DICOM CONFORMANCE STATEMENT

FOR

TE7 Series/TE5 Series/TE9 Series/TE10 Series DIAGNOSTIC ULTRASOUND SYSTEM

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1 Conformance Statement Overview

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ultrasound system of TE7 series.We specify ultrasound system generally refer to the products above in this document. The ultrasound system implements the necessary DICOM services to download worklists from an information system, save acquired Ultrasound (US) images and associated Structured Reports to a network storage device and/or removable media, print to a networked hardcopy device, query and retrieve the US images from a networked storage system, and inform the information system about the works actually done. Table 1 provides an overview of the supported network services, Table 2 lists the supported Media Storage Application Profiles, and Table 3 lists the supported Structured Report Templates.

Table 1

NETWORK SERVICES

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer（Storage）		
Verification	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Encapsulated PDF Storage	Yes	Yes
Query/Retrieve		
Study Root Query/Retrieve Information Model – FIND	Yes	No
Study Root Query/Retrieve Information Model – MOVE	Yes	No
Workflow Management		
Modality Worklist Information Model – Find	Yes	No
Modality Performed Procedure Step	Yes	No
Storage Commitment Push Model	Yes	No
Print Management		
Basic Color Print Management	Yes	No

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Basic Grayscale Print Management	Yes	No
Notes, Reports, Measurements, Transfer		
Comprehensive SR Storage	Yes	Yes

Table 2
MEDIA SERVICES

Media Storage Application Profile	Write Files (FSC / FSU)	Read Files (FSR)
Compact Disk - Recordable		
STD-US-SC-SF&MF-CDR	No	Yes
DVD		
STD-US-SC-SF&MF-DVD STD-US-SC-SF&MF-DVD-RAM	No	Yes
USB Devices		
STD-GEN-USB-JPEG for Ultrasound images, Structured Reports and Encapsulated PDF.	Yes / Yes[1]	Yes

Note:
1 Only acts as a FSU for media that may be written to multiple times.

Table 3
STRUCTURED REPORTS

Concept Name	Supported
OB-GYN Ultrasound Procedure Report	Yes
Echocardiography Procedure Report	Yes
Vascular Ultrasound Report	Yes
Breast Imaging Report	Yes
Small parts Ultrasound Report	Yes

2 Table of Contents

3 Introduction

3.1 Review History

DOCUMENT VERSION	DATE OF ISSUE	DESCRIPTION
1.0	12. 31, 2014	Creation of the document
2.0	08.25,2015	Added measurement items;
3.0	07.30,2016	Added measurement items;modify EFW
4.0	11.30.2016	Added measurement items;
5.0	9.25,2017	Added measurement items and GA formula
6.0	07.16.2018	Added measurement items;
7.0	12.06.2018	Added measurement items;
8.0	Abolished	Added measurement items;
9.0	12.20.2019	Added measurement items;
10.0	03.04.2021	Added measurement items;
11.0	06.07.2021	Update TLS configuration

3.2 Audience

This document is intended for potential customers, system integrators of medical equipment, marketing staff interested in system functionality and software designers implementing DICOM interfaces. It is assumed that the readers of this document are familiar with the DICOM Standard and with the terminology and concept which are used in the Standard. If readers are unfamiliar with DICOM terminology they should read the DICOM Standard, prior to reading this DICOM Conformance Statement document.

3.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between Mindray Products and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM

equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

— The comparison of different Conformance Statements is the first step towards assessing interconnectivity and interoperability between Mindray medical equipment and other DICOM conformant equipments.

— Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

— The DICOM standard will evolve to meet the user's growing requirements. Mindray is actively involved in the development of the DICOM standard,. Therefore, Mindray reserves the right to make changes to its products or to discontinue its delivery.

— The Ultrasound System follows the IHE SWF, PDI, ED Profiles.

3.4 Terms and Definitions

- **Abstract Syntax** – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.
- **Application Context** – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.
- **Application Entity (AE)** – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.
- **Application Entity Title** – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network. The Called AE Title defines the intended receiver of an Association. Nevertheless, the Calling AE Title defines the requestor of an Association.
- **Application Profile** - A Media Storage Application Profile defines a selection of choices at the various layers of the DICOM Media Storage Model which are applicable to a specific need or context in which the media interchange is intended to be performed.
- **Association** – a network communication channel set up between *Application Entities*.
- **Association Establishment** - an Association Establishment is the first phase of communication between two DICOM Application Entities. The AEs use the Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.
- **Attribute** – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number

(0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

- **DICOM File Format** - the DICOM File Format provides a means to encapsulate in a File the Data Set representing a SOP Instance related to a DICOM Information Object.
- **DICOM Message Service Element (DIMSE)** – a DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.
- **File** - a File is an ordered string of zero or more bytes, where the first byte is at the beginning of the file and the last byte is at the end of the File. Files are identified by an unique File ID and may by written, read, or deleted.
- **File Meta Information** - the File Meta Information includes identifying information on the encapsulated Data Set. It is a mandatory header at the beginning of every DICOM File.
- **Information Object Definition (IOD)** - the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: Print Job IOD.
- **Joint Photographic Experts Group (JPEG)** – a set of standardized image compression techniques, available for use by DICOM applications.
- **Module** – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.
- **Negotiation** – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.
- **Physical Media** - a piece of material with recording capabilities for streams of bits. Characteristics of a Physical Media include form factor, mechanical characteristics, recording properties and rules for recording and organizing bit streams in accessible structures.
- **Presentation Context** – the set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.
- **Protocol Data Unit (PDU)** – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.
- **Security Profile** – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data
- **Service Class Provider (SCP)** – role of an *Application Entity* that provides a DICOM network service; typically, a server that performs operations requested by another

Application Entity (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

- **Service Class User (SCU)** – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)
- **Service/Object Pair (SOP) Class** – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.
- **Service/Object Pair (SOP) Instance** – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.
- **Tag** – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]
- **Transfer Syntax** – the encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.
- **Unique Identifier (UID)** – a globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.
- **Value Representation (VR)** – the format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

3.5 Acronyms, Abbreviations, and Symbols

The following acronyms and abbreviations are used in this document.

ACR	American College of Radiology
AE	Application Entity
CDR	Compact Disk Recordable
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element-Composite
FSC	File-Set Creator
FSR	File-Set Reader
FSU	File-Set Updater

HIS	Hospital Information System
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition
ISO	International Standard Organization
JPEG	Joint Photographic Experts Group
MODALITY	Ultrasound System
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
O	Optional (Key Attribute)
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
R	Required (Key Attribute)
RIS	Radiology Information System
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
UL	Upper Layer
VR	Value Representation
US	Ultrasound
UID	Unique Identifier

3.6 References

DICOM Quick Guide & FAQ, Revision 6.0 Final Text, Mindray Co. Ltd

Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3, available free at http://medical.nema.org/

IHE Technical Framework, available free at http://www.ihe.net/

4 Networking

4.1 Implementation Model

4.1.1 Application Data Flow

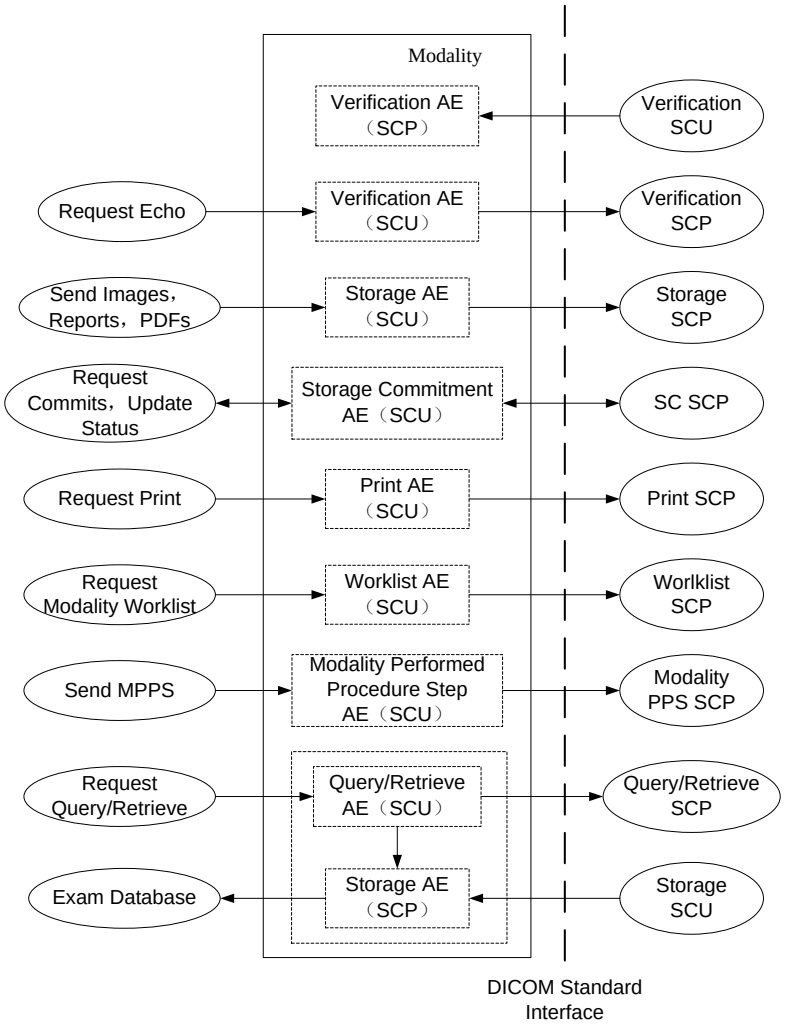

Figure 1

Implementation Model

Note：Storage AE（SCP）only be used in Query/Retrieve

This application entity provides a user interface, internal database and network listener that spawns additional threads as necessary to handle incoming connections.

Conceptually the network services may be modeled as the following AE's, however, in fact all the AE's share a single (configurable) AE Title:

- Verification AE (as SCU and SCP)

- Storage AE (as SCU and SCP)
- Storage Commitment AE（SCU）
- Print AE (as SCU)
- Worklist AE (as SCU)
- MPPS AE (as SCU)
- Query/Retrieve AE (as SCU)

4.1.2 Functional Definitions of AE's

4.1.2.1 Verification AE

The ultrasound system supports the Verification service as a SCU and SCP.

As a SCU, verification is activated when the verify button is selected on the dicom service configuration page where the verification results will also be showed to the user.

As a SCP, verification AE waits in the background for connections, will accept associations with Presentation Contexts for SOP Class of the Verification Service Class, and will respond successfully to echo requests.

4.1.2.2 Storage AE

As a SCU, the Storage AE originates associations for the transfer of DICOM Ultrasound single frame images, multi-frame images, secondary capture images, comprehensive structured reports ,and Encapsulated PDFs to remote AE (selected from a pre-configured list)..

The system supports automatic and manual storage.

The operations for automatic storage service are described below:

- Operation 1

Step 1: Enable "Send or printing after End Exam" in the user preset.

Step 2: End Exam, the ended exam (maybe include images, SRs, PDFs) would automatically send to the default storage service SCPs which are set to be default in the DICOM service preset dialog.

- Operation 2

Step 1: Open the system preset dialog and switch to the "key config" tab page.

Step 2: Set the shortcut key which means saving image to hard disk and combines the key with the function of sending image to the default DICOM storage SCPs.

Step 3: During the examining, the user can press the Send key to send image to default DICOM storage service SCPs.

The operations for manual storage service are described below:

- Operation 1

Step 1: Select exams in the iStation Dialog.

Step 2: Press “Send to” and select DICOM Storage service SCPs.

Step 3: Send the selected exams (maybe include images, SRs, PDFs) to the DICOM Storage service SCPs.

- Operation 2

Step 1: Open the review dialog and select the images.

Step 2: Press the “Send To” button to choose the storage SCPs.

Step 3: Send the images to the DICOM Storage service SCPs.

The SR only could be sent in the circumstance as below:

- The exam type is obstetric, gynecology, cardiac, vascular, breast or small parts.
- The SR Key for the exam type must be installed in option preset UI.
- Exam is the unit to send.
- The status of the exam is "End".
- The DICOM storage service SCPs should be set as "Attach SR when Store Images" or "Only Store SR".

The Encapsulated PDF only could be sent in the circumstance as below:

- Exam is the unit to send.
- The status of the exam is "End".
- The "Encapsulated PDF" should be enabled in DICOM storage service preset.

In the event that the ultrasound system is taken off the network as a portable system or when a network failure occurs during a background store, the Storage SCU maintains a queue of failed C-STORE requests. If pre-configured on Preset UI, the failed C-Store requests will be automatically retried specified times. If no pre-configuration, the user can also retry the failed requests manually.

As a SCP, the Storage AE could only be used in Query/Retrieve, otherwise couldn't.

4.1.2.3 Storage Commitment AE

The Storage Commitment AE originates associations to ensure the reliable storage of DICOM composite information objects on remote DICOM device after sending DICOM Storage Service to the device.

The Storage Commitment service will be executed automatically in the circumstance as below:

- The Storage Commitment Service is set to associate with the Storage Service in DICOM storage service preset dialog and the associated Storage Service is executed.
- Exam is the unit to send.
- The status of the exam is "End". It would not be executed when an "Active" exam is selected.

4.1.2.4 Print AE

As a SCU, the Print AE originates associations for the print of DICOM Ultrasound single frame images and secondary capture images to remote AE (selected from a pre-configured list).

The system is capable of grayscale (B/W) and color print supporting with automatic and manual print functions.

The operations for automatic print service are described below:

- Operation 1

Step 1: Enable “Send or printing after End Exam” in the user preset.

Step 2: End Exam, the single frame images and secondary capture images of ended exam would automatically send to the default print service SCPs which are set to be default in the DICOM service preset dialog.

Notes: This operation associates with the “Display Format” of the DICOM print preset, the DICOM print will be not active until one page is filled with the images or the exam end. For example, if the “Display Format” has been set to “STANDARD\2,3”, the DICOM print will be not active until the shortcut key has been pressed 6 times. However, when the exam end, the DICOM print will be active even if one page is not filled.

- Operation 2

Step 1: Open the system preset dialog and switch to the "key config" tab page.

Step 2: Set the shortcut key which which means saving image to hard disk and combines the key with the function of sending image to the default DICOM print SCPs.

Step 3: During the examining, the user can press the print key to send image to default DICOM print service SCPs.

The operations for manual print service are described below:

- Operation 1

Step 1: Select exams in the iStation Dialog.

Step 2: Press “Send to” and select DICOM print service SCPs.

Step 3: Send the single frame images and secondary capture images of the selected exams to the DICOM print service SCPs.

- Operation 2

Step 1: Open the review dialog and select the images.

Step 2: Press the “Send To” button to choose the print SCPs.

Step 3: Send the images to the DICOM print service SCPs.

4.1.2.5 Worklist AE

The Worklist AE is activated through the Worklist UI when the user selects a remote AE to query (from a pre-configured list).The system supports automatic and manual query depending on its configuration on Preset UI. The system supports fuzzy query using “?” and “*”.

- If set one and only one remote AE to be default status. The system can initiate a query with default rules when show the Worklist UI. The Worklist Server is the default server. The Modality Type is US, the Exam Date is today, and the Scheduled Station AE Title is blank.
- Alternatively if the default status is no, the user can specify query rules on Worklist UI. Such as Patient ID, Patient Name, Accession Number, Requested Procedure ID, Worklist Server, Exam Date, Modality Type and Scheduled Station AE Title.

If no matches are found, a dialogue will be presented to the user to indicate so. The possible reasons for this failure are listed to help trouble shooting.

If more than one matching patients found, user can discover lists number on the UI. The user can also change query rules for another query, or for further filter in local database to locate the patients quickly. And the lists can be sorted in ascending or descending order.

4.1.2.6 MPPS AE

MPPS AE sends event transactions that facilitate the transfer of exam procedure status from the ultrasound system to the information system.

MPPS messages are sent from the system under the following circumstances:

- MPPS N-Create, Status = IN PROGRESS. Starting a new exam or reactive an exam result in automated creation of an MPPS Instance managed by a remote AE.
- MPPS N-Set, Status = COMPLETE. Completion of the MPPS is performed as the result of an operator action of ending the exam.
- MPPS N-Set, Status = DISCONTINUED. “Cancel Exam” causes the “Discontinued” status to be sent. User can select various reasons from the “Reason of cancel Exam” UI when need to cancel an exam.

4.1.2.7 Query/Retrieve AE

The Query/Retrieve AE supports the Query/Retrieve services as an SCU.

As a Query SCU, the system initiates a C-Find request to the remote SCP if

pre-configured on the Preset UI, and then query is invoked directly by the user. The system supports fuzzy query using “?” and “*”.

For remote AE, no matter what the default status is, the user can specify query rules on Query/Retrieve UI. Such as Patient ID, Patient Name, Accession Number, Exam Date and select Search Key. If no matches are found, a dialogue will be presented to the user to indicate so. The user can also change query rules for another query, or for further filter in local database to locate the patients quickly.

As a Move SCU, the system supports the Study Root Query Model. The stystem can only retrieve ultrasound images or structed reports, whose modality atrributes are "US" or "SR", but will leap all the other ones. Furthermore, the retrieval destination is only local host.

The system initiates a C-MOVE request to the remote Retrieve SCP when user selects items to retrieve. The remote Retrieve SCP in turn starts C-STORE sub operations to the ultrasound system.

User can discover lists number for queried items, as well as retrieval items. And the lists can be sorted in ascending or descending order.

4.1.3 Sequence of Real World Activities

All SCP activities are performed asynchronously in the background and not dependent on any sequencing.

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

4.2 AE Specifications

4.2.1 Modality **AE**

4.2.1.1 SOP Classes

The ultrasound system provides Standard Conformance to the following SOP Class:

Table 4
SOP Class for Modality AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes[1]
US Multiframe Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes[1]
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes[1]

Comprehensive Structured Report Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes[1]
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes[1]
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Yes	No
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No
Modality Worklist Information Model – Find	1.2.840.10008.5.1.4.31	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Study Root Query/Retrieve Information Model - Find	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve Information Model - Move	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

Note：1 Yes only used in Query/Retrieve, otherwise No.

4.2.1.2 Association Establishment Policies

4.2.1.2.1General

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

Table 5

DICOM Application Context for Modality AE

Application Context Name	1.2.840.10008.3.1.1.1

The PDU size is configurable with a minimum size of 16,384 and a maximum size of 65,536. The default PDU size is 32,768.

4.2.1.2.2Number of Associations

The system initiates one Association at a time for each destination to which a transfer request is being processed in the active job queue list. Since Storage and Print tasks are executed within a same thread, when they are selected simultaneously, only one job will be active at a time, the other(s) remain pending until the active job is successful or failed.

Table 6

Number of Associations as an Association Initiator

Maximum number of simultaneous associations	1

Table 7

Number of Associations as an Association Acceptor

Maximum number of simultaneous associations	1

4.2.1.2.3 Asynchronous Nature

The ultrasound system will only allow a single outstanding operation on an association.

4.2.1.2.4 Implementation Identifying Information

Table 8
DICOM Implementation Class and Version for Modality AE

Implementation Class UID	1.2.156.112536.1.2121.0.1.0.1
Implementation Version Name	MINDRAY_V1.0

4.2.1.3 Association Initiation Policy

4.2.1.3.1 Activity – Request Echo

4.2.1.3.1.1 Description and Sequencing of Activities

The user can verify the existence of a DICOM server on the hospitals network, through a button in the 'DICOM Service' screen. When the user presses this button, the ultrasound system will initiate the association.

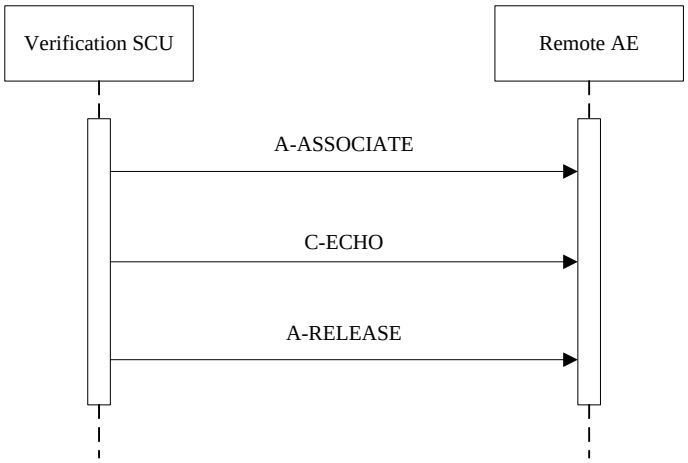

Figure 2
Sequencing of Activity – Send Echo Request

4.2.1.3.1.2 Proposed Presentation Contexts

The Verification AE (as SCU) supports the following Presentation Contexts for Verification.

Table 9
Presentation Contexts for Verification

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name**	**UID**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

4.2.1.3.1.3 SOP Specific Conformance

It summarizes the behavior of Ultrasound System when receiving status codes in a C-ECHO response.

Table 10

Verification C-Echo Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior (as SCU)
Success	Success	0000	Device Status is set to: Verify Successful
Refused	Out of Resources	A7XX	Device Status is set to: Verify Failed
Failed	Unable to process	CXXX	Device Status is set to: Verify Failed
*	*	Any other status code	Device Status is set to: Verify Failed

4.2.1.3.2 Activity – Store images, SRs, PDFs

4.2.1.3.2.1 Description and Sequencing of Activities

For each exam, image selected from the user interface to be transferred, an attempt will be made to transfer it to the selected remote AE. When the storage fails, not only the failed task will automatically retry specific times if configured on Preset UI, but also user can restart the failed task by pressing “Retry” Button on the ultrasound task management dialog. Besides that, in the event that the ultrasound system is taken off the network or when a network failure occurs during a background store, the Storage SCU maintains a queue of failed C-STORE requests. Once the network is restored, the system will retry automaticlly.

Structured Reports will contain a part of common used measurements and calculations created by ultrasound system, and custom measurements or calculations will also be sent in SR

If custom measurements or calculations were defined, all custom measurements or calculations will be contained in private elements(M-99999,MRUS, "custom-measurement-name") in SR, where " custom-measurement-name " means the name of user custom measurement in the ultrasound system.

- The OB and Gyn exam types create OB-GYN Ultrasound Procedure Reports.
- The Adult Card exam type creates Adult Echocardiography Reports.

- The Abd, Uro and Vas exam types create Vascular Reports
- The Breast exam types create Breast Imaging Reports.
- The SMP exam types create Small parts Imageing Reports

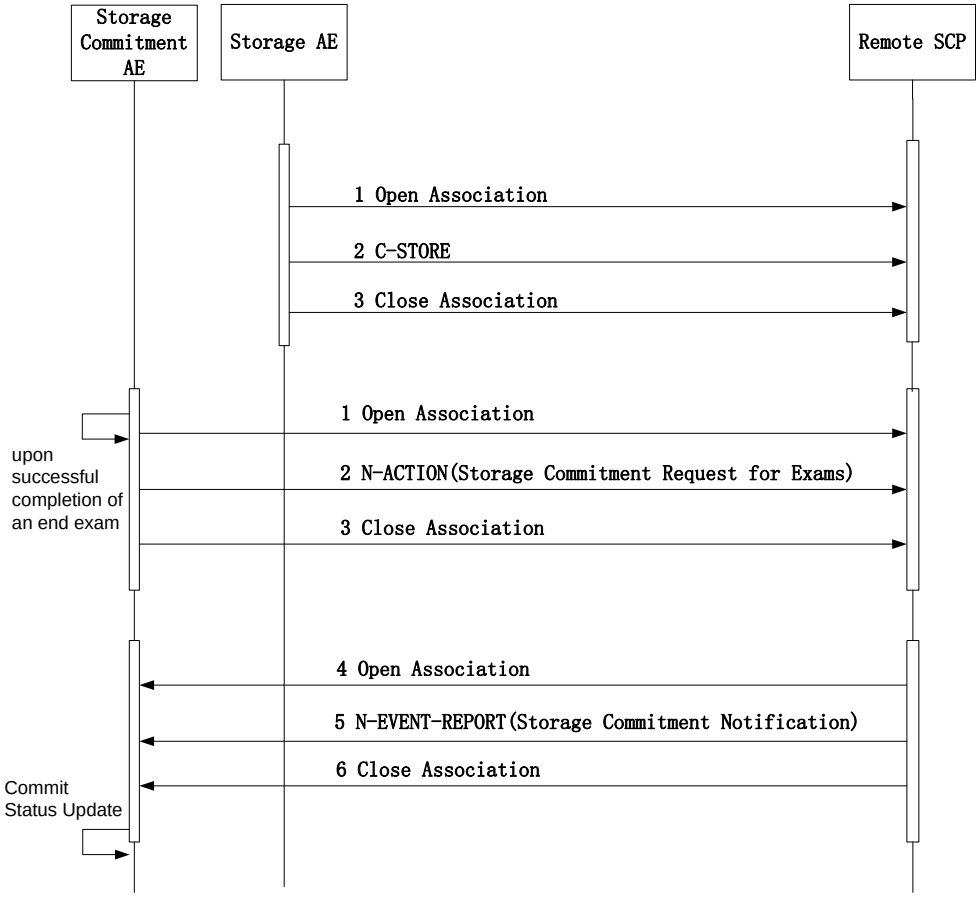

Figure 3

Sequencing of Activity – Send Storage Request

4.2.1.3.2.2 Proposed Presentation Contexts

If Storage AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the C-STORE operation. As to Compress Transfer Syntaxes, it will apply the user configured one.

Table 11

Proposed Presentation Contexts for Storage

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name**	**UID**		
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman	1.2.840.10008.1.2.4.50	SCU	None

		Coding (Process 1)			
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
US Multiframe 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	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
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	SCU	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCU	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCU	None
Comprehensive Structured Report 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	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
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	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

4.2.1.3.2.3 SOP Specific Conformance

Storage AE provides Standard Conformance to the Storage Service Class.

Storage AE will behave as described in the table below in response to the status returned in the C-STORE response command message.

Table 12
Storage C-STORE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	Image transmission is successful, The status code is logged and the task success is reported to the user via task management.
Refused	Out of Resources	A7xx	The association is aborted using A-ABORT and the send task is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Error	Data Set does not match SOP Class	A9xx	The association is aborted using A-ABORT and the send task is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.

Error	Cannot Understand	Cxxx	The association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Failure	Any other failure	xxxx	The association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and, If user selects the failed task, the reasons for this failure will be showed via task management.
Warning	Coercion of Data Elements	B000	Image transmission is considered successful but the status meaning is logged.
	Data Set does not match SOP Class	B007	Image transmission is considered successful but the status meaning is logged.
	Elements Discarded	B006	Image transmission is considered successful but the status meaning is logged.
	Any other status code.	xxxx	The Association is aborted using A-ABORT and the send job is marked as failed. The status code is logged and the job failure is reported to the user via task management.

