



**MyLab 9, X5, X6, X7, X8,
Omega, Sigma, Delta**

Ultrasound Scanners

DICOM Conformance Statement

Document Version C7.6

Date: NOV. 20, 2018

1 CONFORMANCE STATEMENT OVERVIEW

MyLab 9, X5, X6, X7, X8, Omega, Sigma are Ultrasound scanners made by Esaote; their software is based upon the Windows® 10 Operating System. This DICOM® Conformance Statement (DCS) specifies the conformance to the DICOM standard¹ for these Esaote MyLab systems having the covered SW builds.

The covered MyLab systems implement the necessary DICOM services to download work lists from an information system, to save acquired Ultrasound images, clips and Structured Report objects² to a network storage device, to save them on a CD-R, DVD, USB and Flash Memory, or to print images to a networked hardcopy device. It is also possible to retrieve and display Ultrasound, Ultrasound Multiframe and Secondary Capture objects from media and from a Query/Retrieve server.

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Table 1 provides an overview of the network services supported by the MyLab systems.

**Table 1
NETWORK SERVICES**

| SOP Classes | User of Service (SCU) | Provider of Service (SCP) |
|-------------------------------------|-----------------------|---------------------------|
| Transfer | | |
| Ultrasound Image Storage | Yes (*) | Yes (*) (***) |
| Ultrasound Multiframe Image Storage | Yes (*) | Yes (*) (***) |
| Secondary Capture Image Storage | Yes (*) | Yes (*) (***) |
| Comprehensive SR Storage | Yes (*) (**) | No |
| Query/Retrieve | | |
| Study Root Information Model FIND | Yes (*) (***) | No |
| Study Root Information Model MOVE | Yes (*) (***) | No |
| Workflow Management | | |
| Modality Worklist | Yes (*) | No |
| Storage Commitment Push Model | Yes (*) (**) | No |
| Modality Performed Procedure Step | Yes (*) (**) | No |
| Print Management | | |
| Basic Grayscale Print Management | Yes (*) | No |
| Basic Color Print Management | Yes (*) | No |

(*) Enabled by the purchasable DICOM option.

(**) Not present in VET models.

(***) Ultrasound, Ultrasound-Multiframe and Secondary Capture images only; other modalities are enabled by the purchasable Multimodality Archive and Query/Retrieve option.

¹ DICOM is the registered trademark of the National Electrical Manufacturers Association for its standards publications relating to digital communications of medical information.

² DICOM Structured Report not available in VET models.

Table 2 provides an overview of the Media Storage Application Profiles supported by the MyLab systems.

Table 2
MEDIA SERVICES

| Media Storage Application Profile | Write Files (FSC or FSU) | Read Files (FSR) |
|--|-------------------------------------|-------------------------|
| Compact Disk – Recordable | | |
| General Purpose CD-R Interchange (STD-GEN-CD) | Yes (*) | Yes (*)(**) |
| Ultrasound Spatial Calibration Single and Multiframe CD-R Interchange (STD-US-SC-MF-CDR) | Yes (*) | Yes (*) |
| DVD | | |
| General Purpose DVD with Compression Interchange (STD-GEN-DVD-JPEG) | Yes (*) | Yes (*)(**) |
| Ultrasound Spatial Calibration Single and Multiframe DVD Interchange (STD-US-SC-MF-DVD) | Yes (*) | Yes (*) |
| USB and Flash Memory | | |
| General Purpose USB Media Interchange with JPEG (STD-GEN-USB-JPEG) | Yes (*) | Yes (*)(**) |

(*) Enabled by the purchasable DICOM option.

(**) Ultrasound, Ultrasound-Multiframe and Secondary Capture images only; other modalities are enabled by the purchasable Multimodality Archive and Query/Retrieve option.

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3 INTRODUCTION

3.1 REVISION HISTORY

**Table 3
REVISION HISTORY**

| Document Version | Date of Issue | Author | Description | Systems | SW build |
|------------------|-------------------------------|-------------------------|---------------------------------|--|----------------------|
| C7.6 | Nov. 20 th , 2018. | Luigi Pampana Biancheri | - New MyLab model and sw build. | MyLab 9, X5, X6, X7, X8, Omega, Sigma, Delta | F080XXX ³ |

This document applies to all the software releases identified by the SW builds listed in the above table, for the MyLab systems indicated (please note that every “X” in the SW build column stay for a number); when not indicated, all the sw releases having the same build number share the same DICOM behaviour. Always check for the latest version of this document covering the desired system and software build. Foot page notes will appear indicating the differences among the various systems, if any. Some of the MyLab systems are intended for veterinary usage: these models are identified by the “VET” suffix; the differences between human and veterinary systems are explicitly described in this document. For systems with suffixes not indicated in the table above, please refer to the same model without any suffix.

For any other information, or for the latest version of this document, please contact Esaote:

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NOTE: when in this document we refer to “Esaote”, without any further specification, we mean the Esaote group:

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3.2 AUDIENCE

This document is written for the people that need to understand how the MyLab systems will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the MyLab systems. This document contains some basic DICOM definitions so that any reader may understand how the MyLab systems implement DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product’s functionality, and how that functionality integrates with other devices that support compatible DICOM features.

3.3 REMARKS

The scope of this DICOM Conformance Statement is to facilitate integration between the MyLab systems 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

³ Not all the sw builds are available for all the listed models.

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 just the first step towards assessing interconnectivity and interoperability between the Esaote product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.
- Some of the MyLab systems have participated in an industry-wide testing program sponsored by Integrating the Healthcare Enterprise (IHE). The IHE Integration Statement for these MyLab systems, together with the IHE Technical Framework, may facilitate the process of validation testing. See <http://www.esaote.com/dicom.htm> for the list of the systems that participated to IHE.
- The DICOM standard will evolve to meet the users' future requirements. Esaote is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue their delivery.

The DICOM functionalities given by the Esaote MyLab systems are implemented by means of the DCMLab Library, a DICOM software library which has been developed by the Esaote DICOM Management Group (EDMG), in order to offer to all the Esaote modalities and applications a common DICOM platform.

3.4 TERMS AND DEFINITIONS

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

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 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.

Application Context – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

Association – a network communication channel set up between *Application Entities*.

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).

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: MR Image IOD, CT Image IOD, Print Job IOD.

Joint Photographic Experts Group (JPEG) – a set of standardized image compression techniques, available for use by DICOM applications.

Media Application Profile – the specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)

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.

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 BASICS OF DICOM COMMUNICATION

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in *italics* below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two *Application Entities* (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an initial network “handshake”. One of the two devices must initiate an *Association* (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (*Negotiation*).

DICOM specifies a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifies a variety of methods for encoding data, denoted *Transfer Syntaxes*. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called *Presentation Contexts*. The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on *Roles* – which one is the *Service Class User* (SCU – client) and which is the *Service Class Provider* (SCP – server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (*PDU*) size, security information, and network service options (called *Extended Negotiation* information).

The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate *Information Object Definition*, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a *Media Application Profile* that specifies “pre-negotiated” exchange media format, Abstract Syntax, and Transfer Syntax.

3.6 ABBREVIATIONS

Abbreviations are as follows:

| | |
|-------|--|
| AE | Application Entity |
| AET | Application Entity Title |
| CAD | Computer Aided Detection |
| CDA | Clinical Document Architecture |
| CD-R | Compact Disk Recordable |
| CSE | Customer Service Engineer |
| CR | Computed Radiography |
| CT | Computed Tomography |
| DHCP | Dynamic Host Configuration Protocol |
| DICOM | Digital Imaging and Communications in Medicine |
| DIT | Directory Information Tree (LDAP) |
| DN | Distinguished Name (LDAP) |
| DNS | Domain Name System |
| DX | Digital X-ray |
| FSC | File-Set Creator |
| FSU | File-Set Updater |
| FSR | File-Set Reader |
| GSDF | Grayscale Standard Display Function |
| GSPS | Grayscale Softcopy Presentation State |
| HIS | Hospital Information System |
| HL7 | Health Level 7 Standard |
| IHE | Integrating the Healthcare Enterprise |
| IOD | Information Object Definition |
| IPv4 | Internet Protocol version 4 |
| IPv6 | Internet Protocol version 6 |

| | |
|--------|---|
| ISO | International Organization for Standards |
| IO | Intra-oral X-ray |
| JPEG | Joint Photographic Experts Group |
| LDAP | Lightweight Directory Access Protocol |
| LDIF | LDAP Data Interchange Format |
| LUT | Look-up Table |
| MAR | Medication Administration Record |
| MPEG | Moving Picture Experts Group |
| MG | Mammography (X-ray) |
| MPPS | Modality Performed Procedure Step |
| MR | Magnetic Resonance Imaging |
| MSPS | Modality Scheduled Procedure Step |
| MTU | Maximum Transmission Unit (IP) |
| MWL | Modality Worklist |
| NM | Nuclear Medicine |
| NTP | Network Time Protocol |
| O | Optional (Key Attribute) |
| OP | Ophthalmic Photography |
| OSI | Open Systems Interconnection |
| PACS | Picture Archiving and Communication System |
| PET | Positron Emission Tomography |
| PDU | Protocol Data Unit |
| R | Required (Key Attribute) |
| RDN | Relative Distinguished Name (LDAP) |
| RF | Radiofluoroscopy |
| RIS | Radiology Information System. |
| RT | Radiotherapy |
| SC | Secondary Capture |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SOP | Service-Object Pair |
| SPS | Scheduled Procedure Step |
| SR | Structured Reporting |
| TCP/IP | Transmission Control Protocol / Internet Protocol |
| U | Unique (Key Attribute) |
| UL | Upper Layer |
| US | Ultrasound |
| VL | Visible Light |
| VR | Value Representation |
| XA | X-ray Angiography |

Some of the tables have a “**Presence of ...**” column in which the following abbreviations are used, unless specified:

| | |
|--------|--|
| VNAP | Not Always Present (attribute sent zero length if no value is present) |
| ANAP | Not Always Present |
| ALWAYS | Always Present |
| EMPTY | Attribute is sent without a value |

The abbreviations used in the “**Source**” column:

| | |
|---------|---|
| MWL | the attribute value source is the Modality Worklist |
| USER | the attribute value comes from the User input |
| AUTO | the attribute value is generated automatically |
| CONFIG | the attribute value is a configurable parameter |
| PROFILE | the attribute value is a parameter found in the profile chosen for the selected printer |

3.7 REFERENCES

NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at <http://medical.nema.org/>

3.8 IMPLEMENTATION IDENTIFYING INFORMATION

The Implementation Class UID and Implementation Version Name for all the Application Entities can change according to the software build, and are described in the Table 4, that describes also the DCMLab releases present in the various MyLab software builds. Please note that any "X" in the Software build and Implementation Version Name columns stay for a number. Please note some of the listed systems and software builds can be available only for particular countries.

Table 4
IMPLEMENTATION IDENTIFYING INFORMATION

| System | Software build | DCMLab SW Release | Implementation Class UID | Implementation Version Name |
|---|-----------------------------|------------------------------|---------------------------------|------------------------------------|
| MyLab 9, X5, X6, X7, X8, Omega, Sigma, Delta | F080XXX ⁴ | 3.4.4.4 VC++ 14.0 | 1.3.76.2.3.3 | X.XX.XX F080XXX_ |

⁴ Not all the sw builds are available for all the listed models.

4 NETWORKING

4.1 IMPLEMENTATION MODEL

4.1.1 Application Data Flow ⁵

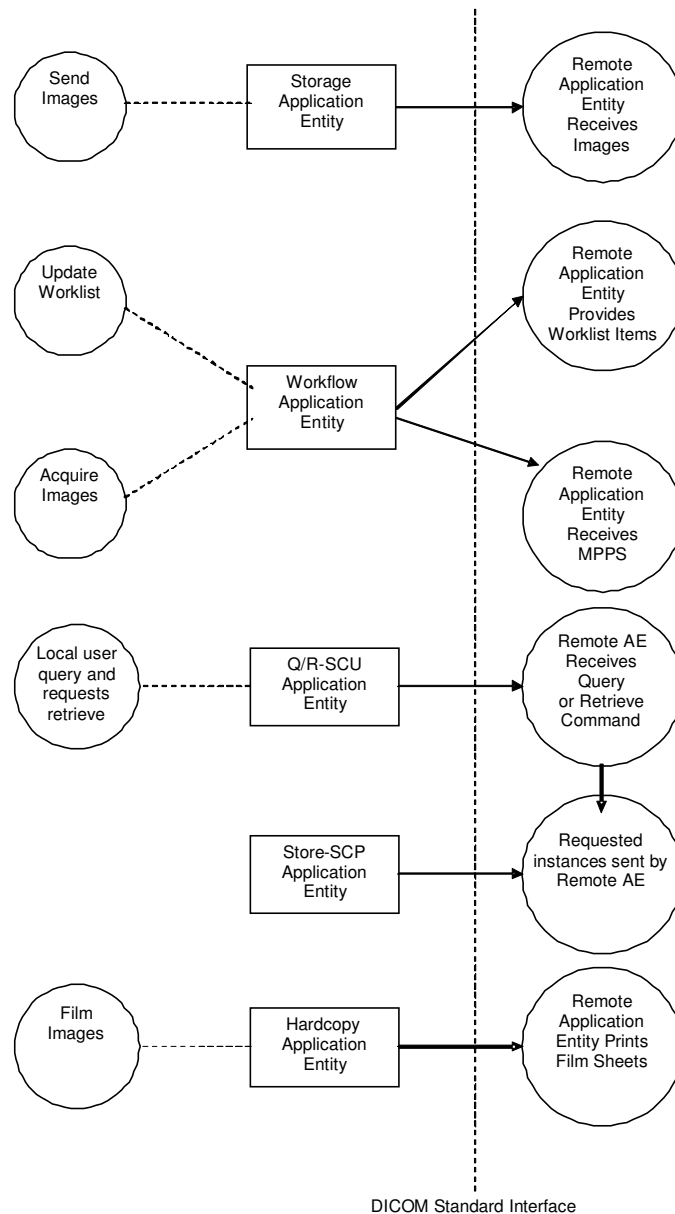


Figure 1
APPLICATION DATA FLOW DIAGRAM

— The Storage Application Entity sends images, clips and Structured Report objects ⁶ to a remote AE. It is associated with the local real-world activity "Send Images". "Send Images" is performed upon user

⁵ Storage Commitment and MPPS SOP Classes not present in in VET models.

⁶ DICOM Structured Report not available in VET models.

request for each study when closing it, or for specific studies selected from the hard disk database, or (according to the models) directly sending any image and clip as soon as it is acquired and stored into the local database. If a remote AE is configured as a Storage Commitment server, the Storage AE will request Storage Commitment and if a commitment is successfully obtained will record this information in the local database.

- The Workflow Application Entity receives Worklist information from and sends MPPS information ⁷ to a remote AE. It is associated with the local real-world activities “Update Worklist” and “Acquire Images”. When the “Update Worklist” local real-world activity is performed the Workflow Application Entity queries a remote AE for worklist items and provides the set of worklist items matching the query request. “Update Worklist” is performed as a result of an operator request or can be performed automatically when entering the Worklist panel for selecting the exam to execute. When the “Acquire Images” local real-world activity is performed the Workflow Application Entity creates and updates Modality Performed Procedure Step instances managed by a remote AE. Acquisition of images will result in automated creation of an MPPS Instance. Completion of the MPPS is performed as the result of an operator action.
- The Q/R-SCU Application Entity can query a DICOM Query/Retrieve SCP Application over the network, and then retrieve the instances to the local archive, from which they can be seen.
- The Store-SCP Application Entity can receive the images over the network from a Storage SCU, either requested using the Q/R-SCU Application Entity or unsolicited.
- The Hardcopy Application Entity prints images on a remote AE (DICOM Printer). It is associated with the local real-world activity “Film Images”. “Film Images” creates a print-job within the print queue containing one virtual film sheet composed from images selected by the user.

4.1.2 Functional Definition of AEs

4.1.2.1 Functional Definition of Storage Application Entity

It is possible to activate the Storage Application Entity when closing the current study, from the database panel, or directly sending, over a separate association, any image and clip as soon as it is acquired and stored into the local database; in this case the clips acquired during a stress testing protocol and the measurement report (secondary capture images or structured report objects) are sent together, on a further separate association, when closing the study.

When closing the current study, a panel will allow the User to decide if and where to archive the images, clips and Structured Report objects ⁸, selecting among “ARCHIVE TO DB” (on the local Hard Disk), “ARCHIVE TO CD/DVD” (the CD-R or the DVD), “ARCHIVE TO USB” and “ARCHIVE TO DICOM SERVER”. Selecting “DB” will store the acquired images in the local database, while selecting “CD/DVD” or “USB” or “DICOM SERVER” will store or send them in DICOM format to the selected destination (without keeping a copy in the local database).

From the local database panel, pressing the “DICOM” soft-key, a “DICOM PROCEDURE” panel will appear, allowing to choose between the following destinations: “CD/DVD” (the CD-R or the DVD), “USB” and “DICOM SERVER”, storing or sending the selected studies (previously archived to the local database, see above), in DICOM format, to the selected destination.

When activating the above described functions choosing “DICOM SERVER”, the SOP Instances associated with the selected study (or studies) will be collected into one send job. The existence of a send job queue entry with associated network destination will activate the Storage AE. An association request will be sent to the destination AE and upon successful negotiation of a Presentation Context the image transfer will be started. If the association cannot be opened, the related send job will be set to an error state and it will be possible to restart it later by the user via job control interface. The Storage AE will not try to initiate another association for this send job automatically.

⁷ MPPS SOP Class is not available in VET models.

⁸ DICOM Structured Report not available in VET models.

4.1.2.2 Functional Definition of Workflow Application Entity ⁹

Worklist Update attempts to download a Worklist from a remote node. If the Workflow AE establishes an Association to a remote AE, it will transfer all worklist items via the open Association. The results will be displayed in a separate list, which will be cleared with the next Worklist Update, if successful. The previously obtained worklist will be kept if for any reason a new one cannot be received: this is done to enable the use of the device also when disconnected from the network. In any case when a worklist item is used to start an exam it will be grayed, so the user, even when the worklist server is not available, can be aware of the already executed exams.

The Workflow AE performs the creation of a MPPS Instance automatically whenever the exam is started. When closing the exam, the MPPS "COMPLETE" or "DISCONTINUED" states can be chosen from the user interface. In case of automatic saving of the exam to a DICOM server, the MPPS message will be "COMPLETE" when one or more images have been acquired, "DISCONTINUED" otherwise.

4.1.2.3 Functional Definition of Store-SCP Application Entity

The Store-SCP waits in the background for connections and accepts associations with Presentation Contexts for the SOP Classes of the Storage Service Class. Instances received after sending a retrieve command to a remote Q/R SCP will be immediately added to the local database, where they may subsequently be listed and viewed through the user interface; unsolicited instances will be put in a temporary storage area, where they can be moved to the local database.

4.1.2.4 Functional Definition of Q/R-SCU Application Entity

A connection from the Q/R-SCU to the remote AE is established to execute a query of the remote archive using the decided criteria. When the user selects a study, a connection to the remote AE is established to initiate and monitor the retrieval: the Store-SCP AE receives the retrieved instances.

4.1.2.5 Functional Definition of Hardcopy Application Entity

It is possible to activate the Hardcopy Application Entity both for printing images from the current Study, and for printing a set of images from the local database. In any case, the images belonging to the current Study will not be mixed in the same print-job with the images belonging to older Studies.

On the MyLab keyboard, according to the model, there are one or more print keys; each one can be assigned to a given DICOM printing profile, that is to a given configuration for a given DICOM printer.

Pressing one of the assigned print keys will add the current visualized image to queue that will be used to compose the film sheet that will be printed according to the selected printing profile. There are different and separated queues for images belonging to the current Study (real-time display, and images selected from the "EXAM REV" environment), and for the images belonging to older Studies (images selected from the "ARCHIVE REV" environment).

When activating the above described keys, the preformatted grayscale or color image (according to the color capability of the corresponding printer) will be added to the print-job being prepared for the selected printing profile. When the number of images requested to fill the film sheet for that printing profile is reached, an association request will be sent to the destination AE, and upon successful negotiation of a Presentation Context the data transfer will be started. If the association cannot be opened, or if some fatal error occurs, the related print-job will be set to an error state, and it will be possible to restart it later by the user via job control interface. The Hardcopy AE will not try to initiate another association for this print-job automatically.

⁹ MPPS SOP Class not present in VET models.

4.1.3 Sequencing of Real-World Activities ¹⁰

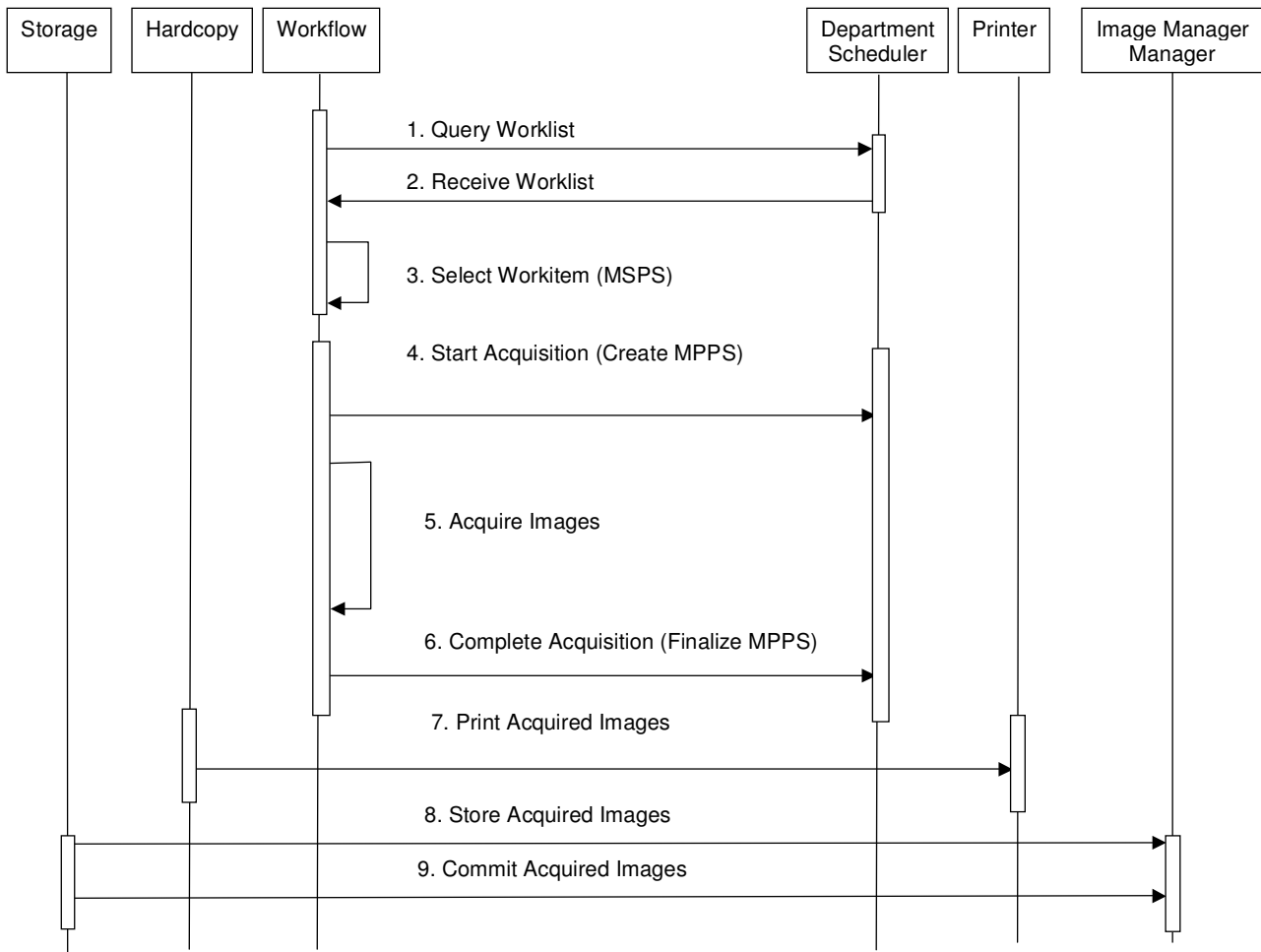


Figure 2
APPLICATION DATA FLOW DIAGRAM

Under normal conditions the sequencing constraints illustrated in Figure 2 apply:

1. Query Worklist.
2. Receive Worklist of Modality Scheduled Procedure Steps (MSPS).
3. Select Workitem (MSPS) from Worklist.
4. Start acquisition and create MPPS.
5. Acquire Images.
6. Complete acquisition and finalize MPPS.
7. Print acquired images (optional step).
8. Store acquired images, clips and created Structured Report objects.

