Ultrasound Section

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		EV(121070, DCM, "Findings"	CONTAINER	1	ALWAYS	
>	HAS CONCEPT MOD	EV (363698007, SCT, "Finding Site")	CODE	1	ALWAYS	$SectionSubject
>	CONTAINS	EV(125007, DCM, "Measurement Group)	CONTAINER	1-n	ALWAYS	
>	CONTAINS	DTID 5223 "Pediatric, Fetal and Congenital Cardiac Ultrasound Measurement"	INCLUDE	1-n	ALWAYS	

Table 140: TID 5223. Pediatric, Fetal and Congenital Cardiac Ultrasound Measurement

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		DTID 300 "Measurement"	INCLUDE	1	ALWAYS	
>	HAS CONCEPT MOD	EV (272517003, SCT, "Respiratory Cycle Point")	CODE	1	USER DEFINED	

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		DTID 300 “Measurement”	INCLUDE	1	ALWAYS	
>	HAS CONCEPT MOD	EV (272518008, SCT, "Cardiac Cycle Point")	CODE	1	USER DEFINED	
>	HAS ACQ CONTEXT	EV (399264008, SCT, "Image Mode")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(125105, DCM, "Measurement Orientation")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(G-C048, SRT, "Flow Direction")	CODE	1	USER DEFINED	

Table 141: TID 300 Measurement

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
	CONTAINS	(M-02550, SRT, "Diameter")	NUM	1	ALWAYS	
	CONTAINS	(A2E, 99IMPROOF, "Peak A wave/Peak E wave by US")	NUM	1	ALWAYS	
	CONTAINS	(59080-2, LN, "E-Wave Peak Velocity")	NUM	1	ALWAYS	
>	HAS CONCEPT MOD	(R-4089A, SRT, "Cardiac Cycle Point")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(125105, DCM, "Measurement Orientation")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(G-C0E3, SRT, "Finding Site")	CODE	1	USER DEFINED	
>	HAS CONCEPT MOD	(G-0373, SRT, "Image Mode")	CODE	1	USER DEFINED	

Table 142: TID 1204 “Language of Content Item and Descendants”

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
	HAS CONCEPT MOD	(121049, DCM, "Language of Content Item and Descendants")	CODE	1	ALWAYS	

8.3.3. Private code definitions

Not applicable.

8.4. Grayscale Image consistency

Not applicable.

8.5. Standard Extended/Specialized/Private SOPs

8.5.1. Comprehensive SR IOD Templates

Table 143: Private/Additional Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Other Patient IDs	0010,1000	LO		ANAP	COPY, USER	

8.6. Private Transfer Syntaxes

Not applicable.

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