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

Table 13

Storage Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the send job is marked as failed. The reason is logged and the job failure is reported to the user via task management.
Association aborted by the SCP or network layers	The send job is marked as failed. The reason is logged and the job failure is reported to the user via task management.

The following tables provide the list of attributes requested in the Storage.

Table 14

US Image IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
Equipment	General Equipment
Image	General Image
	Image Pixel
	US Region Calibration
	US Image
	VOI LUT
	SOP Common

Table 15

US Multi-Frame Image IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
Equipment	General Equipment
Image	General Image
	Image Pixel
	Cine
	Multi-frame
	US Region Calibration
	US Image
	VOI LUT
	SOP Common

Table 16

SC Image IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	General Series
Equipment	General Equipment
	SC Equipment
Image	General Image
	Image Pixel
	SC Image
	VOI LUT
	SOP Common

Table 17

Encapsulated PDF IOD

IE	Module
Patient	Patient
Study	General Study
	Patient Study
Series	Encapsulated Document
Equipment	General Equipment
	SC Equipment
Encapsulated Document	Encapsulated Document
	SOP Common

Table 18

Patient Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0010,0010)	PN	2	Patient's Name	MWL/USER
(0010,0020)	LO	2	Patient ID	MWL/USER
(0010,0030)	DA	2	Patient's Birth Date	MWL/USER, default is set to zero length
(0010,0040)	CS	2	Patient's Sex	MWL/USER, default is set to zero length
(0010,1000)	LO	3	Other Patient IDs	MWL/USER
(0010,2160)	SH	3	Ethnic Group	MWL
(0010,4000)	LT	3	Patient Comments	MWL/USER

Table 19

General Study Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0020)	DA	2	Study Date	AUTO
(0008,0030)	TM	2	Study Time	AUTO
(0008,0050)	SH	2	Accession Number	MWL/USER, default is set to zero length
(0008,0090)	PN	2	Referring Physician's Name	MWL/USER, default is set to zero length
(0008,1030)	LO	3	Study Description	MWL
(0008,1032)	SQ	3	Procedure Code Sequence	MWL
(0020,000D)	UI	1	Study Instance UID	MWL/AUTO
(0020,0010)	SH	2	Study ID	AUTO

Table 20

Patient Study Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,1080)	LO	3	Admitting Diagnoses Description	MWL
(0010,1010)	AS	3	Patient's Age	MWL/USER, default is set to zero length If the user set Patient Birth Date, it will be calculated automatically.
(0010,1020)	DS	3	Patient's Size	MWL/USER, default is set to zero length
(0010,1030)	DS	3	Patient's Weight	MWL/USER, default is set to zero length
(0010,21B0)	LT	3	Additional Patient History	MWL

Table 21

General Series Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0021)	DA	3	Series Date	AUTO
(0008,0031)	TM	3	Series Time	AUTO
(0008,0060)	CS	1	Modality	“US”
(0008,103E)	LO	3	Series Description	MWL
(0008,1050)	PN	3	Performing	MWL/USER, default is set to zero length

			Physician's Name	
(0008,1070)	PN	3	Operators' Name	MWL/USER, default is set to zero length
(0018,1030)	LO	3	Protocol Name	AUTO – set to ExamType
(0018,5100)	CS	2C	Patient Position	Set to zero length
(0020,000E)	UI	1	Series Instance UID	AUTO
(0020,0011)	IS	2	Series Number	AUTO
(0020,0060)	CS	2C	Laterality	Set to zero length
(0040,0244)	DA	3	Performed Procedure Step Start Date	MPPS
(0040,0245)	TM	3	Performed Procedure Step Start Time	MPPS
(0040,0254)	LO	3	Performed Procedure Step Description	MPPS
(0040,0260)	SQ	3	Performed Protocol Code Sequence	MPPS

Table 22

Encapsulated Document Series Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	1	Modality	“US”
(0020,000E)	UI	1	Series Instance UID	AUTO
(0020,0011)	IS	1	Series Number	AUTO
(0008,103E)	LO	3	Series Description	MWL
(0040,0275)	SQ	3	Request Attributes Sequence	MWL
(0040,1001)	SH	1C	>Requested Procedure ID	MWL
(0040,0009)	SH	1C	>Scheduled Procedure Step ID	MWL
(0040,0007)	LO	3	>Scheduled Procedure Step	MWL

			MWL Description	
(0040,0008)	SQ	3	>Scheduled Protocol Code Sequence	MWL
(0008,0100)	SH	1C	>>Code Value	MWL
(0008,0102)	SH	1C	>>Coding Scheme designator	MWL
(0008,0103)	SH	1C	>>Coding Scheme Version	MWL
(0008,0104)	LO	1C	>>Code Meaning	MWL

Table 23

General Equipment Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0070)	LO	2	Manufacturer	“MINDRAY”
(0008,0080)	LO	3	Institution Name	CONFIG
(0008,1010)	SH	3	Station Name	CONFIG
(0008,1040)	LO	3	Institutional Department Name	CONFIG
(0008,1090)	LO	3	Manufacturer's Model Name	“TE7” /“TE9”
(0018,1000)	LO	3	Device Serial Number	The Ethernet card Mac Address
(0018,1020)	LO	3	Software Version(s)	AUTO

Table 24

SC Equipment Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	3	Modality	“US”
(0008,0064)	CS	1	Conversion Type	“WSD”
(0018,1010)	LO	3	Secondary Capture Device ID	“TE7”/“TE9”
(0018,1016)	LO	3	Secondary Capture Device Manufacturer	“MINDRAY”
(0018,1018)	LO	3	Secondary Capture Device	“TE7” /“TE9”

			Manufacturer's Model Name	
(0018,1019)	LO	3	Secondary Capture Device Software Version(s)	AUTO

Table 25

General Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0023)	DA	2C	Content Date	AUTO
(0008,0033)	TM	2C	Content Time	AUTO
(0008,2111)	ST	3	Derivation Description	CONFIG, default is set to zero length
(0020,0013)	IS	2	Instance Number	AUTO
(0020,0020)	CS	2C	Patient Orientation	Set to zero length
(0020,4000)	LT	3	Image Comments	Set to zero length
(0028,0301)	CS	3	Burned In Annotation	“YES”

Table 26

US Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0008)	CS	2	Image Type	“ORIGINAL/PRIMARY”
(0018,5010)	LO	3	Transducer Data	USER
(0018,5020)	LO	3	Processing Function	USER
(0028,0002)	US	1	Samples per Pixel	1 or 3
(0028,0004)	CS	1	Photometric Interpretation	“RGB”, for color images; “MONOCHROME2”, if the image is grayscale; “YBR_FULL_422”, if the image is sent using JPEG. “RGB”, if the image is sent using JPEG Lossless. “YBR_FULL”, if the image is sent using RLE Lossless.

				"YBR_ICT", if the image is sent using JPEG 2000 Image Compression. "YBR_RCT",if the image is sent using JPEG 2000 Image Compression (Lossless Only)
(0028,0006)	US	1C	Planar Configuration	1, if the image is sent using RLE Lossless 0，otherwise.
(0028,0009)	AT	1C	Frame Increment Pointer	Frame Time
(0028,0014)	US	3	Ultrasound Color Data Present	0 or 1
(0028,0100)	US	1	Bits Allocated	0x0008
(0028,0101)	US	1	Bits Stored	0x0008
(0028,0102)	US	1	High Bit	0x0007
(0028,0103)	US	1	Pixel Representation	0x0000
(0028,2110)	CS	1C	Lossy Image Compression	Not used if image is uncompressed; support JPEG baseline,JPEG Lossless,RLE Lossless,JPEG 2000 Image Compression,JPEG 2000 Image Compression (Lossless Only) process1 and set it to "01"

Table 27

SC Image Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,1012)	DA	3	Date of Secondary Capture	AUTO
(0018,1014)	TM	3	Time of Secondary Capture	AUTO

Table 28

Image Pixel Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,0010)	US	1	Rows	CONFIG
(0028,0011)	US	1	Columns	CONFIG
(0028,0034)	IS	1c	Pixel Aspect Ratio	Set to zero length
(7FE0,0010)	OW	1	Pixel Data	

Table 29

VOI LUT Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,1050)	DS	1C	Window Center	AUTO
(0028,1051)	DS	1C	Window Width	AUTO

Table 30

SOP Common Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0005)	CS	1C	Specific Character Set	AUTO
(0008,0012)	DA	3	Instance Creation Date	AUTO
(0008,0013)	TM	3	Instance Creation Time	AUTO
(0008,0016)	UI	1C	SOP Class UID	AUTO
(0008,0018)	UI	1C	SOP Instance UID	AUTO

Table 31

US Region Calibration Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,6011)	SQ	1	Sequence of Ultrasound Regions	
>(0018,6012)	US	1	Region Spatial Format	Set by the system
>(0018,6014)	US	1	Region Data Type	Set by the system
>(0018,6016)	UL	1	Region Flags	Set by the system
>(0018,6018)	UL	1	Region Location	Set by the system

			Min X0	
>(0018,601A)	UL	1	Region Location Min Y0	Set by the system
>(0018,601C)	UL	1	Region Location Max X1	Set by the system
>(0018,601E)	UL	1	Region Location Max Y1	Set by the system
>(0018,6024)	US	1	Physical Units X Direction	Set by the system
>(0018,6026)	US	1	Physical Units Y Direction	Set by the system
>(0018,602C)	FD	1	Physical Delta X	Set by the system
>(0018,602E)	FD	1	Physical Delta Y	Set by the system

Table 32

Cine Module Used for US Multi-Frame Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,2142)	IS	3	Start Trim	Set by the system
(0008,2143)	IS	3	Stop Trim	Set by the system
(0008,2144)	IS	3	Recommended Display Frame Rate	Set by the system
(0018,0040)	IS	3	Cine Rate	CONFIG
(0018,0072)	DS	3	Effective Duration	Set by the system
(0018,1063)	DS	1C	Frame Time	Set by the system
(0018,1065)	DS	1C	Frame Time Vector	Set by the system
(0018,1066)	DS	3	Frame Delay	Set by the system
(0018,1242)	IS	3	Actual Frame Duration	Set by the system
(0018,1244)	US	3	Preferred Playback Sequencing	Set by the system

Table 33

Multi-Frame Module Used for US Multi-Frame Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0028,0008)	IS	1	Number of Frames	AUTO

(0028,0009)	AT	1	Frame Increment Pointer	0018 1063 = Frame Time

Table 34

SC Equipment Module Used for Second Capture Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0008,0060)	CS	3	Modality	"US"
(0008,0064)	CS	1	Conversion Type	"WSD"
(0018,1010)	LO	3	Secondary Capture Device ID	"TE7" /"TE9"
(0018,1016)	LO	3	Secondary Capture Device Manufacturer	"MINDRAY"
(0018,1018)	LO	3	Secondary Capture Device Manufacturer's Model Name	"TE7" /"TE9"
(0018,1019)	LO	3	Secondary Capture Device Software Version(s)	AUTO

Table 35

SC Image Module Used for Second Capture Images Only

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0018,1012)	DA	3	Date of Secondary Capture	AUTO
(0018,1014)	TM	3	Time of Secondary Capture	AUTO

Table 36

Encapsulated Document Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0020,0013)	IS	1	Instance Number	AUTO
(0008,0023)	DA	2	Content Date	AUTO

(0008,0033)	TM	2	Content Time	AUTO
(0008,002A)	DT	2	Acquisition DateTime	AUTO
(0028,0301)	CS	1	Burned In Annotation	"YES"
(0042,0010)	ST	2	Document Title	The Title of the Document
(0040,A043)	SQ	2	Concept Name Code Sequence	Set to zero length
(0040,A493)	CS	3	Verification Flag	AUTO. "UNVERIFIED" = Not attested by a legally accountable person. "VERIFIED" = Attested to (signed) by a Verifying Observer or Legal Authenticator named in the document, who is accountable for its content.
(0042,0012)	LO	1	MIME Type of Encapsulated Document	"application/pdf"
(0042,0011)	OB	1	Encapsulated Document	The PDF Document

Table 37

Acquisition Context Module

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0040,0555)	SQ	2	Acquisition Context Sequence	Set to zero length

Conventions used for the Value(s) and Comments section are:

MWL – the attribute value source is from Modality WORKLIST

USER – the attribute value source is from User's input

AUTO – automatically generated by the MODALITY system

CONFIG - the attribute value source is a configurable parameter

4.2.1.3.3 Activity – Request Storage Commitment

4.2.1.3.3.1 Description and Sequencing of Activities

A possible sequence of interactions between the Storage Commitment AE and a remote AE is illustrated in the Figure 3
Sequencing of Activity – Send Storage Request.

4.2.1.3.3.2 Proposed Presentation Contexts

The Storage Commitment AE is capable of proposing the Presentation Contexts shown in the table below:

Table 38

Proposed Presentation Contexts for Activity Request Storage Commitment

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

The Storage Commitment AE will only accept the SCU role within a Presentation Context for the Storage Commitment Push Model SOP Class.

4.2.1.3.3.3 SOP Specific Conformance

4.2.1.3.3.3.1 Storage Commitment Operations (N-ACTION)

The Storage Commitment AE will request storage commitment for the configured device.

The behavior of Storage Commitment AE when receiving N-Action response status codes is summarized in the table below:

Table 39

Storage Commitment N-ACTION Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The request for storage commitment is considered successfully sent. The ultrasound system waits for the N-EVENT-REPORT in background.
*	*	Any other status code.	The request for storage commitment is failed.

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

Table 40

Storage Commitment Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the send job is marked as failed.
Association aborted by the SCP or network layers	The send job is marked as failed.

Storage Commitment AE will request storage commitment using the following tags

NOTE: Storage Commitment may only be automatically requested upon successful completion of an end exam storage task,

Table 41

Storage Commitment N-Actiont Request Attributes

Action Type Name	Event Type ID	Attribute	Tag
Storage Commitment Request	1	Transaction UID	(0008,1195)
		Referenced SOP Sequence	(0008,1199)
		>Referenced SOP Class UID	(0008,1150)
		>Referenced SOP Instance UID	(0008,1155)
		Instance Creation Date	(0008,0012)
		Instance Creation Time	(0008,0013)

4.2.1.3.3.3.2 Storage Commitment Notifications (N-EVENT-REPORT)

Storage Commitment AE is capable of receiving an N-EVENT-REPORT on a different association than the one on which the N-ACTION operation was performed.The behavior of Storage Commitment AE when receiving Event Types within the N-EVENT-REPORT is summarized in the table below.

Table 42

Storage Commitment N-Event-Report Behavior

Event Type ID	Behavior
1	The storage Commitment request is considered successful and the storage commitment column of iStation Column is marked with a tick.
2	The storage Commitment request is considered Failed.

The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in the table below:

Table 43

Storage Commitment N-EVENT-REPORT Response Status Reasons

Service Status	Further Meaning	Error Code	Reasons
Success	Success	0000	The notification event has been successfully received.
Failure	Processing Failure	0110H	An internal error occurred during processing of the N-EVENT-REPORT.

Tags supported for an N-Event-Report message.

Table 44

Storage Commitment N-Event-Report Message Contents

EVENT TYPE NAME	EVENT TYPE ID	ATTRIBUTE	TAG	REQUIREMENT TYPE SCP
Storage Commitment Request Successful	1	Transaction UID	(0008,1195)	1
		Referenced SOP Sequence	(0008,1199)	1
		>Referenced SOP Class UID	(0008,1150)	1
		>Referenced SOP Instance UID	(0008,1155)	1
Storage Commitment Request Complete – Failures Exist	2	Transaction UID	(0008,1195)	1
		Referenced SOP Sequence	(0008,1199)	1
		>Referenced SOP Class UID	(0008,1150)	1
		>Referenced SOP Instance UID	(0008,1155)	1
		Failed SOP Sequence	(0008,1198)	1
		>Referenced SOP Class UID	(0008,1150)	1
		>Referenced SOP Instance UID	(0008,1155)	1
		>Failure Reason	(0008,1197)	1

4.2.1.3.4 Activity – Film Images

4.2.1.3.4.1 Description and Sequencing of Activities

A user composes images onto film sheets and requests them to be sent to a specific hardcopy device. The user can select the desired film format and number of copies. Each print-job is forwarded to the job queue and processed individually.

The system is invoked by the user on “Send to” UI if the print remote AE is pre-configured. Status of the print-job is reported through task management UI. If pre-configured on Preset UI, the failed print task will be automatically retried specified times. If no pre-configuration, the user can also retry manually. Only one task will be active at a time for each separate hardcopy device. The same as Storage, the system could retry automaticlly the failed task caused by network failure，when the network is restored.

A typical sequence of DIMSE messages sent over an association between Print AE and a Printer is illustrated in Figure 4:

1. Print AE opens an association with the Printer.

2. N-GET on the Printer SOP Class is used to obtain current printer status information.
3. N-CREATE on the Film Session SOP Class creates a Film Session.
4. N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session. A single Image Box will be created as the result of this operation (Print AE default uses the format STANDARD\1.1, but user can change it on Preset UI).
5. N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer.
6. N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box.
7. The Printer prints the requested number of film sheets.
8. The Printer asynchronously reports its status via N-EVENT-REPORT notification (Printer SOP Class). The Printer can send this message at any time. Print AE does not require the N-EVENT-REPORT to be sent. Print AE is capable of receiving an N-EVENT-REPORT notification at any time during an association.
9. N-DELETE on the Film Box SOP Class deletes the complete Film box SOP Instance hierarchy.
10. N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
11. Print AE closes the association with the Printer.

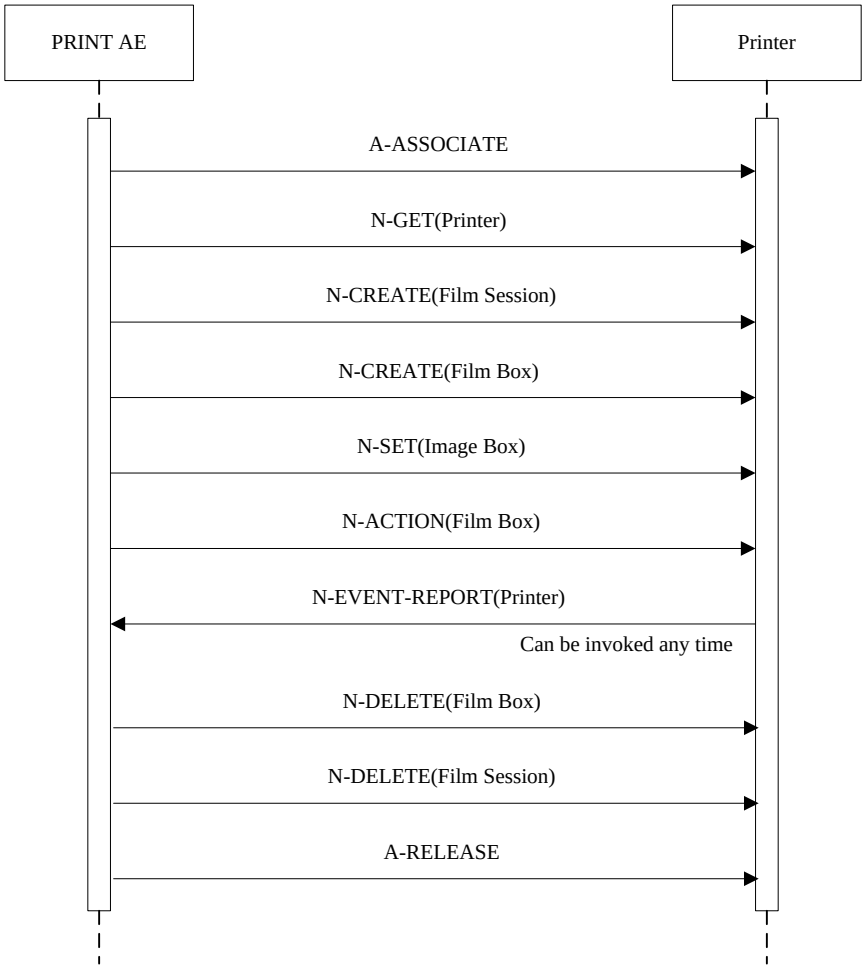

Figure 4

Sequencing of Activity – Film Images

4.2.1.3.4.2 Proposed Presentation Contexts

Print AE is capable of proposing the Presentation Contexts shown in the table below:

Table 45

Proposed Presentation Contexts for Activity Film Images

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

4.2.1.3.4.3 Common SOP Specific Conformance for all Print SOP Classes

The general behavior of Print AE during communication failure is summarized in the table below. This behavior is common for all SOP Classes supported by Print AE.

Table 46

Print AE Communication Failure Behavior

Exception	Behavior
Timeout	The association is aborted using A-ABORT and the print-job is marked as failed.
Association aborted by the SCP or network layers	The print-job is marked as failed. The reason is logged and the job failure is reported to the user.

Recommended abbreviations to be used for the tables are:

VNAP Value Not Always Present (attribute sent zero length if no value is present)

ANAP Attribute Not Always Present

ALWAYS Always Present with a value

EMPTY Attribute is sent without a value

Recommended abbreviations to be used for the source of the data values in the tables are:

USER the attribute value source is from User input

AUTO the attribute value is generated automatically

CONFIG the attribute value source is a configurable parameter

PRINTER the attribute value is provided by printer

4.2.1.3.4.4 SOP Specific Conformance for the Printer SOP Class

Print AE supports the following DIMSE operations and notifications for the Printer SOP Class:

— N-GET

— N-EVENT-REPORT

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.1.3.4.4.1 Printer SOP Class Operations (N-GET)

Print AE uses the Printer SOP Class N-GET operation to obtain information about the current printer status. The attributes excepted via N-GET are listed in the table below:

Table 47

Printer SOP Class N-GET Request Attribute Identifier List

Attribute Name	Tag
Printer Status	(2110,0010)
Printer Status Info	(2110,0020)
Printer Name	(2110,0030)
Manufacturer	(0008,0070)
Manufacturer Model Name	(0008,1090)
Device Serial Number	(0018,1000)
Software Version(s)	(0018,1020)
Date of Last Calibration	(0018,1200)
Time of Last Calibration	(0018,1201)

The behavior of Print AE when encountering status codes in a N-GET response is summarized in the table below:

Table 48

Printer SOP Class N-GET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The request to get printer status information was success.
Warning	any warning	xxxx	The print-job continues to be printed.
Failure	any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.1.3.4.4.2 Printer SOP Class Notifications (N-EVENT-REPORT)

Print AE is capable of receiving an N-EVENT-REPORT request at any time during an association. The behavior of Print AE when receiving Event Types within the N-EVENT-REPORT is summarized in the table below.

Table 49

Printer SOP Class N-Event-Report Behavior

Event Type Name	Event Type ID	Behavior
Normal	1	The print-job continues to be printed.
Warning	2	The print-job continues to be printed. The contents of Printer Status Info (2110, 0020) is logged and reported to the user via the job-control application.
Failure	3	The print-job is marked as failed. The contents of Printer Status Info (2110, 0020) is logged and reported to the user via the job-control application.
*	*	An invalid Event Type ID will cause a status code of 0113H to be returned in a N-EVENT-REPORT response.

The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in the table below:

Table 50

Printer SOP Class N-EVENT-REPORT Response Status Reasons

Service Status	Further Meaning	Error Code	Reasons
Success	Success	0000	The notification event has been successfully received.
Failure	No Such Event Type	0113H	An invalid Event Type ID was supplied in the N-EVENT-REPORT request.
Failure	Processing Failure	0110H	An internal error occurred during processing of the N-EVENT-REPORT. A short description of the error will be returned in Error Comment (0000, 0902).

4.2.1.3.4.5 SOP Specific Conformance for the Film Session SOP Class

Print AE supports the following DIMSE operations for the Film Session SOP Class:

— N-CREATE

— N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.1.3.4.5.1 Film Session SOP Class Operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the table below:

Table 51
Film Session SOP Class N-CREATE Request Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Number of Copies	(2000,0010)	IS	[1, 100]	ALWAYS	CONFIG
Print Priority	(2000,0020)	CS	LOW, MED,HIGH	ALWAYS	CONFIG
Medium Type	(2000,0030)	CS	BLUE FILM, CLEAR FILM, PAPER	ALWAYS	CONFIG
Film Destination	(2000,0040)	CS	MAGAZINE，PROCESSOR	ALWAYS	CONFIG

The behavior of Print AE when encountering status codes in a N-CREATE response is summarized in the table below:

Table 52
Film Session SOP Class N-CREATE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Memory allocation not supported	B600	The N-CREATE operation is considered successful.
Warning	any warning	xxxx	The N-CREATE operation is considered successful.
Failure	any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.1.3.4.5.2 Film Session SOP Class Operations (N-DELETE)

The behavior of Print AE when encountering status codes in a N-DELETE response is summarized in the table below:

Table 53
Printer SOP Class N-DELETE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Any warning	xxxx	The N-DELETE operation is considered successful.
Failure	Any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.1.3.4.6 SOP Specific Conformance for the Film Box SOP Class

Print AE supports the following DIMSE operations for the Film Box SOP Class:

— N-CREATE

— N-ACTION

— N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.1.3.4.6.1 Film Box SOP Class Operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the table below:

Table 54
Film Box SOP Class N-CREATE Request Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Display Format	(2010,0010)	CS	PORTRAIT: STANDARD\1,1 STANDARD\1,2 STANDARD\1,3 STANDARD\2,1 STANDARD\2,2 STANDARD\2,3 STANDARD\2,4 STANDARD\3,3 STANDARD\3,4 STANDARD\3,5 STANDARD\3,6	ALWAYS	CONFIG

			STANDARD\4,4 STANDARD\4,5 STANDARD\4,6 STANDARD\4,7 STANDARD\4,8 STANDARD\5,5 STANDARD\5,6 STANDARD\5,7 STANDARD\5,8 STANDARD\6,6 STANDARD\6,7 STANDARD\6,8 STANDARD\6,9 STANDARD\6,10 STANDARD\7,7 STANDARD\7,8 STANDARD\7,9 STANDARD\7,10 STANDARD\8,8 STANDARD\8,9 STANDARD\8,10 LANDSCAPE: STANDARD\1,1 STANDARD\2,1 STANDARD\3,1 STANDARD\1,2 STANDARD\2,2 STANDARD\3,2 STANDARD\4,2 STANDARD\3,3 STANDARD\4,3 STANDARD\5,3 STANDARD\6,3 STANDARD\4,4 STANDARD\5,4 STANDARD\6,4		

			STANDARD\7,4 STANDARD\8,4 STANDARD\5,5 STANDARD\6,5 STANDARD\7,5 STANDARD\8,5 STANDARD\6,6 STANDARD\7,6 STANDARD\8,6 STANDARD\9,6 STANDARD\10,6 STANDARD\7,7 STANDARD\8,7 STANDARD\9,7 STANDARD\10,7 STANDARD\8,8 STANDARD\9,8 STANDARD\10,8		
Referenced Film Session Sequence	(2010,0500)	SQ		ALWAYS	AUTO
>Referenced SOP Class UID	(0008,1150)	UI	1.2.840.10008.5.1.1.1	ALWAYS	AUTO
>Referenced SOP Instance UID	(0008,1155)	UI	From created Film Session SOP Instance	ALWAYS	AUTO
Film Orientation	(2010,0040)	CS	PORTRAIT or LANDSCAPE	ALWAYS	CONFIG
Film Size ID	(2010,0050)	CS	8INX10IN 8_5INX11IN 10INX12IN 10INX14IN 11INX14IN 11INX17IN 14INX14IN 14INX17IN	ALWAYS	CONFIG

			24CMX24CM 24CMX30CM A4 A3		
Magnification Type	(2010,0060)	CS	REPLICATE, BILINEAR, CUBIC or NONE	ALWAYS	CONFIG
Max Density	(2010,0130)	US	0 .. 65535	ANAP	CONFIG
Min Density	(2010,0120)	US	0 .. 65535	ANAP	CONFIG
Trim	(2010,0140)	CS	YES or No	ALWAYS	CONFIG
Configuration Information	(2010,0150)	ST	User defined text	ANAP	USER

The behavior of Print AE when encountering status codes in a N-CREATE response is summarized in the table below:

Table 55
Film Box SOP Class N-CREATE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Requested Min Density or Max Density outside of printer's operating range	B605H	The N-CREATE operation is considered successful.
Warning	Any other warning	xxxx	The N-CREATE operation is considered successful.
Failure	There is an existing Film Box that has not been printed and N-ACTION at the Film Session level is not supported. A new Film Box will not be created when a previous Film Box has not been printed.	C616H	C The association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and the job failure is reported to the user.
Failure	Any failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.1.3.4.6.2 Film Box SOP Class Operations (N-ACTION)

An N-ACTION Request is issued to instruct the Print SCP to print the contents of the Film

Box. The Action Reply argument in an N-ACTION response is not evaluated.