¹⁰ Storage Commitment and MPPS SOP Classes not present in VET models.

9. If there is a Storage Commitment server configured and enabled, the Storage AE will request Storage Commitment for the images to it.

Other workflow situations (e.g. unscheduled procedure steps) will have other sequencing constraints. Printing could equally take place after the acquired images have been stored. Printing could be omitted completely if no printer is connected or hardcopies are not required.

Q/R-SCU and Store-SCP activities are performed in a completely independent way from the above activities. The Q/R-SCU activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed, including receiving the related images with the Store-SCP.

4.2 AE SPECIFICATIONS

4.2.1 Storage Application Entity Specification

4.2.1.1 SOP Classes

MyLab provides Standard Conformance to the following SOP Classes:

Table 5
SOP CLASSES FOR AE STORAGE

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|-------------------------------|-----|-------------------|
| Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | Yes | No |
| Ultrasound Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | Yes | No |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Yes | No |
| Comprehensive SR Storage ¹¹ | 1.2.840.10008.5.1.4.1.1.88.33 | Yes | No |
| Storage Commitment Push Model ¹² | 1.2.840.10008.1.20.1 | Yes | No |
| Verification | 1.2.840.10008.1.1 | Yes | Yes ¹³ |

4.2.1.2 Association Policies

4.2.1.2.1 General

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

Table 6
DICOM APPLICATION CONTEXT FOR AE STORAGE

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

4.2.1.2.2 Number of Associations

MyLab initiates one Association at a time for each destination to which a transfer request is being processed in the active job queue list. Only one job will be active at a time, the other remains pending until the active job is completed or failed.

Table 7
NUMBER OF ASSOCIATIONS INITIATED FOR AE STORAGE

| | |
|---|-----------|
| Maximum number of simultaneous Associations | Unlimited |
|---|-----------|

MyLab accepts Associations to receive N-EVENT-REPORT notifications for the Storage Commitment Push Model SOP Class.

4.2.1.2.3 Asynchronous Nature

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

Table 8
ASYNCHRONOUS NATURE AS A SCU FOR AE STORAGE

| | |
|---|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---|---|

¹¹ Comprehensive SR Storage SOP Class not present in VET models.

¹² Storage Commitment SOP Class not present in VET models.

¹³ Only active when the Storage Commitment and/or the Query/Retrieve are enabled.

4.2.1.2.4 Implementation Identifying Information

See section 3.8.

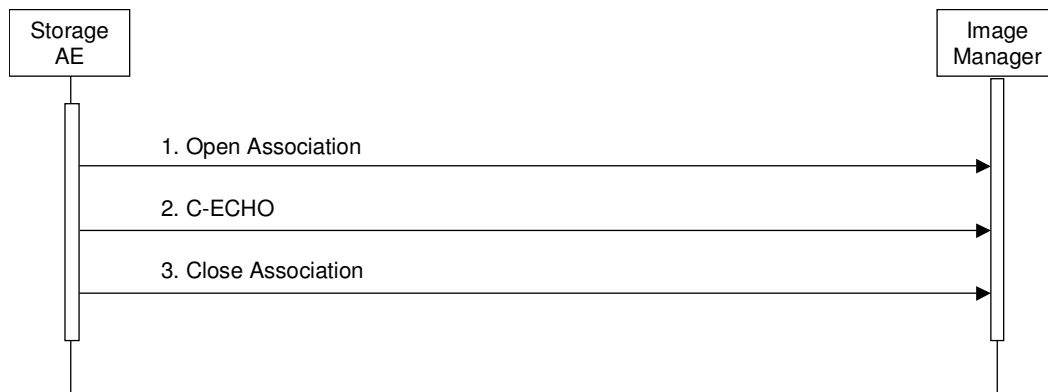
4.2.1.3 Association Initiation Policy

4.2.1.3.1 Activity – Connectivity Verification

4.2.1.3.1.1 Description and Sequencing of Activities

The Storage AE is invoked to perform a verification by the Storage SCP server configuration interface. The job consists of data describing the destination.

If a response to the C-ECHO-RQ is not received within a timeout, the Association will be aborted and an error will be reported to the User.



**Figure 3
SEQUENCING OF ACTIVITY – CONNECTIVITY VERIFICATION**

4.2.1.3.1.2 Proposed Presentation Context Table

The MyLab is capable of proposing the Presentation Contexts as shown in the following table:

**Table 9
PROPOSED PRESENTATION CONTEXT FOR CONNECTIVITY VERIFICATION**

| Presentation Context Table | | | | | |
|----------------------------|-------------------|---------------------------|-------------------|------|------------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Negot |
| Name | UID | Name List | UID List | | |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |

4.2.1.3.1.3 SOP Specific Conformance for Connectivity Verification

The MyLab provides standard conformance to the DICOM Verification Service Class as an SCU. The status code for the C-ECHO is as follows:

**Table 10
C-ECHO RESPONSE STATUS HANDLING BEHAVIOUR**

| Code | Status | Meaning |
|------|---------|---------------------------------|
| 0000 | Success | The C-ECHO request is accepted. |

4.2.1.3.2 Activity – Send Images ¹⁴

4.2.1.3.2.1 Description and Sequencing of Activities

The Storage AE is invoked to send images, clips and SR objects¹⁵ by the job control interface that is responsible for processing network archival tasks. The job consists of data describing the instances marked for storage and the destination. An internal daemon process triggered by a job initiates the procedure to store the instances related to this job. If the process successfully establishes an Association to a remote Application Entity, it will transfer the instances, one after another, via the open Association. If the job contains multiple instances, then multiple C-STORE requests will be issued over the same Association. Status of the transfer is reported through the job control interface. If the Association cannot be established, or one or more C-STORE Responses from the remote Application contain a status other than Success, the related send job is switched to a failed state, deleting from it the images that were successfully sent; it can be restarted at any time by user interaction. If a response is not received within a timeout, the Association will be aborted and the sending of the current instances will be considered failed. In the configuration of the system for each DICOM Store SCP configured there is an AUTOMATIC RETRY check; when enabled, when the association cannot be established for a network problem, or because the server rejects it, or when a network error occurs when sending a file, before immediately switching the job to a failed state, it will be automatically re-sent after a configurable interval of time, for a configurable number of times; when the number of configured retries has expired without success, the job will be put to a failed state.

If there is a configured Storage Commitment SCP, the Storage AE will, after all images have been sent, transmit a single Storage Commitment request (N-ACTION) over another Association. Upon receiving the N-ACTION response the Storage AE will close the Association. However, the Storage AE is capable of receiving an N-EVENT-REPORT request at any time during an association provided a Presentation Context for the Storage Commitment Push Model has been successfully negotiated (i.e. the N-ACTION is sent at the end of one association and the N-EVENT-REPORT is received during an association initiated for a subsequent send job or during an association initiated by the Remote AE for the specific purpose of sending the N-EVENT-REPORT).

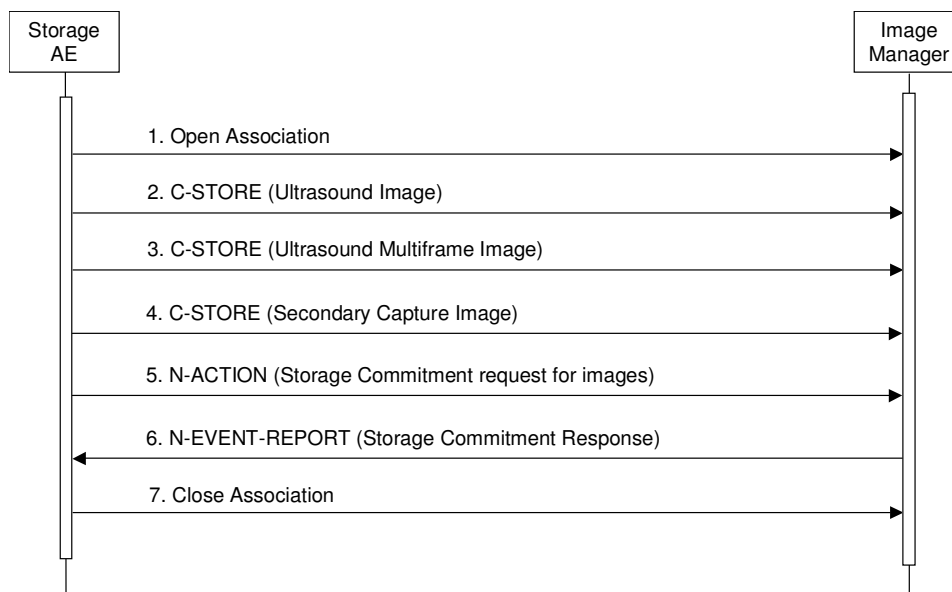


Figure 4
SEQUENCING OF ACTIVITY – SEND IMAGES

A possible sequence of interactions between the Storage AE and an Image Manager (e.g. a storage or archive device supporting the Storage and Storage Commitment SOP Classes as an SCP) is illustrated in Figure 4:

¹⁴ Storage Commitment SOP Class not present in VET models.

¹⁵ DICOM Structured Report not available in VET models.

1. The Storage AE opens an association with the Image Manager.
2. A Storage SOP Instance (US, US-MF, SC or SR object) is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
3. Another Storage SOP Instance is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
4. Another Storage SOP Instance is transmitted to the Image Manager using a C-STORE request and the Image Manager replies with a C-STORE response (status success).
5. An N-ACTION request is transmitted to the Image Manager to obtain storage commitment of previously transmitted SOP Instances. The Image Manager replies with a N-ACTION response indicating the request has been received and is being processed.
6. The Image Manager immediately transmits an N-EVENT-REPORT request notifying the Storage AE of the status of the Storage Commitment Request (sent in step 5 using the N-ACTION message). The Storage AE replies with a N-EVENT-REPORT response confirming receipt. The Image Manager could send this message at any time or omit it entirely in favor of transmitting the N-EVENT-REPORT over a separate dedicated association (see note).
7. The Storage AE closes the association with the Image Manager.

NOTE: Many other message sequences are possible depending on the number of Storage SOP Instances to be stored. The N-EVENT-REPORT can also be sent over a separate association initiated by the Image Manager (see Section 4.2.1.3.1 on Activity – Receive Storage Commitment Response). The Storage SCP and the Storage Commitment SCP can be different systems.

4.2.1.3.2.2 Proposed Presentation Contexts

MyLab is capable of proposing the Presentation Contexts shown in the following table:

Table 11
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY SEND IMAGES

| Presentation Context Table | | | | | |
|-------------------------------------|-----------------------------|--|---|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Ultrasound Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless Explicit VR Little Endian Implicit VR Little Endian | 1.2.840.10008.1.2.5 1.2.840.10008.1.2.1 1.2.840.10008.1.2 | | |
| | | Explicit VR Little Endian Implicit VR Little Endian | 1.2.840.10008.1.2.1 1.2.840.10008.1.2 | | |
| Ultrasound Multiframe Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | RLE Lossless Explicit VR Little Endian Implicit VR Little Endian | 1.2.840.10008.1.2.5 1.2.840.10008.1.2.1 1.2.840.10008.1.2 | | |
| | | Explicit VR Little Endian Implicit VR Little Endian | 1.2.840.10008.1.2.1 1.2.840.10008.1.2 | | |

| | | | | | |
|---|-------------------------------|--|--|-----|------|
| Comprehensive SR Storage ¹⁶ | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Little Endian Implicit VR Little Endian | 1.2.840.10008.1.2.1 1.2.840.10008.1.2 | SCU | None |
| Storage Commitment Push Model ¹⁷ | 1.2.840.10008.1.20.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |

Presentation Context for Ultrasound and Secondary Capture Images can be changed from the User's Interface pressing the MENU button, selecting DICOM CONFIGURATION and entering the QUALITY tab of the configuration panel. For each Storage SCP destination, the following choices are allowed for IMAGE QUALITY:

1. HIGH (UNCOMPRESSED): the Explicit VR Little Endian and the Implicit VR Little Endian will be offered;
2. MEDIUM (LOSSLESS RLE): the RLE, the Explicit VR Little Endian and the Implicit VR Little Endian will be offered;
3. LOW (LOSSY JPEG): only the JPEG lossy Baseline (Process 1) will be offered.

The Presentation Context for Ultrasound Multiframe Images can be changed, for each Storage SCP destination, from the User's Interface pressing the MENU button, selecting DICOM CONFIGURATION and entering the QUALITY tab of the configuration panel. You will find four different settings for CLIP QUALITY; selecting LOW, MEDIUM and HIGH the JPEG lossy Baseline (Process 1) will be offered, with three different compression levels. It is also possible to completely disable the DICOM sending of the clips, to avoid errors with servers that do not support these objects. It is also possible to reduce the frame matrix of the exported clips: for MATRIX SIZE a slider allows to select SMALL, MEDIUM and FULL.

If all the offered Presentation Contexts are not accepted, an error is generated; otherwise, an error is generated only if any of the images to be sent belong to a Presentation Context that has not been accepted. The job failure is logged and reported to the user via the job control application.

4.2.1.3.2.3 SOP Specific Conformance for Image Storage SOP Classes

All Image SOP Classes supported by the Storage AE exhibit the same behavior, except where stated, and are described together in this section.

The behavior of Storage AE when encountering status codes in a C-STORE response is summarized in the Table below:

Table 12
STORAGE C-STORE RESPONSE STATUS HANDLING BEHAVIOR

| Service Status | Further Meaning | Error Code | Behavior |
|----------------|-----------------------------------|------------|--|
| Success | Success | 0000 | The SCP has successfully stored the SOP Instance. If all SOP Instances in a send job have status success then the job is marked as complete. |
| Refused | Out of Resources | A700-A7FF | The send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. This is a transient failure. |
| Error | Data Set does not match SOP Class | A900-A9FF | The send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. |
| Error | Cannot Understand | C000-CFFF | The send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. |

¹⁶ Not present in VET models.

¹⁷ Storage Commitment SOP Class not present in VET models.

| | | | |
|---------|-----------------------------------|------------------------|---|
| Warning | Coercion of Data Elements | B000 | The send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. |
| Warning | Data Set does not match SOP Class | B007 | The send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. |
| Warning | Elements Discarded | B006 | The send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. |
| * | * | Any other status code. | The send job is marked as failed. The status code is logged and the job failure is reported to the user via the job control application. |

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

Table 13
STORAGE COMMUNICATION FAILURE BEHAVIOR

| Exception | Behavior |
|--|---|
| Timeout | The connection is aborted and the send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application. |
| 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 the job control application. |

A failed send job can be restarted by user interaction: only the failed images will be re-sent.

A failed send job can be restarted by user interaction: only the failed images will be re-sent. In the configuration of the system for each DICOM Store SCP configured there is an AUTOMATIC RETRY check; when enabled, when the association cannot be established for a network problem, or because the server rejects it, or when a network error occurs when sending a file, before immediately switching the job to a failed state, it will be automatically re-sent after a configurable interval of time, for a configurable number of times; when the number of configured retries has expired without success, the job will be put to a failed state.

The contents of US Image, US Multiframe Image, Secondary Capture Image and Comprehensive SR Storage SOP Instances created by MyLab conform to the DICOM US, US Multiframe, Secondary Capture Image and Comprehensive SR IOD definitions and are described in section 8.1.

The report with the performed measures can be exported in several ways according to the configuration of the system and the kind of application used to produce it. From the User's Interface, pressing the MENU button, selecting DICOM CONFIGURATION and entering the REPORT tab of the configuration panel, under REPORT EXPORT, for each Storage SCP destination it is possible to select among the following choices:

1. STRUCTURED REPORT¹⁸: a Comprehensive SR object will be created for applications that allow it (human "CARDIAC", "VASCULAR", "ABDOMINAL", "OB-FETAL" and "GYNECOLOGY"), while the report will be written in the pixels of one or more Secondary Capture images for the other applications. By checking "ADD MEASUREMENT FILE" the report will also be added into the proprietary attributes contained in the SR object (when produced), in the original proprietary format; this is intended to provide specific applications supported by Esaote the way to get the complete report in the Esaote format;
2. DICOM VIEWER COMPATIBLE IMAGE: the report will be written in a human readable way into the pixels of one or more Secondary Capture images, that will be sent together with the exam;
3. NONE: the report will not be sent at all;

¹⁸ DICOM Structured Report not available in VET models.

4.2.1.3.2.4 SOP Specific Conformance for Storage Commitment SOP Class ¹⁹

4.2.1.3.2.4.1 Storage Commitment Operations (N-ACTION)

The Storage AE will request storage commitment for instances of the Ultrasound, Ultrasound Multiframe, Secondary Capture Image and Comprehensive SR²⁰ Storage SOP Classes if there is a Remote AE configured as a Storage Commitment server (SCP) and a presentation context for the Storage Commitment Push Model has been accepted.

The Storage AE will consider Storage Commitment failed if no N-EVENT-REPORT is received for a Transaction UID within a configurable time period after receiving a successful N-ACTION response (duration of applicability for a Transaction UID).

The Storage AE does not send the optional Storage Media FileSet ID & UID Attributes or the Referenced Study Component Sequence Attribute in the N-ACTION.

The list of the jobs for which a Storage Commitment request (N-ACTION) has been successfully sent to the Storage Commitment SCP can be accessed right clicking the DICOM Network icon, and selecting (only in the Archive Review environment) STORAGE COMMITMENT SUMMARY. For each job there is a status that can be IN PROGRESS, FAILED or COMPLETED. Selecting one of the items of this list and clicking DETAILS opens a panel in which the complete list of the SOP Instance UIDs for that job is present.

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

Table 14
STORAGE COMMITMENT N-ACTION RESPONSE STATUS HANDLING BEHAVIOR

| Service Status | Further Meaning | Error Code | Behavior |
|----------------|-----------------|------------------------|--|
| Success | Success | 0000 | The request for storage comment is considered successfully sent. A timer is started which will expire if no N-EVENT-REPORT for the Transaction UID is received within a configurable timeout period. |
| * | * | Any other status code. | The Association is aborted using A-ABORT and the request for storage comment is marked as failed. The status meaning is logged and reported to the user via the job control application. |

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

Table 15
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 the job control application. |
| 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 the job control application. |

¹⁹ Storage Commitment SOP Class not present in VET models.

²⁰ DICOM Structured Report not available in VET models.

4.2.1.3.2.4.2 Storage Commitment Notifications (N-EVENT-REPORT)

The Storage AE is capable of receiving an N-EVENT-REPORT notification if it has successfully negotiated a Presentation Context for the Storage Commitment Push Model.

Upon receipt of a N-EVENT-REPORT the timer associated with the Transaction UID will be canceled.

The behavior of Storage AE when receiving Event Types within the N-EVENT-REPORT is summarized in the Table below.

Table 16
STORAGE COMMITMENT N-EVENT-REPORT BEHAVIOUR

| Event Type Name | Event Type ID | Behavior |
|--|---------------|--|
| Storage Commitment Request Successful | 1 | The Referenced SOP Instances under Referenced SOP Sequence (0008,1199) are marked within the STORAGE COMMITMENT SUMMARY list as "COMPLETED". Successfully committed SOP Instances are candidates for deletion from the local database. |
| Storage Commitment Request Complete – Failures Exist | 2 | The Referenced SOP Instances under Referenced SOP Sequence (0008,1199) are treated in the same way as in the success case (Event Type 1). The Referenced SOP Instances under Failed SOP Sequence (0008,1198) are marked within the STORAGE COMMITMENT SUMMARY - DETAILS as "FAILED". A send job that failed storage commitment will not be automatically restarted but can be restarted by user interaction. |

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

Table 17
STORAGE COMMITMENT N-EVENT-REPORT RESPONSE STATUS REASONS

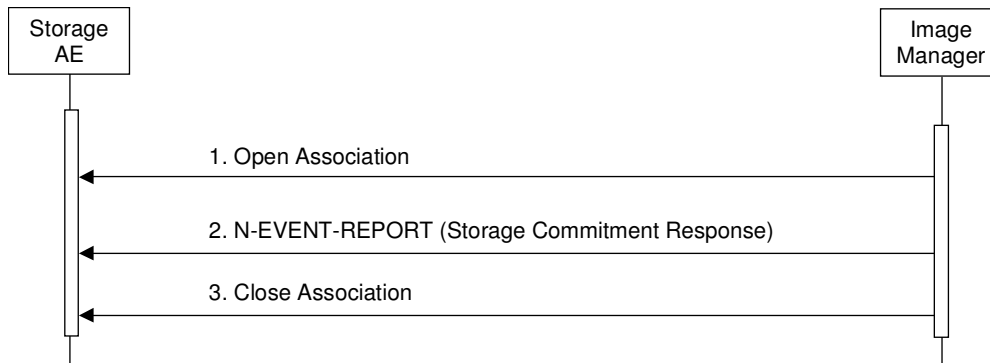
| Service Status | Further Meaning | Error Code | Reasons |
|----------------|------------------------|------------|---|
| Success | Success | 0000 | The storage commitment result has been successfully received. |
| Failure | Unrecognized Operation | 0211H | The Transaction UID in the N-EVENT-REPORT request is not recognized (was never issued within an N-ACTION request). |
| Failure | Resource Limitation | 0213H | The Transaction UID in the N-EVENT-REPORT request has expired (no N-EVENT-REPORT was received within a configurable time limit). |
| 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). |
| Failure | Invalid Argument Value | 0115H | One or more SOP Instance UIDs with the Referenced SOP Sequence (0008,1199) or Failed SOP Sequence (0008,1198) was not included in the Storage Commitment Request associated with this Transaction UID. The unrecognized SOP Instance UIDs will be returned within the Event Information of the N-EVENT-REPORT response. |

4.2.1.3 Association Acceptance Policy ²¹

4.2.1.3.1 Activity – Receive Storage Commitment Response

4.2.1.3.1.1 Description and Sequencing of Activities

The Storage AE will accept associations in order to receive responses to a Storage Commitment Request.



**Figure 5
SEQUENCING OF ACTIVITY - RECEIVE STORAGE COMMITMENT RESPONSE**

A possible sequence of interactions between the Storage AE and an Image Manager (e.g. a storage or archive device supporting Storage Commitment SOP Classes as an SCP) is illustrated in the Figure above:

1. The Image Manager opens a new association with the Storage AE.
2. The Image Manager sends an N-EVENT-REPORT request notifying the Storage AE of the status of a previous Storage Commitment Request. The Storage AE replies with a N-EVENT-REPORT response confirming receipt.
3. The Image Manager closes the association with the Storage AE.