The behavior of Print AE when encountering status codes in a N-ACTION response is summarized in the table below:

Table 56

Film Box SOP Class N-ACTION Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully. The film has been accepted for printing.
Warning	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page)	B603H	The N-ACTION operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	The N-ACTION operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The N-ACTION operation is considered successful.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit.	B60AH	The N-ACTION operation is considered successful.
Warning	Any other warning	xxxx	The N-ACTION operation is considered successful.
Failure	Unable to create Print Job SOP Instance; print queue is full.	C602	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Image size is larger than Image Box size.	C603	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Combined Print Image Size is larger than Image Box size.	C613	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to

			the user.
Failure	Any other failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.1.3.4.6.3 Film Session SOP Class Operations (N-DELETE)

The behavior of Print AE when encountering status codes in a N-DELETE response is summarized in the table below:

Table 57

Printer SOP Class N-DELETE Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Warning	Any warning	xxxx	The N-DELETE operation is considered successful.
Failure	Any other failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.

4.2.1.3.4.7 SOP Specific Conformance for the Image Box SOP Class

Print AE supports the following DIMSE operations for the Image Box SOP Class:

— N-SET

Details of the supported attributes and status handling behavior are described in the following subsections.

4.2.1.3.4.7.1 Image Box SOP Class Operations (N-SET)

The attributes supplied in an N-SET Request are listed in the table below:

Table 58

Image Box SOP Class N-SET Request Attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Position	(2020,0010)	US	[1, num_image1]	ALWAYS	AUTO
Basic Grayscale Image Sequence	(2020,0111)	SQ		If the service is configured as MONOCHROME2	AUTO
>Samples Per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
>Photometric	(0028,0004)	CS	MONOCHROME2	ALWAYS	CONFIG

Interpretation					
>Rows	(0028,0010)	US	Depends on film size	ALWAYS	AUTO
>Columns	(0028,0011)	US	Depends on film size	ALWAYS	AUTO
>Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO
>Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
>High Bit	(0028,0102)	US	7	ALWAYS	AUTO
>Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
>Pixel Data	(7FE0,0010)	OB	Pixels of rendered film sheet	ALWAYS	AUTO
Basic Color Image Sequence	(2020,0111)	SQ		If the service is configured as RGB	AUTO
>Samples Per Pixel	(0028,0002)	US	3	ALWAYS	AUTO
>Photometric Interpretation	(0028,0004)	CS	RGB	ALWAYS	CONFIG
>Planar Configuration	(0028,0006)	US	1	ALWAYS	AUTO
>Rows	(0028,0010)	US	Depends on film size	ALWAYS	AUTO
>Columns	(0028,0011)	US	Depends on film size	ALWAYS	AUTO
>Bits Allocated	(0028,0100)	US	8	ALWAYS	AUTO
>Bits Stored	(0028,0101)	US	8	ALWAYS	AUTO
>High Bit	(0028,0102)	US	7	ALWAYS	AUTO
>Pixel Representation	(0028,0103)	US	0	ALWAYS	AUTO
>Pixel Data	(7FE0,0010)	OB	Pixels of rendered film sheet	ALWAYS	AUTO

Note：1 If the attribute of Image Display Format is (STANDARD\m, n), num_image is m*n.

The behavior of Print AE when encountering status codes in a N-SET response is summarized in the table below:

Table 59

Image Box SOP Class N-SET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	Image print is successful, The status code is logged and the task success is reported to the user via task management.
Warning	Image size is larger than Image Box size. The image has been demagnified.	B604H	The N-SET operation is considered successful.
Warning	Requested Min Density or Max Density outside of printer's operating range.	B605H	The N-SET operation is considered successful.
Warning	Image size is larger than Image Box size. The image has been cropped to fit.	B609H	The N-SET operation is considered successful.
Warning	Image size or Combined Print Image Size is larger than Image Box size. The image or combined Print Image has been decimated to fit.	B60AH	The N-SET operation is considered successful.
Warning	Any other warning	xxxx	The N-SET operation is considered successful.
Failure	Image size is larger than Image Box size.	C603	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Insufficient memory in printer to store the image.	C605	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Combined Print Image Size is larger than Image Box size.	C613	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to the user.
Failure	Any other failure	xxxx	The Association is aborted using A-ABORT and the print-job is marked as failed. The status meaning is logged and reported to

			the user.

4.2.1.3.5 Activity – Send Find Request

4.2.1.3.5.1 Description and Sequencing of Activities

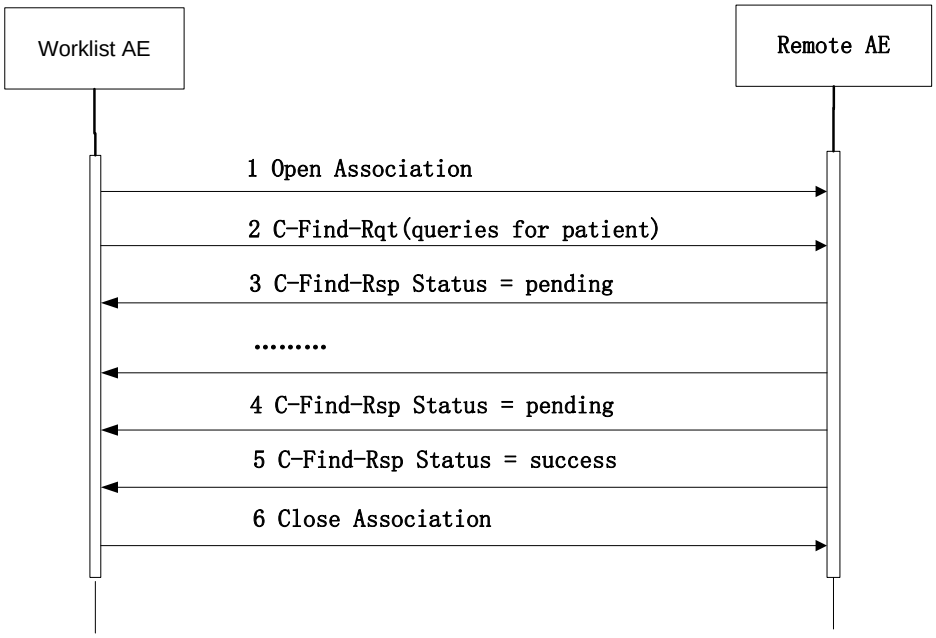

Figure 5

Sequencing of Activity – Send FIND Request

A possible sequence of interactions between the Worklist AE and a remote AE (e.g. a system such as a RIS or HIS; or a PACS) is illustrated in the Figure below:

1. The Worklist AE opens an association with the remote AE
2. The Worklist AE sends a C-FIND request to the remote AE containing the Query attributes.
3. The remote AE returns a C-FIND response containing the requested attributes of the first matching Item.
4. The remote AE returns another C-FIND response containing the requested attributes of the second matching Item. And then another one.
5. When the remote AE returns all the C-FIND responses with status Success indicating that no further matching Items exist.
6. The C-Find AE closes the association with the remote AE.

4.2.1.3.5.2 Proposed Presentation Contexts

Table 60

Proposed Presentation Contexts for Worklist AE

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

Worklist AE will propose Presentation Contexts for the SOP Classes listed above. For these SOP Class, Worklist AE will propose multiple Presentation Contexts, one for each of the supported Transfer Syntaxes.

If Worklist AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the C-FIND operation.

4.2.1.3.5.3 SOP Specific Conformance

Table 61
C_FIND Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior (as SCU)
Refused	Out of resources	A700	The association is aborted using A-ABORT and a notify message is displayed: Some errors happen when query worklist server.
Failed	Identifier Does Not Match SOP Class	A900	
Failed	Unable to process	Cxxx	
Cancel	Matching terminated due to Cancel request	FE00	/
Success	Matching is complete - No final Identifier is supplied.	0000	Patient lists show on the UI
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys.	FF00	The worklist item contained in the Identifier is collected for later display or further processing.
Pending	Matches are continuing - Warning that one or more Optional Keys were not supported for existence for this Identifier.	FF01	The worklist item contained in the Identifier is collected for later display or further

			processing.
*	The Association is aborted using A-ABORT and the query is marked as failed. The status meaning is logged and reported to the user if an interactive query. Any additional error information in the Response will be logged.	Any other status code.	The association is aborted using A-ABORT and a notify message is displayed: Some errors happen when query worklist server.

Worklist AE provides Standard Conformance to the Storage Service Class.

Worklist AE will behave as described in the Table 61 in response to the status returned in the C-FIND response command message.

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

Table 62

COMMUNICATION FAILURE BEHAVIOR FOR WORKLIST AE

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the query marked as failed. The reason is logged and reported to the user if an interactive query.
Association aborted by the SCP or network layers	The query is marked as failed. The reason is logged and reported to the user if an interactive query.

The table below provides a description of the Ultrasound system Worklist Request Identifier and specifies the attributes that are copied into the images. Unexpected attributes returned in a C-FIND response are ignored.

Requested return attributes not supported by the SCP are set to have no value. Non-matching responses returned by the SCP due to unsupported optional matching keys are ignored. No attempt is made to filter out possible duplicate entries.

Table 63

Worklist Request Identifier

ATTRIBUTE	VR	ATTRIBUTE NAME	MATCHING KEYS	RETURN KEYS
Module: Patient Identification Module (M)				
(0010,0010)	PN	Patient's Name	configurable	X (DI)
(0010,0020)	LO	Patient ID	configurable	X(DI)
(0010,1000)	LO	Other Patient IDs	configurable	X (DI)
Module: Patient Demographic Module (M)				
(0010,0030)	DA	Patient's Birth Date		X(DI)
(0010,0032)	TM	Patient's Birth Time		X(DI)

(0010,0040)	CS	Patient's Sex		X(DI)
(0010,1020)	DS	Patient's Size		X (DI)
(0010,1030)	DS	Patient's Weight		X (DI)
(0010,2160)	SH	Ethnic Group		X (DI)
(0010,4000)	LT	Patient Comments		X (DI)
(0040,3001)	LO	Confidentiality constraint on patient data Description		X (DI)
Module: Patient Medical Module (M)				
(0010,2000)	LO	Medical Alerts		X (DI)
(0010,2110)	LO	Contrast Allergies		X (DI)
(0010,21B0)	US	Additional Patient's History		X (DI)
(0010,21C0)	US	Pregnancy Status		X (DI)
(0010,21D0)	DA	Last Menstrual Date		X (DI)
(0038, 0050)	LO	Special Needs		X (DI)
(0038, 0500)	LO	Patient State		X (DI)
Module: Visit Relationship Module (M)				
(0008,1120)	SQ	Referenced Patient Sequence		X (DI)
Module: Visit Identification Module (M)				
(0038,0010)	LO	Admission ID		X (DI)
Module: Visit Status Module (M)				
(0038,0300)	LO	Current Patient Location		X (DI)
Module: Visit Admission Module (M)				
(0008,1080)	LO	Admitting Diagnosis Description		X (DI)
Module: Scheduled Procedure Step Module (M)				
(0040,0100)	SQ	Scheduled Procedure Step Sequence		X (DI)
>(0008,0060)	CS	Modality	Configurable and the default is set to "US"	
>(0032,1070)	LO	Requested Contrast Agent		X (DI)

>(0040,0001)	AE	Scheduled Station AE Title	configurable	X (DI)
>(0040,0002)	DA	Scheduled Procedure Step Start Date	configurable and the default is set to today's date	X(DI)
>(0040,0003)	TM	Scheduled Procedure Step Start Time		X (DI)
>(0040,0004)	DA	Scheduled Procedure Step End Date		X (DI)
>(0040,0005)	TM	Scheduled Procedure Step End Time		X (DI)
>(0040,0006)	PN	Scheduled Performing Physician's Name		X (DI)
>(0040,0007)	LO	Scheduled Procedure Step Description		X(DI)
>(0040,0008)	SQ	Scheduled Protocol Code Sequence		X (DI)
> >(0008,0100)	SH	Code Value		X (DI)
> >(0008,0102)	SH	Coding Scheme Designator		X (DI)
> >(0008,0103)	SH	Coding Scheme Version		X (DI)
> >(0008,0104)	LO	Code Meaning		X (DI)
>(0040,0009)	SH	Scheduled Procedure Step ID		X (DI)
>(0040,0010)	SH	Scheduled Station Name		X (DI)
>(0040,0011)	SH	Scheduled Procedure Step Location		X (DI)
>(0040,0012)	LO	Pre-Medication		X (DI)
> (0040,0020)	CS	Scheduled Procedure Step Status		X (DI)
> (0040,0400)	LT	Comments on the Scheduled Procedure Step		X (DI)
Module: Requested Procedure Module (M)				
(0008,1110)	SQ	Referenced Study		X (DI)

		Sequence		
> (0008,1150)	UI	Referenced SOP Class UID		X (DI)
> (0008,1155)	UI	Referenced SOP Instance UID		X (DI)
(0020,000D)	UI	Study Instance UID		X (DI)
(0032,1060)	LO	Requested Procedure Description		X (DI)
(0032,1064)	SQ	Requested Procedure Code Sequence		X (DI)
> (0008,0100)	SH	Code Value		X (DI)
> (0008,0102)	SH	Coding Scheme Designator		X (DI)
>(0008,0103)	SH	Coding Scheme Version		X (DI)
>(0008,0104)	LO	Code Meaning		X (DI)
(0040,1001)	SH	Requested Procedure ID	configurable	X (DI)
(0040,1003)	SH	Requested Procedure Priority		X (DI)
(0040,1004)	LO	Patient Transport Arrangements		X (DI)
(0040,1400)	LT	Requested Procedure Comments		X (DI)
Module: Imaging Service Request Module (M)				
(0008,0050)	SH	Accession Number	configurable	X (DI)
(0008,0090)	PN	Referring Physician's Name		X (DI)
(0032,1032)	PN	Requesting Physician		X (DI)
(0032,1033)	LO	Requesting Service		X (DI)
(0040,2400)	LT	Imaging Service Request Comments		X (DI)
Module: SOP Common Module (M)				
(0008,0005)	CS	Specific Character Set		X (DI)
Module: Additional Attributes Module (M)				

(0008,0032)	TM	Acquisition Time		X (DI)

The convention used for Matching Keys is:

X - Return keys. An " X " indicates that MODALITY supplies this attribute as a Return Key with zero length for Universal Matching.

DI – Display to the user.

4.2.1.3.6 Activity – Send MPPS Request

4.2.1.3.6.1 Description and Sequencing of Activities

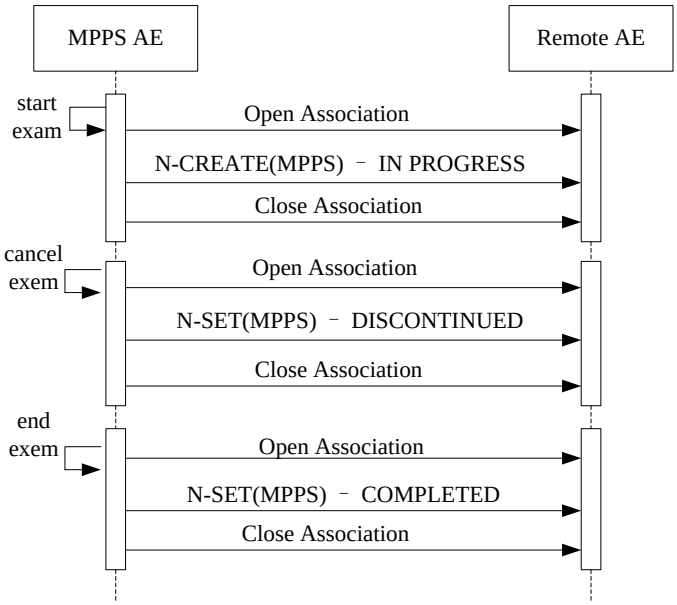

Figure 6

Sequencing of Activity – MPPS progress

A possible sequence of interactions between the MPPS AE and a Remote AE(Departmental Scheduler, e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated in Figure B.4.2-4:

1. The MPPS AE opens an association with the Remote AE.
2. The MPPS AE sends an N-CREATE request to the Remote AE to create an MPPS instance with status of “IN PROGRESS” and create all necessary attributes. The Remote AE acknowledges the MPPS creation with an N-CREATE response (status success).
3. The MPPS AE closes the association with the Remote AE.
4. All images are acquired and stored in the local database.
5. The MPPS AE opens an association with the Remote AE.
6. The MPPS AE sends an N-SET request to the Remote AE to update the MPPS instance with status of “COMPLETED” and set all necessary attributes. The Departmental Scheduler acknowledges the MPPS update with an N-SET response (status success).
7. The MPPS AE closes the association with the Remote AE.

Note: The Cancel and End Exam commands are mutually exclusive. They are both represented here for illustration purposes only. Actual workflow uses one or the other for a given exam.

For each exam step transfer, an attempt will be made to transmit it to the selected remote AE. If it fails, it will automatically retry specific times if configured on Preset UI..

4.2.1.3.6.2 Proposed Presentation Contexts

Table 64
Proposed Presentation Contexts for MPPS AE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

MPPS-SCU will propose Presentation Contexts for the SOP Classes listed above. For these SOP Class, MPPS-SCU will propose multiple Presentation Contexts, one for each of the supported Transfer Syntaxes.

If MPPS AE is offered a choice of Transfer Syntaxes in the accepted Presentation Contexts, it will apply the first encountered to use for the MPPS AE operation.

4.2.1.3.6.3 SOP Specific Conformance

MPPS AE provides Standard Conformance to the MPPS Service Class.

MPPS-SCU will behave as described in the table below in response to the status returned in the N-Create or N-Set response command message.

Table 65
MPPS N-CREATE / N-SET Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The SCP has completed the operation successfully.
Failure	Processing Failure – Performed Procedure Step Object may no longer be updated	0110	The Association is aborted using A-ABORT and the MPPS is marked as failed. The status meaning and Additional information in the Response is logged (i.e. Error Comment and Error ID).
Warning	Attribute Value Out of Range	0116H	The MPPS operation is considered successful but the status meaning is logged. Additional information in

			the Response identifying the attributes out of range will be logged (i.e. Elements in the Modification List/Attribute List)
*	*	Any other status code.	The Association is aborted using A-ABORT and the MPPS is marked as failed. The status meaning is logged.

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

Table 66

MPPS COMMUNICATION FAILURE BEHAVIOR

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and MPPS marked as failed. The reason is logged.
Association aborted by the SCP or network layers	The MPPS is marked as failed. The reason is logged.

Table below provides a description of the MPPS N-CREATE and N-SET request identifiers sent by ultrasound system. Empty cells in the N-CREATE and N-SET columns indicate that the attribute is not sent. An “x” indicates that an appropriate value will be sent. A “Zero length” attribute will be sent with zero length.

Table 67

MPPS N-CREATE / N-SET Request Identifier

Attribute Name	Tag	Req. Type N-CREATE	Req. Type N-SET
Module: Performed Procedure Step Relationship Module (M)			
Referenced Patient Sequence	(0008,1120)	2 (Default is set to null)	Not allowed
Patient’s Name	(0010,0010)	2	Not allowed
Patient ID	(0010,0020)	2	Not allowed
Patient’s Birth Date	(0010,0030)	2	Not allowed
Patient’s Sex	(0010,0040)	2	Not allowed
Scheduled Step Attribute Sequence	(0040,0270)	1	Not allowed
>Accession Number	(0008,0050)	2	Not allowed
>Referenced Study Sequence	(0008,1110)	2	Not allowed
>Study Instance UID	(0020,000D)	1	Not allowed
>Requested Procedure Description	(0032,1060)	2	Not allowed

>Scheduled Procedure Step Description	(0040,0007)	2	Not allowed
>Scheduled Protocol Code Sequence	(0040,0008)	2	Not allowed
>Scheduled Procedure Step ID	(0040,0009)	2	Not allowed
>Requested Procedure ID	(0040,1001)	2	Not allowed
Module: Image Acquisition Results Module (M)			
Modality	(0008,0060)	1	Not allowed
Study ID	(0020,0010)	2	Not allowed
Performed Protocol Code Sequence	(0040,0260)	2 (Default is set to null)	3
Performed Series Sequence	(0040,0340)	2	3
>Retrieve AE Title	(0008,0054)	2 (Default is set to null)	2
>Series Description	(0008,103E)	2 (Default is set to null)	2
>Performing Physician's Name	(0008,1050)	2	2
>Operators' Name	(0008,1070)	2	2
>Referenced Image Sequence	(0008,1140)	2	2
>Protocol Name	(0018,1030)	1	1
>Series Instance UID	(0020,000E)	1	1
>Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)	2 (Default is set to null)	2
Module: Billing And Material Management Code Module (M)			
Billing Procedure Step Sequence	(0040,0320)	3	3
Film Consumption Sequence	(0040,0321)	3	3
Billing Supplies and Devices Sequence	(0040,0324)	3	3
Module: Performed Procedure Step Information Module (M)			
Procedure Code Sequence	(0008,1032)	2 (Default is set to null)	3
Performed Station AE Title	(0040,0241)	1	Not allowed
Performed Station Name	(0040,0242)	2 (Default is set to null)	Not allowed
Performed Location	(0040,0243)	2 (Default is set to null)	Not allowed
Performed Procedure Step Start Date	(0040,0244)	1	Not allowed

Performed Procedure Step Start Time	(0040,0245)	1	Not allowed
Performed Procedure Step End Date	(0040,0250)	2 (Default is set to null)	3
Performed Procedure Step End Time	(0040,0251)	2	3
Performed Procedure Step Status	(0040,0252)	1	3
Performed Procedure Step ID	(0040,0253)	1	Not allowed
Performed Procedure Step Description	(0040,0254)	2 (Default is set to null)	3
Performed Procedure Type Description	(0040,0255)	2 (Default is set to null)	3
Performed Procedure Step Discontinuation Reason Code Sequence	(0040,0281)	3	3
Module: SOP Common Module (M)			
Specific Character Set	(0008,0005)	1C (Required if an extended or replacement character set is used)	Not allowed

4.2.1.3.7 Activity – Query/Retrieve from Remote AE

4.2.1.3.7.1 Description and Sequencing of Activities for SCU

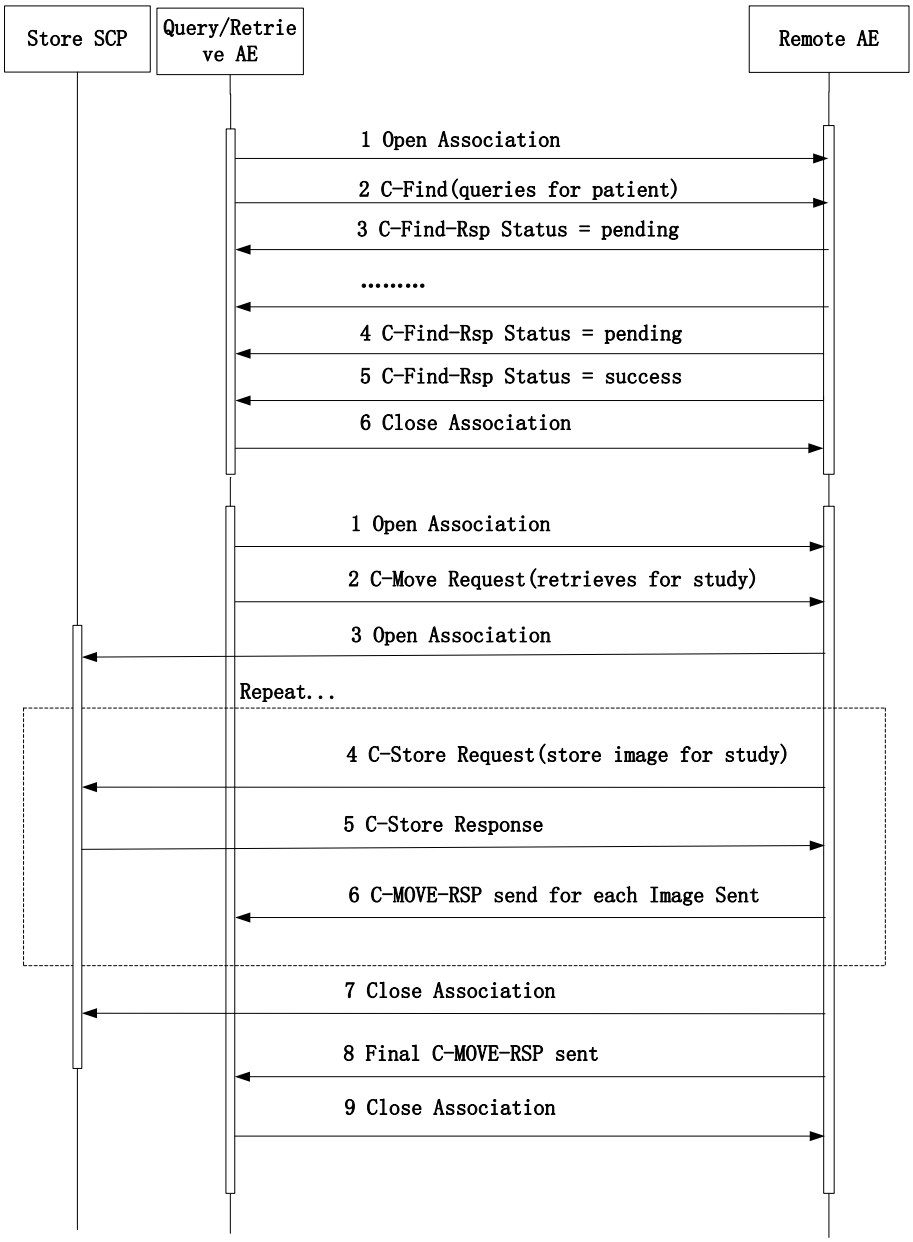

Figure 7

Sequencing of Activity – Query/Retrieve progress

The associated Real-World activity is a C-Find request initiated by the user. The user specifies some attributes the system should use to query its database. If the query user successfully establishes an association to the remote AE, it will send a C-Find request (according to the query model) and will then return the results to the application.