The Storage AE may reject association attempts as shown in the Table below. The Result, Source and Reason/Diag columns represent the values returned in the appropriate fields of an ASSOCIATE-RJ PDU (see PS 3.8, Section 9.3.4). The contents of the Source column is abbreviated to save space and the meaning of the abbreviations are:

- a) 1 – DICOM UL service-user
- b) 2 – DICOM UL service-provider (ASCE related function)
- c) 3 – DICOM UL service-provider (Presentation related function)

**Table 18
ASSOCIATION REJECTION REASONS**

| Result | Source | Reason/Diag | Explanation |
|------------------------|--------|--------------------------|--|
| 2 – rejected-transient | c | 2 – local-limit-exceeded | The (configurable) maximum number of simultaneous associations has been reached. An association request with the same parameters may succeed at a later time. |
| 2 – rejected-transient | c | 1 – temporary-congestion | No associations can be accepted at this time due to the real-time requirements of higher priority activities (e.g. during image acquisition no associations will be accepted) or because insufficient resources are available (e.g. memory, processes, threads). An association request with the same parameters |

²¹ The Storage AE will not accept associations when Storage Commitment SOP Class is not present or not enabled.

| | | | |
|------------------------|---|--|--|
| | | | may succeed at a later time. |
| 1 – rejected-permanent | a | 2 – application-context-name-not-supported | The association request contained an unsupported Application Context Name. An association request with the same parameters will not succeed at a later time. |
| 1 – rejected-permanent | a | 7 – called-AE-title-not-recognized | The association request contained an unrecognized Called AE Title. An association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the association initiator is incorrectly configured and attempts to address the association acceptor using the wrong AE Title. |
| 1 – rejected-permanent | a | 3 – calling-AE-title-not-recognized | The association request contained an unrecognized Calling AE Title. An association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the association acceptor has not been configured to recognize the AE Title of the association initiator. |
| 1 – rejected-permanent | b | 1 – no-reason-given | The association request could not be parsed. An association request with the same format will not succeed at a later time. |

4.2.1.3.1.2 Accepted Presentation Contexts

The Storage AE will accept Presentation Contexts as shown in the Table below.

**Table 19
ACCEPTABLE PRESENTATION CONTEXTS FOR
ACTIVITY RECEIVE STORAGE COMMITMENT RESPONSE**

| 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 |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |

The Storage AE will only accept the SCU role (which must be proposed via SCP/SCU Role Selection Negotiation) within a Presentation Context for the Storage Commitment Push Model SOP Class.

4.2.1.3.1.3 SOP Specific Conformance for Storage Commitment SOP Class

4.2.1.3.1.4 Storage Commitment Notifications (N-EVENT-REPORT)

Upon receipt of a N-EVENT-REPORT the timer associated with the Transaction UID will be canceled, and the job will be marked as “COMPLETED” in the STORAGE COMMITMENT SUMMARY list. Otherwise, when the timer reaches the configured timeout value before reaching any response, the job will be marked as “FAILED”.

The behavior of Storage AE when receiving Event Types within the N-EVENT-REPORT is summarized in Table 17.

The reasons for returning specific status codes in a N-EVENT-REPORT response are summarized in Table 18.

4.2.2 Store-SCP Application Entity Specification

4.2.2.1 SOP Classes

Store-SCP provide Standard Conformance to the following SOP Class(es):

Table 1
SOP CLASSES SUPPORTED BY STORE-SCP

| SOP Class Name | SOP Class UID | SCU | SCP |
|--|-----------------------------|-----|-----|
| US Image Storage | 1.2.840.10008.5.1.4.1.1.6.1 | No | Yes |
| Ultrasound Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | No | Yes |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | No | Yes |
| CT Image Storage ²² | 1.2.840.10008.5.1.4.1.1.2 | No | Yes |
| MR Image Storage ²³ | 1.2.840.10008.5.1.4.1.1.4 | No | Yes |
| Nuclear Medicine Image Storage ²⁴ | 1.2.840.10008.5.1.4.1.1.20 | No | Yes |
| Positron Emission Tomography Image Storage ²⁵ | 1.2.840.10008.5.1.4.1.1.128 | No | Yes |
| Computed Radiography Image Storage ²⁶ | 1.2.840.10008.5.1.4.1.1.1 | No | Yes |
| Digital X-Ray Image Storage - For Presentation ²⁷ | 1.2.840.10008.5.1.4.1.1.1.1 | No | Yes |
| Digital Mammography X-Ray Image Storage - For Presentation ²⁸ | 1.2.840.10008.5.1.4.1.1.1.2 | No | Yes |

4.2.2.2 Association Policies

4.2.2.2.1 General

Store-SCP accepts but never initiates associations.

Table 2
MAXIMUM PDU SIZE RECEIVED AS A SCP FOR STORE-SCP

| | |
|---------------------------|------------|
| Maximum PDU size received | 128 Kbytes |
|---------------------------|------------|

4.2.2.2.2 Number of Associations

Table 3
NUMBER OF ASSOCIATIONS AS A SCP FOR STORE-SCP

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

4.2.2.2.3 Asynchronous Nature

Store-SCP will only allow a single outstanding operation on an Association. Therefore, Store-SCP will not perform asynchronous operations window negotiation.

²² Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

²³ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

²⁴ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

²⁵ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

²⁶ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

²⁷ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

²⁸ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

4.2.2.2.4 Implementation Identifying Information

See Section 3.8.

4.2.2.3 Association Initiation Policy

Store-SCP does not initiate associations.

4.2.2.4 Association Acceptance Policy

When Store-SCP accepts an association, it will respond to storage requests. If the Called AE Title does not match the pre-configured AE Title, the association will be rejected. Unsolicited instances will only be accepted if the system is accordingly configured, otherwise only the instances requested by the Q/R-SCU AE will be accepted.

4.2.2.4.1 Activity – Receive Storage Request**4.2.2.4.1.1 Description and Sequencing of Activities**

As instances are received they are copied to the local file system and a record inserted into the local database. If the received instance is a duplicate of a previously received instance, the new instance will be rejected. Instances received after sending a retrieve command to a remote Q/R SCP will be immediately added to the local database, where they may subsequently be listed and viewed through the user interface; unsolicited instances will be put in a temporary storage area, where they can be moved to the local database.

4.2.2.4.1.2 Accepted Presentation Contexts

Table 4
ACCEPTABLE PRESENTATION CONTEXTS FOR
STORE-SCP AND RECEIVE STORAGE REQUEST

| Presentation Context Table | | | | | |
|--|-----------------------------|---------------------------------|------------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| 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 (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |
| | | RLE | 1.2.840.10008.1.2.5 | SCP | 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 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| | | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |
| | | RLE | 1.2.840.10008.1.2.5 | SCP | None |
| US Multi-Frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCP | None |
| CT Image Storage ²⁹ | 1.2.840.10008.5.1.4.1.1.2 | 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 lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |
| MR Image Storage ³⁰ | 1.2.840.10008.5.1.4.1.1.4 | 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 lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |
| Nuclear Medicine Image Storage ³¹ | 1.2.840.10008.5.1.4.1.1.20 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |
| Positron Emission | 1.2.840.10008.5.1.4.1.1.128 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |

²⁹ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

³⁰ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

³¹ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

| | | | | | |
|--|-----------------------------|----------------------------|------------------------|-----|------|
| Tomography Image Storage ³² | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |
| Computed Radiography Image Storage ³³ | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |
| Digital X-Ray Image Storage - For Presentation ³⁴ | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |
| Digital Mammography X-Ray Image Storage - For Presentation ³⁵ | 1.2.840.10008.5.1.4.1.1.1.2 | 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 lossless (Process 14) | 1.2.840.10008.1.2.4.70 | SCP | None |

4.2.2.4.1.2.1. Extended Negotiation

No extended negotiation is performed, though Store-SCP:

- is a Level 2 Storage SCP (Full – does not discard any data elements)
- does not support digital signatures
- does not coerce any received data elements

4.2.2.4.1.3 SOP Specific Conformance

4.2.2.4.1.3.1. SOP Specific Conformance to Storage SOP Classes

Store-SCP provides standard conformance to the Storage Service Class.

4.2.2.4.1.3.2. Presentation Context Acceptance Criterion

All the above listed presentation contexts will be accepted.

4.2.2.4.1.3.3. Transfer Syntax Selection Policies

The Store-SCP AE will place the highest priority on the first syntax listed in the Accepted Presentation Contexts Table above, and decreasing priority on the following syntaxes.

³² Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

³³ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

³⁴ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

³⁵ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

4.2.2.4.1.3.4. Response Status

Store-SCP will behave as described in the Table below when generating the C-STORE response command message.

**Table 5
RESPONSE STATUS FOR STORE-SCP AND RECEIVE STORAGE REQUEST**

| Service Status | Further Meaning | Status Codes | Reason |
|-----------------------|-----------------------------------|---------------------|---|
| Refused | Out of Resources | A7xx | Never sent |
| Error | Data Set does not match SOP Class | A9xx | Never sent – data set is not checked prior to storage |
| | Cannot understand | Cxxx | The request was not processed. |
| | Client not authorized | 0100 | Not authorized to store images. |
| Warning | Instance already in archive | 0110 | Instances already in archive will be rejected. |
| | Coercion of Data Elements | B000 | Never sent - no coercion is ever performed |
| | Data Set does not match SOP Class | B007 | Never sent - data set is not checked prior to storage |
| Success | Elements Discarded | B006 | Never sent – all elements are always stored |
| | | 0000 | |

4.2.3 Q/R-SCU Application Entity Specification

Q/R-SCU AE provides Standard Conformance to the following DICOM SOP Classes:

Table 6
SOP CLASSES SUPPORTED BY Q/R-SCU

| SOP Class Name | SOP Class UID | SCU | SCP |
|--|-----------------------------|-----|-----|
| 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 |

4.2.3.1 Association Establishment Policies

4.2.3.1.1 General

Q/R-SCU initiates but never accepts associations. SOP class extended negotiation is not supported.

The configuration of the system defines all the Application Entity Titles with which this AE can establish associations. Included in the configuration are the different AE's IP host names and TCP port numbers on which the remote AE's are listening for incoming DICOM associations. If a particular remote AE definition in the configuration does not include a TCP port number, then Q/R-SCU AE can't request an association with the remote AE. The configuration allows also to change the port number used to listen for incoming stores after a retrieve request: this port is the same used by the Store-SCP AE.

4.2.3.1.2 Number of Associations

Only one association at the same time is allowed.

4.2.3.1.3 Asynchronous Nature

Q/R-SCU AE uses only synchronous mode of operation. If a remote AE specifies asynchronous operations in its association request, Q/R-SCU AE responds with no asynchronous operation's entry in the association response (this implies that only synchronous operations are supported).

4.2.3.1.4 Implementation Identifying Information

See Section 3.8.

4.2.3.2 Association Initiation Policy

Q/R-SCU AE uses a list of valid query/retrieve servers. User can select one of them, the system save these settings so the user does not need to set them for every request or after every startup.

Q/R-SCU AE starts an association for every request of query or retrieval.

4.2.3.2.1 Real-world Activity "query"

4.2.3.2.1.1 Associated Real-world Activity

The system initiates a query operation in response to user activity.

This operation will cause Q/R-SCU AE to:

- Build a list of identifiers to query
- initiate a DICOM association with the remote server
- send a C-FIND command with the identifiers and query level
- get the results and release the association.

4.2.3.2.1.2 Proposed Presentation Contexts

Q/R-SCU AE will propose the presentation contexts listed in the following Presentation Context Table for Query/Retrieve Service Class as Query SCU:

Table 7
Proposed Presentation Contexts for Q/R-SCU

| 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 |

4.2.3.2.1.3 SOP Specific Conformance for Query SOP Classes

Q/R-SCU AE has the following behavior when querying a remote AE:

- Following the remote AE accepting the proposed association, it will send a C-FIND operation with the identifier list created from the user interface.
- Results list returned will be displayed to the user.
- The association will be released.

4.2.3.3 Real-world Activity “retrieve”

4.2.3.3.1 Associated Real-world Activity

The system initiates a retrieve operation in response to user activity.

This operation will cause Q/R-SCU AE to:

- Build a list of instances to retrieve
- initiate a DICOM association with the remote server
- create a thread to listen for C-STORE commands from the remote server
- send a C-MOVE command with the instances
- receive C-STORE commands from the remote server
- get the C-MOVE results and release the association.

4.2.3.3.2 Proposed Presentation Contexts

Q/R-SCU AE will propose the presentation context listed in the following Presentation Context Table for Query/Retrieve Service Class as Retrieve SCU:

Table 8
Proposed Presentation Contexts for Q/R-SCU

| Presentation Context Table | | | | | |
|----------------------------------|-----------------------------|---------------------------|---------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name | UID | | |
| Study Root Query/Retrieve – 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 |

4.2.3.3.3 SOP Specific Conformance for Retrieve SOP Classes

Q/R-SCU AE has the following behavior when retrieving images from storage on a remote AE:

- Following the remote AE accepting the proposed association, it will create a thread to listen for the C-STORE operations returning the images.
- AE will perform a C-MOVE operation sending the identifier list created from the user interface.
- Images stored to the listener thread will be displayed.

- When the C-MOVE command has received all results or been aborted, the listener thread will be terminated.
- The association will be released.

4.2.3.3.4 Association Acceptance Policy

Q/R-SCU AE accept associations only for retrieve purposes. Anyway, for the same TCP Port and AE Title, the Storage SCP AE is always listening for associations to receive solicited and unsolicited instances.

4.2.3.3.5 SOP Specific Conformance for Retrieve SOP Classes

Q/R-SCU AE will monitor the Store-SCP Application Entity to verify that the requested instances have been received, adding them to the local database.

4.2.4 Workflow Application Entity Specification ³⁶

4.2.4.1 SOP Classes

MyLab provides Standard Conformance to the following SOP Classes:

Table 20
SOP CLASSES FOR AE WORKFLOW

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|-------------------------|-----|-----|
| Modality Worklist Information Model – FIND | 1.2.840.10008.5.1.4.31 | Yes | No |
| Modality Performed Procedure Step ³⁷ | 1.2.840.10008.3.1.2.3.3 | Yes | No |

4.2.4.2 Association Policies

4.2.4.2.1 General

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

Table 21
DICOM APPLICATION CONTEXT FOR AE WORKFLOW

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

4.2.4.2.2 Number of Associations

MyLab initiates one Association at a time for a Worklist request.

Table 22
NUMBER OF ASSOCIATIONS INITIATED FOR AE WORKFLOW

| | |
|---|---|
| Maximum number of simultaneous Associations | 1 |
|---|---|

4.2.4.2.3 Asynchronous Nature

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

Table 23
ASYNCHRONOUS NATURE AS A SCU FOR AE WORKFLOW

| | |
|---|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---|---|

4.2.4.2.4 Implementation Identifying Information

See section 3.8.

4.2.4.3 Association Initiation Policy

4.2.4.3.1 Activity – Worklist Update

4.2.4.3.1.1 Description and Sequencing of Activities

The request for a Worklist Update is initiated by user interaction (broad query), or automatically when starting an exam selected among the previously requested worklist items (narrow query). Pressing the “WORKLIST”

³⁶ MPPS SOP Class not present in VET models.

³⁷ MPPS SOP Class not present in VET models.

soft key in the PATIENT DATA panel, the WORKLIST QUERY panel appears. Pressing the button “QUERY” in this panel issues a broad worklist query to the configured worklist server.

It is possible to configure the system to automatically execute the broad worklist query whenever the User opens the Worklist panel, by checking “QUERY AT START” in the panel itself. Otherwise, the results of the latest worklist query (if any) will appear until you press “QUERY”.

The “SHOW QUERY PARAMETERS” in the WORKLIST QUERY panel will display a “QUERY PARAMETERS” panel for entering data as search criteria. When the QUERY is pressed, the data from the panel will be inserted as matching keys into the query. In the QUERY PARAMETERS panel there is a “RESET” button to reset the query parameters to the default (current day for the Scheduled Procedure Step Start Date, local AE Title of the MyLab for the Scheduled Station AE Title).

With broad worklist queries the MyLab system always requests all items that match the matching keys in the table below:

Table 24
BROAD WORKLIST QUERY MATCHING KEYS

| Tag | Attribute | Contents |
|-------------|---------------------------------------|---|
| (0008,0005) | Specific Character Set | “ISO_IR 100” or “ISO_IR 144” ³⁸ |
| (0008,0050) | Accession Number | empty, can be set |
| (0008,0060) | Modality | pre-set to “US” but can be changed or blanked |
| (0040,0006) | Scheduled Performing Physician’s Name | empty, can be set |
| (0010,0010) | Patient’s Name | empty, can be set |
| (0010,0020) | Patient ID | empty, can be set |
| (0040,0002) | Scheduled Procedure Step Start Date | present date, can be modified |
| (0040,0001) | Scheduled Station AE Title | Local AE Title, can be modified |
| (0040,1001) | Requested Procedure ID | empty, can be set |

Upon initiation of the request, the MyLab will build an Identifier for the C-FIND request, using the above matching keys and the return keys in Table 30. Then it will initiate an Association to send the request and will wait for Worklist responses. After retrieval of all responses, MyLab will display them in the WORKLIST QUERY panel, showing for each Scheduled Procedure Step the Patient Name, sex, Scheduled Performing Physician, Scheduled Procedure Step Start Date and Time, Scheduled Procedure Step ID, Accession Number, and a STATUS information flag that identifies with “WARNING” the received Scheduled Procedure Steps in which some mandatory attributes are missing. For every item it is possible to show the other information received by selecting it and pressing “DETAILS”: in this panel, in case of missing mandatory attributes in the response, there will also be the list of them. Even if some information, while mandatory for the SCP, is not provided by it, the MyLab will allow executing it by using the values that would be used for an unscheduled exam. In case of corrupted C-FIND-RSP messages, in the WORKLIST panel a message will appear saying that some of the records are corrupted.

The results will be cleared with the next worklist update. The previously obtained worklist will be kept if for any reason a new one cannot be received: this is done to enable the use of the device also when disconnected from the network. In any case when a worklist item is used to start an exam it will be grayed, so the user, even when the worklist server is not available, can be aware of the already executed exams.

³⁸ Set to “ISO_IR 100” when the system is set to use a Latin keyboard or to “ISO_IR 144” when it is set to use a Cyrillic keyboard. It is not intended to be a matching key. When any C-FIND-RSP contains a different character set of the one in the query, a warning will result, and the characters that cannot be mapped into the current character set will be substituted by a question mark “?”. When the any C-FIND-RSP does not contain the (0008,0005) Specific Character Set, the received data are treated as their (0008,0005) Specific Character Set correspond to the current settings of the MyLab.

It is possible to configure the system to automatically execute a narrow worklist query whenever the User starts an exam, by checking "REFRESH DATA WHEN STARTING AN EXAM" in the worklist Worklist server configuration. In this case each time a record is selected to use it for starting an exam using its data, a narrow query will be performed to verify that the information still corresponds to the selected record. In case of any difference, a broad query is automatically issued and the User is requested to select again the exam to start.

It is also possible to configure the system to force the user to insert some details in the worklist query panel, to avoid getting too many responses from a worklist server that has a huge number of scheduled procedure steps registered. This can be done accessing the DICOM configuration panel: for each DICOM MWL SCP configured there is a "FORCE DETAILS" check; when checked the sw verifies that in the at least one among Patient Last Name, Patient ID and Accession number in the worklist panel contains a string. In case all these three attributes are empty, an error message appears.

Table 25
NARROW WORKLIST QUERY MATCHING KEYS

| Tag | Attribute | Contents | Matching Key Type |
|-------------|-------------------------------------|---|-------------------|
| (0008,0005) | Specific Character Ser | "ISO_IR 100" or "ISO_IR 144" | = |
| (0040,0002) | Scheduled Procedure Step Start Date | the same used in the broad query | R |
| (0008,0060) | Modality | the same used in the broad query | R |
| (0010,0020) | Patient ID | from the selected result of the broad query | R |
| (0040,0001) | Scheduled Station AE Title | from the selected result of the broad query | R |
| (0008,0050) | Accession Number | from the selected result of the broad query | O |

It is also possible to configure the system to periodically query the worklist server in background, so that when opening the worklist panel you immediately get fresh data without having to wait.

Table 26
BACKGROUND WORKLIST QUERY MATCHING KEYS

| Tag | Attribute | Contents |
|-------------|---------------------------------------|---|
| (0008,0005) | Specific Character Ser | "ISO_IR 100" or "ISO_IR 144" |
| (0008,0060) | Modality | pre-set to "US" but can be changed or blanked |
| (0040,0006) | Scheduled Performing Physician's Name | empty, can be set |
| (0040,0002) | Scheduled Procedure Step Start Date | present date |
| (0040,0001) | Scheduled Station AE Title | Local AE Title, can be modified |

Upon initiation of the request, the MyLab system will build an Identifier for the C-FIND request, using the above matching keys and the return keys in Table 30. Then it will initiate an Association to send the request and will wait for Worklist responses. After retrieval of all the responses, the MyLab system filters them for the same Patient ID, Accession Number, Scheduled Procedure Step Start Date, Scheduled Procedure Step Start Time, in order to identify the response that matches with the item selected in the broad query.

If from the narrow query, after filtering the responses as above, there are none or more than one matching the selected item, or some of the relevant information in the return keys have changed since the broad query, a warning message will be shown, a broad query will automatically be issued, and the User will be asked to select the exam again, to be sure all the information is coherent with the one contained in the Worklist Server.

For the broad, narrow and background queries, the MyLab system will initiate an Association in order to issue a C-FIND request according to the Modality Worklist Information Model.

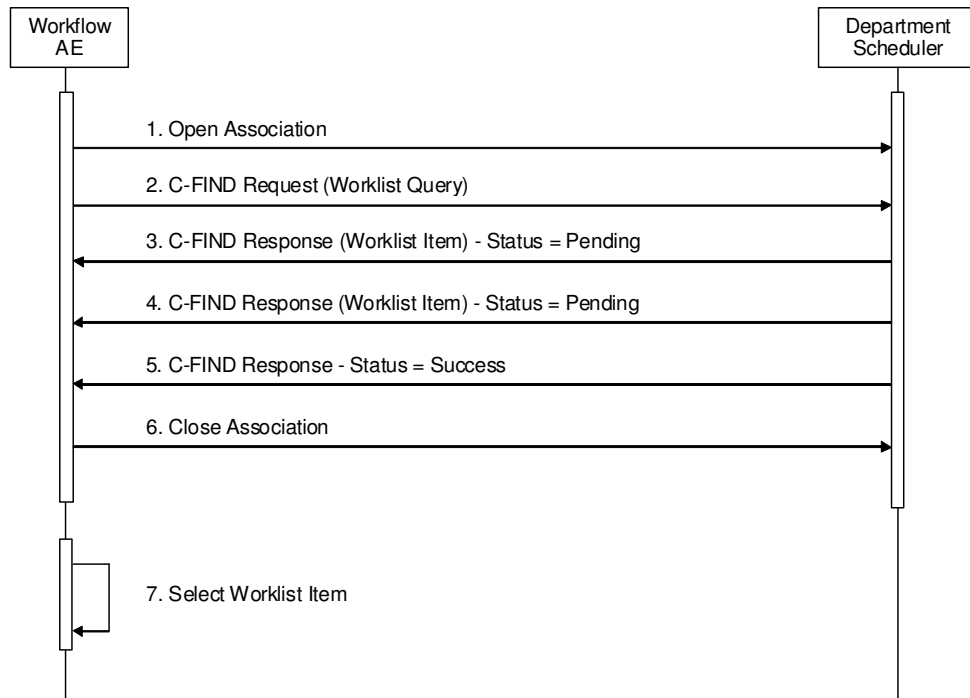


Figure 6
SEQUENCING OF ACTIVITY – WORKLIST UPDATE

A possible sequence of interactions between the Workflow AE and a Departmental Scheduler (e.g. a device such as a RIS or HIS which supports the Modality Worklist SOP Class as an SCP) is illustrated in the Figure above:

1. The Worklist AE opens an association with the Departmental Scheduler
2. The Worklist AE sends a C-FIND request to the Departmental Scheduler containing the Worklist Query attributes.
3. The Departmental Scheduler returns a C-FIND response containing the requested attributes of the first matching Worklist Item.
4. The Departmental Scheduler returns another C-FIND response containing the requested attributes of the second matching Worklist Item.
5. The Departmental Scheduler returns another C-FIND response with status Success indicating that no further matching Worklist Items exist. This example assumes that only 2 Worklist items match the Worklist Query.
6. The Worklist AE closes the association with the Departmental Scheduler.
7. The user selects a Worklist Item from the Worklist and prepares to acquire new images.

4.2.4.3.1.2 Proposed Presentation Contexts

MyLab will propose Presentation Contexts as shown in the following table:

Table 27
PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY WORKLIST UPDATE

| Presentation Context Table | | | | | |
|--|------------------------|---------------------------|-------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| 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 |

4.2.4.3.1.3 SOP Specific Conformance for Modality Worklist

The behavior of the MyLab when encountering status codes in a Modality Worklist C-FIND response is summarized in the Table below. If any other SCP response status than "Success" or "Pending" is received by the MyLab, a message "query failed" will appear on the user interface.

Table 28
MODALITY WORKLIST C-FIND RESPONSE STATUS HANDLING BEHAVIOR

| Service Status | Further Meaning | Error Code | Behavior |
|----------------|--|------------------------|--|
| Success | Matching is complete | 0000 | The SCP has completed the matches. Worklist items are available for display or further processing. |
| Refused | Out of Resources | A700 | The Association is aborted using A-ABORT and the worklist 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. |
| Failed | Identifier does not match SOP Class | A900 | The Association is aborted using A-ABORT and the worklist 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. |
| Failed | Unable to Process | C000 – CFFF | The Association is aborted using A-ABORT and the worklist 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. |
| Cancel | Matching terminated due to Cancel request | FE00 | If the query was cancelled due to too many worklist items then the SCP has completed the matches. Worklist items are available for display or further processing. Otherwise, the Association is aborted using A-ABORT and the worklist query is marked as failed. The status meaning is logged and reported to the user if an interactive query. |
| Pending | Matches are continuing | 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 | FF01 | The worklist item contained in the Identifier is collected for later display or further processing. The status meaning is logged only once for each C-FIND operation. |
| * | * | Any other status code. | The Association is aborted using A-ABORT and the worklist 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. |
|--|--|--|------------------------------|

The behavior of the MyLab during communication failure is summarized in the Table below.

Table 29
MODALITY WORKLIST COMMUNICATION FAILURE BEHAVIOR

| Exception | Behavior |
|--|--|
| Timeout | The Association is aborted using A-ABORT and the worklist 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 worklist query is marked as failed. The reason is logged and reported to the user if an interactive query. |

Acquired images will always use the Study Instance UID specified for the Scheduled Procedure Step (if available). If an acquisition is unscheduled, a Study Instance UID will be generated locally.

The Table below provides a description of the MyLab 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 30
WORKLIST REQUEST IDENTIFIER

| Module Name Attribute Name | Tag | VR | M | R | Q | D | IOD |
|---|-------------|----|---|---|---|---|-----------------|
| SOP Common Specific Character Set | (0008,0005) | CS | S | | | | |
| Scheduled Procedure Step | | | | | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | SQ | | | | | |
| > Scheduled Station AE Title | (0040,0001) | AE | S | x | x | d | |
| > Scheduled Procedure Step Start Date | (0040,0002) | DA | R | | x | w | |
| > Scheduled Procedure Step Start Time | (0040,0003) | TM | | x | | w | |
| > Modality | (0008,0060) | CS | S | | | d | x |
| > Scheduled Performing Physician's Name | (0040,0006) | PN | * | x | x | x | x ³⁹ |
| > Scheduled Procedure Step Description | (0040,0007) | LO | | x | | d | x |
| > Scheduled Protocol Code Sequence | (0040,0008) | SQ | | x | | d | x |
| > Scheduled Procedure Step ID | (0040,0009) | SH | | x | | w | x |
| Requested Procedure | | | | | | | |
| Requested Procedure ID | (0040,1001) | SH | | x | x | d | x |
| Requested Procedure Description | (0032,1060) | LO | | x | | d | x |
| Requested Procedure Code Sequence | (0032,1064) | SQ | | x | | d | x |
| Study Instance UID | (0020,000D) | UI | | x | | | x |
| Referenced Study Sequence | (0008,1110) | SQ | | x | | | x |
| Imaging Service Request | | | | | | | |
| Accession Number | (0008,0050) | SH | | x | x | x | x |
| Requesting Physician | (0032,1032) | PN | | x | | d | |
| Referring Physician's Name | (0008,0090) | PN | | x | | x | x |
| Visit Identification | | | | | | | |
| Admission ID | (0038,0010) | LO | | x | | d | |

³⁹ The value received in the response can be changed from the User's interface; in the produced IOD it will be inserted in the (0008,1050) Performing Physicians' Name.

| | | | | | | | |
|--|-------------|----|---|---|---|------|---|
| Visit Status Current Patient Location | (0038,0300) | LO | | x | | d | |
| Visit Admission Admitting Diagnoses Description | (0008,1080) | LO | | x | | x | x |
| Patient Identification Patient's Name | (0010,0010) | PN | * | x | x | x, w | x |
| Patient ID | (0010,0020) | LO | | x | x | x | x |
| Patient Demographic Patient's Birth Date | (0010,0030) | DA | | x | | x | x |
| Patient's Sex | (0010,0040) | CS | | x | | x, w | x |
| Patient's Weight | (0010,1030) | DS | | x | | d | x |
| Patient's Size | (0010,1020) | DS | | x | | d | x |
| Patient Comments | (0010,4000) | LT | | x | | d | |
| Patient Medical Patient State | (0038,0500) | LO | | x | | d | |
| Pregnancy Status | (0010,21C0) | US | | x | | d | |
| Medical Alerts | (0010,2000) | LO | | x | | d | |
| Contrast Allergies | (0010,2110) | LO | | x | | d | |
| Special Needs | (0038,0050) | LO | | x | | d | |
| Additional Patient History | (0010,21B0) | LT | | x | | d | |

The above table should be read as follows:

Module Name: The name of the associated module for supported worklist attributes.

Attribute Name: Attributes supported to build a MyLab Worklist Request Identifier.

Tag: DICOM tag for this attribute.

VR: DICOM VR for this attribute.

M: Matching keys for (default) Worklist Update. A "S" will indicate that the MyLab will supply an attribute value for Single Value Matching, a "R" will indicate Range Matching and a "*" will denote wildcard matching. The "Scheduled Station AE Title" is Matching Key with the Local AE Title when "This Unit" is selected. The "Modality" is set to "US", by default, but can be changed or blanked. Please note that "Specific Character Set" is set to "ISO_IR 100" when the system is set to use a Latin keyboard, to "ISO_IR 144" when it is set to use a Cyrillic keyboard, and it is not intended to be a matching key.

R: Return keys. An "x" will indicate that the MyLab will supply this attribute as Return Key with zero length for Universal Matching. The "Scheduled Station AE Title" is Return Key with zero length for Universal Matching when "All Units" is selected.

Q: Interactive Query Key. An "x" will indicate that the MyLab will supply this attribute as matching key, if entered in the QUERY PARAMETERS panel. For the "Patient's Name" and "Scheduled Performing Physician's Name" only Last Name and First Name can be inserted, a wildcard will be added for the other components. The "Scheduled Station AE Title" is single value matching key when "Specific Unit" is selected and a AE Title is supplied.

D: Displayed keys. A "w" indicates that this worklist attribute is displayed to the user in the WORKLIST QUERY panel. An "x" indicates that this worklist attribute is displayed to the user in the patient registration dialog, when the corresponding worklist item is selected pressing "SELECT EXAM" from the WORKLIST QUERY panel. For example, Patient Name will be displayed when registering the patient prior to an examination. A "d" indicates that this worklist attribute is displayed to the user only when selecting a worklist item and pressing "DETAILS".

IOD: An "x" indicates that this Worklist attribute is included into all Object Instances created during performance of the related Procedure Step.

The default Query Configuration is set to "Modality" (US) and "Date" (date of today). Optionally, additional matching are configurable in the QUERY PARAMETERS panel, as described above.

4.2.4.3.2 Activity – Acquire Images

4.2.4.3.2.1 Description and Sequencing of Activities ⁴⁰

Selecting an item from in the WORKLIST QUERY panel, and pressing "SELECT EXAM", takes you back to the PATIENT DATA panel, already filled with all the data coming from the worklist. It is possible to modify or to input the Performing Physician, Height and Weight of the patient.

The trigger to create a MPPS SOP Instance is derived from pressing "OK" in the PATIENT DATA panel. An Association to the configured MPPS SCP system is established immediately and the related MPPS SOP Instance will be created.

When closing the current exam ("Start End" key) the MPPS will be set to the final state "COMPLETED". It is also possible to set it to "DISCONTINUED", by checking "ABANDONED PROCEDURE" before pressing OK in the EXAM panel that appears when closing the exam. This check is pre-set when no images have been acquired, anyway can be unchecked if needed (for example, measures done without storing images). In case of automatic saving of the exam to a DICOM server, the MPPS message will be "COMPLETED" when one or more images have been acquired, "DISCONTINUED" otherwise.

Starting an exam for a locally registered Patient will create an "unscheduled cases", by allowing MPPS Instances to be communicated for locally registered Patients.

The MyLab only supports a 0-to-1 relationship between Scheduled and Performed Procedure Steps.

The MyLab will initiate an Association to issue an:

- N-CREATE request according to the CREATE Modality Performed Procedure Step SOP Instance operation or a
- N-SET request to update the contents and state of the MPPS according to the SET Modality Performed Procedure Step Information operation.

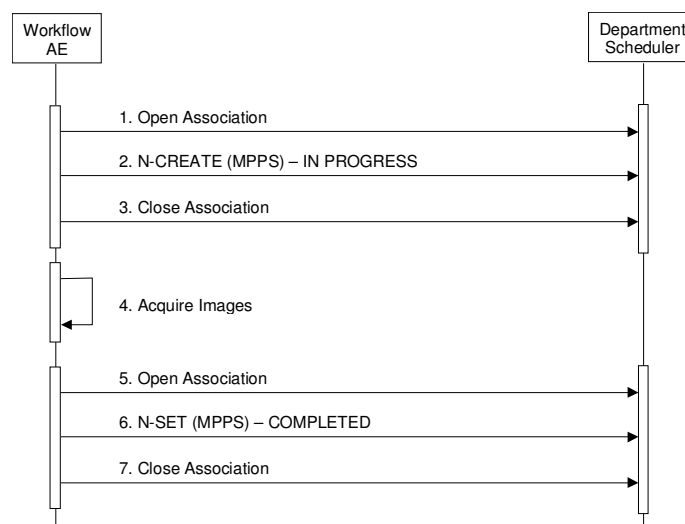


Figure 7
SEQUENCING OF ACTIVITY – ACQUIRE IMAGES

A possible sequence of interactions between the Workflow AE and a 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 7:

⁴⁰ MPPS SOP Class not present in VET models.

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

4.2.4.3.2.2 Proposed Presentation Contexts

The MyLab will propose Presentation Contexts as shown in the following table:

Table 31
PROPOSED PRESENTATION CONTEXTS FOR REAL-WORLD ACTIVITY ACQUIRE IMAGES

| Presentation Context Table | | | | | |
|---|-------------------------|---------------------------|-------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Modality Performed Procedure Step ⁴¹ | 1.2.840.10008.3.1.2.3.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |

4.2.4.3.2.3 SOP Specific Conformance for MPPS ⁴²

The behavior of the MyLab when encountering status codes in an MPPS N-CREATE or N-SET response is summarized in Table 32. If any other SCP response status than "Success" or "Warning" is received by the MyLab, a message "MPPS update failed" will appear on the user interface.

Table 32
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 is logged and reported to the user. Additional information in the Response will be 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 | The Association is aborted using A-ABORT and the |

⁴¹ MPPS SOP Class not present in VET models.

⁴² MPPS SOP Class not present in VET models.

| | | | |
|--|--|--------------|--|
| | | status code. | MPPS is marked as failed. The status meaning is logged and reported to the user. |
|--|--|--------------|--|

The behavior of the MyLab during communication failure is summarized in the Table below:

Table 33
MPPS COMMUNICATION FAILURE BEHAVIOR

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

Table 34 provides a description of the MPPS N-CREATE and N-SET request identifiers sent by the MyLab. Empty cells in the N-CREATE and N-SET columns indicate that the attribute is not sent. A "Zero length" attribute will be sent with zero length.

Table 34
MPPS N-CREATE / N-SET REQUEST IDENTIFIER

| Attribute Name | Tag | VR | N-CREATE | N-SET |
|-----------------------------|-------------|----|--|-------|
| Specific Character Set | (0008,0005) | CS | "ISO_IR 100" or "ISO_IR 144" ⁴³ . | |
| Modality | (0008,0060) | CS | US | |
| Procedure Code Sequence | (0008,1032) | SQ | From Modality Worklist, contains the value of the Requested Procedure Code Sequence (0032,1064). Not present for unscheduled exams or if the User unchecks "PERFORM PROCEDURE AS REQUESTED" in the WORKLIST QUERY panel. | |
| Referenced Patient Sequence | (0008,1120) | SQ | Zero length. | |
| Patient's Name | (0010,0010) | PN | From Modality Worklist (all 5 components) or user input. The user cannot modify values provided via Modality Worklist. | |
| Patient ID | (0010,0020) | LO | From Modality Worklist or user input. The user cannot modify values provided via Modality Worklist. | |
| Patient's Birth Date | (0010,0030) | DA | From Modality Worklist or user input. The user cannot modify values provided via Modality Worklist. | |
| Patient's Sex | (0010,0040) | CS | From Modality Worklist or user input. The user cannot modify values provided via Modality Worklist. | |
| Study ID | (0020,0010) | SH | Generated by the device. From | |

⁴³ "ISO_IR 100" is used when the system is set to use a Latin keyboard, "ISO_IR 144" when it is set to use a Cyrillic keyboard.

| | | | | |
|--|-------------|----|---|--------------------------------------|
| | | | Requested Procedure ID (0040,1001) when Modality Worklist is enabled. | |
| Performed Station AE Title | (0040,0241) | AE | Local AE Title. | |
| Performed Station Name | (0040,0242) | SH | Zero length. | |
| Performed Location | (0040,0243) | SH | Zero length. | |
| Performed Procedure Step Start Date | (0040,0244) | DA | Generated by the device. | |
| Performed Procedure Step Start Time | (0040,0245) | TM | Generated by the device. | |
| Performed Procedure Step End Date | (0040,0250) | DA | Zero length. | Actual end date. |
| Performed Procedure Step End Time | (0040,0251) | TM | Zero length. | Actual end time. |
| Performed Procedure Step Status | (0040,0252) | CS | "IN PROGRESS". | "DISCONTINUED" or "COMPLETED". |
| Performed Procedure Step ID | (0040,0253) | SH | Generated by the device. | |
| Performed Procedure Step Description | (0040,0254) | LO | According to the chosen application. | According to the chosen application. |
| Performed Procedure Type Description | (0040,0255) | LO | Zero length. | Zero length. |
| Performed Protocol Code Sequence | (0040,0260) | SQ | Zero length. | |
| Scheduled Step Attributes Sequence | (0040,0270) | SQ | | |
| > Accession Number | (0008,0050) | SH | From Modality Worklist or user input. The user cannot modify values provided via Modality Worklist. | |
| > Referenced Study Sequence | (0008,1110) | SQ | From Modality Worklist, empty for unscheduled exams. | |
| >> Referenced SOP Class UID | (0008,1150) | UI | From Modality Worklist. | |
| >> Referenced SOP Instance UID | (0008,1155) | UI | From Modality Worklist. | |
| > Study Instance UID | (0020,000D) | UI | From Modality Worklist, automatically generated for unscheduled exams. | |
| > Requested Procedure Description | (0032,1060) | LO | From Modality Worklist, Zero length for unscheduled exams. | |
| > Scheduled Procedure Step Description | (0040,0007) | LO | From Modality Worklist, Zero length for unscheduled exams. | |
| > Scheduled Protocol Code Sequence | (0040,0008) | SQ | From Modality Worklist, Zero length for unscheduled exams. | |
| > Scheduled Procedure Step ID | (0040,0009) | SH | From Modality Worklist, Zero length for unscheduled exams. | |

| | | | | |
|--|-------------|----|--|--|
| > Requested Procedure ID | (0040,1001) | SH | From Modality Worklist, Zero length for unscheduled exams. | |
| Performed Series Sequence | (0040,0340) | SQ | Zero length. | One or more items. |
| > Retrieve AE Title | (0008,0054) | AE | | Zero length. |
| > Series Description | (0008,103E) | LO | | According to the chosen application. |
| > Performing Physician's Name | (0008,1050) | PN | | From Modality Worklist, as (0040,0006) Scheduled Performing Phys. Name, or from user input. The user can modify values provided via Modality Worklist. |
| > Operator's Name | (0008,1070) | PN | | Generated by the device according to the login name used to access the system. |
| > Referenced Image Sequence | (0008,1140) | SQ | | One or more items. |
| >> Referenced SOP Class UID | (0008,1150) | UI | | Generated by the device. |
| >> Referenced SOP Instance UID | (0008,1155) | UI | | Generated by the device. |
| > Protocol Name | (0018,1030) | LO | | According to the chosen pre-set. |
| > Series Instance UID | (0020,000E) | UI | | Generated by the device. |
| > Referenced Non-Image Composite SOP Instance Seq. | (0040,0220) | SQ | | Zero length. |

4.2.4.4 Association Acceptance Policy

The Workflow Application Entity does not accept Associations.

4.2.5 Hardcopy Application Entity Specification

4.2.5.1 SOP Classes

The MyLab provides Standard Conformance to the following SOP Classes:

Table 35
SOP CLASSES FOR AE HARDCOPY

| SOP Class Name | SOP Class UID | SCU | SCP |
|---------------------------------------|------------------------|-----|-----|
| Basic Grayscale Print Management Meta | 1.2.840.10008.5.1.1.9 | Yes | No |
| Basic Color Print Management Meta | 1.2.840.10008.5.1.1.18 | Yes | No |

4.2.5.2 Association Policies

4.2.5.2.1 General

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

Table 36
DICOM APPLICATION CONTEXT FOR AE HARDCOPY

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

4.2.5.2.2 Number of Associations

It is possible to simultaneously configure many hardcopy devices, and for each one of them it is possible to configure many different printing profiles. According to the MyLab model, one or more of these printing profiles (belonging to the same or to different hardcopy devices) can be assigned to the print keys (one or more according to the model).

There are two different printing environments, one for the images belonging to the current Study (and displayed in the real-time environment, or selected and displayed from the "EXAM REV." environment), and another for the images belonging to older Studies (and displayed from the "ARCHIVE REV." environment).

Every time a print key is pressed, the current image is added to the current film according to the print key and the environment, so it is possible to simultaneously compose several films; whenever a film composing is completed, a print-job is prepared and the MyLab initiates the related Association.

Table 37
NUMBER OF ASSOCIATIONS INITIATED FOR AE HARDCOPY

| | |
|---|------------|
| Maximum number of simultaneous Associations | Unlimited. |
|---|------------|

MyLab does not accept Associations.

4.2.5.2.3 Asynchronous Nature

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

Table 38
ASYNCHRONOUS NATURE AS A SCU FOR AE HARDCOPY

| | |
|---|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---|---|

4.2.5.2.4 Implementation Identifying Information

The implementation information for this Application Entity can be found in Table 4.

4.2.5.2.5 Printer configuration

The Service personnel, when configuring the MyLab for a given DICOM printer, must select a suitable printer configuration profile, according to the brand/model of the printer. In the printer configuration profile, compiled using the DICOM Conformance Statement of the printer, for every attribute that can be put in the N-CREATE of the Film Session SOP Class, in the N-CREATE of the Film Box SOP Class, and in the N-SET on the Image Box SOP Class, there is the complete list of accepted values, and the most suitable one (or a flag that says not to send this attribute, for the optional ones).

The Service personnel, according to the User's needs, must decide in which format(s) to print with that printer, preparing one or more printing profiles, in which some of the pre-defined attributes can be changed among the ones present in the pre-defined printer configuration profile, while for the others the most suitable one (or none) will be sent, according to the printer configuration profile. One of the configuration parameters is the color capability: for printers that accept both the Basic Grayscale and Basic Color Print Management Meta SOP Class, the Service personnel can decide in which way to print.

There is also a generic printer configuration profile, in which all the non-mandatory information (excepted the attributes directly managed from the User's interface) is marked not to be sent: this printer configuration profile can be used with unknown printers, leaving the printer software the burden to chose the most correct configuration parameters.

To use a configured printing profile, the User must tie it to one of the special print keys.

4.2.5.3 Association Initiation Policy

4.2.5.3.1.1 Activity – Connectivity Verification

4.2.5.3.1.2 Description and Sequencing of Activities

The Hardcopy AE is invoked to perform a verification by the Print SCP configuration interface. The job consists of data describing the destination.

If a response to the C-ECHO-RQ is not received within a timeout, the Association will be aborted and an error will be reported to the User.

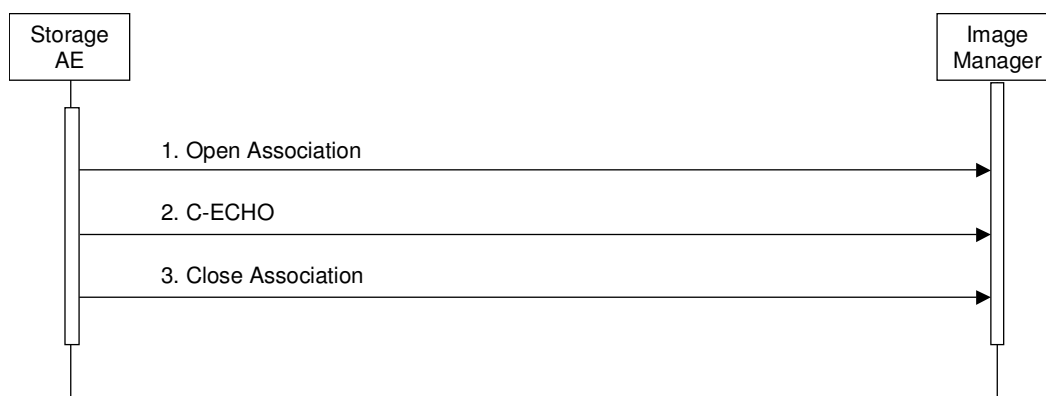


Figure 8
SEQUENCING OF ACTIVITY – CONNECTIVITY VERIFICATION

4.2.5.3.1.3 Proposed Presentation Context Table

The MyLab is capable of proposing the Presentation Contexts as shown in the following table:

Table 39
PROPOSED PRESENTATION CONTEXT FOR CONNECTIVITY VERIFICATION

| Presentation Context Table | | | | | |
|----------------------------|-------------------|---------------------------|-------------------|------|------------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Negot |
| Name | UID | Name List | UID List | | |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |

4.2.5.3.1.4 SOP Specific Conformance for Connectivity Verification

The MyLab provides standard conformance to the DICOM Verification Service Class as an SCU. The status code for the C-ECHO is as follows:

Table 40
C-ECHO RESPONSE STATUS HANDLING BEHAVIOUR

| Code | Status | Meaning |
|------|---------|---------------------------------|
| 0000 | Success | The C-ECHO request is accepted. |

4.2.5.3.2 Activity – Film Images

4.2.5.3.2.1 Description and Sequencing of Activities

A user composes images onto one film sheet by pressing the printing key for every image that can be added to the related printing layout; when the number of allowed images has been reached, or by selecting the “PRINT NOW TO DICOM PRINTER” entry in the pop-up menu related to the desired printing layout, the print-job is forwarded to the job queue and processed individually. Pressing the “RESET ADDED IMAGES” entry in the above pop-up menu will delete all the already added images from the current print-job.