The C-MOVE-RQs are used to retrieve the referenced instances. The Query/Retrieve AE supports the Study Root Information Model.

4.2.1.3.7.2 Proposed Presentation Contexts

Table 68
Proposed Presentation Contexts for Query/Retrieve AE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Study Root Query/Retrieve Information Model - Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
Study Root Query/Retrieve Information Model - Move	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

4.2.1.3.7.3 SOP Specific Conformance

The ultrasound system provides Standard Conformance to the DICOM Query/Retrieve Class.

4.2.1.3.7.3.1 Response Status

Query/Retrieve AE will behave as described in the table below in response to the status returned in the C-Find response command message.

Table 69
C-Find Response Status Handling Behavior

Service Status	Meaning	Protocol Codes	Related Fields	Behavior (as SCU)
Refused	Refused Out of Resources	A700	(0000,0902)	The association is aborted using A-ABORT and a notify message is displayed: The remote server error.
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)	
	Unable to process	CXXX	(0000,0901) (0000,0902)	
Canceling	Matching terminated due to Cancel request	FE00	None	
Success	Matching is complete - No	0000	None	Patient lists show on

	final Identifier is supplied			the UI
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier	/
	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Identifier	/

The ultrasound system supports the following query levels:

- Study

The Query/Retrieve AE interprets following status codes

Table 70
C-Move Response Status Handling Behavior

Service Status	Meaning	Protocol Codes	Related Fields	Behavior (as SCU)
Refused	Refused Out of Resources	A700	(0000,0902)	The association is aborted using A-ABORT and a notify message is displayed: The remote server error.
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)	
	Unable to process	CXXX	(0000,0901) (0000,0902)	
Canceling	Matching terminated due to Cancel request	FE00	None	
Success	Matching is complete - No final Identifier is supplied	0000	None	Image retrieve is successful, Patient lists show on the UI
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier	/
	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Identifier	/

4.2.1.3.7.3.2 Study Root Query/Retrieve Attributes

4.2.1.3.7.3.3 Supported Matching

Following are the types of matching that can be request by the implementation:

- Single Value matching
- Universal Matching
- Wild Card Matching
- Range of date, Range of Time

The user can filter the downloaded C-FIND result, to view a limited set of the result.

4.2.1.3.7.3.4 Study Level

This section defines the keys at the Study Level of the Study Root Query/Retrieve Information Model that are supported by this implementation.

Table 71
STUDY LEVEL ATTRIBUTES

MODULE: STUDY ROOT INFORMATION MODEL (M)					
Attribute	**VR**	**Type**	**Attribute Name**	**Value**	**Matching keys**
Module: Study Root Information Model (M)					
(0008,0020)	DA	R	Study Date		DA(SK)
(0008,0030)	TM	R	Study Time		N
(0010,0010)	PN	R	Patient's Name		*(SK)
(0010,0020)	LO	R	Patient ID		S(SK)
(0008,0050)	SH	R	Accession Number		*(SK)
(0010,0030)	DA	O	Patient's Birth Date		S(SK)
(0010,0040)	CS	O	Patient's Sex		S(SK)
(0020,0010)	SH	R	Study ID		S(SK)
(0020,000D)	UI	U	Study Instance UID		N
(0008,0061)	CS	O	Modalities in Study	US	N
(0008,0090)	PN	O	Referring Physician's Name		N
(0008,1030)	LO	O	Study Description		N
(0008,1032)	SQ	O	Procedure Code Sequence		N
(0008,1060)	PN	O	Name of Physician(s) Reading Study		N
(0008,1080)	LO	O	Admitting Diagnoses Description		N
(0008,1110)	SQ	O	Referenced Study Sequence		N
(0008,1120)	SQ	O	Referenced Patient Sequence		N
(0010,0021)	LO	O	Issuer of Patient ID		N
(0010,0032)	TM	O	Patient's Birth Time		N
(0010,1000)	LO	O	Other Patient IDs		N
(0010,1001)	PN	O	Other Patient Names		N
(0010,1010)	AS	O	Patient's Age		N
(0010,1020)	DS	O	Patient's Size		N
(0010,1030)	DS	O	Patient's Weight		N

(0010,2160)	SH	O	Ethnic Group		N
(0010,2180)	SH	O	Occupation		N
(0010,21B0)	LT	O	Additional Patient History		N
(0010,4000)	LT	O	Patient Comments		N
(0020,1070)	IS	O	Other Study Numbers		N
(0020,1200)	IS	O	Number of Patient Related Studies		N
(0020,1202)	IS	O	Number of Patient Related Series		N
(0020,1204)	IS	O	Number of Patient Related Instances		N
(0020,1206)	IS	O	Number of Study Related Series		N
(0020,1208)	IS	O	Number of Study Related Instances		N
(4008,010C)	PN	O	Interpretation Author		N
Module: Additional Attributes Module (O)					
(0008,0062)	UN	O	SOP Classes in Study		N

4.2.1.3.7.3.5 Series Level Attributes

Table 72

SERIES LEVEL ATTRIBUTES

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE	MATCHINGKEYS
Module: Study Root Information Model (M)					
(0020,000D)	UI	U	Study Instance UID		S
(0020,000E)	UI	U	Series Instance UID		N
(0008,0060)	CS	R	Modality		N
(0020,0011)	IS	R	Series Number		N
(0020,1209)	IS	O	Number of Series Related Instances		N
Module: Additional Attributes Module (O)					
(0008,0021)	DA	O	Series Date		N
(0008,0031)	TM	O	Series Time		N

4.2.1.3.7.3.6 Composite Object Instance Level

Table 73

COMPOSITE OBJECT INSTANCE LEVEL ATTRIBUTES

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE	MATCHINGKEYS
Module: Study Root Information Model (M)					
(0020,000D)	UI	U	Study Instance UID		S
(0020,000E)	UI	U	Series Instance UID		S
(0008,0018)	UI	U	SOP Instance UID		N
(0020,0013)	IS	R	Instance Number		N
Module: Additional Attributes Module (O)					
(0008,0016)	UI	O	SOP Class UID		N
(0008,001A)	UI	O	Related General SOP Class UID		N
(0008,3001)	SQ	O	Alternate Representation Sequence		N
>(0008,1150)	UI	O	Referenced SOP Class UID		N
>(0008,1155)	UI	O	Referenced SOP Instance UID		N
>(0020,000E)	UI	O	Series Instance UID		N
>(0040,A170)	SQ	O	Purpose of Reference Code Sequence		N
>>(0008,0100)	SH	O	Code Value		N
>>(0008,0102)	SH	O	Coding Scheme Designator		N
>>(0008,0103)	SH	O	Coding Scheme Version		N
>>(0008,0104)	LO	O	Code Meaning		N
(0040,A043)	SQ	O	Concept Name Code Sequence		N
>(0008,0100)	SH	O	Code Value		N
>(0008,0102)	SH	O	Coding Scheme Designator		N
>(0008,0103)	SH	O	Coding Scheme Version		N
>(0008,0104)	LO	O	Code Meaning		N
(0040,A504)	SQ	O	Content Template Sequence		N
>(0008,0105)	CS	O	Mapping Resource		N
>(0040,DB00)	CS	O	Template Identifier		N

4.2.1.4 Association Acceptance Policy

4.2.1.4.1 Activity – Receive Echo Request

4.2.1.4.1.1 Description and Sequencing of Activities

The Verification AE (as SCP) accepts associations only if they have valid Presentation Contexts. If Verification AE (as SCP) receives an echo (C-ECHO) request then the response will be sent over the same association used to send the C-ECHO-RQ.

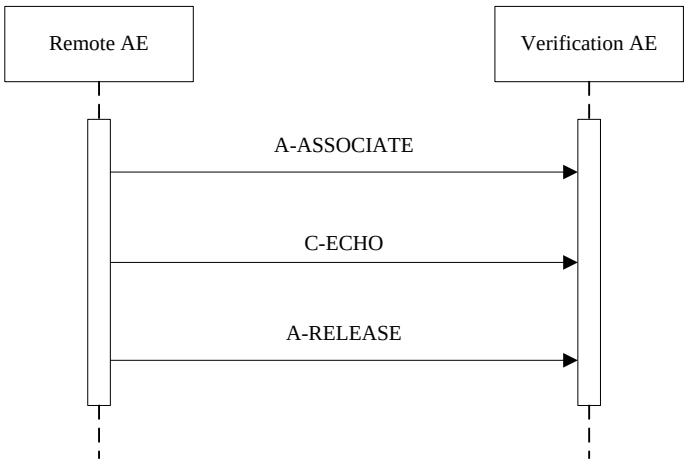

Figure 8
Sequencing of Activity – Receive Echo Request

4.2.1.4.1.2 Accepted Presentation Contexts

It will accept Presentation Contexts as shown in the following table:

Table 74
Proposed Presentation Contexts for Activity Verification

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

4.2.1.4.1.3 SOP Specific Conformance

The Application conforms to the definition of a Verification SCP in accordance with the DICOM Standard.

4.2.1.4.2 Activity – Receive Storage

4.2.1.4.2.1 Description and Sequencing of Activities

The system could act as Storage SCP in Query/Retrieve, otherwise couldn't. A possible sequence of interactions between the Storage AE (as SCP) and a remote AE is illustrated in the Figure 7.

4.2.1.4.2.2 Accepted Presentation Contexts

The Storage AE (as SCP) will accept Presentation Contexts as shown in the table below.

Table 75

Proposed Presentation Contexts for Storage

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name**	**UID**		
US 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	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
US Multiframe 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	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
Secondary	1.2.840.100	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Capture Image Storage	08.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90	SCP	None
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91	SCP	None
Comprehensive Structured Report 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	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
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	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None

Note：The sytem could not support to browse the Encapsulated PDF.

4.2.1.4.2.3 SOP Specific Conformance

The Application conforms to the definition of a Storage SCP in accordance with the DICOM Standard.

4.3 Network Interface

4.3.1 Supported Communications Stacks

Modality DICOM AEs provide DICOM 3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.3.2 TCP/IP Stack

Modality DICOM AEs inherit their TCP/IP stack from the Windows 7 Operating System upon which they execute.

4.3.3 Physical Network Interface

Modality supports a single network interface. One of the following physical network interfaces will be available depending on installed hardware options:

Table 76
Supported Physical Network Interfaces

Ethernet 100baseT

4.3.4 Additional Protocols

Modality does not support additional protocols.

4.4 Configuration

The Configuration Utility allows the service engineer to set and maintain configuration parameters of local and remote DICOM application entities.

4.4.1 AE Title/Presentation Address Mapping

This mapping (including IP and port numbers) is defined during the system Network Configuration procedure.

4.4.2 Configurable Parameters

Localhost DICOM Service Property(Including SCU and SCP):

- AE Title
- Port
- PDU
- TLS Port

Server Setting:

- Device
- IP address

Storage:

- Device, Service name, AE Title and Port.

- Timeout.
- TLS.
- Maximum retries. (default value is 3)
- Interval Time (In this version, this parameter is not usable.)
- Compression Mode, Compression Ratio.
- Color Mode (Color, Mixed, or Gray).
- Cine Zoom Mode (original or 640*480)
- Allow Multiframe(Enable or not)
- Max Framerate(options(25, 30, 35, full), or other inputed valid value)
- SR Storage Option(“Attach SR When Store Images”, “Only Store SR”, and “Not Store SR")
- Storage mode(“Parallel file”,“Parallel frame”)
- Transducer Tracking
- Strategy Name
- Encapsulated PDF(Enable or not)
- Default Service Status (Y/N)

Print:

- Device, Service name, AE Title and Port .
- Timeout.
- TLS.
- Maximum retries. (default value is 3)
- Interval Time (In this version, this parameter is not usable.)
- Media Type: PAPER, CLEAR FILM, or BLUE FILM
- Film Size:
  - 8INX10IN
  - 8_5INX11IN
  - 10INX12IN
  - 10INX14IN
  - 11INX14IN
  - 11INX17IN
  - 14INX14IN
  - 14INX17IN
  - 24CMX24CM
  - 24CMX30CM
  - A4
  - A3

- Copies:1-100
- Max Density: 0-65535
- Min Density:0-65535
- Settings: RGB or MONOCHROME2
- Display Format:
  - ✧ PORTRAIT:

STANDARD\1,1
STANDARD\1,2
STANDARD\1,3
STANDARD\2,1
STANDARD\2,2
STANDARD\2,3
STANDARD\2,4
STANDARD\3,3
STANDARD\3,4
STANDARD\3,5
STANDARD\3,6
STANDARD\4,4
STANDARD\4,5
STANDARD\4,6
STANDARD\4,7
STANDARD\4,8
STANDARD\5,5
STANDARD\5,6
STANDARD\5,7
STANDARD\5,8
STANDARD\6,6
STANDARD\6,7
STANDARD\6,8
STANDARD\6,9
STANDARD\6,10
STANDARD\7,7
STANDARD\7,8
STANDARD\7,9
STANDARD\7,10
STANDARD\8,8
STANDARD\8,9

STANDARD\8,10

✧ LANDSCAPE:

STANDARD\1,1
STANDARD\1,1
STANDARD\2,1
STANDARD\3,1
STANDARD\1,2
STANDARD\2,2
STANDARD\3,2
STANDARD\4,2
STANDARD\3,3
STANDARD\4,3
STANDARD\5,3
STANDARD\6,3
STANDARD\4,4
STANDARD\5,4
STANDARD\6,4
STANDARD\7,4
STANDARD\8,4
STANDARD\5,5
STANDARD\6,5
STANDARD\7,5
STANDARD\8, 5
STANDARD\6,6
STANDARD\7,6
STANDARD\8,6
STANDARD\9,6
STANDARD\10,6
STANDARD\7,7
STANDARD\8,7
STANDARD\9,7
STANDARD\10,7
STANDARD\8,8
STANDARD\9,8
STANDARD\10,8

- Destination: MAGAZINE or PROCESSOR
- Film Orientation: LANDSCAPE or PORTRAIT

- Priority: HIGH, MED, or LOW
- Configuration Info
- Magnification Type: NONE, CUBIC, REPLICATE, or BILINEAR
- Trim: Yes/Not
- Strategy Name
- Default Status (Y/N)

WORKLIST:

- Device, Service name, AE Title and Port .
- TLS.
- Timeout.
- Maximum retries, Interval Time (In this version, these two parameters are not usable.)
- Strategy Name
- Remove Attributes
- Default Status (Y/N)

MPPS:

- Device, Service name, AE Title and Port.
- TLS.
- Timeout.
- Maximum retries (default value is 3)
- Interval Time (In this version, this parameter is not usable.)
- Default Status (Y/N)

Storage Commitment:

- Device, Service name, AE Title and Port.
- TLS.
- Timeout.
- Maximum retries, Interval Time (In this version, these two parameters are not usable.)
- Associated Storage Service
- Default Status (Not available)

Query/Retrieve

- Device, Service name, AE Title and Port.
- TLS.
- Timeout.
- Maximum retries, Interval Time (In this version, these two parameters are not usable.)

- Default Status (Y/N)

5 Media Storage

5.1 Implementation Model

5.1.1 Application Data Flow

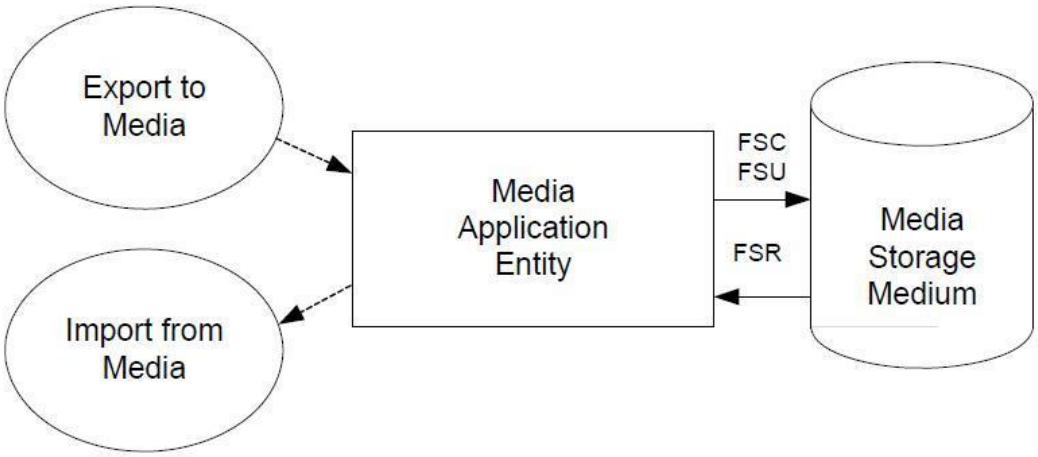

Figure 9

Application Data Flow Diagram for Media Storage

— The Media Application Entity exports Images and Structured Reports to a removable storage medium. It is associated with the local real-world activity “Backup” using the configured export selection parameters for selected patients’ data (images and / or Structured Reports).

5.1.2 Functional Definition of AE’s

5.1.2.1 Functional Definition of Media Application Entity

Using”Export” will pass the currently selected patients’ exams or individually selected images to the Media Application Entity. The contents of each export job will be written to the selected media destination. The size of the selected media is used to determine and display the number of media required for the export. When a device is filled to capacity, the system will prompt the user for addition media and continue.

5.1.3 Sequencing of Real-World Activities

At least one image must exist and be selected before the Media Application Entity can be invoked. The operator can insert new media at any time. The Media Application Entity will wait indefinitely for media to be inserted before starting to write to the device.

5.1.4 File Meta Information Options

The implementation information written to the File Meta Header in each file is:

Table 77
DICOM Implementation Class and Version for Media Storage

Implementation Class UID	1.2.156.112536.1.2121.0.1.0.1
Implementation Version Name	MINDRAY_V1.0

5.2 AE Specifications

5.2.1 Media Application Entity Specification

The Media Application Entity provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below: The available physical media is CD-R, CD-RW, DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, and USB devices.

Table 78
Application Profiles, Activities and Roles

Application Profiles Supported	Real World Activity	Role
STD-GEN-USB-JPEG	Export Exam	FSC/FSU
STD-GEN-USB-JPEG	Read Exam	FSR
STD-US-SC-SF&MF-CDR STD-US-SC-SF&MF-DVD STD-US-SC-SF&MF-DVD-RAM	Import Exam	FSR

5.2.1.1 File Meta Information for the Application Entity

The File Meta Header does not include the Source Application Entity Title.

5.2.1.2 Real-World Activities

5.2.1.2.1 Activity-FSC-Export exams

When system user exports exams, images, SR, or Encapsulated PDF to a media upon which no DICOM data resides, it creates a DICOM file set and writes this DICOM File Set to this media.

The Media Application Entity acts as an FSC using the interchange option when requested to export SOP Instances from the local database to media upon which no DICOM data resides.

5.2.1.2.2 Activity-FSR-Import exams

When system user presents the directory of the media, presses “Restore” button and the selected exams are transferred from the media to the system for review. Objects transferred to the system retain their original SOP Instance UIDs.

The Media Application Entity acts as an FSR using the interchange option when requested to import SOP Instances from media to the local database.

5.2.1.2.3 Activity-FSU-Export exams

The system user selects exams from the system’s directory for transfer to media that already contains data. The DICOMDIR is updated allowing access to original and new data.

The Media Application Entity acts as an FSU using the interchange option when requested to export SOP Instances from the local database to media upon which DICOM data already resides.

5.2.1.2.3.1 Media Storage Application Profiles

See Table 78 for supported Application Profiles.

5.2.1.2.3.1.1 Options

The Media Application Entity supports the SOP Classes and Transfer Syntaxes listed in the table below:

Table 79
IODs, SOP Classes and Transfer Syntaxes

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
DICOM Media Storage Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5

		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy, Baseline Sequential with Huffman Coding (Process 1)	1.2.840.10008.1.2.4.50
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		RLE Lossless	1.2.840.10008.1.2.5
		JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90
		JPEG 2000 Image Compression	1.2.840.10008.1.2.4.91

Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Explicit VR Little Endian	1.2.840.10008.1.2.1
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Explicit VR Little Endian	1.2.840.10008.1.2.1

5.3 Media Storage Application Profile

See Table 78 for supported Application Profiles.

5.3.1 DICOMDIR Attributes

The DICOMDIR file will contain the following attributes.

Table 80

Common Directory Information Module Attributes

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1130)	CS	2	File-set ID	AUTO
(0004,1200)	UL	1	Offset of the First Directory Record of the Root Directory Entity	AUTO
(0004,1202)	UL	1	Offset of the Last Directory Record of the Root Directory Entity	AUTO
(0004,1212)	US	1	File-set Consistency Flag	0xFFFF
(0004,1220)	SQ	2	Directory Record Sequence	
>(0004,1400)	UL	1	Offset of the Next Directory Record	AUTO
>(0004,1410)	US	1	Record In-use Flag	0xFFFF
>(0004,1420)	UL	1	Offset of Referenced Lower-Level Directory Entity	AUTO
>(0004,1142)	CS	2	Specific Character Set of File-set Descriptor File	ISO_IR 100

Table 81

Patient Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	PATIENT
(0010,0020)	LO	1	Patient ID	MWL/USER

(0010,0010)	PN	2	Patient's Name	MWL/USER
(0010,0030)	DA	3	Patient's Birth Date	MWL/USER
(0010,0040)	CS	3	Patient's Sex	MWL/USER
(0010,1000)	LO	3	Other Patient IDs	MWL/USER

Table 82

Study Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	STUDY
(0008,0020)	DA	1	Study Date	AUTO
(0008,0030)	TM	1	Study Time	AUTO
(0020,0010)	SH	1	Study ID	AUTO
(0020,000D)	UI	1C	Study Instance UID	AUTO
(0008,0050)	SH	2	Accession Number	MWL/USER
(0008,1030)	LO	2	Study Description	If it is a scheduled exam, the value is mapped from Scheduled Procedure Step Description;
(0008,0090)	PN		Referring Physician's Name	MWL/USER

Table 83

Series Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	SERIES
(0008,0060)	CS	1	Modality	US
(0020,000E)	UI	1	Series Instance UID	AUTO
(0020,0011)	IS	1	Series Number	AUTO
(0008,0021)	DA	3	Series Date	AUTO
(0008,0031)	TM	3	Series Time	AUTO
(0008,103e)	LO		Series Description	If it is a scheduled exam, the value is mapped from Scheduled Procedure Step Description;

				If not, same as the value of Study Description
(0008,1050)	PN		Performing Physician's Name	MWL/USER

Table 84

Image Directory Record

ATTRIBUTE	VR	TYPE	ATTRIBUTE NAME	VALUE(S) AND COMMENTS
(0004,1430)	CS	1	Directory Record Type	IMAGE
(0004,1500)	CS	1C	Referenced File ID	AUTO
(0004,1510)	UI	1C	Referenced SOP Class UID in File	AUTO
(0004,1511)	UI	1C	Referenced SOP Instance UID in File	AUTO
(0004,1512)	UI	1C	Referenced Transfer Syntax UID in File	AUTO
(0020,0013)	IS	1	Instance Number	AUTO
(0028,0008)	IS	3	Number of Frames	AUTO(Only used for mutil-frame image)

5.4 Augmented and Private Application Profiles

No augmented/private profile is supported.

5.5 Media Configuration

None.

6 SUPPORT OF CHARACTER SETS

In addition to the default character repertoire, the Defined Terms for Specific Character Set in Table 85 are supported:

Table 85
Supported Specific Character Set Defined Terms

Character Set Description	Defined Term	System Language
ISO 8859-1	ISO_IR 100	English, French, German, Italian, Portuguese, Spanish, Norwegian
ISO 8859-5	ISO_IR 144	Russian
ISO-8859-2	ISO_IR 101	Polish, Czech, Serbian
ISO-8859-9	ISO_IR 148	Turkish
GB18030	GB18030	Chinese

If the system language is configured for one of above languages, the corresponding Character Set will be used automatically. Whether or not characters are displayed correctly depends on the operating system. For example, if the system is configured for Polish, the characters of Polish could display correctly.

7 SECURITY

7.1 Security Profiles

TE7 supports secure DICOM communication in conformance with the Basic TLS Secure Transport Connection Profile and the AES TLS Secure Transport Connection Profile.At default configuration,the TLS option is deactivated.

Basic TLS Secure Transport Connection Profile and the AES TLS Secure Transport Connection Profile are supported using Transport Layer Security Version 1.2 protocol with the following features:

Supported TLS Feature	**Mechanism**
Entity Authentication	RS A based certificates
Exchange of Master Secrets	RSA
Data Integrity	SHA
Privacy (Cyphersuite Options)	TLS_RSA_WITH_AES_128_CBC_SHA TLS_RSA_WITH_3DES_EDE_CBC_SHA

7.2 Association level security

None supported.

Any Calling AE Titles and/or IP addresses may open an Association.

7.3 Application level security

None supported.

8 ANNEXES

8.1 IOD contents

8.1.1 Created SOP Instances

None.

8.1.2 Usage of attributes from received IOD's

No SOP Class specific fields are required.

The local database makes use of the conventional identification attributes to distinguish patients, studies, series and instances. In particular, if two patients have the same value for Patient ID, Patient's Name and Patient's Sex, they will be treated as the same in the browser and the local database.

8.1.3 Attribute Mapping

Not applicable.

8.1.4 Coerced/Modified fields

No coercion is performed.

8.2 Data Dictionary of private attributes

No private attributes are defined.

8.3 Coded terminology and templates

The value for Code Meaning will be displayed for all code sequences. No local lexicon is provided to look up alternative code meanings.

8.4 Grayscale Image Consistency

Modality does not support the Grayscale Standard Display Function.

8.5 Standard extended/specialized/private sop Classes

None.

8.6 Private Transfer Syntaxes

None.

A. Appendix : OB – GYN structured reporting template

This appendix lists the DICOM Structured Report (SR) mappings used in the Obstetric and Gynecologic Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The OB-GYN Report mappings follow the DICOM SR Template TID 5000: OB-GYN Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

A.1. TID (300) Measurement

This Template provides a general structure for a numeric measurement, together with evaluations of its normality and/or significance, and the inference source(s) for its value.

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			NUM	$Measurement	√		Units = $Units
2	>	HAS CONCEPT MOD	CODE	EV (G-C036, SRT, "Measurement Method")	√		$Method
3	>	HAS CONCEPT MOD	CODE	EV (121401, DCM, "Derivation")	√		$Derivation
4	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, "Finding Site")	√		$TargetSite
5	>>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, "Laterality")	√		DCID (244) Laterality
6	>	HAS PROPERTIES	CODE	EV (121404, DCM, "Selection Status")	√		
7	>	INFERRED FROM	CODE	DCID (228) Equation or Table	√		
8	>>	HAS PROPERTIES	NUM		√		

A.2. TID 1008 Subject Context, Fetus

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			PNAME	EV (121036,DCM, "Mother of fetus")			
2			UIDREF	EV (121028,DCM, "Subject UID")			
3			TEXT	EV (121030,DCM, "Subject ID")			
4			TEXT	EV (11951-1,LN, "Fetus ID")	√		
5			NUM	EV (11878-6,LN, "Number of Fetuses")	√		

A.3. TID (5000) OB-GYN Ultrasound Procedure Report

This is the template for the root of the content tree for the OB-GYN ultrasound procedure report.

NO	**NL**	**Relation with Parent**	**Value Type**	**Concept Name**	**Used in MODALITY**	**Condition**	**Value Set Constraint**
1			CONTAINER	EV (125000, DCM, "OB-GYN Ultrasound Procedure Report")	√		
2	>	HAS CONCEPT MOD	INCLUDE	DTID (1204) Language of Content Item and Descendants			
3	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	√		
4	>	CONTAINS	INCLUDE	DTID (5001) Patient Characteristics	√		
5	>	CONTAINS	CONTAINER	DT (111028, DCM, "Image Library")	√		

6	>>	CONTAINS	IMAGE	No purpose of reference	√		
7	>	CONTAINS	INCLUDE	DTID (5002) OB-GYN Procedure Summary Section	√		
8	>	CONTAINS	INCLUDE	DTID (5004) Fetal Biometry Ratio Section	√		
9	>	CONTAINS	INCLUDE	DTID (5005) Fetal Biometry Section	√		
10	>	CONTAINS	INCLUDE	DTID (5006) Long Bones Section	√		
11	>	CONTAINS	INCLUDE	DTID (5007) Fetal Cranium Section	√		
12	>	CONTAINS	INCLUDE	DTID (5009) Fetal Biophysical Profile Section	√		
13	>	CONTAINS	INCLUDE	DTID (5011) Early Gestation Section	√		
14	>	CONTAINS	INCLUDE	DTID (5010) Amniotic Sac Section	√		
15	>	CONTAINS	INCLUDE	DTID (5015) Pelvis and Uterus Section	√		
16	>	CONTAINS	INCLUDE	DTID (5012) Ovaries Section	√		
17	>	CONTAINS	INCLUDE	DTID (5013) Follicles Section	√		$Laterality = EV (G-A101, SRT, “Left”) $Number = EV (11879-4, LN, “Number of follicles in left ovary”)
18	>	CONTAINS	INCLUDE	DTID (5013) Follicles Section	√		$Laterality = EV (G-A100, SRT, “Right”) $Number = EV (11880-2, LN, “Number of follicles in right ovary”)

19	>	CONTAINS	CONTAINER	EV (121070, DCM, “Findings”)	√		
20	>>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√		EV (T-F6800, SRT, “Embryonic Vascular Structure”)
21	>>	CONTAINS	INCLUDE	DTID (5025) OB-GYN Fetal Vascular Measurement Group	√		$AnatomyGroup = DCID (12141) Fetal Vasculature
22	>	CONTAINS	CONTAINER	EV (121070, DCM, “Findings”)	√		
23	>>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√		EV (T-D6007, SRT, “Pelvic Vascular Structure”)
24	>>	CONTAINS	INCLUDE	DTID (5026) OB-GYN Pelvic Vascular Measurement Group	√		$AnatomyGroup = DCID (12140) Pelvic Vasculature Anatomical Location
25	>	CONTAINS	INCLUDE	DTID (SELFTMP-1)	√		
26	>	CONTAINS	TEXT	(20121120,MRUS, “self-defined-Measurementfile”)	√		

A.4. TID (SELFTMP-1) Fetal Cardiac Measurement Group

This is a private template referenced by TID (5000).

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV(T0001,MRUS,Fetel Cardiac)	√		
2	>	HAS OBS CONTEXT	INCLUDE	DTID (1008) Subject Context, Fetus	√		
3	>	CONTAINS	INCLUDE	DTID (SELFTMP-2) Fetal ZSCORE	√		$MeasType = DCID (SELFCID-1) Fetal Z-Score $Derivation = DCID (3627) Measurement Type

A.5. TID (SELFTMP-2) Fetal ZScore

This is a private template referenced by TID (5000).

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	INCLUDE	DTID (300) Measurement	√		

A.6. TID (1001) OBSERVATION CONTEXT

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1	>	HAS OBS CONTEXT	CODE	EV (121005,DCM, “Observer Type”)	√		(121006,DCM, “Person”)
2	>	HAS OBS CONTEXT	PNAME	EV (121008,DCM, “Person Observer Name”)	√		Operator from Info
3	>	HAS OBS CONTEXT	TEXT	EV (121009,DCM, “ Person Observer’s Organization Name”)	√		Institution Name (0008,0080) of the General Equipment Module
4	>	HAS OBS CONTEXT	CODE	EV (121010,DCM, “ Person Observer’s Role in the Organization”)	√		(121093, DCM, "Sonographer")
5	>	HAS OBS CONTEXT	CODE	EV (121024, DCM, "Subject Class”)	√		(121025, DCM, "Patient”)
6	>	HAS OBS CONTEXT	PNAME	EV (121029,DCM, "Subject Name”)	√		value of Patient’s Name (0010,0010) in Patient Module
7	>	HAS OBS CONTEXT	DATE	EV (121031,DCM, "Subject Birth Date”)	√		value of Patient’s Birth Date (0010,0030) in Patient Module
8	>	HAS OBS CONTEXT	CODE	EV (121032,DCM, "Subject Sex”)	√		value equivalent to Patient’s Sex (0010,0040) in Patient Module

9	>	HAS OBS CONTEXT	NUM	EV (121033,DCM, "Subject Age")	√		value of Patient's Age (0010,1010) in Patient Study Module

A.7. TID (5001) OB-GYN Patient Characteristics

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (121118, DCM, "Patient Characteristics")	√		
2	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")			
3	>	CONTAINS	NUM	EV (8302-2, LN, "Patient Height")			
4	>	CONTAINS	NUM	EV (29463-7, LN, "Patient Weight")			
5	>	CONTAINS	NUM	EV (11996-6, LN, "Gravida")	√		from info
6	>	CONTAINS	NUM	EV (11977-6, LN, "Para")	√		from info
7	>	CONTAINS	NUM	EV (11612-9, LN, "Aborta")	√		from info
8	>	CONTAINS	NUM	EV (33065-4, LN, "Ectopic Pregnancies")	√		from info(Ectopic)

A.8. TID (5002) OB-GYN Procedure Summary

NO	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (121111, DCM, "Summary")	√		
2	>	CONTAINS	DATE	(I12003-01, MRUS, "IVF")	√		from info
3	>	CONTAINS	DATE	(C12003-01, MRUS, "EDD from IVF")	√		from info
4	>	CONTAINS	DATE	(I12003-02, MRUS, "PRV")	√		from info
5	>	CONTAINS	DATE	(C12003-02, MRUS, "EDD from PRV")	√		from info

6	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11886-9, LN, "Gestational Age by ovulation date")
7	>	CONTAINS	TEXT	EV (121106, DCM, “Comment”)	√		from info
8	>	CONTAINS	TEXT	(I12101-01, MRUS, "Primary Indications")	√		from info
9	>	CONTAINS	NUM	(8302-2, LN, "Patient Height")	√		from info
10	>	CONTAINS	NUM	(29463-7, LN, "Patient Weight")	√		from info
11	>	CONTAINS	TEXT	EV (121106, DCM, “Comment”)	√		report interface Comments
12	>	CONTAINS	INCLUDE	FINDING_7	√		
13	>	CONTAINS	INCLUDE	BTID (5003) OB-GYN Fetus Summary	√		

A.9. TID (5003) OB-GYN Fetus Summary

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125008, DCM, “Fetus Summary”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (11951-1,LN,"Fetus ID”)	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, Number of Fetuses”)	√		
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (18185-9, LN, "Gestational Age")
5	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11885-1, LN, "Gestational Age by LMP”)
6	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11727-5, LN, "Estimated Weight”)

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
7	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11767-1, LN, "EFW percentile rank")
8	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11948-7, LN, " Fetal Heart Rate")
9	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (C12019-01, MRUS, "Gestational Age by IVF")
10	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (I12019-01, MRUS, "GA of Previous Exam")
11	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (C12019-02, MRUS, "Gestational Age by PRV")
12	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (C12019-03, MRUS, "Gestational Age by EDD")
13	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (C12019-4, MRUS, "Gestational Age by EFW")
14	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (C12019-4, MRUS, "Gestational Age by mean Gestational Sac Diameter")
15	>	CONTAINS	INCLUDE	FINDING_1	√		
16	>	CONTAINS	INCLUDE	FINDING_2	√		
17	>	CONTAINS	INCLUDE	FINDING_3	√		
18	>	CONTAINS	INCLUDE	FINDING_4	√		
19	>	CONTAINS	INCLUDE	FINDING_5	√		
20	>	CONTAINS	INCLUDE	FINDING_6	√		

A.10. TID (FINDING_1) Fetal Description

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(FG12019-01,MRUS,"Fetal Description")	√		
2	>	CONTAINS	TEXT	(FG12018-02,MRUS,"Fetal Lie")	√		
3	>	CONTAINS	TEXT	(FG7455-01,MRUS,"Gender")	√		
4	>	CONTAINS	TEXT	(FG7160-01,MRUS,"3 Vessel Cord")	√		
5	>	CONTAINS	TEXT	(T-D1200,SNM3,"Face")	√		
6	>	CONTAINS	TEXT	(FG4-01,MRUS,"Nose Lips")	√		
7	>	CONTAINS	TEXT	(FG12011-01,MRUS,"Cord insertion")	√		
8	>	CONTAINS	TEXT	(T-57000,SNM3,"Stomach")	√		
9	>	CONTAINS	CONTAINER	(T-71000,SRT,"Kidney")	√		
10	>>	CONTAINS	TEXT	(G-A100,SNM3,"Left")	√		
11	>>	CONTAINS	TEXT	(G-A101,SNM3,"Right")	√		
12	>	CONTAINS	TEXT	(T-74000,SRT,"Bladder")	√		
13	>	CONTAINS	TEXT	(T-63000,SRT,"Gall bladder“)	√		
14	>	CONTAINS	TEXT	(T-62000,SRT,"Liver")	√		
15	>	CONTAINS	TEXT	(T-D3400,SRT," Diaphragm ")			
16	>	CONTAINS	TEXT	(FG4031-02,MRUS,"Fetal Bowel")	√		

A.11. TID (FINDING_2) Fetus Limbs

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(FG4031-03,MRUS,"Fetus Limbs")	√		
2	>	CONTAINS	TEXT	(FG4031-04,MRUS,"Upper Extremities")	√		
3	>	CONTAINS	TEXT	(FG4031-05,MRUS,"Lower Extremities")	√		

A.12. TID (FINDING_3) Fetal Cardiology

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(FG4031-06,MRUS,"Fetal Cardiology")	√		
2	>	CONTAINS	TEXT	(FG12239-01,MRUS,"Cardiac Activity")	√		
3	>	CONTAINS	TEXT	(FG4031-07,MRUS,"4C HEART")	√		
4	>	CONTAINS	TEXT	(T-42000,SNM3,"Aorta")	√		
5	>	CONTAINS	TEXT	(T-44000,SNM3,Pulmonary Artery)	√		
6	>	CONTAINS	TEXT	(FG3010-02,MRUS,Ascending Aorta)	√		
7	>	CONTAINS	TEXT	(FG3010-01,MRUS,"ARCH")	√		
8	>	CONTAINS	TEXT	(FG3010-03,MRUS," Decrease ARCH ")	√		
9	>	CONTAINS	TEXT	(T-32650,SRT,Left Ventricular Outflow Tract)	√		
10	>	CONTAINS	TEXT	(T-32550,SRT,Right Ventricle Outflow Tract)	√		

A.13. TID (FINDING_4) Fetal Brain

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(FG4030-01,MRUS,"Fetal Brain")	√		
2	>	CONTAINS	TEXT	(FG4030-02,MRUS,"Lateral Ventricles")	√		
3	>	CONTAINS	TEXT	(11860-4,LN,"Cisterna Magna")	√		
4	>	CONTAINS	TEXT	(T-A600A,SNM3,"Cerebellum")	√		
5	>	CONTAINS	TEXT	(FG4030-03,MRUS,"CSP")	√		

A.14. TID (FINDING_5) Spine

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(T-11500,SRT,"Spine")	√		
2	>	CONTAINS	TEXT	(T-11501,SNM3,"Cervical Spine")	√		
3	>	CONTAINS	TEXT	(T-11502,SNM3,"Thoracic Spine")	√		
4	>	CONTAINS	TEXT	(T-11503,SNM3,"Lumbar Spine")	√		
5	>	CONTAINS	TEXT	(FG4031-08,MRUS,"Sacral Spine")	√		

A.15. TID (FINDING_6) Fetal Environment

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(FG12019-03,MRUS,"Fetal Environment")	√		
2	>	CONTAINS	TEXT	(FG12011-01,MRUS,"Placental Location")	√		
3	>	CONTAINS	TEXT	(FG12011-02,MRUS,"Amniotic Fluid")	√		
4	>	CONTAINS	TEXT	(FG12011-03,MRUS,"Placental Grade")	√		

A.16. TID (FINDING_7) Maternal Description

This is a private template referenced by TID (5003).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1		CONTAINS	CONTAINER	(FG6088-01,MRUS,"Maternal Description")	√		
2	>	CONTAINS	CONTAINER	(FG12011-03,MRUS,"Adnexa")	√		
3	>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
4	>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
5	>	CONTAINS	CONTAINER	(T-87000,SRT,"Ovary")	√		
6	>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
7	>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
8	>	CONTAINS	CONTAINER	(T-71000,SRT,Kidney)	√		
9	>>	CONTAINS	TEXT	(G-A100,SNM3,Right)	√		
10	>>	CONTAINS	TEXT	(G-A101,SNM3,Left)	√		
11	>	CONTAINS	TEXT	(FG4031-01,MRUS,"LUS")	√		
12	>	CONTAINS	TEXT	(T-83200,SRT,Cervix)	√		

A.17. TID (5004)Fetal Biometry Ratio Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125001, DCM, “Fetal Biometry Ratios”)	√		
2	>	HAS OBS CONTEXT	INCLUDE	EV (11951-1, LN, "Fetus ID”)	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses”)	√		
4	>	CONTAINS	NUM	（ 11947-9, LN, "HC/AC"）	√		
5	>	CONTAINS	NUM	（ 11871-1, LN, "FL/AC"）	√		
6	>	CONTAINS	NUM	（ 11872-9, LN, "FL/BPD"）	√		
7	>	CONTAINS	NUM	(11873-7, LN, "FL/HC")	√		
8	>	CONTAINS	NUM	(C12004-01, MRUS, HrtC/TC)	√		
9	>	CONTAINS	NUM	(C12004-02, MRUS, "TCD/AC")	√		
10	>	CONTAINS	NUM	(C12004-04, MRUS, "Cephalic Index by HC")	√		

A.18. TID (5005) Fetal Biometry Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125002, DCM, ”Fetal Biometry”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (11951-1,LN, "Fetus ID”)	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses”)	√		
4	>	CONTAINS	INCLUDE	DTID (5008) Fetal Biometry Group	√		$BiometryType = MemberOf

							{DCID (12005) Fetal Biometry Measurements}

A.19. TID (5006) Fetal Long Bones Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125003, DCM, ”Fetal Long Bones”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (11951-1,LN, "Fetus ID”)	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses”)	√		
4	>	CONTAINS	INCLUDE	DTID (5008) Fetal Biometry Group	√		$BiometryType = MemberOf {DCID (12006) Fetal Long Bones Biometry Measurements}

A.20. TID (5007) Fetal Cranium Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125004, DCM, ”Fetal Cranium”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (11951-1,LN, "Fetus ID”)	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses”)	√		
4	>	CONTAINS	INCLUDE	DTID (5008) Fetal Biometry Group	√		$BiometryType = MemberOf {DCID (12007)

							Fetal Cranium}

A.21. TID (5008) Fetal Biometry Group

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT(125005, DCM, ”Biometry Group”)	√		
2	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = $BiometryType
							$Derivation = DCID (3627) Measurement Type
3	>	CONTAINS	NUM	EV (18185-9, LN, ”Gestational Age”)	√		Units= EV (d,UCUM, days)
4	>>	INFERRED FROM	CODE	DCID (228) Equation or Table	√		DCID (12013) Gestational Age Equations and Tables
5	>>	R-INFERRED FROM	NUM				
6	>>	HAS PROPERTIES	NUM	DCID (226) Population Statistical Descriptors			
7	>	CONTAINS	NUM	(DCM, 125012, "Growth Percentile Rank")	√		
8	>>	INFERRED FROM	CODE	DCID (228) Equation or Table	√		

A.22. TID (5009) Fetal Biophysical Profile Section

	NL	Relation with Parent	Value Type	Concept Name	Used in Modality	Condition	Value Set Constraint
1			CONTAINER	DT (125006, DCM, ”Biophysical	√		

				Profile")			
2	>	HAS OBS CONTEXT	INCLUDE	EV (11951-1,LN, "Fetus ID")	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses")	√		
4	>	CONTAINS	NUM	EV (11631-9, LN, "Gross Body Movement")	√		Units = DT ("{0:2}", UCUM, "range 0:2")
5	>>	HAS PROPERTIES	TEXT	(121106, DCM, "Comment")	√		
6	>	CONTAINS	NUM	EV (11632-7, LN, "Fetal Breathing")	√		Units = DT ("{0:2}", UCUM, "range 0:2")
7	>>	HAS PROPERTIES	TEXT	(121106, DCM, "Comment")	√		
8	>	CONTAINS	NUM	EV (11635-0, LN, "Fetal Tone")	√		Units = DT ("{0:2}", UCUM, "range 0:2")
9	>>	HAS PROPERTIES	TEXT	(121106, DCM, "Comment")	√		
10	>	CONTAINS	NUM	EV (11635-5, LN, "Fetal Heart Reactivity")	√		Units = DT ("{0:2}", UCUM, "range 0:2")
11	>>	HAS PROPERTIES	TEXT	(121106, DCM, "Comment")	√		
12	>	CONTAINS	NUM	EV (11630-1, LN, "Amniotic Fluid Volume")	√		Units = DT ("{0:2}", UCUM, "range 0:2")
13	>>	HAS PROPERTIES	TEXT	(121106, DCM, "Comment")	√		
14	>	CONTAINS	NUM	DT (11634-3, LN, "Biophysical Profile Sum Score")	√		
15	>>	HAS	TEXT	(121106, DCM,	√		

		PROPERTIES		"Comment")			

A.23. TID (5010) Amniotic Sac Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (121070, DCM, "Findings")	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, "Finding Site")	√		DT (T-F1300, SRT, "Amniotic Sac")
3	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = DT (11627-7, LN, "Amniotic Fluid Index")
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11624-4, LN, "First Quadrant Diameter"),
5	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11626-9, LN, "Second Quadrant Diameter")
6	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11625-1, LN, "Third Quadrant Diameter")
7	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (11623-6, LN, "Fourth Quadrant Diameter")
8	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (M12008-01,MRUS, "Amniotic Fluid")

A.24. TID (5011) Early Gestation Section

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125009, DCM, “Early Gestation”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (11951-1,LN, "Fetus ID”)	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses”)	√		
4	>	CONTAINS	INCLUDE	DTID (5008) Fetal Biometry Group	√		$BiometryType= Member of {DCID (12009) Early Gestation Biometry Measurements}

A.25. TID (5012) Ovaries Section

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (121070, DCM, “Findings”)	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√		DT (T-87000, SRT, ”Ovary”)
3	>	CONTAINS	INCLUDE	EV (T-87000, SRT, ”Ovary”)	√		$Measurement = EV (T-87000, SRT, ”Ovary”)
4	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11829-9,LN, ”Left Ovary Width”)

5	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11840-6, LN, ”Left Ovary Length”)
6	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11857-0 , LN,” Left Ovary Height”)
7	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (12164-0, LN, ”Left Ovary Volume”)
8	>	CONTAINS	INCLUDE	EV (T-87000, SRT, ”Ovary”)	√		$GroupName = EV (T-87000, SRT, ”Ovary”)
9	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11830-7, LN, ”Right Ovary Width”)
10	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11841-4, LN, ”Right Ovary Length”)
11	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11858-8, LN, ”Right Ovary Height”)
12	> >	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (12165-7, LN, ”Right Ovary Volume”)

A.26. TID (5013) Follicles Section

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (121070, DCM, “Findings”)	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√		DT (T-87600, SRT, “Ovarian Follicle”)
3	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, “Laterality”)	√		$Laterality
4	>	CONTAINS	NUM	EV (11879-4,	√		

				LN, “Number of follicles in left ovary”) OR EV (11880-2, LN, “Number of follicles in right ovary”) Number of follicles in the ovary.			
5	>	CONTAINS	INCLUDE	DTID (5014) Follicle Measurement Group	√		

A.27. TID (5014) Follicle Measurement Group

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (125007, DCM, “Measurement Group”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (12510, DCM, “Identifier”)	√		Unique among all groups of same laterality
3	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (G-D705, SRT, “Volume”)
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (M11793-02, MRUS, “Follicle Length”)
5	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (M11793-01, LN, “Follicle Width”)
6	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (M11794-01, MRUS,

							"Follicle Thickness")
7	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV (11793-7, LN, "Follicle Diameter")

A.28. TID (5015) Pelvis And Uterus Section

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	DT (125011, DCM, "Pelvis and Uterus")	√		
2	>	CONTAINS	CONTAINER	$GroupName	√		$GroupName = EV (T-83000, SRT, "Uterus")
3	>>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = $Width $Width = EV (11865-3,LN," Uterus Width")
4	>>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = $Length $Length = EV (11842-2, LN," Uterus Length")
5	>>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = $Height $Height = EV (11859-6, LN," Uterus Height")
6	>>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = $Volume $Volume = EV (33192-6, LN, "Uterus Volume")
7	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV(LN,11961-0,Cervix Length)
8	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = EV(LN,12145-9,Endometrium Thickness)
9	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (MRUS,M12011-01,Cervix Height)
1	>	CONTAINS	INCLUDE	DTID (300)	√		$Measurement =

0				Measurement			(MRUS,M12011-02,Cervix Width)
11	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (MRUS,C12011-03,Uterus Body)
12	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$Measurement = (MRUS,C12011-04,UT_L/CX_L)

A.29. TID (5025) OB-GYN Fetus Vascular Ultrasound Measurement Group

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	$AnatomyGroup	√		
2	>	HAS OBS CONTEXT	TEXT	EV (11951-1,LN, "Fetus ID")	√		
3	>	HAS OBS CONTEXT	NUM	EV (11878-6,LN, "Number of Fetuses")	√		
4	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT "Laterality")	√		DCID (244) Laterality
5	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$MeasType = DCID (12119) Vascular Ultrasound Property $Derivation = DCID (3627) Measurement Type

A.30. TID (5026) OB-GYN Pelvic Vascular Ultrasound Measurement Group

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINE	$AnatomyGroup	√		

			R				
2	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, "Laterality")	√		DCID (244) Laterality
3	>	HAS CONCEPT MOD	TEXT	(112050, DCM, "Anatomic Identifier")	√		
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√		$MeasType = DCID (12119) Vascular Ultrasound Property $Derivation = DCID (3627) Measurement Type

A.31. CID (228) Equation or Table

CSD	CV	Code Meaning
DCM	121420	Equation
DCM	121421	Equation Citation
DCM	121424	Table of Values
DCM	121422	Table of Values Citation
DCM	121423	Method Citation

A.32. CID (244) Laterality

CSD	CV	Code Meaning
SRT	G-A100	Right
SRT	G-A101	Left
SRT	G-A102	Right and left
SRT	G-A103	Unilateral

A.33. CID (3627) Measurement Type

CSD	CV	Code Meaning
SRT	R-002E1	Best value
SRT	R-00317	Mean
SRT	R-00319	Median
SRT	R-0032E	Mode
SRT	R-00355	Point source measurement
SRT	R-00353	Peak to peak

SRT	R-41D27	Visual estimation
SRT	R-10260	Estimated
SRT	R-41D2D	Calculated
SRT	R-41D41	Measured

A.34. CID (12005) Fetal Biometry Measurements

CSD	CV	Code Meaning
LN	11979-2	Abdominal Circumference
LN	11818-2	Anterior-Posterior Abdominal Diameter
LN	11851-3	Occipital-Frontal Diameter
LN	11862-0	Transverse Abdominal Diameter
LN	11820-8	Biparietal Diameter
LN	11963-6	Femur Length
LN	11984-2	Head Circumference
MRUS	M12005-02	Heart Circumference

A.35. CID (12006) Fetal Long Bones Measurements

CSD	CV	Code Meaning
LN	11966-9	Humerus length
LN	11963-6	Femur Length

A.36. CID (12009) Early Gestation Biometry Measurements

CSD	CV	Code Meaning
LN	11957-8	Crown Rump Length
MRUS	C12009-01	Mean Gestational Sac Diameter
MRUS	M12009-01	Gestational Sac Diameter1
MRUS	M12009-02	Gestational Sac Diameter2
MRUS	M12009-03	Gestational Sac Diameter3

A.37. CID (12013) Gestational Age Equations and Tables

CSD	CV	Code Meaning
LN	11885-1	Gestational Age by LMP
LN	11892-7	AC, Hadlock 1984