The Hardcopy AE is invoked by the job control interface that is responsible for processing network tasks. The job consists of data describing the images and graphics to be printed as well as the requested layout and other parameters. The film sheet is sent image by image. If no association to the printer can be established, or some error occurs, the print-job is switched to a failed state and the user informed.

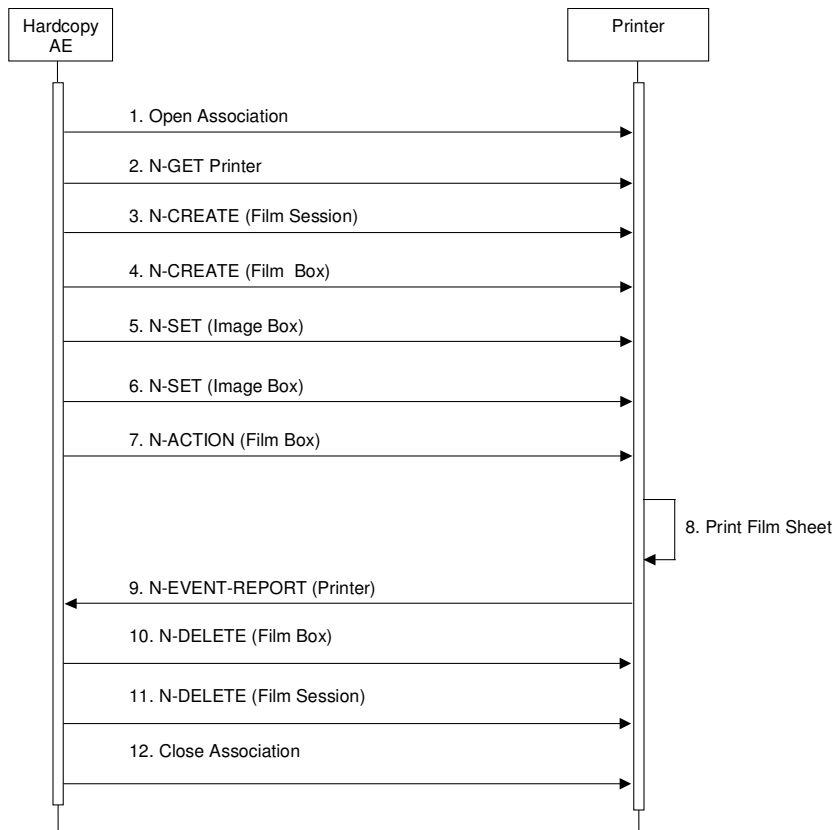


Figure 9
SEQUENCING OF ACTIVITY – FILM IMAGES

A typical sequence of DIMSE messages sent over an association between Hardcopy AE and a Printer is illustrated in Figure 9:

1. Hardcopy AE opens an association with the Printer, using the Basic Grayscale or Basic Color Print Management META SOP Class according to the configuration of the printing layout.
2. N-GET on the Printer SOP Class is used to obtain current printer status information. If the Printer reports a status of FAILURE, the print-job is switched to a failed state and the user informed.
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.
5. N-SET on the Image Box SOP Class transfers the contents of the first image to the printer.
6. N-SET on the Image Box SOP Class transfers the contents of the other various images to the printer, or delete the unwanted ones from the Film Box.
7. N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box already composed.
8. The printer prints the requested number of film sheets
9. The Printer asynchronously reports its status via N-EVENT-REPORT notification (Printer SOP Class). The printer can send this message at any time. Hardcopy AE does not require the N-EVENT-REPORT to be sent. Hardcopy AE is capable of receiving an N-EVENT-REPORT notification at any time during an association. If the Printer reports a status of FAILURE, the print-job is switched to a failed state and the user informed.
10. N-DELETE on the Film Box SOP Class deletes the Film Box SOP instance.
11. N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP instance.

12. Hardcopy AE closes the association with the Printer

Status of the print-job is reported through the job control interface. If any Response from the remote Application contains a status other than Success or Warning, the Association is aborted and the related Job is switched to a failed state.

4.2.5.3.2.2 Proposed Presentation Contexts

The MyLab is capable of proposing the Presentation Contexts shown in the Table below:

Table 41
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 |
| 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 |

4.2.5.3.2.3 Common SOP Specific Conformance for all Print SOP Classes

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

Table 42
HARDCOPY COMMUNICATION FAILURE BEHAVIOR

| Exception | Behavior |
|--|--|
| Timeout | The Association is aborted. The reason is logged and reported to the user. |
| Association aborted by the SCP or network layers | The Association is aborted. The reason is logged and reported to the user. |

4.2.5.3.2.4 SOP Specific Conformance for the Printer SOP Class

Hardcopy 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.

4.2.5.3.2.5 Printer SOP Class Operations (N-GET)

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

Table 43
PRINTER SOP CLASS N-GET REQUEST ATTRIBUTES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|----------------|-------------|----|---------------------|-------------------|---------|
| Printer Status | (2110,0010) | CS | Provided by Printer | ALWAYS | Printer |

| | | | | | |
|---------------------------|-------------|----|--|--------|---------|
| Printer Status Info | (2110,0020) | CS | Provided by Printer | ALWAYS | Printer |
| Printer Name | (2110,0030) | LO | Provided by Printer (for logging purposes) | ALWAYS | Printer |
| Manufacturer | (0008,0070) | LO | Provided by Printer (for logging purposes) | ALWAYS | Printer |
| Manufacturer's Model Name | (0008,1090) | LO | Provided by Printer (for logging purposes) | ALWAYS | Printer |
| Software Version(s) | (0018,1020) | LO | Provided by Printer (for logging purposes) | ALWAYS | Printer |

The Printer Status information is evaluated as follows:

1. If Printer status (2110,0010) is NORMAL, the print-job continues to be printed.
2. If Printer status (2110,0010) is FAILURE, the print-job is marked as failed. The contents of Printer Status Info (2110,0020) is logged and reported to the user.
3. If Printer status (2110,0010) is WARNING, the print-job continues to be printed. The contents of Printer Status Info (2110,0020) is logged.

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

Table 44
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. |
| * | * | Any other status code. | The Association is aborted. The status meaning is logged and reported to the user. |

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

Hardcopy AE is capable of receiving an N-EVENT-REPORT request at any time during an association.

The behavior of Hardcopy AE when receiving Event Types within the N-EVENT-REPORT is summarized in the Table below:

Table 45
PRINTER SOP CLASS N-EVENT-REPORT BEHAVIOUR

| 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. |
| Failure | 3 | The print-job is marked as failed. The contents of Printer Status Info (2110,0020) is logged and reported to the user. |
| * | * | 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 46
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). |

4.2.5.3.2.7 SOP Specific Conformance for the Film Session SOP Class

Hardcopy 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.

4.2.5.3.2.8 Film Session SOP Class Operations (N-CREATE)

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

Table 47
FILM SESSION SOP CLASS N-CREATE REQUEST ATTRIBUTES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--------------------|-------------|----|---|-------------------|---------|
| Number of Copies | (2000,0010) | IS | Chosen by the User among the values in the Printer Profile. | ALWAYS | USER |
| Print Priority | (2000,0020) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Medium Type | (2000,0030) | CS | Chosen by the User among the values in the Printer Profile. | ANAP | USER |
| Film Destination | (2000,0040) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Film Session Label | (2000,0050) | LO | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Memory Allocation | (2000,0060) | IS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Owner ID | (2100,0160) | SH | Pre-defined value from the Printer Profile. | ANAP | PROFILE |

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

Table 48
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 | Attribute Value Out of Range | 0116H | The N-CREATE operation is considered successful and the user is notified that there was a warning. The status meaning and additional information in the Response identifying the attributes out of range will be logged (i.e. Elements in the Modification List/Attribute List). |
| Warning | Attribute List Error | 0107H | The N-CREATE operation is considered successful and the user is notified that there was a warning. The status meaning and additional information in the Response identifying the attributes will be logged (i.e. Elements in the Attribute Identifier List). |
| * | * | Any other status code. | The Association is aborted and the print-job is marked as failed and the user is notified that there was an error. The status meaning is logged. |

4.2.5.3.2.9 Film Session SOP Class Operations (N-DELETE)

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

Table 49
FILM SESSION 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. |
| * | * | Any other status code. | The Association is aborted and the print-job is marked as failed and the user is notified that there was an error. The status meaning is logged. |

4.2.5.3.2.10 SOP Specific Conformance for the Film Box SOP Class

Hardcopy 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.

4.2.5.3.2.11 Film Box SOP Class Operations (N-CREATE)

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

Table 50
FILM BOX SOP CLASS N-CREATE REQUEST ATTRIBUTES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|----------------------|-------------|----|--|-------------------|--------|
| Image Display Format | (2010,0010) | CS | Chosen by the User among the <i>STANDARD</i> _{c,r} values in the Printer Profile. | ALWAYS | USER |
| Film Orientation | (2010,0040) | CS | Chosen by the User among the values in the Printer Profile. | ANAP | USER |

| | | | | | |
|----------------------------------|-------------|----|---|--------|---------|
| Film Size ID | (2010,0050) | CS | Chosen by the User among the values in the Printer Profile. | ANAP | USER |
| Magnification Type | (2010,0060) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Smoothing Type | (2010,0080) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Border Density | (2010,0100) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Empty Image Density | (2010,0110) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Max Density | (2010,0130) | US | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Min Density | (2010,0120) | US | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Trim | (2010,0140) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Configuration Information | (2010,0150) | ST | Pre-defined value from the Printer Profile. | ANAP | PROFILE |
| Referenced Film Session Sequence | (2010,0500) | SQ | | ALWAYS | AUTO |
| >Referenced SOP Class UID | (0008,1150) | UI | <i>1.2.840.10008.5.1.1.1</i> | ALWAYS | AUTO |
| >Referenced SOP Instance UID | (0008,1155) | UI | From created Film Session SOP Instance | ALWAYS | AUTO |
| Requested Resolution ID | (2020,0050) | CS | Pre-defined value from the Printer Profile. | ANAP | PROFILE |

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

Table 51
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. |
| * | * | Any other status code. | The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user. |

4.2.5.3.2.12 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 Hardcopy AE when encountering status codes in a N-ACTION response is summarized in the Table below:

Table 52
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. |
| * | * | Any other status code. | The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user. |

4.2.5.3.2.13 Film Box SOP Class Operations (N-DELETE)

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

Table 53
FILM BOX 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. |
| * | * | Any other status code. | The Association is aborted and the print-job is marked as failed and the user is notified that there was an error. The status meaning is logged. |

4.2.5.3.2.14 SOP Specific Conformance for the Image Box SOP Class

Hardcopy 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.

4.2.5.3.2.15 Image Box SOP Class Operations (N-SET)

The attributes supplied in an N-SET Request are listed in the Tables below, one for the Basic Grayscale Image Box SOP Class, and one for the Basic Color Image Box SOP Class:

Table 54
BASIC GRAYSCALE IMAGE BOX SOP CLASS N-SET REQUEST ATTRIBUTES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--------------------------------|-------------|----|---|-------------------|--------|
| Image Position | (2020,0010) | US | According to the place in the Film Box | ALWAYS | AUTO |
| Basic Grayscale Image Sequence | (2020,0110) | SQ | | ALWAYS | AUTO |
| >Samples Per Pixel | (0028,0002) | US | 1 | ALWAYS | AUTO |
| >Photometric Interpretation | (0028,0004) | CS | MONOCHROME2 | ALWAYS | AUTO |
| >Rows | (0028,0010) | US | According to the dimension of the preformatted image (the same for all the images in the same film) | ALWAYS | AUTO |
| >Columns | (0028,0011) | US | According to the dimension of the preformatted image (the same for all the images in the same film) | 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 | 0000H = unsigned integer. | ALWAYS | AUTO |
| >Pixel Data | (7FE0,0010) | OB | Pixels of rendered image | ALWAYS | AUTO |

Table 55
BASIC COLOR IMAGE BOX SOP CLASS N-SET REQUEST ATTRIBUTES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|-----------------------------|-------------|----|---|-------------------|--------|
| Image Position | (2020,0010) | US | According to the place in the Film Box | ALWAYS | AUTO |
| Basic Color Image Sequence | (2020,0111) | SQ | | ALWAYS | AUTO |
| >Samples Per Pixel | (0028,0002) | US | 3 | ALWAYS | AUTO |
| >Photometric Interpretation | (0028,0004) | CS | <i>RGB</i> | ALWAYS | AUTO |
| >Rows | (0028,0010) | US | According to the dimension of the preformatted image (the same for all the images in the same film) | ALWAYS | AUTO |
| >Columns | (0028,0011) | US | According to the dimension of the preformatted image (the same for all the images in the same film) | 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 | 0000H = unsigned integer. | ALWAYS | AUTO |
| >Pixel Data | (7FE0,0010) | OB | Pixels of rendered image | ALWAYS | AUTO |

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

Table 56
IMAGE BOX SOP CLASS N-SET RESPONSE STATUS HANDLING BEHAVIOR

| Service Status | Further Meaning | Error Code | Behavior |
|----------------|-----------------|------------------------|--|
| Success | Success | 0000 | The SCP has completed the operation successfully. Image successfully stored in Image Box. |
| * | * | Any other status code. | The Association is aborted and the print-job is marked as failed. The status meaning is logged and reported to the user. |

4.2.5.4 Association Acceptance Policy

The Hardcopy Application Entity does not accept Associations.

4.3 NETWORK INTERFACES

4.3.1 Physical Network Interface

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

Table 57
SUPPORTED PHYSICAL NETWORK INTERFACES

| |
|-------------------|
| Ethernet 100baseT |
| Ethernet 10baseT |

4.3.2 Additional Protocols

The MyLab conforms to the System Management Profiles listed in the Table below. All requested transactions for the listed profiles and actors are supported. Support for optional transactions are listed in the Table below:

Table 58
SUPPORTED SYSTEM MANAGEMENT PROFILES

| Profile Name | Actor | Protocols Used | Optional Transactions | Security Support |
|----------------------------|-------------|----------------|-----------------------|------------------|
| Network Address Management | DHCP Client | DHCP | N/A | |
| | DNS Client | DNS | N/A | |

4.3.2.1 DHCP

DHCP can be used to obtain TCP/IP network configuration information. The default Windows DHCP client is used, if enabled by the System Administrator: please refer to the Windows documentation for further details.

4.3.2.2 DNS

DNS can be used for address resolution. If DHCP is not in use or the DHCP server does not return any DNS server addresses, the identity of the DNS servers can be configured by the System Administrator. If a DNS server is not in use, the numeric IP addresses need to be used.

4.4 CONFIGURATION

4.4.1 AE Title/Presentation Address Mapping

4.4.1.1 Local AE Titles and TCP Ports

All local applications use the AE Title, IP address, and listening TCP Port. The Default AE Title is "MYLAB", the default TCP Port is 6104 or 11112 according to the model, both can be changed from the DICOM configuration menu, the new values become effective after a reboot of the system.

4.4.1.2 Remote AE Title/Presentation Address Mapping

The AE Titles, host names or IP addresses, and TCP port numbers of remote applications can be configured from the DICOM configuration menu.

4.4.1.2.1 Storage Application Entity

The MyLab User must set the AE Title, port-number, host-name for remote Storage SCPs, enabling one or more of them.

The MyLab User must set the AE Title, port-number, host-name for remote Storage Commitment SCPs, enabling only one of them at a given time⁴⁴.

⁴⁴ Storage Commitment SOP Class not present in VET models.

4.4.1.2.2 Workflow Application Entity

The MyLab User must set the AE Title, port-number, host-name for remote MWL SCPs, enabling only one of them at a given time.

The MyLab User must set the AE Title, port-number, host-name for remote MPPS SCPs, enabling only one of them at a given time ⁴⁵.

4.4.1.2.3 Hardcopy Application Entity

The MyLab User must set the AE Title, port-number, host-name and printer profile for remote Print SCPs, enabling one or more of them. For every configured printer, one or more printing profile can be created, and tied to one of the printing keys.

4.4.2 Parameters

A large number of parameters related to acquisition and general operation can be configured using the Service/Installation Tool. The Table below only shows those configuration parameters relevant to DICOM communication. See the MyLab Service Manual for details on general configuration capabilities.

Table 59
CONFIGURATION PARAMETERS TABLE

| Parameter | Configurable (Yes/No) | Default Value |
|--|-----------------------|--------------------------------------|
| General Parameters | | |
| Max PDU Receive Size | No | 28672 Bytes |
| Max PDU Send Size (larger PDUs will never be sent, even if the receiver supports a larger Max PDU Receive Size. If the receiver supports a smaller Max PDU Receive Size then the Max PDU Send Size will be reduced accordingly for the duration of the Association. Max PDU Receive Size information is exchanged during DICOM Association Negotiation in the Maximum Length Sub-Item of the A-ASSOCIATION-RQ and A-ASSOCIATE-AC) | No | 28672 Bytes |
| Time-out waiting for a acceptance or rejection response to an Association Request (Application Level Timeout) | No | 60 s |
| Time-out waiting for a response to an Association release request (Application Level Timeout) | No | 60 s |
| Time-out waiting for completion of a TCP/IP connect request (Low-level timeout) | No | 60 s |
| Time-out awaiting a Response to a DIMSE Request (Low-Level Timeout) | Yes | 60 s |
| Time-out for waiting for data between TCP/IP-packets (Low Level Timeout) | No | 60 s |
| Storage SCU Parameters | | |
| Storage SCU time-out waiting for a response to a C-STORE-RQ | Yes | 60 s |
| Number of times a failed send job may be retried | No | 0 (Failed send jobs are not retried) |
| Delay between retrying failed send jobs | No | Not applicable |
| Maximum number of simultaneously initiated Associations by the Storage-SCU AE | No | 1 |
| Supported Transfer Syntaxes (separately configurable for each remote | No | See Table 11, |

⁴⁵ MPPS SOP Class not present in VET models.

| Parameter | Configurable (Yes/No) | Default Value |
|--|-----------------------|---|
| AE) | | not separately configurable |
| Storage Commitment Parameters | | |
| Timeout waiting for a Storage Commitment Notification (maximum duration of applicability for a Storage Commitment Transaction UID). | Yes | 600 s |
| Maximum number of simultaneously accepted Associations by the Storage AE. | No | 1 |
| Delay association release after sending a Storage Commitment Request (wait for a Storage Commitment Notification over the same association). | No | 0 s |
| Modality Worklist Parameters | | |
| Modality Worklist SCU time-out waiting for the final response to a C-FIND-RQ | Yes | 60 s |
| Maximum number of Worklist Items | No | Unlimited |
| Supported Transfer Syntaxes for Modality Worklist | No | See Table 27. |
| Delay between automatic Worklist Updates | No | No automatic retry |
| Query Worklist for specific Scheduled Station AE Title | Yes | Local AE Title |
| Query Worklist for specific Modality Value | No | US |
| MPPS Parameters | | |
| MPPS SCU time-out waiting for a response to a N-CREATE-RQ | No | 60 s |
| MPPS SCU time-out waiting for a response to a N-SET-RQ | No | 60 s |
| Supported Transfer Syntaxes for MPPS | No | See Table 31. |
| Print Parameters | | |
| Print SCU time-out waiting for a response to a N-CREATE-RQ | Yes | 60 s |
| Print SCU time-out waiting for a response to a N-SET-RQ | Yes | 60 s |
| Print SCU time-out waiting for a response to a N-ACTION-RQ | Yes | 60 s |
| Supported Transfer Syntaxes (separately configurable for each remote printer) | No | See Table 41, not separately configurable |
| Number of times a failed print-job may be retried | No | 0 (Failed send jobs are not retried) |
| Delay between retrying failed print-jobs | No | Not applicable |
| Printer correction LUT (separately configurable for each remote printer) | No | Not applied |

5 MEDIA INTERCHANGE

5.1 IMPLEMENTATION MODEL

5.1.1 Application Data Flow

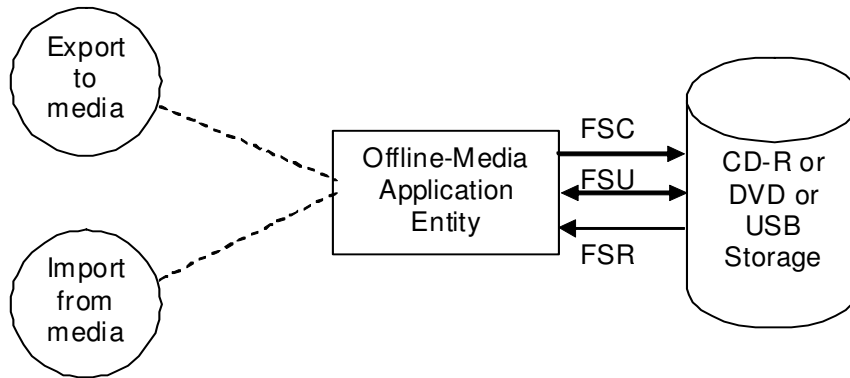


Figure 10
APPLICATION DATA FLOW DIAGRAM FOR MEDIA STORAGE

- Offline-Media Application Entity exports images, clips, Secondary Capture and SR objects⁴⁶ to a CD-R or a DVD or a USB Storage medium. It is associated with the local real-world activity “Archive”. “Archive” (to CD-R or to DVD or to USB) is performed upon user request for each study when closing it, or for specific studies selected from the had disk database. Offline-Media Application Entity import images, clips and Secondary Capture objects from a CD-R or a DVD or a USB Storage medium. It is associated with the local real-world activity “Import DICOM DB”.

5.1.2 Functional Definition of AEs

5.1.2.1 Functional Definition of Offline-Media Application Entity

It is possible to activate the Offline-Media Application Entity entry for exporting both when closing the current study, and from the database panel.

When closing the current study, a panel will allow the User to decide if and where to archive in DICOM the images, clips and SR objects: the User should check “DICOM” and select among “CD/DVD” (the CD-R or DVD), “USB”, “<DICOM SERVER 1>”, “<DICOM SERVER 2>”, etc. Selecting “CD/DVD” or “USB” will store the DICOM objects on the chosen medium, while selecting one of the configured DICOM servers (“<DICOM SERVER 1>”, “<DICOM SERVER 2>”, etc.) will send them in DICOM format to the selected destination. Please note that the current study will not be archived into the local database unless you also check “LOCAL ARCHIVE”.

From the local database panel, pressing the “DICOM” soft-key, a “DICOM PROCEDURE” panel will appear, allowing to choose between the following destinations: “CD/DVD” (the CD-R or DVD), “USB”, “<DICOM SERVER 1>”, “<DICOM SERVER 2>”, etc. In this way you can store or send the selected studies (previously archived to the local database), in DICOM format, to the selected destination.

When activating the above described functions choosing “CD/DVD” or “USB”, the SOP Instances associated with the selected study (or studies) will be collected into one export job. The existence of an export job queue entry will activate the Offline-Media AE.

⁴⁶ DICOM Structured Report not available in VET models.

If the required medium is not present, or cannot be accessed, the related export job will be set to an error state and it will be possible to restart it later by the user via job control interface. The Offline-Media AE will not try to export again the instances automatically.

It is possible to activate the Offline-Media Application Entity entry for importing when the ARCHIVE environment is open. A softkey "IMPORT DICOM DB" appears, pressing it a list of available devices appears, selecting either USB or CD/DVD a list of the available studies is shown, you can select one or more to retrieve them into the local database.

5.1.3 Sequencing of Real-World Activities

For exporting, the operator can insert a new CD-R or DVD, or a USB storage media (according to the case), at any time before the Offline-Media Application Entity activation. The CD-R or DVD will be formatted, while the USB storage media must be previously formatted using another computer. For CD-R and DVD a viewer will be automatically put into the media.

Please note that the USB storage media, to meet the DICOM standard, must be formatted selecting the FAT16 or FAT32 File System, while NTFS is not allowed. For example, these are options of the standard Windows Operating System formatting utility.

For importing, the operator can insert a CD-R or DVD, or a USB storage media (according to the case) at any time before the Offline-Media Application Entity activation.

5.1.4 File Meta Information Options

See section 3.6 for the implementation information written to the File Meta Header in each file.

5.2 AE SPECIFICATIONS

5.2.1 Offline-Media Application Entity Specification

The Offline-Media Application Entity provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below:

**Table 60
APPLICATION PROFILES, ACTIVITIES AND ROLES FOR OFFLINE-MEDIA**

| Application Profiles Supported | Real World Activity | Role |
|--------------------------------|----------------------------|---------------|
| STD-GEN-CD | Import/Export from/to CD-R | FRS, FSC |
| STD-GEN-DVD-JPEG | Import/Export from/to DVD | FRS, FSC |
| STD-GEN-USB-JPEG | Import/Export from/to USB | FRS, FSC, FSU |
| STD-US-SC-MF-CDR | Import/Export from/to CD-R | FRS, FSC |
| STD-US-SC-MF-DVD | Import/Export from/to DVD | FRS, FSC |

5.2.1.1 File Meta Information for the Application Entity

The Source Application Entity Title included in the File Meta Header is configurable (see section 5.3).

5.2.1.2 Real-World Activities

5.2.1.2.1 Activity – Export to CD-R or DVD or USB

The Offline-Media Application Entity acts as an FSC when requested to export SOP Instances from the local database to a CD-R or DVD or USB medium. When exporting to USB the Offline-Media Application Entity can act as an FSU if a DICOMDIR is already present.

5.2.1.2.2 Activity – Import from CD-R or DVD or USB

The Offline-Media Application Entity acts as an FSR when requested to import SOP Instances from a CD-R or DVD or USB medium to the local database.

5.2.1.2.3 Media Storage Application Profiles

The Offline-Media Application Entity support the STD-GEN-CD, STD-GEN-DVD-JPEG, STD-GEN-USB-JPEG, STD-US-SC-MF-CDR, and the STD-US-SC-MF-DVD Application Profiles.

Please note that, to strictly follow the STD-GEN-CD application profile, the images must be exported in the uncompressed format, by selecting the appropriate configuration in the QUALITY tab of the DICOM CONFIGURATION panel (IMAGE QUALITY HIGH, CLIP QUALITY UNCOMPRESSED, otherwise the patients must not contain any US-MF objects).

Please note that, to strictly follow the STD-GEN-DVD-JPEG and the STD-GEN-USB-JPEG application profiles, the single frame US or SC images must be exported in the uncompressed or JPEG lossy compressed format, by selecting the appropriate configuration in the QUALITY tab of the DICOM CONFIGURATION panel (IMAGE QUALITY LOW or IMAGE QUALITY HIGH).

Please note that, to strictly follow the STD-US-SC-MF-CDR and STD-US-SC-MF-DVD application profiles, the SC image or SR object export must be disabled, by selecting the appropriate configuration in the REPORT EXPORT tab of the DICOM CONFIGURATION panel (NONE).

The Offline-Media Application Entity supports the SOP Classes and Transfer Syntaxes listed in the Table below:

Table 61
IODS, SOP CLASSES AND TRANSFER SYNTAXES FOR OFFLINE MEDIA

| Information Object Definition | SOP Class UID | Transfer Syntax | Transfer Syntax UID |
|--|-------------------------------|---------------------------------|------------------------|
| Media Storage Directory Storage | 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 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| | | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| Ultrasound Multiframe 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 (Process 1) | 1.2.840.10008.1.2.4.50 |
| 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 |
| | | RLE Lossless | 1.2.840.10008.1.2.5 |
| | | JPEG lossy Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |
| Comprehensive SR Storage ⁴⁷ | 1.2.840.10008.5.1.4.1.1.88.33 | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| CT Image Storage ⁴⁸ | 1.2.840.10008.5.1.4.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |
| MR Image Storage ⁴⁹ | 1.2.840.10008.5.1.4.1.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |
| Nuclear Medicine Image Storage ⁵⁰ | 1.2.840.10008.5.1.4.1.1.20 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |

⁴⁷ Not present in VET models. Not available for importing.

⁴⁸ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

⁴⁹ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

⁵⁰ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

| | | | |
|--|-----------------------------|----------------------------|------------------------|
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |
| Positron Emission Tomography Image Storage ⁵¹ | 1.2.840.10008.5.1.4.1.1.128 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |
| Computed Radiography Image Storage ⁵² | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |
| Digital X-Ray Image Storage - For Presentation ⁵³ | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |
| Digital Mammography X-Ray Image Storage - For Presentation ⁵⁴ | 1.2.840.10008.5.1.4.1.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | JPEG lossless (Process 14) | 1.2.840.10008.1.2.4.70 |

The Transfer Syntax used for Ultrasound and Secondary Capture Images can be changed from the User's Interface pressing the MENU button, selecting DICOM CONFIGURATION and entering the QUALITY tab of the configuration panel. The following choices are allowed for IMAGE QUALITY:

1. HIGH (UNCOMPRESSED): the Explicit VR Little Endian Transfer Syntax will be used;
2. MEDIUM (LOSSLESS RLE): the RLE Transfer Syntax will be used;
3. LOW (LOSSY JPEG): the JPEG lossy Baseline (Process 1) Transfer Syntax will be used.

The Transfer Syntax used for Ultrasound Multiframe Images can be changed, for each different media destination (USB, CD/DVD, Network folder), from the User's Interface pressing the MENU button, selecting DICOM CONFIGURATION and entering the QUALITY tab of the configuration panel. You will find four different settings for CLIP QUALITY; selecting LOW, MEDIUM and HIGH the JPEG lossy Baseline (Process 1) will be used, with three different compression levels, while selecting UNCOMPRESSED the Explicit VR Little Endian will be used. It is also possible to reduce the frame matrix of the exported clips: for MATRIX SIZE a slider allows to select SMALL, MEDIUM and FULL.

Please note that archiving Ultrasound Multiframe Images without compressing them could produce very large files: this option should not be used for normal operations, especially with long clips.

The US Image, US Multiframe Image, Secondary Capture Image and Comprehensive SR Storage SOP Classes are extended to create Standard Extended SOP Classes by addition of standard and private attributes to the created SOP Instances as documented in Section 8.1.

Also the Media Storage Directory Storage SOP Class is extended, for supporting a larger number of attributes. The DICOMDIR file created includes the Basic Directory IOD containing Directory Records at the Patient and the subsidiary Study, Series and Image levels, appropriate to the SOP Classes in the corresponding File Set. All Type 1 and Type 2 attributes are included in the DICOMDIR. A few other attributes (Type 3 for the Basic Directory IOD), when present in the indexed objects, are also included in the DICOMDIR at the correct level.

⁵¹ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

⁵² Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

⁵³ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

⁵⁴ Enabled by the purchasable Multimodality Archive and Query/Retrieve option.

5.2 AUGMENTED AND PRIVATE APPLICATION PROFILES

MyLab does not support any augmented for private application profiles.

5.3 MEDIA CONFIGURATION

All local applications use the AE Title configured by the Service personnel. The Application Entity Title configurable for Media Services is the same used for the network storage.

6 SUPPORT OF CHARACTER SETS

All MyLab DICOM applications support the

ISO_IR 100 (ISO 8859-1:1987 Latin Alphabet No. 1 supplementary set).

The MyLab models which can be configured to use a Cyrillic keyboard, when the Cyrillic keyboard is enabled will support instead

ISO_IR 144 (ISO 8859-5:1999 Latin/Cyrillic Alphabet supplementary set).

In any case, the exams will be exported with the Specific Character Set that was in use in the system that acquired them at the moment they were acquired.

7 SECURITY

DICOM security is not implemented on the MyLab. It is assumed that MyLab is used within a secured environment. It is assumed that a secured environment includes at a minimum:

- a. Firewall or router protections to ensure that only approved external hosts have network access to MyLab.
- b. Firewall or router protections to ensure that MyLab only has network access to approved external hosts and services.
- c. Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (e.g. such as a Virtual Private Network (VPN))

Other network security procedures such as automated intrusion detection may be appropriate in some environments. Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

8 ANNEXES

8.1 IOD CONTENTS

8.1.1 Created SOP Instances

Table 62 specifies the attributes of an US, US-MF or Secondary Capture Image transmitted by the MyLab storage application. Table 63 specifies the attributes of a Structured Report object transmitted by the MyLab storage application.

The following tables use a number of abbreviations. The abbreviations used in the “Presence of ...” column are:

| | |
|--------|--|
| VNAP | Value Not Always Present (attribute sent zero length if no value is present) |
| ANAP | Attribute Not Always Present |
| ALWAYS | Always Present |
| EMPTY | Attribute is sent without a value |

The abbreviations used in the “Source” column:

| | |
|--------|--|
| USER | the attribute value source is from User input |
| MWL | the attribute value source is from DICOM Modality Worklist Service |
| AUTO | the attribute value is generated automatically |
| CONFIG | the attribute value source is a configurable parameter |

NOTE: All dates and times are encoded in the local configured calendar and time. Date, Time and Time zone are configured using the Service/Installation Tool.

8.1.1.1 US, US Multiframe and Secondary Capture Image IOD

Table 62
IOD OF US, US-MF AND SC CREATED SOP INSTANCES

| IE | Module | Reference | Presence of Module |
|-----------|-----------------------|-----------|--|
| Patient | Patient | Table 64 | ALWAYS |
| Study | General Study | Table 65 | ALWAYS |
| | Patient Study | Table 66 | ALWAYS |
| Series | General Series | Table 67 | ALWAYS |
| Equipment | General Equipment | Table 68 | ALWAYS |
| | SC Equipment | Table 69 | ANAP, only if SC. |
| Image | General Image | Table 70 | ALWAYS |
| | Image Pixel | Table 71 | ALWAYS |
| | US Region Calibration | Table 72 | ANAP, only if US or US-MF (not present when depth changes are applied when acquiring US-MF). |
| | Cine | Table 73 | ANAP, only if US-MF |
| | Multi-Frame | Table 74 | ANAP, only if US-MF |
| | Frame Pointers | Table 75 | ANAP, only if cardiac US-MF |
| | US Image | Table 76 | ANAP, only if US or US-MF |

| | | | |
|--|--|----------|--|
| | CnTI Private Application ⁵⁵ | Table 82 | ANAP, only if CnTI US-MF |
| | SC Image | === | EMPTY, can be present only for SC, but no attributes of this module are present. |
| | SOP Common | Table 80 | ALWAYS |

8.1.1.2 Comprehensive Structured Report IOD

Table 63
IOD OF SR CREATED SOP INSTANCES

| IE | Module | Reference | Presence of Module |
|-----------|----------------------------|-----------|---|
| Patient | Patient | Table 64 | ALWAYS |
| Study | General Study | Table 65 | ALWAYS |
| | Patient Study | Table 66 | EMPTY |
| Series | SR Document Series | Table 77 | ALWAYS |
| Equipment | General Equipment | Table 68 | ALWAYS |
| Document | SR Document General | Table 78 | ALWAYS |
| | SR Document Content | Table 79 | ALWAYS |
| | SOP Common | Table 80 | ALWAYS |
| | Report Private Application | Table 81 | ANAP, present only when "ADD MEASUREMENTS FILE" has been set. |

8.1.1.3 Description of the produced modules

Table 64
PATIENT MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|----------------------|-------------|----|---|-------------------|------------|
| Patient's Name | (0010,0010) | PN | From Modality Worklist or user input (in this case it accepts only the first three components). For VET systems, the first two of the five components in their order of occurrence are the Owner's name and the name of the animal. The remaining components are not present. | VNAP | MWL / USER |
| Patient ID | (0010,0020) | LO | From Modality Worklist or user input ⁵⁶ . | VNAP | MWL / USER |
| Patient's Birth Date | (0010,0030) | DA | From Modality Worklist or user input. | VNAP | MWL / USER |
| Patient's Sex | (0010,0040) | CS | From Modality Worklist or user input. | VNAP | MWL / USER |

⁵⁵ Present since build F065XXX.

⁵⁶ When the worklist is not enabled and the user did not fill the Patient ID, the machine will generate a DICOM Patient ID (a progressive number for each exam produced by the same machine), just to avoid exporting studies with an empty Patient ID.

| | | | | | |
|---------------------------------|-------------|----|--|-----------|------|
| Patient Species Description (*) | (0010,2201) | LO | CANINE, FELINE, EQUINE, BOVINE, OVINE, CAPRINE, PORCINE or UNKNOWN. | VNAP (*) | USER |
| Patient Breed Description (*) | (0010,2292) | LO | From User input. | VNAP (*) | USER |
| Patient Breed Code Sequence (*) | (0010,2293) | SQ | Always empty. | EMPTY (*) | AUTO |
| Breed Registration Sequence (*) | (0010,2294) | SQ | Always empty. | EMPTY (*) | AUTO |
| Responsible Person (*) | (0010,2297) | PN | From User input, the Owner's Name. | VNAP (*) | USER |
| Responsible Person Role (*) | (0010,2298) | CS | Present if Responsible Person is not empty, in this case it is Always OWNER. | ANAP (*) | AUTO |
| Responsible Organization (*) | (0010,2299) | LO | Always empty. | EMPTY (*) | AUTO |

Table 65
GENERAL STUDY MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|----------------------------|-------------|----|---|-------------------|-------------|
| Study Instance UID | (0020,000D) | UI | From Modality Worklist or generated by the device. | ALWAYS | MWL / AUTO |
| Study Date | (0008,0020) | DA | <yyyymmdd> | ALWAYS | AUTO |
| Study Time | (0008,0030) | TM | <hhmmss> | ALWAYS | AUTO |
| Accession Number | (0008,0050) | SH | From Modality Worklist or user input. | VNAP | MWL / USER |
| Referring Physician's Name | (0008,0090) | PN | From Modality Worklist or user input. | VNAP | MWL / USER |
| Study ID | (0020,0010) | SH | Generated by the device. From Requested Procedure ID (0040,1001) when Modality Worklist is enabled. | ALWAYS | AUTO / MWL |
| Study Description | (0008,1030) | LO | From user input. When not input it will be automatically filled by the device according to the selected applications (localized), except when the image and clip sending as soon as they are acquired is enabled: in this case will remain empty. | ALWAYS | AUTO / USER |
| Referenced Study Sequence | (0008,1110) | SQ | From Modality Worklist, is the reference to the Study SOP Class/SOP Instance. Not present for unscheduled exams. | VNAP | MWL |
| Procedure Code Sequence | (0008,1032) | SQ | From Modality Worklist, contains the value of the Requested Procedure Code Sequence (0032,1064). Not present for unscheduled exams or if the User unchecks "PERFORM PROCEDURE AS REQUESTED" in the WORKLIST QUERY panel. | VNAP | MWL |

(*) Present only in SOP instances produced by a VET system.

Table 66
PATIENT STUDY MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---------------------------------|-------------|----|--|-------------------|------------|
| Admitting Diagnoses Description | (0008,1080) | LO | From Modality Worklist or user input. | VNAP | MWL / USER |
| Patient's Age | (0010,1010) | AS | From user input. | VNAP | USER |
| Patient's Size | (0010,1020) | DS | From Modality Worklist or user input (can be empty according to the selected application). | VNAP | MWL / USER |
| Patient's Weight | (0010,1030) | DS | From Modality Worklist or user input (can be empty according to the selected application). | VNAP | MWL / USER |
| Patient's Sex Neutered (*) | (0010,2203) | CS | ALTERED, UNALTERED or empty. | VNAP (*) | USER |

Table 67
GENERAL SERIES MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--|-------------|----|--|-------------------|-------------|
| Modality | (0008,0060) | CS | US for US and US-MF images, DOC or US ⁵⁷ for Secondary Capture images. | ALWAYS | AUTO |
| Series Instance UID | (0020,000E) | UI | Generated by device. | ALWAYS | AUTO |
| Series Number | (0020,0011) | IS | Generated by device. | ALWAYS | AUTO |
| Laterality | (0020,0060) | CS | Always empty. | EMPTY | AUTO |
| Series Date | (0008,0021) | DA | <yyyymmdd> | ALWAYS | AUTO |
| Series Time | (0008,0031) | TM | <hhmmss> | ALWAYS | AUTO |
| Series Description | (0008,103E) | LO | Generated by device according to the selected application (not localized). | ALWAYS | AUTO |
| Performing Physicians' Name | (0008,1050) | PN | From Modality Worklist, as (0040,0006) Scheduled Performing Phys. Name, or from user input. The user can modify values provided via Modality Worklist. | VNAP | MWL / USER |
| Operators' Name | (0008,1070) | PN | Generated by the device according to the login name used to access the system, or from user input when security access is disabled. | VNAP | AUTO / USER |
| Referenced Performed Procedure Step Sequence | (0008,1111) | SQ | Identifies the Performed Procedure Step SOP Instance to which the Series is related. Not present if MPPS not available or not enabled. | VNAP | AUTO |
| Protocol Name | (0018,1030) | LO | Generated by device according to the selected application (localized). | ALWAYS | AUTO |
| Performed Procedure Step ID | (0040,0253) | SH | Generated by device. | VNAP | AUTO |
| Performed Procedure Step Start Date | (0040,0244) | DA | Generated by device. | VNAP | AUTO |

(*) Present only in SOP instances produced by a VET system.

⁵⁷ The desired content can be chosen from the DICOM configuration.

| | | | | | |
|--|-------------|----|---|------|------|
| Performed Procedure Step Start Time | (0040,0245) | TM | Generated by device. | VNAP | AUTO |
| Performed Procedure Step Description | (0040,0254) | LO | Generated by device. | VNAP | AUTO |
| Performed Protocol Code Sequence | (0040,0260) | SQ | Normally absent; for cardiac US-MF images acquired in a Staged protocol (when available), it is automatically filled with the Ultrasound Stress Protocol Codes described in Table 105 ⁵⁸ , | VNAP | AUTO |
| Request Attributes Sequence | (0040,0275) | SQ | From Modality Worklist, the whole sequence is not present for unscheduled exams. | VNAP | MWL |
| > Requested Procedure ID | (0040,1001) | SH | From Modality Worklist. | VNAP | MWL |
| > Requested Procedure Description | (0032,1060) | LO | From Modality Worklist. | VNAP | MWL |
| > Scheduled Procedure Step ID | (0040,0009) | SH | From Modality Worklist. | VNAP | MWL |
| > Scheduled Procedure Step Description | (0040,0007) | LO | From Modality Worklist. | VNAP | MWL |
| > Scheduled Protocol Code Sequence | (0040,0008) | SQ | From Modality Worklist. | VNAP | MWL |

**Table 68
GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|-------------------------------|-------------|----|---|-------------------|--------|
| Manufacturer | (0008,0070) | LO | ESAOTE | ALWAYS | AUTO |
| Institution Name | (0008,0080) | LO | The CENTER name input in the System Settings – Center ID configuration menu. | VNAP | CONFIG |
| Station Name | (0008,1010) | SH | The STATION NAME input in the System Settings – Center ID configuration menu. | VNAP | CONFIG |
| Institutional Department Name | (0008,1040) | LO | The DEPARTMENT name in the System Settings – Center ID configuration menu. | VNAP | CONFIG |
| Manufacturer's Model Name | (0008,1090) | LO | Internal model name. | ALWAYS | AUTO |
| Device Serial Number | (0018,1000) | LO | Generated by device. | ALWAYS | AUTO |
| Software Version(s) | (0018,1020) | LO | Generated by device. | ALWAYS | AUTO |

⁵⁸ This attribute will not be present unless the Stress Echo Preset has been created selecting the protocol among BICYCLE ERGOMETER, DIPYRIDAMOLE and DOBUTAMINE.

Table 69
SC EQUIPMENT MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|-----------------|-------------|----|-------|-------------------|--------|
| Conversion Type | (0008,0064) | CS | SYN. | ALWAYS | AUTO |

Table 70
GENERAL IMAGE MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--------------------------------|-------------|----|---|-------------------|--------|
| Instance Number | (0020,0013) | IS | Generated by the device. Can be repeated when cloning one image from another (adding measures etc.) | ALWAYS | AUTO |
| Content Date | (0008,0023) | DA | <yyyymmdd> | ALWAYS | AUTO |
| Content Time | (0008,0033) | TM | <hhmmss> | ALWAYS | AUTO |
| Patient Orientation | (0020,0020) | CS | Always empty. | EMPTY | AUTO |
| Image Type | (0008,0008) | CS | For JPEG lossy compressed images the first two fields are <i>DERIVED\SECONDARY</i> . The third and fourth are specified according to the standard for the US images. For IMT images the fourth component is absent. For the SC images the third field is the same of the corresponding US and US-MF images, the fourth field is absent. | ALWAYS | AUTO |
| Acquisition Date | (0008,0022) | DA | <yyyymmdd> | ALWAYS | AUTO |
| Acquisition Time | (0008,0032) | TM | <hhmmss> | ALWAYS | AUTO |
| Derivation Description | (0008,2111) | ST | Generated by the device for JPEG lossy compressed images. | ANAP | AUTO |
| Lossy Image Compression Ratio | (0028,2112) | DS | Generated by the device for JPEG lossy compressed images ⁵⁹ . | ANAP | AUTO |
| Lossy Image Compression | (0028,2110) | CS | 01 for JPEG lossy compressed images. | ANAP | AUTO |
| Lossy Image Compression Method | (0028,2114) | CS | <i>ISO_10918_1</i> for JPEG lossy compressed images. | ANAP | AUTO |
| Burned In Annotation | (0028,0301) | CS | According to the configuration, the US, US-MF and SC objects produced by the MyLab can contain a burned in caption that identifies the patient and date the image was acquired etc.; US and US-MF images normally contain other burned in information about the acquisition, the measures, etc. | ALWAYS | AUTO |

⁵⁹ For JPEG lossy compressed US-MF images the User can select among three different compression factors.