CSD	CV	Code Meaning
LN	11893-5	AC, Jeanty 1984
LN	11902-4	BPD, Hadlock 1984
LN	11903-2	BPD, Hansmann 1985
LN	11905-7	BPD, Jeanty 1984
LN	33082-9	BPD, Osaka 1989
LN	33083-7	BPD, Rempen 1991
LN	11906-5	BPD, Kurtz 1980
LN	11910-7	CRL, Hadlock 1992
LN	11911-5	CRL, Hansmann 1985
LN	11917-2	CRL, Jeanty 1984
LN	11913-1	CRL, Nelson 1981
LN	33094-4	CRL, Rempen 1991
LN	11914-9	CRL, Robinson 1975
LN	11920-6	FL, Hadlock 1984
LN	11922-2	FL, Hohler 1982
LN	11923-0	FL, Jeanty 1984
LN	11932-1	HC, Hadlock 1984
LN	33112-4	HC, Hansmann 1985
LN	11934-7	HC, Jeanty 1984
LN	33111-6	HC derived, Chitty 1997
LN	11936-2	Humerus, Jeanty 1984
LN	33544-8	OFD, Hansmann 1985
LN	33134-8	TCD, Hill 1990
MRUS	F12013-01	AC, ASUM 2001
MRUS	F12013-02	AC,Nicolaides 1994
MRUS	F12013-03	BPD, ASUM 2001
MRUS	F12013-04	BPD, Merz 1991
MRUS	F12013-05	BPD, Tokyo 1989
MRUS	F12013-06	BPD-oo, Chitty 1994
MRUS	F12013-07	CRL, ASUM 2001
MRUS	F12013-08	CRL, Tokyo 1989
MRUS	F12013-24	EFW, Tokyo 1989
MRUS	F12013-09	FL, ASUM 2001
MRUS	F12013-10	FL, Chitty 1997
MRUS	F12013-11	FL, Merz 1991

CSD	CV	Code Meaning
MRUS	F12013-12	FL, Tokyo 1989
MRUS	F12013-13	FL,Warda,1985
MRUS	F12013-16	HC derived, Chitty 1994
MRUS	F12013-15	HC, ASUM 2001
MRUS	F12013-17	HC,Nicolaides 1994
MRUS	F12013-18	Humerus Length, ASUM 2001
MRUS	F12013-19	OFD, ASUM 2001
MRUS	F12013-20	OFD,Nicolaides 1994
MRUS	F12013-22	TCD,Nicolaides 1994
MRUS	F12013-26	FL, Hansmann 1995
MRUS	F12013-43	EFW, Hadlock 1991
MRUS	F12013-44	Mean Gestational Sac Diameter, Daya 1991
MRUS	F12013-49	OFD,Jeanty 1984
MRUS	F12013-50	FL,Nicolaides 1994
MRUS	F12013-52	AC,Hansmann1986
MRUS	F12013-53	AC,CFEF Crequat2000
MRUS	F12013-54	AC,Chitty（plotted）1994
MRUS	F12013-55	CRL,Robinson hp BMUS 1975
RUS	F12013-61	CRL，Verburg 2008
MRUS	F12013-62	BPD，Verburg 2008

A.38. CID (12014) Fetal Body Weight

CSD	CV	Code Meaning
LN	11739-0	EFW by AC and BPD, Shepard 1982
LN	11756-4	EFW by AC, Campbell 1975
LN	33144-7	EFW by BPD, APTD, TTD, FL, Tokyo 1987
LN	11735-8	EFW by AC, BPD, FL, Hadlock 1985
LN	11732-5	EFW by AC, BPD, FL, HC, Hadlock 1985
LN	11751-5	EFW by AC, FL, Hadlock 1985
LN	11746-5	EFW by AC, FL, HC, Hadlock 1985
LN	11884-4	Average Ultrasound Age
MRUS	F12013-27	CUA by BPD, Hadlock 1984

CSD	CV	Code Meaning
MRUS	F12014-01	EFW by AC,BPD,Merz 1991
MRUS	F12014-02	EFW by AC,Merz 1991
MRUS	F12014-03	EFW by BPD, THD, Hansmann 1995
MRUS	F12014-04	EFW by BPD, FTA, FL, Osaka 1983

A.39. CID (12015) Fetal Growth Equations and Tables

CSD	CV	Code Meaning
LN	33146-2	AC by GA, Hadlock 1984
LN	33546-3	AC (derived) by GA, Chitty 1994
LN	33198-3	BPD by GA, Hadlock 1984
LN	33155-3	BPD by GA, Rempen 1991
LN	33160-3	CRL by GA, Rempen1991
LN	33181-9	TCD by GA Goldstein 1987
LN	33166-0	FL by GA, Hadlock 1984
LN	33167-8	FL by GA, Chitty 1994
LN	33173-6	HC by GA, Hadlock 1984
LN	33174-4	HC derived by GA, Chitty 1994
MRUS	F12015-01	AC by GA, ASUM 2001
MRUS	F12015-02	AC by GA, Merz 1991
MRUS	F12015-03	AC, Jeanty 1984
MRUS	F12015-05	BPD by GA, ASUM 2001
MRUS	F12015-06	BPD, Hansmann 1985
MRUS	F12015-07	BPD by GA, Merz 1988
MRUS	F12015-08	BPD,Kurtz,1980
MRUS	F12015-09	BPD,Sabbagha 1978
MRUS	F12015-10	BPD, Tokyo 1989
MRUS	F12015-13	CRL by GA ASUM 2001
MRUS	F12015-14	CRL, Hansmann 1985
MRUS	F12015-15	CRL, Robinson 1975
MRUS	F12015-16	CRL, Tokyo 1989
MRUS	F12015-17	EFW by GA, Hadlock 1984
MRUS	F12015-18	FL by GA, ASUM 2001
MRUS	F12015-19	FL, Hansmann 1995
MRUS	F12015-20	FL by GA, Merz 1991

CSD	CV	Code Meaning
MRUS	F12015-21	FL, O'Brien,1981
MRUS	F12015-22	FL, Osaka 1989
MRUS	F12015-23	FL, Tokyo, 1989
MRUS	F12015-24	FL,Warda,1985
MRUS	F12015-27	HC by GA, ASUM 2001
MRUS	F12015-28	HC, Hansmann 1985
MRUS	F12015-29	HC by GA, Merz 1991
MRUS	F12015-30	Humerus Length by GA, ASUM 2001
MRUS	F12015-31	OFD by GA, ASUM 2001
MRUS	F12015-32	OFD, Hansmann 1985
MRUS	F12015-33	OFD,Merz 1991
MRUS	F12015-34	OFD,Nicolaides 1994
MRUS	F12015-41	EFW by GA, Hansmann 1995
MRUS	F12015-37	TCD,Hill 1990

A.40. CID (12119) Vascular Ultrasound Property

CSD	CV	Code Meaning
INCLUDE CID 12120 Blood Velocity Measurements		
INCLUDE CID 12121 Vascular Indices and Ratios		
INCLUDE CID 12122 Other Vascular Properties		

A.41. CID (12120) Blood Velocity Measurements

CSD	CV	Code Meaning
LN	11653-3	End Diastolic Velocity
LN	11726-7	Peak Systolic Velocity
LN	11726-7	Peak Velocity

A.42. CID (12121) Vascular Indices and Ratios

CSD	CV	Code Meaning
LN	12008-9	Pulsatility Index
LN	12023-8	Resistivity Index

A.43. CID (12122) Other Vascular Properties

CSD	CV	Code Meaning
MRUS	M12119-02	Angle

A.44. CID (12140) Pelvic Vasculature Anatomical Location

CSD	CV	Code Meaning
SRT	T-46980	Ovarian Artery
SRT	T-46820	Uterine Artery

A.45. Mapping between Modality measurements and DICOM Concepts.

A.45.1. OB-GYN Measurements

MODALITY Label	*DICOM Mapping*
FHR	11948-7,LN,Fetal Heart Rate
HC/AC	11947-9,LN,HC/AC
FL/AC	11871-1,LN,FL/AC
FL/BPD	11872-9,LN,FL/BPD
FL/HC	11873-7,LN,FL/HC
HrtC/TC	C12004-01,MRUS,HrtC/TC
TCD/AC	C12004-02,MRUS,TCD/AC
CIHC	C12004-04, MRUS,Cephalic Index by HC
AC	11979-2,LN,Abdominal Circumference
BPD	11820-8,LN,Biparietal Diameter
FL	11963-6,LN,Femur Length
HC	11984-2,LN,Head Circumference
APAD	11818-2,LN,Anterior-Posterior Abdominal Diameter
OFD	11851-3, LN,Occipital-Frontal Diameter
TAD	11862-0, LN,Transverse Abdominal Diameter
THD	M12005-01,MRUS,Thoracic Diameter
HrtC	M12005-02,MRUS,Heart Circumference
TCD	11863-8,LN,Trans Cerebellar Diameter
HUM	11966-9,LN,Humerus length

MODALITY Label	***DICOM Mapping***
AF1	11624-4,LN,First Quadrant Diameter
AF2	11626-9,LN,Second Quadrant Diameter
AF3	11625-1,LN,Third Quadrant Diameter
AF4	11623-6,LN,Fourth Quadrant Diameter
AF	M12008-01,MRUS,Amniotic Fluid
CRL	11957-8,LN,Crown Rump Length
Mean Sac Diam	C12009-01,MRUS,Mean Gestational Sac Diameter
Cervix L	11961-0,LN,Cervix Length
Cervix L	11961-0,LN,Cervix Length
Endo	12145-9,LN,Endometrium Thickness
Cervix H	M12011-01,MRUS,Cervix Height
Cervix W	M12011-02,MRUS,Cervix Width
Uterus Body	C12011-03,MRUS,Uterus Body
UT-L/CX-L	C12011-04,MRUS,UT_L/CX_L
AFI	11627-7,LN,Amniotic Fluid Index
Ovary W	11829-9, LN, Left Ovary Width;11830-7, LN, Right Ovary Width
Ovary L	11840-6, LN, Left Ovary Length;11841-4, LN, Right Ovary Length
Ovary H	11857-0, LN, Left Ovary Height;11858-8, LN, Right Ovary Height
Ovary Vol	12164-0, LN, Left Ovary Volume;12165-7, LN, Right Ovary Volume
Follicle L	M11793-02, MRUS, Follicle Length
UT W	11865-3,LN,Uterus Width
UT L	11842-2,LN,Uterus Length
UT H	11859-6,LN,Uterus Height
UT Vol	33192-6,LN,Uterus Volume
Follicle W	M11793-01,MRUS,Follicle Width
Follicle1 Thick	M11794-01,MRUS,Follicle Thickness
Follicle Vol	G-D705,SRT,Volume
Follicle Diam	11793-7,LN,Follicle Diameter
EFW1	11727-5,LN,Estimated Weight
EFW2	11727-5,LN,Estimated Weight
CP	11767-1,LN，EFW percentile rank
UP	11767-1,LN，EFW percentile rank
CP	11767-1,LN，EFW percentile rank
UP	11767-1,LN，EFW percentile rank

MODALITY Label	*DICOM Mapping*
EFW(Campbell)	11727-5,LN,Estimated Weight
EFW(Hadlock1)	11727-5,LN,Estimated Weight
EFW(Hadlock2)	11727-5,LN,Estimated Weight
EFW(Hadlock3)	11727-5,LN,Estimated Weight
EFW(Hadlock4)	11727-5,LN,Estimated Weight
EFW(Hansmann)	11727-5,LN,Estimated Weight
EFW(Merz1)	11727-5,LN,Estimated Weight
EFW(Merz2)	11727-5,LN,Estimated Weight
EFW(Osaka)	11727-5,LN,Estimated Weight
EFW(Shepard)	11727-5,LN,Estimated Weight
EFW(Tokyo)	11727-5,LN,Estimated Weight
Sac Diam1	M12009-01,MRUS,Gestational Sac Diameter1
Sac Diam2	M12009-02,MRUS,Gestational Sac Diameter2
Sac Diam3	M12009-03,MRUS,Gestational Sac Diameter3

A.45.2. Vasculature Anatomic Location

MODALITY Vasculature Anatomic Location	*DICOM Mapping*
Ovarian A	T-46980, SRT, Ovarian Artery
Ut A	T-46820, SRT, Uterine Artery

A.45.3. OB-GYN Vascular Measurements

MODALITY Label	*DICOM Mapping*
<Vasculature Anatomic Location> ED	11653-3, LN, End Diastolic Velocity
<Vasculature Anatomic Location> PS	11726-7, LN, Peak Systolic Velocity
<Vasculature Anatomic Location> PV	11726-7, LN, Peak Velocity
<Vasculature Anatomic Location> PI	12008-9, LN, Pulsatility Index
<Vasculature Anatomic Location> RI	12023-8, LN, Resistivity Index
<Vasculature Anatomic Location> θ	M12119-02, MRUS, Angle

A.45.4. Biophysical Profile Measurements

MODALITY Label	*DICOM Mapping*
FM	11631-9,LN,Gross Body Movement
FBM	11632-7,LN,Fetal Breathing

FT	11635-0,LN,Fetal Tone
FHR	11635-5,LN,Fetal Heart Reactivity
AF	11630-1,LN,Amniotic Fluid Volume
Total Score	11634-3,LN,Biophysical Profile Sum Score
Fetal Lie	FG12018-02,MRUS,Fetal Lie
Gender	FG7455-01,MRUS,Gender
3 Vessel Cord	FG7160-01,MRUS,3 Vessel Cord
Face	T-D1200,SNM3,Face
Nose Lips	FG4-01,MRUS,Nose Lips
Cord insertion	FG12011-01,MRUS,Cord insertion
LUS	FG4031-02,MRUS,LUS
Stomach	T-57000,SNM3,Stomach
Left Kidney	T-71000,SRT,Kidney
Right Kidney	T-71000,SRT,Kidney
Bladder	T-74000,SRT,Bladder
Gall Bladder	T-63000,SRT,Gall bladder
Liver	T-62000,SRT,Liver
Fetal Bowel	FG4031-03,MRUS,Fetal Bowel
Upper Extremities	FG4031-05,MRUS,Upper Extremities
Lower Extremities	FG4031-06,MRUS,Lower Extremities
Cardiac Activity	FG12239-01,MRUS,Cardiac Activity
4C HEART	FG4031-08,MRUS,4C HEART
Aorta	T-42000,SNM3,Aorta
Pulmonary Artery	T-44000,SNM3,Pulmonary Artery
ARCH	FG3010-01,MRUS,ARCH
LVOT	T-32650,SRT,Left Ventricular Outflow Tract
RVOT	T-32550,SRT,Right Ventricle Outflow Tract
Lateral Ventricles	FG4030-02,MRUS,Lateral Ventricles
Cisterna Magna	11860-4,LN,Cisterna Magna
Cerebellum	T-A600A,SNM3,Cerebellum
CSP	FG4030-03,MRUS,CSP
Cervical Spine	T-11501,SNM3,Cervical Spine
Thoracic Spine	T-11502,SNM3,Thoracic Spine
Lumbar Spine	T-11503,SNM3,Lumbar Spine
Sacral Spine	FG4031-,MRUS,Sacral Spine
Placental Location	FG12011-01,MRUS,Placental Location
Amniotic Fluid	FG12011-02,MRUS,Amniotic Fluid
Placental Grade	FG12011-03,MRUS,Placental Grade
Adnexa	FG12011-03,MRUS,Adnexa
Ovaries	T-87000,SRT,Ovary
Kidney	T-71000,SRT,Kidney
Cervix	T-83200,SRT,Cervix

B. Appendix : Cardiac structured reporting template

This appendix lists the DICOM Structured Report (SR) mappings used in the Cardiac Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Cardiac Report mappings follow the DICOM SR Template TID 5200: Cardiac Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

Attention:There is no Cardiac measurement in Product Type ofTE5/TE5T/TE5S/TE5 Pro/TE5 Super/TE7 MAZUI.

B.1. TID (5200) Echocardiography Procedure Report

This template forms the top of a content tree that allows an ultrasound system to describe the results of an adult echocardiography imaging procedure.

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (125200, DCM, “Adult Echocardiography Procedure Report”)	√		
2	>	HAS CONCEPT MOD	INCLUDE	DTID (1204) Language of Content Item and Descendants			
3	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	√		
4	>	CONTAINS	INCLUDE	DTID (5201) Echocardiography Patient Characteristics	√		
5	>	CONTAINS	CONTAINER	(111028, DCM, “Image Library”)			
6	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32600, SRT, “Left Ventricle”) $MeasType = DCID (12200) Echocardiography Left

							Ventricle
7	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32500, SRT, “Right Ventricle”) $MeasType = DCID (12204) Echocardiography Right Ventricle
8	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32300, SRT, “Left Atrium”) $MeasType = DCID (12205) Echocardiography Left Atrium
9	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-32200, SRT, “Right Atrium”) $MeasType = DCID (12206) Echocardiography Right Atrium
10	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35400, SRT, “Aortic Valve”) $MeasType = DCID (12211) Echocardiography Aortic Valve
11	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35300, SRT, “Mitral Valve”) $MeasType = DCID (12207) Echocardiography Mitral Valve
12	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35200, SRT, “Pulmonic Valve”) $MeasType = DCID (12209) Echocardiography Pulmonic Valve

13	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-35100, SRT, "Tricuspid Valve") $MeasType = DCID (12208) Echocardiography Tricuspid Valve
14	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-42000, SRT, "Aorta") $MeasType= DCID (12212) Echocardiography Aorta
15	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-44000, SRT, "Pulmonary artery") $MeasType DCID (12210) = Echocardiography Pulmonary Artery
16	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (T-48600, SRT, "Vena Cava") $MeasType = DCID (12215) Echocardiography Vena Cavae
17	>	CONTAINS	INCLUDE	DTID (5202) Echo Section	√		$SectionSubject = EV (8867-4, SRT, "Hear rate") $MeasType = DCID (12220) Echocardiography Common Measurements

B.2. TID(1001) Observation Context

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint

1	>	HAS OBS CONTEXT	CODE	EV (121005,DCM, “Observer Type”)	√		(121006,DCM, “Person”)
2	>	HAS OBS CONTEXT	PNAME	EV (121008,DCM, “Person Observer Name”)	√		Operator from Info
3	>	HAS OBS CONTEXT	TEXT	EV (121009,DCM, “ Person Observer’s Organization Name”)	√		Institution Name (0008,0080) of the General Equipment Module
4	>	HAS OBS CONTEXT	CODE	EV (121010,DCM, “ Person Observer’s Role in the Organization”)	√		(121093, DCM, "Sonographer")
5	>	HAS OBS CONTEXT	CODE	EV (121024, DCM, "Subject Class”)	√		(121025, DCM, "Patient”)
6	>	HAS OBS CONTEXT	PNAME	EV (121029,DCM, "Subject Name”)	√		value of Patient’s Name (0010,0010) in Patient Module
7	>	HAS OBS CONTEXT	DATE	EV (121031,DCM, "Subject Birth Date”)	√		value of Patient’s Birth Date (0010,0030) in Patient Module
8	>	HAS OBS CONTEXT	CODE	EV (121032,DCM, "Subject Sex”)	√		value equivalent to Patient’s Sex (0010,0040) in Patient Module
9	>	HAS OBS CONTEXT	NUM	EV (121033,DCM, "Subject Age”)	√		value of Patient’s Age (0010,1010) in Patient Study Module

B.3. TID (5201) Echocardiography Patient Characteristics

	NL	Rel with Parent	VT	Concept Name	Used in Modality	Value Set Constraint	Comments
1			CONTAINER	EV (121118, DCM, “Patient Characteristics”)	√		
2	>	CONTAINS	NUM	EV (121033, DCM, "Subject Age”)	√	Units = DCID (7456) Units of Measure for Age	from Info
3	>	CONTAINS	CODE	EV (121032, DCM, "Subject Sex”)	√	DCID (7455) Sex	from worklist or

							Info
4	>	CONTAINS	NUM	EV (8867-4, LN, “Heart Rate”)	√		from Info
5	>	CONTAINS	NUM	EV (F-008EC, SRT, “Systolic Blood Pressure”)	√		from Info
6	>	CONTAINS	NUM	EV (F-008ED, SRT, "Diastolic Blood Pressure")	√		from Info
7	>	CONTAINS	NUM	EV(18070-3,LN,"Right Atrium Systolic Pressure")	√		from Info
8	>	CONTAINS	NUM	EV (8302-2, LN, “Patient Height”)	√		from worklist or Info
9	>	CONTAINS	NUM	EV (29463-7, LN, “Patient Weight”)	√		from worklist or Info
10	>	CONTAINS	NUM	EV (8277-6, LN, “Body Surface Area”)	√		from Info
11	>>	INFERRED FROM	CODE	EV (8278-4, LN, "Body Surface Area Formula")	√	BCID (3663) Body Surface Area Equations	

B.4. TID (5202) ECHO SECTION

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	EV (121070, DCM, ”Findings”)	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, “Finding Site”)	√	$SectionSubject = EV (T-32600, SRT, “Left Ventricle”)	
3	>	CONTAINS	CONTAINER	DT (125007, DCM, “Measurement Group”)	√		
4	>>	CONTAINS	INCLUDE	DTID (5203) Echo Measurement	√	$Measurement= $MeasType = DCID (12200) Echocardiography Left Ventricle $Method=CID	

						(12227) Echocardiography Measurement Method	

B.5. TID (5203) Echo Measurement

	NL	Relation with Parent	Value Type	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			INCLUDE	DTID (300) Measurement	√	$Measurement = $Measurement $Method = $Method $TargetSite = BCID (12236) Echo Anatomic Sites $TargetSiteMod = BCID (12237) Echocardiography Anatomic Site Modifiers	
2	>	HAS CONCEPT MOD	CODE	EV(G-C036,SRT,"Measurement Method")	√	This row is used only if the measurement or calculation this template is invoked with mandates it. Otherwise this row is not used. The values are taken from the BCID 12227	
3	>	HAS CONCEPT MOD	CODE	EV (G-C048, SRT, “Flow Direction”)	√	BCID (12221) Flow Direction	
4	>	HAS CONCEPT MOD	CODE	EV (R-40899, SRT, “Respiratory Cycle Point”)		DCID (12234) Respiration State	

5	>	HAS CONCEPT MOD	CODE	EV (R-4089A, SRT, "Cardiac Cycle Point")	√	DCID (12233) Respiration State	
6	>	HAS ACQ CONTEXT	CODE	EV (G-0373, SRT, "Image Mode")	√	DCID (12224) Ultrasound Image Modes	

B.6. CID (12200) Echocardiography Left Ventricle

INCLUDE CID 12220 Echocardiography Common Measurements
INCLUDE CID 12201 Left Ventricle Linear
INCLUDE CID 12202 Left Ventricle Volume
INCLUDE CID 12222 Orifice Flow Properties
INCLUDE CID 12203 Left Ventricle Other
INCLUDE CID 12239 Cardiac Output Properties

B.7. CID (12201) Left Ventricle Linear

CSD	CV	Code Meaning
LN	29436-3	Left Ventricle Internal End Diastolic Dimension
LN	29438-9	Left Ventricle Internal Systolic Dimension
LN	18051-3	Left Ventricular Fractional Shortening
LN	18154-5	Interventricular Septum Diastolic Thickness
LN	18155-2	Interventricular Septum to Posterior Wall Thickness Ratio
LN	18054-7	Interventricular Septum % Thickening
LN	18158-6	Interventricular Septum Systolic Thickness
LN	18053-9	Left Ventricle Posterior Wall % Thickening
LN	18077-8	Left Ventricle diastolic major axis
LN	18076-0	Left Ventricle systolic major axis
LN	18156-0	Left Ventricle Posterior Wall Systolic Thickness
LN	18152-9	Left Ventricle Posterior Wall Diastolic Thickness

B.8. CID (12202) Left Ventricle Volume

CSD	CV	Code Meaning
LN	18026-5	Left Ventricular End Diastolic Volume
LN	18148-7	Left Ventricular End Systolic Volume
LN	18043-0	Left Ventricular Ejection Fraction

B.9. CID (12203) Left Ventricle Other

CSD	CV	Code Meaning
LN	18087-7	Left Ventricle Mass
LN	18071-1	Left Ventricular Isovolumic Relaxation Time

B.10. CID (12204) Echocardiography Right Ventricle

CSD	CV	Code Meaning
INCLUDE CID 12222 Orifice Flow Properties		
LN	20304-2	Right Ventricular Internal Diastolic Dimension
LN	20305-9	Right Ventricular Internal Systolic Dimension
SRT	G-0380	Right Ventricular Peak Systolic Pressure
LN	18153-7	Right Ventricular Anterior Wall Diastolic Thickness
LN	18157-8	Right Ventricular Anterior Wall Systolic Thickness

B.11. CID (12205) Echocardiography Left Atrium

CSD	CV	Code Meaning
LN	29469-4	Left Atrium Antero-posterior Systolic Dimension
LN	17985-3	Left Atrium to Aortic Root Ratio
LN	17977-0	Left Atrium Systolic Area

B.12. CID (12206) Echocardiography Right Atrium

CSD	CV	Code Meaning
LN	17988-7	Right Atrium Systolic Area

B.13. CID (12207) Echocardiography Mitral Valve

CSD	CV	Code Meaning
INCLUDE CID 12222 Orifice Flow Properties		
LN	17978-8	Mitral Valve A-Wave Peak Velocity
LN	18037-2	Mitral Valve E-Wave Peak Velocity
LN	18038-0	Mitral Valve E to A Ratio
SRT	G-0386	Mitral Valve AT/DT Ratio
MRUS	M12207-06	Mitral Valve E-wave Pressure Gradient
MRUS	M12207-07	Mitral Valve A-wave Pressure Gradient

CSD	CV	Code Meaning
MRUS	M12207-12	Systolic Velocity of the Mitral Annulus(medial)
MRUS	M12207-13	Early diastolic velocity of the mitral annulus(medial)
MRUS	M12207-14	Late diastolic velocity of the mitral annulus(medial)
MRUS	M12207-15	Early diastolic velocity to Late diastolic velocity Ratio
MRUS	M12207-16	Acceleration Time of Early diastolic velocity
MRUS	M12207-17	Acceleration Rate of Early diastolic velocity
MRUS	M12207-18	Deceleration Time of Early diastolic velocity
MRUS	M12207-19	Deceleration Rate of Early diastolic velocity
MRUS	M12207-20	Systolic Velocity of the Mitral Annulus(lateral)
MRUS	M12207-21	Early diastolic velocity of the mitral annulus(lateral)
MRUS	M12207-22	Late diastolic velocity of the mitral annulus(lateral)
MRUS	M12207-23	Early diastolic velocity to Late diastolic velocity Ratio
MRUS	M12207-24	Acceleration Time of Early diastolic velocity
MRUS	M12207-25	Acceleration Rate of Early diastolic velocity
MRUS	M12207-26	Deceleration Time of Early diastolic velocity
MRUS	M12207-27	Deceleration Rate of Early diastolic velocity
MRUS	M12207-35	MV E/Ea medial
MRUS	M12207-36	MV E/Ea lateral
MRUS	M12207-37	MV E/Ea medial lateral
LN	18036-4	Mitral Valve EPSS, E wave