Table 71
IMAGE PIXEL MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|----------------------------|-------------|----|---|-------------------|--------|
| Samples per Pixel | (0028,0002) | US | 3 | ALWAYS | AUTO |
| Photometric Interpretation | (0028,0004) | CS | Always <i>RGB</i> , except <i>YBR_FULL_422</i> for JPEG lossy compressed images. | ALWAYS | AUTO |
| Rows | (0028,0010) | US | According to the image. | ALWAYS | AUTO |
| Columns | (0028,0011) | US | According to the image (normally 800). | 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 | 0000H | ALWAYS | AUTO |
| Planar Configuration | (0028,0006) | US | 0 | ALWAYS | AUTO |
| Pixel Data | (7FE0,0010) | OW | For the US and US-MF images, the Pixel Data contain burned-in text annotation (data describing the image acquisition parameters) and graphics. For the SC images, the Pixel Data contain the text of the report with the measures in a human readable format. | ALWAYS | AUTO |

Table 72
US REGION CALIBRATION MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--------------------------------|-------------|----|--------------------------|-------------------|--------|
| Sequence of Ultrasound Regions | (0018,6011) | SQ | | ALWAYS | AUTO |
| >Region Spatial Format | (0018,6012) | US | Generated by the device. | ALWAYS | AUTO |
| >Region Data Type | (0018,6014) | US | Generated by the device. | ALWAYS | AUTO |
| >Region Flags | (0018,6016) | UL | Generated by the device. | ALWAYS | AUTO |
| >Region Location Min x_0 | (0018,6018) | UL | Generated by the device. | ALWAYS | AUTO |
| >Region Location Min y_0 | (0018,601A) | UL | Generated by the device. | ALWAYS | AUTO |
| >Region Location Max x_1 | (0018,601C) | UL | Generated by the device. | ALWAYS | AUTO |
| >Region Location Max y_1 | (0018,601E) | UL | Generated by the device. | ALWAYS | AUTO |
| >Physical Units X Direction | (0018,6024) | US | Generated by the device. | ALWAYS | AUTO |
| >Physical Units Y Direction | (0018,6026) | US | Generated by the device. | ALWAYS | AUTO |
| >Physical Delta X | (0018,602C) | FD | Generated by the device. | ALWAYS | AUTO |

| | | | | | |
|---------------------------------|-------------|----|---|--------|------|
| >Physical Delta Y | (0018,602E) | FD | Generated by the device. | ALWAYS | AUTO |
| >Reference Pixel x ₀ | (0018,6020) | SL | Generated by the device, when appropriate for a given region. | VNAP | AUTO |
| >Reference Pixel y ₀ | (0018,6022) | SL | Generated by the device, when appropriate for a given region. | VNAP | AUTO |
| >Ref. Pixel Physical Value X | (0018,6028) | FD | Generated by the device, when appropriate for a given region. | VNAP | AUTO |
| >Ref. Pixel Physical Value Y | (0018,602A) | FD | Generated by the device, when appropriate for a given region. | VNAP | AUTO |

**Table 73
CINE MODULE OF CREATED SOP INSTANCES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|----------------|-------------|----|---|-------------------|--------|
| Frame Time | (0018,1063) | DS | Only if US-MF image, generated by the device. | ANAP | AUTO |

**Table 74
MULTI-FRAME MODULE OF CREATED SOP INSTANCES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|------------------|-------------|----|---|-------------------|--------|
| Number of Frames | (0028,0008) | IS | Only if US-MF image, generated by the device. | ANAP | AUTO |

**Table 75
FRAME POINTERS MODULE OF CREATED SOP INSTANCES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---------------------------------|-------------|----|---|-------------------|--------|
| Representative Frame Number | (0028,6010) | US | Only if cardiac US-MF images, calculated by the device. | ANAP | AUTO |
| Frame Numbers Of Interest (FOI) | (0028,6020) | US | Only if cardiac US-MF images. The frame numbers of the frames to which the ECG R Waves belong, as calculated by the device from the ECG leads input. | ANAP | AUTO |
| Frame Of Interest Description | (0028,6022) | LO | Only if cardiac US-MF images. For each of the Frames Of Interest identified in (0028,6020), this attribute will contain " <i>R Wave number n</i> ", where " <i>n</i> " is a progressive integer number starting from 1. | ANAP | AUTO |
| Frame of Interest Type | (0028,6023) | CS | Only if cardiac US-MF images, generated by the device. For each of the Frames Of Interest identified in (0028,6020), this attribute will contain " <i>RWAVE</i> ". | ANAP | AUTO |

Table 76
US IMAGE MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--------------------------|-------------|----|---|-------------------|--------|
| Stage Number | (0008,2122) | IS | Only for cardiac US-MF images acquired in a Staged protocol (when available), a number that identifies the stage, starting at one. | ANAP | AUTO |
| Number of Stages | (0008,2124) | IS | Only for cardiac US-MF images acquired in a Staged protocol (when available), the number of stages in the acquired protocol. | ANAP | AUTO |
| View Number | (0008,2128) | IS | Only for cardiac US-MF images acquired in a Staged protocol (when available), a number that identifies the View, starting at one. | ANAP | AUTO |
| Number of Views in Stage | (0008,212A) | IS | Only for cardiac US-MF images acquired in a Staged protocol (when available), the number of views in this Stage. | ANAP | AUTO |
| Stage Name | (0008,2120) | SH | Only for cardiac US-MF images acquired in a Staged protocol (when available), a defined term describing the performed Ultrasound Protocol Stage, according to Table 106 ⁶⁰ . | ANAP | AUTO |
| Stage Code Sequence | (0040,000A) | SQ | Only for cardiac US-MF images acquired in a Staged protocol (when available), the sequence describing the performed Ultrasound Protocol Stage. One Item is included in this sequence, according to the codes in Table 106 ⁶¹ . | ANAP | AUTO |
| View Name | (0008,2127) | SH | Only for cardiac US-MF images acquired in a Staged protocol (when available), a defined term describing the view of the patient anatomy in this image, according to the Table 107 ⁶² . | ANAP | AUTO |
| View Code Sequence | (0054,0220) | SQ | Only for cardiac US-MF images acquired in a Staged protocol (when available), the sequence describing the view of the patient anatomy in this image. One Item is included in this sequence, according to the codes in Table 107 ⁶³ . | ANAP | AUTO |
| Heart Rate | (0018,1088) | IS | Calculated by the device from the ECG leads input. Can be zero if impossible to determine (ECG signal not present, non cardiac images). | ALWAYS | AUTO |
| Frame Increment Pointer | (0028,0009) | AT | Contains the tag of the Frame Time attribute, (0018,1063). Only for US-MF images. | ANAP | AUTO |

⁶⁰ This attribute will not be present unless the Stress Echo Preset has been created selecting the protocol among BICYCLE ERGOMETER, DIPYRIDAMOLE and DOBUTAMINE.

⁶¹ This attribute will not be present unless the Stress Echo Preset has been created selecting the protocol among BICYCLE ERGOMETER, DIPYRIDAMOLE and DOBUTAMINE.

⁶² This attribute will not be present unless the Stress Echo Preset has been created selecting the protocol among BICYCLE ERGOMETER, DIPYRIDAMOLE and DOBUTAMINE.

⁶³ This attribute will not be present unless the Stress Echo Preset has been created selecting the protocol among BICYCLE ERGOMETER, DIPYRIDAMOLE and DOBUTAMINE.

| | | | | | |
|--------------------|-------------|----|--|------|------|
| R Wave Time Vector | (0018,6060) | FL | Only for cardiac US-MF images, calculated by the device from the ECG leads input. | ANAP | AUTO |
| Pixel Spacing | (0028,0030) | DS | Only present when "ADD PIXEL SPACING" is checked in the DICOM configuration and the US or US-MF image only contains a single spatial region. | ANAP | AUTO |

Table 77
SR DOCUMENT SERIES MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|--|-------------|----|---|-------------------|--------|
| Modality | (0008,0060) | CS | <i>SR</i> | ALWAYS | AUTO |
| Series Instance UID | (0020,000E) | UI | Generated by device. | ALWAYS | AUTO |
| Series Number | (0020,0011) | IS | Generated by device. | ALWAYS | AUTO |
| Series Date | (0008,0021) | DA | <yyyymmdd> | ALWAYS | AUTO |
| Series Time | (0008,0031) | TM | <hhmm> | ALWAYS | AUTO |
| Referenced Performed Procedure Step Sequence | (0008,1111) | SQ | Identifies the Performed Procedure Step SOP Instance to which the Series is related, present even if MPPS is not enabled. | ALWAYS | AUTO |

Table 78
SR DOCUMENT GENERAL MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|-----------------------------------|-------------|----|--------------------------|-------------------|--------|
| Instance Number | (0020,0013) | IS | Generated by the device. | ALWAYS | AUTO |
| Completion Flag | (0040,A491) | CS | <i>PARTIAL</i> | ALWAYS | AUTO |
| Verification Flag | (0040,A493) | CS | <i>UNVERIFIED</i> | ALWAYS | AUTO |
| Content Date | (0008,0023) | DA | <yyyymmdd> | ALWAYS | AUTO |
| Content Time | (0008,0033) | TM | <hhmm> | ALWAYS | AUTO |
| Performed Procedure Code Sequence | (0040,A372) | SQ | Always empty. | EMPTY | AUTO |

Table 79
SR DOCUMENT CONTENT MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---------------------------|-------------|----|--|-------------------|--------|
| Content Template Sequence | (0040,A504) | SQ | Generated by the device. | ALWAYS | AUTO |
| >Mapping Resource | (0008,0105) | CS | <i>DCMR</i> | ALWAYS | AUTO |
| >Template Identifier | (0040,DB00) | CS | <i>5200</i> (for TID 5200, Adult Echocardiography Procedure Report), <i>5100</i> (for TID 5100, Vascular Ultrasound Procedure Report) or <i>5000</i> (for TID 5000, OB-GYN Ultrasound Procedure Report). | ALWAYS | AUTO |

| | | | | | |
|----------------------------|-------------|----|---|--------|------|
| Content Sequence | (0040,A730) | SQ | See section 8.2.1 for TID 5200, Adult Echocardiography Report and TID 5100, Vascular Ultrasound Procedure Report, and section 8.2.2 for TID 5000, OB-GYN Ultrasound Procedure Report. | | |
| Concept Name Code Sequence | (0040,A043) | SQ | Generated by the device. | ALWAYS | AUTO |
| >Code Value | (0008,0100) | SH | 125200 for Adult Echocardiography Procedure Report, 125001 for Vascular Ultrasound Procedure Report 125000 or for OB-GYN Ultrasound Procedure Report. | ALWAYS | AUTO |
| >Coding Scheme Designator | (0008,0102) | SH | DCM | ALWAYS | AUTO |
| >Code Meaning | (0008,0104) | LO | Adult Echocardiography Procedure Report or Vascular Ultrasound Procedure Report or OB-GYN Ultrasound Procedure Report. | ALWAYS | AUTO |
| Continuity of Content | (0040,A050) | CS | SEPARATE | ALWAYS | AUTO |

Table 80
SOP COMMON MODULE OF CREATED SOP INSTANCES

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|------------------------|-------------|----|--|-------------------|--------|
| Specific Character Set | (0008,0005) | CS | ISO_IR 100 or ISO_IR 144 ⁶⁴ | ALWAYS | AUTO |
| SOP Class UID | (0008,0016) | UI | According to the SOP Class (US, US-MF or SC) | ALWAYS | AUTO |
| SOP Instance UID | (0008,0018) | UI | Generated by the device. | ALWAYS | AUTO |

Table 81
REPORT PRIVATE APPLICATION MODULE OF CREATED SOP INSTANCES⁶⁵

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|-------------|----|---|-------------------|--------|
| Private Creator | (6161,0011) | LO | XMLReport | ALWAYS | AUTO |
| Report, in Esaote proprietary XML format | (6161,1130) | OB | Variable length: contains the report with the measures in Esaote XML internal format (Measures.xml). | ALWAYS | AUTO |
| List of the custom measures, in Esaote proprietary XML format ⁶⁶ | (6161,1131) | OB | Variable length: contains the list of the custom measures defined for that exam, in XML internal format (cmmeasurecfg.xml). | ALWAYS | VNAP |

⁶⁴ "ISO_IR 100" is used when the exam has been produced in a system set to use a Latin keyboard, "ISO_IR 144" when it has been produced in a system set to use a Cyrillic keyboard.

⁶⁵ Present only when "ADD MEASUREMENTS FILE" has been set.

⁶⁶ Only present for exams acquired with sw release 5.xx and later.

Table 82
CNTI PRIVATE APPLICATION MODULE OF CREATED SOP INSTANCES⁶⁷

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|-------------------------------------|-------------|----|---|-------------------|--------|
| Private Creator | (2FF1,0060) | LO | <i>Esaote Contrast Quantification</i> | ALWAYS | AUTO |
| Private Creator Data Version | (2FF1,6001) | LO | 1.0 | ALWAYS | AUTO |
| Contrast master gain | (2FF1,6031) | DS | Master Gain in dB as defined with the gain knob. | ALWAYS | AUTO |
| Anti-log law vector | (2FF1,6032) | IS | Inverse log-compression law for data linearization. | ALWAYS | AUTO |
| Gray Map curve data | (2FF1,6033) | IS | Direct Gray Map curve. | ALWAYS | AUTO |
| Palette name | (2FF1,6035) | LO | Name of Palette. | ALWAYS | AUTO |
| Contrast Red Palette Data | (2FF1,6036) | IS | Direct Palette Red curve. | ALWAYS | AUTO |
| Contrast Green Palette Data | (2FF1,6037) | IS | Direct Palette Green curve. | ALWAYS | AUTO |
| Contrast Blue Palette Data | (2FF1,6038) | IS | Direct Palette Blue curve. | ALWAYS | AUTO |
| Transducer name | (2FF1,6040) | LO | Transducer name. | ALWAYS | AUTO |
| Transducer frequency | (2FF1,6041) | DS | Transducer center frequency in MHz. | ALWAYS | AUTO |
| Vector of destruction-frame numbers | (2FF1,6050) | IS | Position of first destruction frame. | ALWAYS | AUTO |
| Number of destruction frames | (2FF1,6051) | IS | Length of destruction-frame vector. | ALWAYS | AUTO |
| Nonlinear Contrast Mode | (2FF1,6052) | CS | Operating Mode (i.e. CnTI). | ALWAYS | AUTO |
| Allow Quantification | (2FF1,6053) | LO | Allow Quantification Flag: <i>True</i> if the clip as been acquired to enable quantification. <i>False</i> otherwise. | ALWAYS | AUTO |

8.1.2 Used Fields in received IOD by application

The MyLab storage application does not receive SOP Instances.

⁶⁷ Present only for CnTI clips.

8.2 STRUCTURED REPORT MAPPING ⁶⁸

The mappings of the DICOM SR objects produced by the MyLab system are organized in a manner similar to the DICOM SR Templates as described in PS 3.16 of the DICOM Standard. This appendix has the aim of finding, for a given measure in the MyLab system, its corresponding encoding in the produced SR object.

The “CARDIAC” application will produce an Adult Echocardiography Procedure Report (TID 5200), the “VASCULAR” and “ABDOMINAL” applications will produce a Vascular Ultrasound Procedure Report (TID 5100), the “OB-FETAL” and “GYNECOLOGY” applications will produce a OB-GYN Ultrasound Procedure Report (TID 5000). All the other applications will not produce any Structured Report object, but the acquired measures will be exported in Secondary Capture images. If a given study contains more than one of the above supported applications, more than one Structured Report object will be produced.

8.2.1 Adult Echocardiography, Vascular and Abdominal SR mapping

Complete tables describe the mapping of the “CARDIAC” application to the DICOM Adult Echocardiography SR documents, and of the “VASCULAR” and “ABDOMINAL” applications to the DICOM Vascular SR documents. The tables are organized in the same way of the reports that can be printed from the MyLab system itself, or exported as a series of Secondary Capture images. The first three columns of the tables refer to the measure as identified in the MyLab system (Page, Measure, Sub-measure), the other three columns contain the DICOM mapping of this measure, indicating the Base Measurement Concept Name, the Section, and the Concept or Acquisition Context Modifiers.

As these tables are very long, to avoid a huge DICOM Conformance Statement, and to make more easy to use them for the integration of the MyLab systems, we will provide them in spreadsheet format (xls document): please write an e-mail to connectivity@esaote.com indicating the MyLab system and the software build, or the revision number of the present document.

8.2.2 OB-GYN SR mapping

The following tables describe the mapping of the “OB-FETAL” and “GYNECOLOGY” applications to the OB-GYN SR documents. The tables are organized in the same way of the reports that can be printed from the MyLab system itself, or exported as a series of Secondary Capture images.

That is, the tables are divided into various sections that correspond to the various sections of the reports; each section is divided in subsections that correspond to the various subsections of the reports; the first column of the table correspond to the measure name in the Esaote report. The other two or three columns contain the DICOM mapping of this measure, indicating the Base Measurement Concept Name, the Section (when applicable), and the Concept or Acquisition Context Modifiers.

Table 83
OB-GYN SR MAPPING – OBSTETRIC MEASUREMENTS AND CALCULATIONS

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|----------------------------|--------------------------------------|---|
| COMMON MEASUREMENTS | | |
| GRAVIDA | (11996-6, LN, “Gravida”) | == = |
| PARA | (11977-6, LN, “Para”) | == = |
| ABORTA | (11612-9, LN, “Aborta”) | == = |
| ECTOPIC | (33065-4, LN, “Ectopic Pregnancies”) | == = |
| EDD BY LMP | (11779-6, LN, “EDD from LMP”) | == = |
| LMP | (11955-2, LN, “LMP”) | == = |
| FIRST DGA DATE | (EV-17, ESAOTE_P1, “Date Of FDGA”) | == = |
| DGA BY FDGA | (EV-19, ESAOTE_P1, “DGA by FDGA”) | == = |
| FIRST DGA | (EV-20, ESAOTE_P1, “First DGA”) | == = |

⁶⁸ DICOM Structured Report not available in VET models.

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|------------------------|--|--|
| B-Mode | | |
| Biparietal Diam | (11820-8, LN, "Biparietal Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Head Circumference | (11984-2, LN, "Head Circumference") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Abdominal Circumf | (11979-2, LN, "Abdominal Circumference") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Femur Length | (11963-6, LN, "Femur Length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Occipit Frontal Diam | (11851-3, LN, "Occipital-Frontal Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Crown-Rump Length | (11957-8, LN, "Crown Rump Length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Gest Sac Diam | (11850-5, LN, "Gestational Sac Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Humerus Length | (11966-9, LN, "Humerus length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Ulna Length | (11969-3, LN, "Ulna length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Tibia Length | (11968-5, LN, "Tibia length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Estim Fetal Weight | (11863-8, LN, "Trans Cerebellar Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Transv Cereb Diam | (11964-4, LN, "Fibula length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Fibula Length | (11967-7, LN, "Radius length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Radio Length | (11862-0, LN, "Tranverse Abdominal Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Transv Abd Diam | (11860-4, LN, "Cisterna Magna length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Cisterna Magna | (EV-81, ESAOTE_P1, "APTD * TTD") | (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| APTD X TTD | (33068-8, LN, "Thoracic Area") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Fetal Trunk Sect A | (EV-114, ESAOTE_P1, "Binocular Distance") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Binocular Distance | (11864-6, LN, "Transverse Thoracic Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Transv Trunk Diam | (11819-0, LN, "Anterior-Posterior Trunk Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Ant Post Trunk Diam | (33069-6, LN, "Nuchal Translucency") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Nuchal Translucency | (11818-2, LN, "Anterior-Posterior Abdominal Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Ant-Post Abd Diam | (11962-8, LN, "Clavicle length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Clavicula Length | (EV-113, ESAOTE_P1, "Length Of Vertebra") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Length of Vertebra | (11965-1, LN, "Foot length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Foot Length | (EV-117, ESAOTE_P1, "Nose Bone Length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Nose Bone Length | (11988-3, LN, "Thoracic Circumference") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Thoracic Circumference | (12146-7, LN, "Nuchal Fold thickness") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Nuchal Fold | (12171-5, LN, "Lateral Ventrical width") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Lateral Ventricle | (33070-4, LN, "Inner Orbital Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Interorbital Diam | (11629-3, LN, "Outer Orbital Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Outer Orbital Diam | (EV-82, ESAOTE_P1, "Max Amniotic Diameter") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Max Amniotic Diam | (EV-115, ESAOTE_P1, "Ear Length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|---|--|---|
| GA (LMP) | (11885-1, LN, "Gestational Age by LMP") | == = |
| AVERAGE ULTRASOUND AGE | (18185-9, LN, "Gestational Age") | == = |
| ESTIM FETAL WEIGHT | (11727-5, LN, "Estimated Weight") | == = |
| EFW GROWTH VALUE RANKING | (11767-1, LN, "EFW percentile rank") | == = |
| AMNIOTIC FLUID INDEX ⁶⁹ | | |
| QUADRANT 1 | (11624-4, LN, "First Quadrant Diameter") | == = |
| QUADRANT 2 | (11626-9, LN, "Second Quadrant Diameter") | == = |
| QUADRANT 3 | (11625-1, LN, "Third Quadrant Diameter") | == = |
| QUADRANT 4 | (11623-6, LN, "Fourth Quadrant Diameter") | == = |
| AMNIOTIC FLUID INDEX | (11627-7, LN, "Amniotic Fluid Index") | == = |
| Calculations | | |
| Cephalic Index | (11823-2, LN, "Cephalic Index") | == = |
| FL/BPD | (11872-9, LN, "FL/BPD") | == = |
| BPD/FL | (EV-21, ESAOTE_P1, "BPD/FL") | == = |
| FL/AC | (11871-1, LN, "FL/AC") | == = |
| HC/AC | (11947-9, LN, "HC/AC") | == = |
| BIOPHYSICAL PROFILE | | |
| FETAL BREATHING MOVEMENTS | (11632-7, LN, "Fetal Breathing") | == = |
| FETAL BODY MOVEMENTS | (11631-9, LN, "Gross Body Movement") | == = |
| FETAL TONE | (11635-0, LN, "Fetal Tone") | == = |
| FETAL REACTIVITY | (11635-5, LN, "Fetal Heart Reactivity") | == = |
| QUALITATIVE AFV ASSESSMENT | (11630-1, LN, "Amniotic Fluid Volume") | == = |
| TOTAL | (11634-3, LN, "Biophysical Profile Sum Score") | == = |
| FETAL MASS ⁷⁰ | | |
| FETAL MASS <n> | (CN-28, ESAOTE_P1, "Mass ID") = "FETALMASS<n>" | == = |
| LENGTH | (MN-33, ESAOTE_P1, "Fetal Mass Length") | == = |
| HEIGHT | (MN-35, ESAOTE_P1, "Fetal Mass Height") | == = |
| WIDTH | (MN-31, ESAOTE_P1, "Fetal Mass Width") | == = |
| VOL | (MN-29, ESAOTE_P1, "Fetal Mass Volume") | == = |

⁶⁹ The related percentiles and reference are not exported.