B.14. CID (12208) Echocardiography Tricuspid Valve

CSD	CV	Code Meaning
INCLUDE CID 12222 Orifice Flow Properties		
MRUS	M12208-04	Tricuspid Annular Plane Systolic Excursion

B.15. CID (12209) Echocardiography Pulmonic Valve

INCLUDE CID 12222 Orifice Flow Properties

B.16. CID (12210) Echocardiography Pulmonary Artery

CSD	CV	Code Meaning
MRUS	C12210-01	Pulmonary Artery End Diastolic Pressure

B.17. CID (12211) Echocardiography Aortic Valve

CSD	CV	Code Meaning
INCLUDE CID 12220 Echocardiography Common Measurements		
INCLUDE CID 12222 Orifice Flow Properties		
LN	17996-0	Aortic Valve Cusp Separation

B.18. CID (12212) Echocardiography Aorta

CSD	CV	Code Meaning
LN	18015-8	Aortic Root Diameter

B.19. CID (12215) Echocardiography Vena Cavae

CSD	CV	Code Meaning
LN	18006-7	Inferior Vena Cava Diameter
MRUS	C12215-03	Collapsible index of inferior vena cava
MRUS	C12215-04	Distensibility index of inferior vena cava
MRUS	C12215-05	Collapsible index of superior vena cava
MRUS	C12215-06	Distensibility index of superior vena cava
MRUS	C12215-07	Inferior Vena Cava Variability Index

B.20. CID (12220) Echocardiography Common Measurements

CSD	CV	Code Meaning
LN	8867-4	Heart rate

B.21. CID (12221) Flow Direction

CSD	CV	Code Meaning
SRT	R-42047	Antegrade Flow
SRT	R-42E61	Regurgitant Flow

B.22. CID (12222) Orifice Flow Properties

CSD	CV	Code Meaning
SRT	G-038E	Cardiovascular Orifice Area
SRT	G-038F	Cardiovascular Orifice Diameter
LN	11726-7	Peak Velocity
LN	20352-1	Mean Velocity
LN	20247-3	Peak Gradient
LN	20256-4	Mean Gradient
LN	20354-7	Velocity Time Integral
LN	20168-1	Acceleration Time
LN	11653-3	End Diastolic Velocity
LN	20217-6	Deceleration Time
LN	20168-1	Acceleration Time
LN	20216-8	Deceleration Slope
MRUS	M12222-02	Acceleration Slope
MRUS	M12222-01	Angle
MRUS	M12222-08	Presure Gradient at end-Diastole
SRT	G-038E	Cardiovascular Orifice Area
LN	20280-4	Pressure Half-Time

B.23. CID (12224) Ultrasound Image Modes

CSD	CV	Code Meaning
SRT	G-03A2	2D mode
SRT	G-0394	M mode
SRT	R-409E2	Doppler Color Flow
SRT	R-409E4	Doppler Pulsed
SRT	R-409E3	Doppler Continuous Wave
DCM	125230	Power Doppler

B.24. CID (12226) Echocardiography Image View

CSD	CV	Code Meaning
SRT	G-A19B	Apical two chamber
SRT	G-A19C	Apical four chamber

B.25. CID (12227) Echocardiography Measurement Method

INCLUDE CID 12228 Echocardiography Volume Methods
INCLUDE CID 12229 Echocardiography Area Methods
INCLUDE CID 12230 Gradient Methods
INCLUDE CID 12232 Myocardium Mass Methods

B.26. CID (12228) Volume Methods

CSD	CV	Code Meaning
DCM	125204	Area-Length Biplane
DCM	125205	Area-Length Single Plane
DCM	125211	Biplane Ellipse
DCM	125226	Single Plane Ellipse
DCM	125206	Cube Method
DCM	125207	Method of Disks, Biplane
DCM	125208	Method of Disks, Single Plane
DCM	125209	Teichholz
MRUS	VM12228-01	Bullet
MRUS	VM12228-02	Method of Disks,Simpson
MRUS	VM12228-03	Gibson
DCM	125228	Modified Simpson

B.27. CID (12229) Area Methods

CSD	CV	Code Meaning
DCM	125210	Area by Pressure Half-Time
DCM	125212	Continuity Equation
DCM	125213	Continuity Equation by Mean Velocity
DCM	125214	Continuity Equation by Peak Velocity
DCM	125215	Continuity Equation by Velocity Time Integral
DCM	125216	Proximal Isovelocity Surface Area
DCM	125220	Planimetry

B.28. CID (12230) Gradient Methods

CSD	CV	Code Meaning

CSD	CV	Code Meaning
DCM	125217	Full Bernoulli
DCM	125218	Simplified Bernoulli

B.29. CID (12232) Myocardium Mass Methods

CSD	CV	Code Meaning
DCM	125221	Left Ventricle Mass by M-mode
DCM	125222	Left Ventricle Mass by Truncated Ellipse

B.30. CID (12233) Cardiac Phase

CSD	CV	Code Meaning
SRT	F-32011	End Diastole
DCM	109070	End Systole

B.31. CID (12234) Respiration Phase

CSD	CV	Code Meaning
SRT	F-20010	Inspiration
SRT	F-20020	Expiration

B.32. CID (12239) Cardiac Output Properties

CSD	CV	Code Meaning
SRT	F-32120	Stroke Volume
SRT	F-32100	Cardiac Output

B.33. Mapping between Modality measurements and DICOM Concepts.

B.33.1. Left Ventricle Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
LVOT HR	8867-4,LN,Heart rate	
LVIDd(2D)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode;

LVIDd(M)	29436-3,LN,Left Ventricle Internal End Diastolic Dimension	ImageMode = G-0394,SRT,M Mode;
LVIDs(2D)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LVIDs(M)	29438-9,LN,Left Ventricle Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
FS(Teich-2D)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
FS(Teich-M)	18051-3,LN,Left Ventricular Fractional Shortening	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
IVSd(2D)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
IVSd(M)	18154-5,LN,Interventricular Septum Diastolic Thickness	ImageMode = G-0394,SRT,M Mode; Method =
IVSd/LVPWd(2D)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode;
IVSs/LVPWs(2D)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode;
IVSd/LVPWd(M)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-0394,SRT,M Mode;
IVSs/LVPWs(M)	18155-2,LN,Interventricular Septum to Posterior Wall Thickness Ratio	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-0394,SRT,M Mode;
IVS%(2D)	18054-7,LN,Interventricular Septum % Thickening	ImageMode = G-03A2,SRT,2D mode;
IVS%(M)	18054-7,LN,Interventricular Septum % Thickening	ImageMode = G-0394,SRT,M Mode;
IVSs(2D)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-03A2,SRT,2D mode;
IVSs(M)	18158-6,LN,Interventricular Septum Systolic Thickness	ImageMode = G-0394,SRT,M Mode;
LVPW%(2D)	18053-9,LN,Left Ventricle Posterior Wall % Thickening	ImageMode = G-03A2,SRT,2D mode;
LVPW%(M)	18053-9,LN,Left Ventricle Posterior Wall % Thickening	ImageMode = G-0394,SRT,M Mode;
LVPWs(2D)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode;
LVPWs(M)	18156-0,LN,Left Ventricle Posterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode;

LVPWd(2D)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
LVPWd(M)	18152-9,LN,Left Ventricle Posterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode;
rd2i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
rd4i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =F-32011,SRT,End Diastole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
rs2i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
rs4i	M12222-06,MRUS,Flow Radius	CardiacCyclePoint =109070,SRT,End Systole; ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
EDV(Simpson BP)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
EDV(Simp BP-A2C)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
EDV(Simp BP-A4C)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
EDV(Teich-M)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
EDV(Teich-2D)	18026-5,LN,Left Ventricular End Diastolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz

ESV(Simpson BP)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
ESV(Simp BP-A2C)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
ESV(Simp BP-A4C)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
ESV(Teich-M)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
ESV(Teich-2D)	18148-7,LN,Left Ventricular End Systolic Volume	ImageMode =G-03A2,SRT,2D mode; Method =125209,DCM,Teichholz
EF(Simpson BP)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
EF2(Simpson BP)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
EF4(Simpson BP)	18043-0,LN,Left Ventricular Ejection Fraction	ImageMode =G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
LVOT Diam(2D)	G-038F,SRT,Cardiovascular Orifice Diameter	ImageMode =G-03A2,SRT,2D mode;
MV Area	G-038E,SRT, Cardiovascular Orifice Area	ImageMode =G-03A2,SRT,2D mode;
MV PHT	G-038E,SRT, Cardiovascular Orifice Area	ImageMode =G-03A2,SRT,2D mode;
MVA(VTI)	G-038E,SRT, Cardiovascular Orifice Area	ImageMode =G-03A2,SRT,2D mode;
LVOT Vmax(LVOT VTI)	11726-7,LN,Peak Velocity	
LVOT Vmean	20352-1,LN,Mean Velocity	
LVOT PGmax(LVOT VTI)	20247-3,LN,Peak Gradient	
LVOT PGmean	20256-4,LN,Mean Gradient	
LVOT VTI	20354-7,LN,Velocity Time Integral	
PHT	20280-4,LN, Pressure Half-Time	
LVOT θ	M12222-01,MRUS, Angle	

LV Mass(Cube-M)	18087-7,LN,Left Ventricle Mass	ImageMode =G-0394,SRT,M Mode; Method =125221,DCM,Left Ventricle Mass by M-mode
LV Mass(Cube-2D)	18087-7,LN,Left Ventricle Mass	ImageMode =G-03A2,SRT,2D mode;
LVOT SV	F-32120,SRT,Stroke Volume	
SV(Simpson BP)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
SV2(Simpson BP)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
SV4(Simpson BP)	F-32120,SRT,Stroke Volume	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
LVOT CO	F-32100,SRT,Cardiac Output	
CO(Simpson BP)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; Method =125207,DCM,Method of Disks, Biplane
CO2(Simpson BP)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19B,SRT,Apical two chamber; Method =125207,DCM,Method of Disks, Biplane
CO4(Simpson BP)	F-32100,SRT,Cardiac Output	ImageMode = G-03A2,SRT,2D mode; ImageView = G-A19C,SRT,Apical four chamber; Method =125207,DCM,Method of Disks, Biplane
CO(Teich-M)	F-32100,SRT,Cardiac Output	ImageMode = G-0394,SRT,M Mode; Method =125209,DCM,Teichholz
CO(Teich-2D)	F-32100,SRT,Cardiac Output	Method =125209,DCM,Teichholz
FAC	G-0376, SRT ,Left Ventricular Fractional Area Change	ImageMode =G-03A2,SRT,2D mode;

B.33.2. Right Ventricle Measurements

MODALITY Label	***DICOM Mapping***	***Optional Modifiers***
RVDd(2D)	20304-2,LN,Right Ventricular Internal Diastolic Dimension	ImageMode = G-03A2,SRT,2D mode;

RVDd(M)	20304-2,LN,Right Ventricular Internal Diastolic Dimension	ImageMode = G-0394,SRT,M Mode;
RVDs(2D)	20305-9,LN,Right Ventricular Internal Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
RVDs(M)	20305-9,LN,Right Ventricular Internal Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
RVSP	G-0380,SRT,Right Ventricular Peak Systolic Pressure	
RVAWd(2D)	18153-7,LN,Right Ventricular Anterior Wall Diastolic Thickness	ImageMode = G-03A2,SRT,2D mode;
RVAWd(M)	18153-7,LN,Right Ventricular Anterior Wall Diastolic Thickness	ImageMode = G-0394,SRT,M Mode;
RVAWs(2D)	18157-8,LN,Right Ventricular Anterior Wall Systolic Thickness	ImageMode = G-03A2,SRT,2D mode;
RVAWs(M)	18157-8,LN,Right Ventricular Anterior Wall Systolic Thickness	ImageMode = G-0394,SRT,M Mode;
RVOT Vmax(RVOT VTI)	11726-7,LN,Peak Velocity	
RVOT Vmean	20352-1,LN,Mean Velocity	
RVOT PGmax(RVOT VTI)	20247-3,LN,Peak Gradient	
RVOT PGmean	20256-4,LN,Mean Gradient	
RVOT VTI	20354-7,LN,Velocity Time Integral	
RVOT θ	M12222-01,MRUS,Angle	
RV FAC	C12204-03,MRUS ,Right Ventricular Fractional Area Change	ImageMode = G-03A2,SRT,2D mode;
PHT	20280-4,LN, Pressure Half-Time	

B.33.3. Left Atrium Measurements

MODALITY Label	***DICOM Mapping***	***Optional Modifiers***
LA Diam(2D)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-03A2,SRT,2D mode;
LA Diam(M)	29469-4,LN,Left Atrium Antero-posterior Systolic Dimension	ImageMode = G-0394,SRT,M Mode;
LA/Ao(2D)	17985-3,LN,Left Atrium to Aortic Root Ratio	ImageMode = G-03A2,SRT,2D mode;
LA/Ao(M)	17985-3,LN,Left Atrium to Aortic Root Ratio	ImageMode = G-0394,SRT,M Mode;
LA Area	17977-0,LN,Left Atrium Systolic Area	ImageMode = G-03A2,SRT,2D mode;

B.33.4. Right Atrium Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
RA Area	17988-7,LN,Right Atrium Systolic Area	ImageMode = G-03A2,SRT,2D mode;

B.33.5. Aortic Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
ACS(2D)	17996-0,LN,Aortic Valve Cusp Separation	ImageMode = G-03A2,SRT,2D mode;
ACS(M)	17996-0,LN,Aortic Valve Cusp Separation	ImageMode = G-0394,SRT,M Mode;
AV HR	8867-4,LN,Heart rate	
AVA(VTI)	G-038E,SRT,Cardiovascular Orifice Area	Flow Direction =R-42047,SRT,Antegrade Flow; Method =125215,DCM,Continuity Equation by Velocity Time Integral
AV Vmax	11726-7,LN,Peak Velocity	Flow Direction = R-42047,SRT,Antegrade Flow;
AV PGmax	20247-3,LN,Peak Gradient	Flow Direction = R-42047,SRT,Antegrade Flow;
AV PGmean	20256-4,LN,Mean Gradient	Flow Direction = R-42047,SRT,Antegrade Flow;
AV VTI	20354-7,LN,Velocity Time Integral	Flow Direction = R-42047,SRT,Antegrade Flow;
AR DecT	20217-6,LN,Deceleration Time	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV DecT	20217-6,LN,Deceleration Time	Flow Direction = R-42047,SRT, Antegrade Flow;
PV AccT	20168-1,LN, Acceleration Time	Flow Direction = R-42047,SRT, Antegrade Flow;
PV DecT	20217-6,LN, Deceleration Time	Flow Direction = R-42047,SRT, Antegrade Flow;
PV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction = R-42047,SRT, Antegrade Flow;
PV Dec Slope	20216-8, LN, Deceleration Slope	Flow Direction = R-42047,SRT, Antegrade Flow;
AR Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction = R-42E61,SRT,Regurgitant Flow;
AV Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction = R-42047,SRT, Antegrade Flow;
AV θ	M12222-01,MRUS,Angle	Flow Direction = R-42047,SRT,Antegrade Flow;
PR θ	M12222-01,MRUS,Angle	Flow Direction = R-42E61,SRT, Regurgitant Flow;

B.33.6. Mitral Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
MV A Vel	17978-8,LN,Mitral Valve A-Wave Peak Velocity	
MV E Vel	18037-2,LN,Mitral Valve E-Wave Peak Velocity	
MV E Vel(MV E/A)	18037-2,LN,Mitral Valve E-Wave Peak Velocity	

MV E/A(MV E/A)	18038-0,LN,Mitral Valve E to A Ratio	
MV AccT/DecT	G-0386,SRT,Mitral Valve AT/DT Ratio	
MV E PG	M12207-06,MRUS,Mitral Valve E-wave Pressure Gradient	
MV A PG	M12207-07,MRUS,Mitral Valve A-wave Pressure Gradient	
MV Vmax(MV VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV Pgmax	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Pgmax	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV Pgmean	20256-4,LN,Mean Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
MR Pgmean	20256-4,LN,Mean Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT, Antegrade Flow;
MR VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42E61,SRT,Regurgitant Flow;
MV AccT	20168-1,LN,Acceleration Time	Flow Direction =R-42047,SRT, Antegrade Flow;
MV DecT	20217-6,LN,Deceleration Time	Flow Direction =R-42047,SRT, Antegrade Flow;
MV Dec Slope	20216-8,LN,Deceleration Slope	Flow Direction =R-42047,SRT, Antegrade Flow;
MV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction =R-42047,SRT, AntegradeFlow;
PV Acc Slope	M12222-02,MRUS,Acceleration Slope	Flow Direction =R-42047,SRT, Antegrade Flow
MV EPSS	18036-4,LN, Mitral Valve EPSS, E wave	ImageMode = G-03A2,SRT,2D mode;
MV EPSS（M）	18036-4,LN, Mitral Valve EPSS, E wave	ImageMode = G-0394,SRT,M Mode;
MV PHT	20280-4,LN, Pressure Half-Time	ImageMode = Doppler;

B.33.7. Pulmonic Valve Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*

PVθ	M12222-01,MRUS,Angle	Flow Direction =R-42047,SRT,Antegrade Flow;
PRθ	M12222-01,MRUS,Angle	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Ved	11653-3,LN,End Diastolic Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
PR Vmax	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Vmax(PV VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
PR Vmax(PR VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Vmax(PR PHT)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PR Vmax(PISA PR)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
PV Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
PV PGmax(PV VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
PV PGmean	20256-4,LN,Mean Gradient	Flow Direction =R-42047,SRT,Antegrade Flow;
PV VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT,Antegrade Flow;
PR PGed	M12222-08,MRUS,Presure Gradient at end-Diastole	Flow Direction =R-42E61,SRT,Regurgitant Flow;

B.33.8. Tricuspid Valve Measurements

MODALITY Label	***DICOM Mapping***	***Optional Modifiers***
TV θ	M12222-01,MRUS,Angle	Flow Direction =R-42047,SRT,Antegrade Flow;
TV Vmax(TV VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
TR Vmax(TR VTI)	11726-7,LN,Peak Velocity	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV Vmean	20352-1,LN,Mean Velocity	Flow Direction =R-42047,SRT, Antegrade Flow;
TV PGmax(TV VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TR PGmax(TR VTI)	20247-3,LN,Peak Gradient	Flow Direction =R-42E61,SRT,Regurgitant Flow;
TV PGmean	20256-4,LN,Mean Gradient	Flow Direction =R-42047,SRT, Antegrade Flow;
TV VTI	20354-7,LN,Velocity Time Integral	Flow Direction =R-42047,SRT, Antegrade Flow;

B.33.9. Aorta Measurements

MODALITY Label	***DICOM Mapping***	***Optional Modifiers***
Ao Diam(2D)	18015-8,LN,Aortic Root Diameter	ImageMode = G-03A2,SRT,2D mode;
Ao Diam(M)	18015-8,LN,Aortic Root Diameter	ImageMode = G-0394,SRT,M Mode;

B.33.10. Pulmonary Artery Measurements

MODALITY Label	***DICOM Mapping***	***Optional Modifiers***

PAEDP	C12210-01,MRUS,Pulmonary Artery End Diastolic Pressure	

B.33.11. Vena Cava Measurements

MODALITY Label	*DICOM Mapping*	*Optional Modifiers*
IVC Diam(Insp)	18006-7,LN,Inferior Vena Cava Diameter	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode;
IVC Diam(Insp)	18006-7,LN,Inferior Vena Cava Diameter	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode = G-0394, SRT,M Mode;
IVC Diam(Expir)	18006-7,LN,Inferior Vena Cava Diameter	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;
IVC Diam(Expir)	18006-7,LN,Inferior Vena Cava Diameter	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode = G-0394,SRT,M mode;
IVC-CI	C12215-03, MRUS, Collapsible index of inferior vena cava	ImageMode =G-03A2,SRT,2D mode;
IVC-CI(M)	C12215-03, MRUS, Collapsible index of inferior vena cava	ImageMode = G-0394,SRT,M mode;
IVC-DI	C12215-04,MRUS,Distensibility index of inferior vena cava	ImageMode =G-03A2,SRT,2D mode;
IVC-DI(M)	C12215-04,MRUS,Distensibility index of inferior vena cava	ImageMode = G-0394,SRT,M mode;
SVC-CI	C12215-05,MRUS,Collapsible index of superior vena cava	ImageMode =G-03A2,SRT,2D mode;
SVC-DI	C12215-06,MRUS,Distensibility index of superior vena cava	ImageMode =G-03A2,SRT,2D mode;
IVC Depth(Insp)	M12215-04,MRUS, Inferior Vena Cava Depth	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode;
IVC Depth(Insp M)	M12215-04,MRUS, Inferior Vena Cava Depth	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode = G-0394, SRT,M Mode;
IVC Depth(Expir)	M12215-04,MRUS, Inferior Vena Cava Depth	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;

IVC Depth(Expir M)	M12215-04,MRUS, Inferior Vena Cava Depth	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode = G-0394,SRT,M mode;
SVC Depth(Insp)	M12215-05,MRUS, Superior Vena Cava Depth	RespiratoryCyclePoint=F-20010,SRT, Inspiration; ImageMode =G-03A2,SRT,2D mode;
SVC Depth(Expir)	M12215-05,MRUS, Superior Vena Cava Depth	RespiratoryCyclePoint=F-20020,SRT, Expiration; ImageMode =G-03A2,SRT,2D mode;
IVC-VI(M)	C12215-07,MRUS,Inferior Vena Cava Variability Index	ImageMode = G-0394,SRT,M mode;

B.33.12. Heart Rate Measurements

MODALITY Label	***DICOM Mapping***	***Optional Modifiers***
HR	8867-4，LN，Heart rate	Image Mode = G-0394,SRT,M Mode

C. Appendix : Vascular structured reporting template

This appendix lists the DICOM Structured Report (SR) mappings used in the Vascular Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Vascular Report mappings follow the DICOM SR Template TID 5100: Vascular Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

C.1. TID (5100) Vascular Ultrasoud Report

This is the template for the root the content tree for the vascular ultrasound procedure report.

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	EV (125100, DCM, “Vascular Ultrasound Procedure Report”)	√		
2	>	HAS CONCEPT MOD	INCL UDE	DTID (1204) Language of Content Item and Descendants			
3	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	√		
4	>	CONTAINS	INCLUDE	DTID (5101) Vascular Patient Characteristics	√		
5	>	CONTAINS	CONTAINER	EV (111028, DCM, “Image Library”)	√		
6	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12105) Intracranial Cerebral Vessels	

7	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12105) Intracranial Cerebral Vessels	
8	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-40501, SRT, ”Blood Vessel of Head”) $SectionLaterality = EV (G-A103, SRT, ”Unilateral”) $Anatomy = DCID (12106) Intracranial Cerebral Vessels (unilateral)	
9	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-45005, SRT, ”Artery of neck”) $SectionLaterality = EV (G-A101, SRT, ”Left”) $Anatomy = DCID (12104) Extracranial Arteries $AnatomyRatio = DCID (12123) Carotid Ratios	
10	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-45005, SRT, ”Artery of neck”) $SectionLaterality = EV (G-A100, SRT, ”Right”) $Anatomy = DCID (12104) Extracranial Arteries $AnatomyRatio = DCID (12123) Carotid Ratios	

11	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-49403, SRT, "Vein of Lower Extremity") $SectionLaterality = EV (G-A101, SRT, "Left") $Anatomy = DCID (12110) Lower Extremity Veins	
12	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section	√	$SectionScope = DT (T-49403, SRT, "Vein of Lower Extremity") $SectionLaterality = EV (G-A100, SRT, "Right") $Anatomy = DCID (12110) Lower Extremity Veins	

C.2. TID (1001) Observation Context

This template specifies attributes of observation context that may be defined, extended or replaced at any location in the SR tree.

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1	>	HAS OBS CONTEXT	CODE	EV (121005,DCM, "Observer Type")	√	(121006,DCM, "Person")	
2	>	HAS OBS CONTEXT	PNAME	EV (121008,DCM, "Person Observer Name")	√	Operator from Info	
3	>	HAS OBS CONTEXT	TEXT	EV (121009,DCM, " Person Observer's Organization Name")	√	Institution Name (0008,0080) of the General Equipment Module	
4	>	HAS OBS CONTEXT	CODE	EV (121010,DCM, " Person Observer's Role in the Organization")	√	(121093, DCM, "Sonographer")	
5	>	HAS OBS CONTEXT	CODE	EV (121024, DCM, "Subject Class")	√	(121025, DCM, "Patient")	

6	>	HAS OBS CONTEXT	PNAME	EV (121029,DCM, "Subject Name")	√	value of Patient's Name (0010,0010) in Patient Module	
7	>	HAS OBS CONTEXT	DATE	EV (121031,DCM, "Subject Birth Date")	√	value of Patient's Birth Date (0010,0030) in Patient Module	
8	>	HAS OBS CONTEXT	CODE	EV (121032,DCM, "Subject Sex")	√	value equivalent to Patient's Sex (0010,0040) in Patient Module	
9	>	HAS OBS CONTEXT	NUM	EV (121033,DCM, "Subject Age")	√	value of Patient's Age (0010,1010) in Patient Study Module	

C.3. TID (5101) Vascular Patient Characteristics

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	EV (121118, DCM, "Patient Characteristics")			
2	>	CONTAINS	NUM	EV (121033, DCM, "Subject Age")	√	Units = DCID (7456) Units of Measure for Age	
3	>	CONTAINS	CODE	EV (121032, DCM, "Subject Sex")	√	DCID (7455) Sex	
4	>	CONTAINS	NUM	EV (F-008EC, SRT, "Systolic Blood Pressure")	√		
5	>	CONTAINS	NUM	EV (F-008ED, SRT, "Diastolic Blood Pressure")	√		
6	>	CONTAINS	NUM	EV (8302-2, LN, "Patient Height")	√		
7	>	CONTAINS	NUM	EV (29463-7, LN, "Patient Weight")	√		

8	>	CONTAINS	NUM	EV (8277-6, LN, “Body Surface Area”)	√		
9	> >	INFERRED FROM	CODE	EV (8278-4, LN, "Body Surface Area Formula")	√		

C.4. TID(5102) Vascular Procedure Summary Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	COMMENT
1			CONTAINER	DT (121111, DCM, “Summary”)			
2		CONTAINS	TEXT	DCID (12101) Vascular Summary			From Info Comment
3	>	CONTAINS	TEXT	(I12101-01,MRUS,"Primary Indications")	√		From Info
4	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	√		From report interface Comment
5	>	CONTAINS	TEXT	(121071,DCM,"Findings")	√		From report interface Findings
6	>	CONTAINS	TEXT	(I12101-06,MRUS,"Smoker")	√		From report interface Smoker
7	>	CONTAINS	TEXT	(I12101-07,MRUS,"Diabetes")	√		From report interface Diabetes
8	>	CONTAINS	NUM	(I12101-08,MRUS," Total Cholesterol")	√		From report interface Total Cholesterol
9	>	CONTAINS	NUM	(I12101-09,MRUS," HDL cholesterol")	√		From report interface HDL cholesterol

C.5. TID (5103) Vascular Ultrasound Section

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	DT (121070, DCM, "Findings")	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, "Finding Site")	√	$SectionScope	
3	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, "Laterality")	√	$SectionLaterality	
4	>	CONTAINS	INCLUDE	DTID (5104) Vascular Measurement Group	√	$AnatomyGroup = $Anatomy= DCID (12105) Intracranial Cerebral Vessels	
5	>	CONTAINS	INCLUDE	DTID (300) Measurement	√	$Measurement = $AnatomyRatio	Only for Artery of neck

C.6. TID (5104) Vascular Ultrasound Measurement Group

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	$AnatomyGroup	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-A1F8, SRT, "Topographical Modifier")	√	DCID (12116) Vessel Segment Modifiers	
3	>	CONTAINS	INCLUDE	DTID (300) Measurement	√	$Measurement = DCID (12119) Vascular Ultrasound Property $Derivation = DCID (3627) Measurement Type	

C.7. CID (12104) Extracranial Arteries

CSD	CV	Code Meaning
SRT	T-45170	Carotid Bulb
SRT	T-45100	Common Carotid Artery
SRT	T-45300	Internal Carotid Artery
SRT	T-45200	External Carotid Artery

C.8. CID (12105) Intracranial Cerebral Vessels

CSD	CV	Code Meaning
SRT	T-45540	Anterior Cerebral Artery
SRT	T-45600	Middle Cerebral Artery
SRT	T-45900	Posterior Cerebral Artery
SRT	T-45320	Posterior Communicating Artery

C.9. CID (12106) Intracranial Cerebral Vessels (unilateral)

CSD	CV	Code Meaning
SRT	T-45800	Basilar Artery
SRT	T-45530	Anterior Communicating Artery
MRUS	V12106-01	Basilar Vein

C.10. CID (12110) Lower Extremity Veins

CSD	CV	Code Meaning
SRT	T-49630	Anterior Tibial Vein
SRT	T-48920	Common Iliac Vein
SRT	T-48930	External Iliac Vein
SRT	T-49650	Peroneal Vein
SRT	T-49640	Popliteal Vein
SRT	T-49620	Posterior Tibial Vein
SRT	T-48940	Internal iliac vein
MRUS	V12110-01	TP Trunk Vein

C.11. CID (12116) Vessel Segment Modifiers

CSD	CV	Code Meaning
SRT	G-A119	Distal
SRT	G-A188	Mid-longitudinal
SRT	G-036A	Origin of vessel
SRT	G-A118	Proximal
SRT	R-1025B	Dilated portion of segment

C.12. Mapping between Modality measurements and DICOM Concepts.

C.12.1. Vascular Measurements

MODALITY Label	*DICOM Mapping*
<Vasculature Anatomic Location> ED	11653-3, LN, End Diastolic Velocity
<Vasculature Anatomic Location> MD	11665-7 , LN, Minimum Diastolic Velocity
<Vasculature Anatomic Location> PS	11726-7, LN, Peak Systolic Velocity
<Vasculature Anatomic Location> PV	11726-7, LN, Peak Velocity
<Vasculature Anatomic Location> PI	12008-9, LN, Pulsatility Index
<Vasculature Anatomic Location> RI	12023-8, LN, Resistivity Index
<Vasculature Anatomic Location> S/D	12144-2, LN, Systolic to Diastolic Velocity Ratio
<Vasculature Anatomic Location> D/S	M12119-04, MRUS, Diastolic to SystolicVelocity Ratio
<Vasculature Anatomic Location> PPG	20247-3, LN, Peak Gradient
<Vasculature Anatomic Location> θ	M12119-02, MRUS, Angle
<Vasculature Anatomic Location>pseudoaneurysm Length	M12119-07,MRUS,pseudoaneurysm Length
<Vasculature Anatomic Location>pseudoaneurysm Height	M12119-08,MRUS,pseudoaneurysm Height
<Vasculature Anatomic Location>pseudoaneurysm Width	M12119-09,MRUS,pseudoaneurysm Width
<Vasculature Anatomic Location>pseudoaneurysm Neck	M12119-10,MRUS,pseudoaneurysm Neck

C.12.2. Extracranial Arteries

MODALITY Label	*DICOM Mapping*
Bulb	T-45170,SRT,Carotid Bulb
CCA	T-45100,SRT,Common Carotid Artery
ICA	T-45300,SRT,Internal Carotid Artery

C.12.3. Intracranial Cerebral Vessels

MODALITY Label	*DICOM Mapping*
ACA	T-45540,SRT,Anterior Cerebral Artery
MCA	T-45600,SRT,Middle Cerebral Artery
PCA	T-45900,SRT,Posterior Cerebral Artery
PComA	T-45320,SRT,Posterior Communicating Artery

C.12.4. Intracranial Cerebral Vessels (unilateral)

MODALITY Label	*DICOM Mapping*
BA	T-45800,SRT,Basilar Artery
AComA	T-45530,SRT,Anterior Communicating Artery
Ba V	V12106-01,MRUS,Basilar Vein

C.12.5. Lower Extremity Veins

MODALITY Label	*DICOM Mapping*
A.Tib V	T-49630,SRT,Anterior Tibial Vein
C.Iliac V	T-48920,SRT,Common Iliac Vein
Ex.Iliac V	T-48930,SRT,External Iliac Vein
Peroneal V	T-49650,SRT,Peroneal Vein
Pop V	T-49640,SRT,Popliteal Vein
P.Tib V	T-49620,SRT,Posterior Tibial Vein
IIV	T-48940,SRT,Internal iliac vein
TP Trunk V	V12110-01,MRUS,TP Trunk Vein

D. Appendix : Breast Imaging structured reporting template

This appendix lists the DICOM Structured Report (SR) mappings used in the Breast Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Breast Report mappings follow the DICOM SR Template TID 4200: Breast Imaging Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

D.1. TID 1400 Linear Measurement Template

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			NUM	DCID (7470) “Linear Measurements”	√		UNITS = DCID(7460) “Units of Linear Measurement”
2	>	INFERRED FROM	SCOORD	EV (121055,DCM, “Path”)			
3	>>	R-SELECTED FROM	IMAGE				
4	>>	SELECTED FROM	IMAGE				
5	>	INFERRED FROM	SCOORD	EV (121230, DCM, “Path Vertex”)			
6	>>	R-SELECTED FROM	IMAGE				
7	>>	SELECTED FROM	IMAGE				

D.2. TID (4200) BREAST IMAGING REPORT

This is the template for the root the content tree for the breast ultrasound procedure report.

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (111400, DCM, ”Breast Imaging Report”)	√		
2	>	HAS	INCLUDE	DTID (1204) Language of	√		

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
		CONCEPT MOD		Content Item and Descendants			
3	>	CONTAINS	INCLUDE	DTID (4202) Breast Imaging Report Narrative	√		
4	>	CONTAINS	CONTAINER	DT (111028, DCM, “Image Library”)	√		
5	>>	CONTAINS	IMAGE	No purpose of reference	√		
6	>	CONTAINS	INCLUDE	DTID (SELFTMP-3) BREAST IMAGING SUMMAY	√		
7	>	CONTAINS	INCLUDE	DTID (4208) Breast Imaging Report Supplementary Data	√		
8	>	CONTAINS	TEXT	(20121120,MRUS,”self-defined-measurementfile”)	√		

D.3. TID (4201) BREAST IMAGING PROCEDURE REPORTED

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CODE	EV (121058, DCM, ”Procedure reported”)	√		DCID (6050) Breast Procedure Reported
2	>	HAS CONCEPT MOD	CODE	EV (111464, DCM, “Procedure Modifier”)			DCID (6058) Procedure Modifiers for Breast
3	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, ”Laterality”)	√		DCID (6022) Side
4	>	HAS PROPERTIES	CODE	EV (111401, DCM, ”Reason for procedure”)			DCID (6051) Breast Procedure Reason
5	>>	HAS CONCEPT MOD	CODE	EV (G-D709, SRT, “Relative time”)			DCID (12102) Temporal Periods Relating To Procedure or Therapy
6	>>	HAS CONCEPT MOD	CODE	EV (111402, DCM, ”Clinical Finding”)		IFF row 4 value is “Clinical Finding”	DCID (6055) Breast Clinical Finding or Indicated Problem
7	>>>	HAS PROPERTIES	CODE	EV (G-C171, SRT, ”Laterality”)			DCID (6022) Side

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
8	>	HAS PROPERTIES	DATE	EV (111060, DCM, "Study Date")			

D.4. TID (4202) BREAST IMAGING REPORT NARRATIVE

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (111412, DCM, "Narrative Summary"	√		
2	>	CONTAINS	CONTAINER	BCID (6052) Breast Imaging Report Section Title	√		
3	>>	HAS OBS CONTEXT	INCLUDE	DTID (1002) Observer Context	√		
4	>>	CONTAINS	TEXT	BCID (6053) Breast Imaging Report Elements	√		DCM 121058 Procedure reported
5	>>>	INFERRED FROM	INCLUDE	DTID (350) References to Supporting Evidence			

D.5. TID (SELFTMP-3) BREAST IMAGING SUMMAY

This is a private template referenced by TID(4200).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (121111, DCM, "Summary")	√		
2	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	√		
3	>	CONTAINS	TEXT	EV (I12101-01, MRUS, " Primary Indications")	√		
7	>	CONTAINS	NUM	EV (8302-2, LN, "Patient Height")	√		
8	>	CONTAINS	NUM	EV (29463-7, LN, "Patient Weight")	√		
9	>	CONTAINS	TEXT	EV (121106, MRUS, " Comment")	√		

D.6. TID (4206) BREAST IMAGING REPORT FINDING SECTION

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (121070, DCM, ”Findings”)	√		
2	>	HAS OBS CONTEXT	INCLUDE	DTID (1002) Observer Context			
3	>	CONTAINS	INCLUDE	DTID (4201) Breast Imaging Procedure Reported	√		
4	>	CONTAINS	CODE	DTID (SELFTMP-4) BREAST IMAGING MASS FINDING	√**(10 findings)**		
5	>	CONTAINS	INCLUDE	EV (T6006-11, MRUS, ” Lymph Nodes”)	√		
6	>	CONTAINS	INCLUDE	EV (T6006-13, MRUS, ” Assessment”)	√		

D.7. TID (4208) BREAST IMAGING REPORT SUPPLEMENTARY DATA

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (111414, DCM, “Supplementary Data”)	√		
2	>	CONTAINS	INCLUDE	DTID (4201) Breast Imaging Procedure Reported	√		
3	>	CONTAINS	CODE	EV (111403, DCM, ”Baseline screening mammogram”)			DCID (230) Yes-No
4	>	CONTAINS	CODE	EV (111404, DCM, ”First mammogram ever”)			DCID (230) Yes-No
5	>	CONTAINS	INCLUDE	DTID (4205) Breast Composition Section			
6	>	CONTAINS	INCLUDE	DTID (4206) Breast Imaging Report Finding Section	√		
7	>	CONTAINS	INCLUDE	DTID (4204) Breast Imaging			

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
				Report Intervention Section			
8	>	CONTAINS	CONTAINER	EV (111413, DCM, ”Overall Assessment”)			
9	>>	CONTAINS	INCLUDE	DTID (4203) Breast Imaging Assessment			

D.8. TID (SELFTMP-4) BREAST MASS FINDING

This is a private template referenced by TID(4206).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CODE	EV (121071, DCM, ”Finding”)	√		
2	>	HAS OBS CONTEXT	TEXT	EV (M-03000, SRT, ”Mass”)	√		
3	>>	HAS PROPERTIES	INCLUDE	DTID (SELFTMP-5) BREAST IMAGING MASS MEASUREMENT	√		
4	>>	HAS PROPERTIES	INCLUDE	DTID (SELFTMP-6) BREAST IMAGING MASS MEASUREMENT ANALYSIS	√		

D.9. TID (SELFTMP-5) BREAST MASS MEASUREMENT

This is a private template referenced by TID (SELFTMP-4).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (125007, DCM, ” Measurement Group”)	√		
2	>	CONTAINS	INCLUDE	DTID (1400) Linear Measurement Template	√		"$Measurement = G-A22A, SRT, ""Length"";$Laterality = $Laterality;$Section = 6019"
3	>	CONTAINS	INCLUDE	DTID (1400) Linear Measurement Template	√		"$Measurement = G-A220, SRT, ""Width"";$Laterality = $Laterality;$Section = 6019"
4	>	CONTAI	INCLU	DTID (1400) Linear	√		"$Measurement = 121207, DCM,

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
		NS	DE	Measurement Template			""Height"";$Laterality = $Laterality;$Section = 6019"
5	>	CONTAINS	INCLUDE	DTID (1400) Linear Measurement Template	√		"$Measurement = 121242, DCM, ""Distance from nipple"";$Laterality = $Laterality;$Section = 6019"
6	>	CONTAINS	INCLUDE	DTID (1400) Linear Measurement Template	√		"$Measurement = 121243, DCM, ""Distance from skin"";$Laterality = $Laterality;$Section = 6019"

D.10. TID (SELFTMP-6) BREAST MASS ANALYSIS

This is a private template referenced by TID (SELFTMP-4).

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1	>	CONTAINS	TEXT	EV (M-020F9, SRT, ” Shape”)	√		
2	>	CONTAINS	TEXT	EV (T6006-1, MRUS, ” Contour&Margin”)	√		
3	>	CONTAINS	TEXT	EV (T6006-2, MRUS, ”Capsule”)	√		
4	>	CONTAINS	TEXT	EV (T6006-3, MRUS, ”Height/Width”)	√		
5	>	CONTAINS	TEXT	EV (T6006-4, MRUS, ”Echo Inside(to fat”)	√		
6	>	CONTAINS	TEXT	EV (T6006-5, MRUS, ”Posterior Echo”)	√		
7	>	CONTAINS	TEXT	EV (T6006-14, MRUS, ”Vascularity”)	√		
8	>	CONTAINS	TEXT	EV (T6006-7, MRUS, ”Surrounding Tissue”)	√		
9	>	CONTAINS	TEXT	EV (T6006-8, MRUS, ”Elasticity”)	√		
10	>	CONTAINS	TEXT	EV (T6006-9, MRUS, ”Calcifications”)	√		
11	>	CONTAINS	TEXT	EV (T6006-10, MRUS, ”Multiple Homogeneous Masses”)	√		
12	>	CONTAINS	TEXT	EV (T6006-15, MRUS, ”RI”)	√		

D.11. Mapping between Modality measurements and DICOM Concepts.

D.11.1. Breast Measurements

MODALITY Label	*DICOM Mapping*
Mass L	G-A22A, SRT, Length
Mass W	G-A220, SRT, Width
Mass H	121207, DCM, Height
Mass Nipple-Mass Dist	121242, DCM, Distance from nipple
Mass Skin-Mass Dist	121243, DCM, Distance from skin
Mass Shape	M-020F9, SRT, Shape
Mass Contour & Margin	T6006-1, MRUS, Contour&Margin
Mass Capsule	T6006-2, MRUS, Capsule
Mass Height/Width	T6006-3, MRUS, Height/Width
Mass Echo Inside(to fat)	T6006-4, MRUS, Echo Inside(to fat)
Mass Posterior Echo	T6006-5, MRUS, Posterior Echo
Mass Vascularity	T6006-14, MRUS, Vascularity
Mass Surrounding Tissue	T6006-7, MRUS, Surrounding Tissue
Mass Elasticity	T6006-8, MRUS, Elasticity
Mass Calcifications	T6006-9, MRUS, Calcifications
Mass Multiple Homogeneous Mass	T6006-10, MRUS, Multiple Homogeneous Masses
Mass RI	T6006-15, MRUS, RI

Note: The maximum of mass findings is 10.

E. Appendix : SMP Imaging structured reporting template

This appendix lists the DICOM Structured Report (SR) mappings used in the Small Part Structured Reports of ultrasound system SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. The Small Part Report mappings follow the self DICOM SR Template TID 0100: Small Part Ultrasound Procedure Report, except where noted.

All private code values use the Coding Scheme Designator "MRUS".

E.1. TID (0100) Small Part ULTRASOUND REPORT

This is the template for the root the content tree for the Small Part ultrasound procedure report.

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
1			CONTAINER	EV (MR0100-02, MRUS, “Small Part Ultrasound Procedure Report”)	√		
2	>	HAS CONCEPT MOD	INCL UDE	DTID (1204) Language of Content Item and Descendants			
3	>	HAS OBS CONTEXT	INCLUDE	DTID (1001) Observation Context	√		
4	>	CONTAINS	INCLUDE	DTID (0101) Small Part Patient Characteristics	√		
5	>	CONTAINS	CONTAINER	EV (111028, DCM, “Image Library”)	√		
6	>>	CONTAINS	IMAGE	No purpose of reference			
7	>	CONTAINS	INCLUDE	DTID (0102) Small Part Procedure Summary Section	√		
8	>	CONTAINS	INCLUDE	DTID (0103) Small Part Ultrasound Section	√		$SectionScope = DT (T-62000, SRT, ”Thyroid”); $SectionLate

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Condition	Value Set Constraint
							rality = EV (G-A101, SRT, ”Left”); $SectionLaterality = EV (G-A100, SRT, ”Right”)
9	>	CONTAINS	INCLUDE	DTID (0104) Small Part Ultrasound Section	√		$SectionScope = DT (T-94000, SRT, ”Testis”); $SectionLaterality = EV (G-A101, SRT, ”Left”); $SectionLaterality = EV (G-A100, SRT, ”Right”)
10	>	CONTAINS	INCLUDE	DTID (5103) Vascular Ultrasound Section			$SectionScope = DT (T-71019, SRT, ”Vascular Structure Of Thyroid ”); $SectionLaterality = EV (G-A101, SRT, ”Left”); $Anatomy = DCID (12115) Renal Vessels; $AnatomyRatio = DCID (12124) Renal Ratios

E.2. TID (1001) Small Part SERVATION CONTEXT

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1	>	HAS OBS CONTEXT	CODE	EV(121005,DCM, “Observer Type”)	√	(121006,DCM, “Person”)	
2	>	HAS OBS CONTEXT	PNAME	EV(121008,DCM, “Person Observer Name”)	√	Operator from Info	
3	>	HAS OBS CONTEXT	TEXT	EV(121009,DCM, “ Person Observer’s Organization Name”)	√	Institution Name (0008,0080) of the General Equipment Module	
4	>	HAS OBS CONTEXT	CODE	EV(121010,DCM, “ Person Observer’s Role in the Organization”)	√	(121093,DCM, "Sonographer")	
5	>	HAS OBS CONTEXT	CODE	EV(121024, DCM, "Subject Class”)	√	(121025,DCM, "Patient”)	
6	>	HAS OBS CONTEXT	PNAME	EV(121029,DCM, "Subject Name”)	√	value of Patient’s Name (0010,0010) in Patient Module	
7	>	HAS OBS CONTEXT	DATE	EV(121031,DCM, "Subject Birth Date”)	√	value of Patient’s Birth Date (0010,0030) in Patient Module	
8	>	HAS OBS CONTEXT	CODE	EV(121032,DCM, "Subject Sex”)	√	value equivalent to Patient’s Sex (0010,0040) in Patient Module	
9	>	HAS OBS CONTEXT	NUM	EV(121033,DCM, "Subject Age”)	√	value of Patient’s Age (0010,1010) in Patient Study Module	

E.3. TID (0101) Small Part Patient Characteristics

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	EV (121118, DCM, “Patient Characteristics”)			

2	>	CONTAINS	NUM	EV (121033, DCM, "Subject Age")	√	Units = DCID (7456) Units of Measure for Age	
3	>	CONTAINS	CODE	EV (121032, DCM, "Subject Sex")	√	DCID (7455) Sex	
4	>	CONTAINS	NUM	EV (8867-4, LN, "Heart Rate")			
5	>	CONTAINS	NUM	EV (8302-2, LN, "Patient Height")	√		
6	>	CONTAINS	NUM	EV (29463-7, LN, "Patient Weight")	√		

E.4. TID (0102) Small Part PROCEDURE SUMMARY SECTION

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	DT (121111, DCM, "Summary")			
2	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	√		
3	>	CONTAINS	TEXT	(I12111-01,MRUS,"Primary Indications")	√		
4	>	CONTAINS	TEXT	(I12111-02,MRUS,"Secondary Indications")	√		
5	>	CONTAINS	TEXT	(I12111-03,MRUS,"CPT4 Code")	√		
6	>	CONTAINS	TEXT	(I12111-04,MRUS,"CPT4 Description")	√		
7	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	√		

E.5. TID (0103) Small Part ULTRASOUND SECTION

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	DT (121070, DCM, "Findings")	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, "Finding Site")	√	$SectionScope = DT (T-B6000, SRT, "Thyroid ")	
3	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, "Laterality")	√	$SectionLaterality =EV (G-A101, SRT, "Left") OR EV (G-A100, SRT, "Right")	
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√	$Measurement = $AnatomyRatio	

E.6. TID (0104) URO ULTRASOUND SECTION

	NL	Rel with Parent	VT	Concept Name	Used in MODALITY	Value Set Constraint	Comment
1			CONTAINER	DT (121070, DCM, "Findings")	√		
2	>	HAS CONCEPT MOD	CODE	EV (G-C0E3, SRT, "Finding Site")	√	$SectionScope = DT (T-94000, SRT, "Testis")	
3	>	HAS CONCEPT MOD	CODE	EV (G-C171, SRT, "Laterality")	√	$SectionLaterality =EV (G-A101, SRT, "Left") OR EV (G-A100, SRT, "Right")	
4	>	CONTAINS	INCLUDE	DTID (300) Measurement	√	$Measurement = $AnatomyRatio	

E.7. CID (12130) Thyroid Measurements

CSD	CV	Code Meaning
DCM	121207	Height
SRT	G-D7FE	Length
SRT	G-A220	Width
DCM	122445	Wall Thickness
SRT	G-D705	Volume
MRUS	MT-B6000-01	Thyroid Mass1 d1
MRUS	MT-B6000-02	Thyroid Mass1 d2
MRUS	MT-B6000-03	Thyroid Mass1 d3
MRUS	MT-B6000-04	Thyroid Mass2 d1
MRUS	MT-B6000-05	Thyroid Mass2 d2
MRUS	MT-B6000-06	Thyroid Mass2 d3
MRUS	MT-B6000-07	Thyroid Mass3 d1
MRUS	MT-B6000-08	Thyroid Mass3 d2
MRUS	MT-B6000-09	Thyroid Mass3 d3
MRUS	MT-B6000-10	Thyroid Isthmus Height
MRUS	MT-B6000-11	Thyroid Cyst1 d1
MRUS	MT-B6000-12	Thyroid Cyst1 d2
MRUS	MT-B6000-13	Thyroid Cyst1 d3
MRUS	MT-B6000-14	Thyroid Cyst2 d1
MRUS	MT-B6000-15	Thyroid Cyst2 d2
MRUS	MT-B6000-16	Thyroid Cyst2 d3
MRUS	MT-B6000-17	Thyroid Cyst3 d1
MRUS	MT-B6000-18	Thyroid Cyst3 d2
MRUS	MT-B6000-19	Thyroid Cyst3 d3

E.8. CID (12131) URO Measurements

CSD	CV	Code Meaning
DCM	121207	Height
SRT	G-D7FE	Length
DCM	122445	Wall Thickness
SRT	G-D705	Volume

CSD	CV	Code Meaning
DCM	121207	Height
SRT	G-D7FE	Length
SRT	G-A220	Width
MRUS	MT-45210-05	Scrotal Wall Thickness

E.9. Mapping between Modality measurements and DICOM Concepts.

E.9.1. Thyroid Measurements

MODALITY Label	*DICOM Mapping*
Thy.H	121207,DCM,Height
Thy.L	G-D7FE,SRT,Length
Thy.W	G-A220, SRT, Width
Thy.Vol	G-D705,SRT,Volume
Thy.Vol0.523	G-D705,SRT,Volume
Thy.Mass1.L	MT-B6000-01，MRUS，Thyroid Mass1 d1
Thy.Mass1.W	MT-B6000-02，MRUS，Thyroid Mass1 d2
Thy.Mass1.H	MT-B6000-03，MRUS，Thyroid Mass1 d3
Thy.Mass2.L	MT-B6000-04，MRUS，Thyroid Mass2 d1
Thy.Mass2.W	MT-B6000-05，MRUS，Thyroid Mass2 d2
Thy.Mass2.H	MT-B6000-06，MRUS，Thyroid Mass2 d3
Thy.Mass3.L	MT-B6000-07，MRUS，Thyroid Mass3 d1
Thy.Mass3.W	MT-B6000-08，MRUS，Thyroid Mass3 d2
Thy.Mass3.H	MT-B6000-09，MRUS，Thyroid Mass3 d3
Isthmus.H	MT-B6000-10，MRUS，Thyroid Isthmus Height
Thy.Cyst1.L	MT-B6000-11，MRUS，Thyroid Cyst1 d1
Thy.Cyst1.W	MT-B6000-12，MRUS，Thyroid Cyst1 d2
Thy.Cyst1.H	MT-B6000-13，MRUS，Thyroid Cyst1 d3
Thy.Cyst2.L	MT-B6000-14，MRUS，Thyroid Cyst2 d1
Thy.Cyst2.W	MT-B6000-15，MRUS，Thyroid Cyst2 d2
Thy.Cyst2.H	MT-B6000-16，MRUS，Thyroid Cyst2 d3
Thy.Cyst3.L	MT-B6000-17，MRUS，Thyroid Cyst3 d1
Thy.Cyst3.W	MT-B6000-18，MRUS，Thyroid Cyst3 d2

Thy.Cyst3.H	MT-B6000-19，MRUS，Thyroid Cyst3 d3

E.9.2. URO Measurements

MODALITY Label	*DICOM Mapping*
Testis.H	121207,DCM,Height
Testis.L	G-D7FE,SRT,Length
Testis.W	122445,DCM,Wall Thickness
Testis.Vol	G-D705,SRT,Volume
Epididymis.H	121207,DCM,Height
Epididymis.L	G-D7FE,SRT,Length
Epididymis.W	122445,DCM,Wall Thickness
Prostate.H	121207,DCM,Height
Prostate.L	G-D7FE,SRT,Length
Prostate.W	G-A220,SRT,Width
Prostate.Vol	G-D705,SRT,Volume
Scrotal.Wall.T	MRUS,MT-45210-05,Scrotal Wall Thickness