⁷⁰ Up to 4 can be present in the report, numbered from FETAL MASS 1 to FETAL MASS 4. In the following, <n> will be substituted by 1, 2, 3 or 4 according to the case. Note that these measurements are repeated for each fetus if more than one fetus is present.

| ESAOTE MEASURE | BASE MEAS. CONCEPT NAME | CONCEPT OR ACQUISITION CONTEXT MODIFIERS |
|------------------------------------|-----------------------------------|--|
| M-Mode | | |
| Fetal Heart Rate (3) ⁷¹ | (11948-7, LN, "Fetal Heart Rate") | = = = ⁷² |

Table 84
OB-GYN SR MAPPING – GYNECOLOGY

| ESAOTE MEASURE | BASE MEAS. CONCEPT NAME | CONCEPT OR ACQUISITION CONTEXT MODIFIERS |
|-------------------------------------|--|--|
| COMMON MEASUREMENTS | | |
| POST MENOPAUSE | (CN-22, ESAOTE_P1, "Post MenoPause") | = = = |
| LMP DAYS | (CN-21, ESAOTE_P1, "Day of Cycle from LMP") | = = = |
| LMP | (11955-2, LN, "LMP") | = = = |
| Uterus | | |
| Uterus Volume | | |
| Length | (11842-2, LN, "Uterus Length") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Height | (11859-6, LN, "Uterus Height") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Width | (11865-3, LN, "Uterus Width") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Uterus Volume | (33192-6, LN, "Uterus Volume") | (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| UTERUS POSITION | (CN-25, ESAOTE_P1, "Uterus Position") | = = = |
| UTERUS VERSION | (CN-26, ESAOTE_P1, "Uterus Version") | = = = |
| Endometrium | | |
| Endometrium | (12145-9, LN, "Endometrium Thickness") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Cervix Length | | |
| Cervix Length | (11961-0, LN, "CervixLength") | (121401, DCM, "Derivation")=(R-41D41, SRT, "Measured") |
| Uterus Mass | | |
| Fibroma 1 / 2 / 3 / 4 ⁷³ | | |
| Fibroma <n> | (CN-28, ESAOTE_P1, "Mass ID") = "FIBROMA<n>" | = = = |
| Length | (MN-16, ESAOTE_P1, "Fibroma Length") | = = = |
| Height | (MN-19, ESAOTE_P1, "Fibroma Height") | = = = |
| Width | (MN-13, ESAOTE_P1, "Fibroma Width") | = = = |

⁷¹ The Fetal Heart Rate manually input in the OBSERVATIONS page (when available) will be the exported one. Otherwise, the Fetal Heart Rate acquired in Doppler mode will be the exported one, if acquired. When both are missing, the Fetal Heart Rate acquired in M-MODE will be exported, if acquired.

⁷² When present, it is contained in the Ob-Gyn Procedure Fetus Summary.

⁷³ Up to 4 can be present in the report, numbered from Fibroma 1 to Fibroma 4. In the following, <n> will be substituted by 1, 2, 3 or 4 according to the case.

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|--------------------------------------|--|---|
| Volume | (MN-22,ESAOTE_P1, "Fibroma Volume") | == = |
| MASS KIND | (CN-42, ESAOTE_P1, "Mass Kind") | == = |
| CHARACTERISTI CS | (CN-29, ESAOTE_P1, "Fibroma Characteristics") | == = |
| SITE | (CN-30, ESAOTE_P1, "Fibroma Site") | == = |
| L Ovary | | |
| Length | (11840-6, LN, "Left Ovary Length") | (121401, DCM, "Derivation")=(R-41D41,SRT, "Measured") |
| Height | (11857-0, LN, "Left Ovary Height") | (121401, DCM, "Derivation")=(R-41D41,SRT, "Measured") |
| Width | (11829-9, LN, "Left Ovary Width") | (121401, DCM, "Derivation")=(R-41D41,SRT, "Measured") |
| L Ovary Volume | (12164-0, LN, "Left Ovary Volume") | (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| L CORPUS LUTEUM | (CN-40, ESAOTE_P1, "Corpus Luteum Left Ovary") | == = |
| L FOLLICLE <p> 74 | (12510,DCM,"Identifier") = "L_FOLLICLE<p>" (11793-7,SRT,"Follicle Diameter") | (G-C171, SRT, "Laterality")= (G-A101,SRT,"Left") |
| R Ovary | | |
| Length | (11841-4, LN, "Right Ovary Length") | (121401, DCM, "Derivation")=(R-41D41,SRT, "Measured") |
| Height | (11858-8, LN, "Right Ovary Height") | (121401, DCM, "Derivation")=(R-41D41,SRT, "Measured") |
| Width | (11830-7, LN, "Right Ovary Width") | (121401, DCM, "Derivation")=(R-41D41,SRT, "Measured") |
| R Ovary Volume | (12165-7, LN, "Right Ovary Volume") | (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| R CORPUS LUTEUM | (CN-41, ESAOTE_P1, "Corpus Luteum Right Ovary") | == = |
| R FOLLICLE <p> 75 | (12510,DCM,"Identifier") = "R_FOLLICLE<p>" (11793-7,SRT,"Follicle Diameter") | (G-C171, SRT, "Laterality")= (G-A100,SRT,"Right") |
| L Ovary Mass 1 / 2 / 3 / 4 76 | | |
| L Mass <n> | (CN-28,ESAOTE_P1,"Mass ID") = "MASS<n>L" | == = |
| Length | (MN-17,ESAOTE_P1, "Left Ovary Mass Length") | == = |
| Height | (MN-20,ESAOTE_P1, "Left Ovary Mass Height") | == = |
| Width | (MN-14,ESAOTE_P1, "Left Ovary Mass Width") | == = |
| Volume | (MN-23,ESAOTE_P1, "Left Ovary Mass Volume") | == = |
| CHARACTERISTI CS | (CN-31, ESAOTE_P1, "Ovary Mass Characteristics") | == = |

⁷⁴ Up to 14 can be present in the report, identified from A to N. In these measures, <p> will be substituted by A, B, ..., N.

⁷⁵ Up to 14 can be present in the report, identified from A to N. In these measures, <p> will be substituted by A, B, ..., N.

⁷⁶ Up to 4 can be present in the report, numbered from L Mass 1 to L Mass 4. In the following, <n> will be substituted by 1, 2, 3 or 4 according to the case.

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|---|--|---|
| R Ovary Mass 1 / 2 / 3 / 4 ⁷⁷ | | |
| R Mass <n> | (CN-28,ESAOTE_P1,"Mass ID") = "MASS<n>R" | == = |
| Length | (MN-18,ESAOTE_P1, "Right Ovary Mass Length") | == = |
| Height | (MN-21,ESAOTE_P1, "Right Ovary Mass Height") | == = |
| Width | (MN-15,ESAOTE_P1, "RightOvary Mass Width") | == = |
| Volume | (MN-24,ESAOTE_P1, "Right Ovary Mass Volume") | == = |
| CHARACTERISTI CS | (CN-31, ESAOTE_P1, "Ovary Mass Characteristics") | == = |

**Table 85
OB-GYN SR MAPPING – OB-GYN DOPPLER**

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|--|---|--|
| DOPPLER | | | |
| Mid Cerebral A | | | |
| MCA VTI | (20354-7,LN, "Velocity Time Integral") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA PSV | (11726-7,LN, "Peak Systolic Velocity") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA EDV | (11653-3,LN, "End Diastolic Velocity") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA Vmn | (20352-1,LN, "Time averaged mean velocity") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA HR | (EV-84,ESAOTE_P1, "Heart Beat") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA PI | (12008-9,LN, "Pulsatility Index") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA RI | (12023-8,LN, "Resistivity Index") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MCA S/D | (12144-2,LN, "Systolic to Diastolic Velocity Ratio") | (T-45600,SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umbilical A | | | |
| Umb A VTI | (20354-7,LN, "Velocity Time Integral") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A PSV | (11726-7,LN, | (T-F1810,SRT, | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") |

⁷⁷ Up to 4 can be present in the report, numbered from R Mass 1 to R Mass 4. In the following, <n> will be substituted by 1, 2, 3 or 4 according to the case.

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|--|-----------------------------------|---|
| | "Peak Systolic Velocity") | "Umbilical Artery") | (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A EDV | (11653-3,LN, "End Diastolic Velocity") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A Vmn | (20352-1,LN, "Time averaged mean velocity") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A HR | (EV-84,ESAOTE_P1, "Heart Beat") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A PI | (12008-9,LN, "Pulsatility Index") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A RI | (12023-8,LN, "Resistivity Index") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Umb A S/D | (12144-2,LN, "Systolic to Diastolic Velocity Ratio") | (T-F1810,SRT, "Umbilical Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Aorta | | | |
| Aorta VTI | (20354-7,LN, "Velocity Time Integral") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| AV Vmax | (11726-7,LN, "Peak Systolic Velocity") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Aortic EDV | (11653-3,LN, "End Diastolic Velocity") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| AV Vmean | (20352-1,LN, "Time averaged mean velocity") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Aorta HR | (EV-84,ESAOTE_P1, "Heart Beat") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Aorta PI | (12008-9,LN, "Pulsatility Index") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Aorta RI | (12023-8,LN, "Resistivity Index") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Aorta S/D | (12144-2,LN, "Systolic to Diastolic Velocity Ratio") | (T-42000,SRT, "Aorta") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV | | | |
| TV VTI | (20354-7,LN, "Velocity Time Integral") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV PSV | (11726-7,LN, "Peak Systolic Velocity") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV EDV | (11653-3,LN, "End Diastolic Velocity") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV Vmean | (20352-1,LN, "Time averaged mean velocity") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV - HR | (EV-84,ESAOTE_P1, "Heart Beat") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV PI | (12008-9,LN, | (T-35100,SRT, | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") |

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|--|-----------------------------------|---|
| | "Pulsatility Index") | "Tricuspid Valve") | (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV RI | (12023-8,LN, "Resistivity Index") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| TV S/D | (12144-2,LN, "Systolic to Diastolic Velocity Ratio") | (T-35100,SRT, "Tricuspid Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV | | | |
| MV VTI | (20354-7,LN, "Velocity Time Integral") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV PSV | (11726-7,LN, "Peak Systolic Velocity") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV EDV | (11653-3,LN, "End Diastolic Velocity") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV Vmean | (20352-1,LN, "Time averaged mean velocity") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV - HR | (EV-84,ESAOTE_P1, "Heart Beat") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV PI | (12008-9,LN, "Pulsatility Index") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV RI | (12023-8,LN, "Resistivity Index") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| MV S/D | (12144-2,LN, "Systolic to Diastolic Velocity Ratio") | (T-35300,SRT, "Mitral Valve") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| Pulmonary A | | | |
| PA VTI | (20354-7,LN, "Velocity Time Integral") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PA Vmax | (11726-7,LN, "Peak Systolic Velocity") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PR Ved | (11653-3,LN, "End Diastolic Velocity") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PA Vmean | (20352-1,LN, "Time averaged mean velocity") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PA HR | (EV-84,ESAOTE_P1, "Heart Beat") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PA PI | (12008-9,LN, "Pulsatility Index") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PA RI | (12023-8,LN, "Resistivity Index") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| PA S/D | (12144-2,LN, "Systolic to Diastolic Velocity Ratio") | (T-44000,SRT, "Pulmonary Artery") | (G-C171, SRT, "Laterality")=(G-A103,SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D,SRT, "Calculated") |
| R Renal A | | | |

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|------------------------------------|---|--------------------------------|--|
| R RA VTI | (20354-7, LN, "Velocity Time Integral") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA EDV | (11653-3, LN, "End Diastolic Velocity") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA HR | (EV-84, ESAOTE_P1, "Heart Beat") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA PI | (12008-9, LN, "Pulsatility Index") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA RI | (12023-8, LN, "Resistivity Index") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R RA S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Renal A | | | |
| L RA VTI | (20354-7, LN, "Velocity Time Integral") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA EDV | (11653-3, LN, "End Diastolic Velocity") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA HR | (EV-84, ESAOTE_P1, "Heart Beat") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA PI | (12008-9, LN, "Pulsatility Index") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA RI | (12023-8, LN, "Resistivity Index") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L RA S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-46600, SRT, "Renal Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Fetal Heart Rate | | | |
| Fetal Heart Rate (3) ⁷⁸ | (11948-7, LN, "Fetal Heart Rate") | = = = | = = = ⁷⁹ |
| R Middle Cerebral A | | | |

⁷⁸ The Fetal Heart Rate manually input in the OBSERVATIONS page (when available) will be the exported one. Otherwise, the Fetal Heart Rate acquired in Doppler mode will be the exported one, if acquired. When both are missing, the Fetal Heart Rate acquired in M-MODE will be exported, if acquired.

⁷⁹ When present, it is contained in the Ob-Gyn Procedure Fetus Summary.

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|---|--|---|
| R MCA VTI | (20354-7, LN, "Velocity Time Integral") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA EDV | (11653-3, LN, "End Diastolic Velocity") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA HR | (EV-84, ESAOTE_P1, "Heart Beat") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA PI | (12008-9, LN, "Pulsatility Index") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA RI | (12023-8, LN, "Resistivity Index") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R MCA S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Middle Cerebral A | | | |
| L MCA VTI | (20354-7, LN, "Velocity Time Integral") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA EDV | (11653-3, LN, "End Diastolic Velocity") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA HR | (EV-84, ESAOTE_P1, "Heart Beat") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA PI | (12008-9, LN, "Pulsatility Index") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA RI | (12023-8, LN, "Resistivity Index") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L MCA S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-45600, SRT, "Middle Cerebral Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Ductus Arteriosus | | | |
| DA VTI | (20354-7, LN, "Velocity Time Integral") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DA PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|---|------------------------------------|---|
| DA EDV | (11653-3, LN, "End Diastolic Velocity") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DA Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DA HR | (EV-84, ESAOTE_P1, "Heart Beat") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DA PI | (12008-9, LN, "Pulsatility Index") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DA RI | (12023-8, LN, "Resistivity Index") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DA S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-F6845, LN, "Ductus Arteriosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Ductus Venosus | | | |
| DV VTI | (MN-25, ESAOTE_P1, "Time Averaged Velocity") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV EDV | (11653-3, LN, "End Diastolic Velocity") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV HR | (EV-84, ESAOTE_P1, "Heart Beat") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV PI | (12008-9, LN, "Pulsatility Index") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV RI | (12023-8, LN, "Resistivity Index") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| DV S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-F6806, LN, "Ductus Venosus") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Doppl-Mot | | | |
| L Uterine A | | | |
| L Ut A VTI | (20354-7, LN, "Velocity Time Integral") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ut A PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ut A EDV | (11653-3, LN, "End Diastolic Velocity") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ut A Vmn | (20352-1, LN, "Time averaged | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|---|----------------------------------|--|
| | mean velocity") | | |
| L Ut A PI | (12008-9, LN, "Pulsatility Index") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ut A RI | (12023-8, LN, "Resistivity Index") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ut A S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Uterine A | | | |
| R Ut A VTI | (20354-7, LN, "Velocity Time Integral") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ut A PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ut A EDV | (11653-3, LN, "End Diastolic Velocity") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ut A Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ut A PI | (12008-9, LN, "Pulsatility Index") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ut A RI | (12023-8, LN, "Resistivity Index") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ut A S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-46820, SRT, "Uterine Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ovary A VTI | | | |
| L Ov A vti | (20354-7, LN, "Velocity Time Integral") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ov A PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ov A EDV | (11653-3, LN, "End Diastolic Velocity") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ov A Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ovary A PI | (12008-9, LN, "Pulsatility Index") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ov A RI | (12023-8, LN, "Resistivity Index") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| L Ovary A S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A101, SRT, "Left") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ovary A VTI | | | |
| R Ov A VTI | (20354-7, LN, "Velocity Time Integral") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ov A PSV | (11726-7, LN, "Peak Systolic Velocity") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |

| <i>ESAOTE MEASURE</i> | <i>BASE MEAS. CONCEPT NAME</i> | <i>SECTION</i> | <i>CONCEPT OR ACQUISITION CONTEXT MODIFIERS</i> |
|-----------------------|---|--------------------------------------|---|
| R Ov A EDV | (11653-3, LN, "End Diastolic Velocity") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ov A Vmn | (20352-1, LN, "Time averaged mean velocity") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ov A PI | (12008-9, LN, "Pulsatility Index") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ov A RI | (12023-8, LN, "Resistivity Index") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| R Ov A S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (T-46980, SRT, "Ovarian Artery") | (G-C171, SRT, "Laterality")=(G-A100, SRT, "Right") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Spiral A | | | |
| Sp A VTI | (20354-7, LN, "Velocity Time Integral") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A PSV | (11726-7, LN, "Peak Systolic Velocity") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A EDV | (11653-3, LN, "End Diastolic Velocity") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A Vmn | (20352-1, LN, "Time averaged mean velocity") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A HR | (EV-84, ESAOTE_P1, "Heart Beat") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A PI | (12008-9, LN, "Pulsatility Index") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A RI | (12023-8, LN, "Resistivity Index") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |
| Sp A S/D | (12144-2, LN, "Systolic to Diastolic Velocity Ratio") | (EV-121, ESAOTE_P1, "Spiral Artery") | (G-C171, SRT, "Laterality")=(G-A103, SRT, "Unilateral") (121401, DCM, "Derivation")=(R-41D2D, SRT, "Calculated") |

Some of the obstetric measures (gestational age and growth) are calculated from other measures, according to a given equation or table, that can be chosen in the configuration of the MyLab. The following table shows the relationship between the selected equation or table and its encoding in the OB-GYN SR objects.

Table 86
OB-GYN SR MAPPING – EQUATIONS / TABLES

| <i>ESAOTE MEASURE</i> | <i>REFERENCE</i> | <i>EQUATION OR TABLE</i> | <i>EQUATION OR TABLE NAME</i> |
|------------------------|------------------|----------------------------------|--------------------------------------|
| GESTATIONAL AGE | | | |
| ABDOMINAL CIRCUMF | Hadlock84 | (121420, DCM, "Equation") | (11892-7, LN, "AC, Hadlock 1984") |
| | Hansmann | (121424, DCM, "Table of Values") | (33073-8, LN, "AC, Hansmann 1985") |
| | JSUM 2001 | (121424, DCM, "Table of Values") | (EV-24, ESAOTE_P1, "AC, JSUM 2001") |
| | Merz | (121424, DCM, "Table of Values") | (33075-3, LN, "AC, Mertz 1988") |
| BIPARIETAL | Chitty O-O | (121424, DCM, "Table of Values") | (33087-8, LN, "BPD-oo, Chitty 1997") |

| <i>ESAOTE MEASURE</i> | <i>REFERENCE</i> | <i>EQUATION OR TABLE</i> | <i>EQUATION OR TABLE NAME</i> |
|-----------------------|------------------|---------------------------------|---|
| DIAMETER | Hadlock | (121420,DCM, "Equation") | (11901-6,LN, "BPDa, Hadlock 1982") |
| | Hadlock84 | (121420,DCM, "Equation") | (11902-4,LN, "BPD, Hadlock 1984") |
| | Hansmann | (121424,DCM, "Table of Values") | (11903-2,LN, "BPD, Hansmann 1985") |
| | Jeanty | (121424,DCM, "Table of Values") | (11905-7,LN, "BPD, Jeanty 1984") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-29,ESAOTE_P1, "BPD, JSUM") |
| | Merz | (121424,DCM, "Table of Values") | (33081-1,LN, "BPD, Mertz 1988") |
| | Osaka U | (121424,DCM, "Table of Values") | (33082-9,LN, "BPD, Osaka 1989") |
| | Rempen | (121424,DCM, "Table of Values") | (33083-7,LN, "BPD, Rempen 1991") |
| CROWN-RUMP LENGTH | Hadlock | (121420,DCM, "Equation") | (11910-7,LN, "CRL, Hadlock 1992") |
| | Hansmann | (121424,DCM, "Table of Values") | (11911-5,LN, "CRL, Hansmann 1985") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-31,ESAOTE_P1, "CRL, JSUM") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-30,ESAOTE_P1, "CRL, OsakaU 1983") |
| | Rempen | (121424,DCM, "Table of Values") | (33094-4,LN, "CRL, Rempen 1991") |
| | Robinson | (121420,DCM, "Equation") | (11914-9,LN, "CRL, Robinson 1975") |
| FEMUR LENGTH | Chitty | (121424,DCM, "Table of Values") | (33098-5,LN, "FL, Chitty 1997") |
| | Hadlock84 | (121420,DCM, "Equation") | (11920-6,LN, "FL, Hadlock 1984") |
| | Hansmann | (121424,DCM, "Table of Values") | (11921-4,LN, "FL, Hansmann 1985") |
| | Jeanty | (121424,DCM, "Table of Values") | (11923-0,LN, "FL, Jeanty 1984") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-39,ESAOTE_P1, "FL, JSUM 2001") |
| | Merz | (121424,DCM, "Table of Values") | (33542-2,LN, "FL, Merz 1988") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-38,ESAOTE_P1, "FL, OsakaU 1983") |
| FETAL TRUNK SECT A | Osaka U | (121424,DCM, "Table of Values") | (EV-145,ESAOTE_P1, "FTA, Osaka") |
| GEST SAC DIAM | Hansmann | (121424,DCM, "Table of Values") | (EV-40,ESAOTE_P1, "GSD, Hansmann 1985") |
| | Rempen | (121424,DCM, "Table of Values") | (11929-7,LN, "GS, Rempen 1991") |
| HEAD CIRCUMFERENCE | Chitty | (121424,DCM, "Table of Values") | (33111-6,LN, "HC derived, Chitty 1997") |
| | Hadlock84 | (121420,DCM, "Equation") | (11932-1,LN, "HC, Hadlock 1984") |
| | Hansmann | (121424,DCM, "Table of Values") | (33112-4,LN, "HC, Hansmann 1985") |
| | Merz | (121424,DCM, "Table of Values") | (33115-7,LN, "HC Merz, 1988") |
| HUMERUS LENGTH | Jeanty | (121424,DCM, "Table of Values") | (EV-148,ESAOTE_P1, "HL, Jeanty") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-146,ESAOTE_P1, "HL, Osaka") |
| OCCIP FRONTAL DIAM | Hansmann | (121424,DCM, "Table of Values") | (33544-8,LN, "OFD, Hansmann 1985") |
| TIBIA LENGTH | JEANTY84 | (121424,DCM, "Table of Values") | (11941-2,LN, "Tibia, Jeanty 1984") |
| TRANSV CEREB DIAM | Goldstein | (121424,DCM, "Table of Values") | (33133-0,LN, "TCD, Goldstein 1987") |
| | Hill | (121420,DCM, "Equation") | (33134-8,LN, "TCD, Hill 1990") |
| TRANSV TRUNK DIAM | Hansmann | (121424,DCM, "Table of Values") | (33136-3,LN, "Transverse Thoracic Diameter, Hansmann 1985") |

| ESAOTE MEASURE | REFERENCE | EQUATION OR TABLE | EQUATION OR TABLE NAME |
|----------------------------------|------------------------|---------------------------------|---|
| ULNA LENGTH | JEANTY84 | (121424,DCM, "Table of Values") | (11944-6,LN, "Ulna, Jeanty 1984") |
| GROWTH | | | |
| ABDOMINAL CIRCUMF | CFEF | (121424,DCM, "Table of Values") | (EV-85,ESAOTE_P1, "AC by GA, CFEF") |
| | Chitty | (121424,DCM, "Table of Values") | (33546-3,LN, "AC (derived) by GA, Chitty 1994") |
| | Hadlock84 | (121420,DCM, "Equation") | (33146-2,LN, "AC by GA, Hadlock 1984") |
| | Jeanty | (121424,DCM, "Table of Values") | (EV-147,ESAOTE_P1, "AC by GA, Jeanty") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-59,ESAOTE_P1, "JSUM 2001") |
| | Merz | (121424,DCM, "Table of Values") | (33148-8,LN, "AC by GA, Merz 1988") |
| | Nicolaides | (121424,DCM, "Table of Values") | (EV-86,ESAOTE_P1, "AC by GA, Nicolaides") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-122,ESAOTE_P1, "AC by GA, Paladini 2005") |
| ANT-POST ABD DIAM | Merz | (121424,DCM, "Table of Values") | (EV-123,ESAOTE_P1, "APAD by GA, Merz 1996") |
| BIPARIETAL DIAMETER | CFEF | (121424,DCM, "Table of Values") | (EV-90,ESAOTE_P1, "BPD by GA, CFEF") |
| | Chitty O-O | (121424,DCM, "Table of Values") | (33152-0,LN, "BPD outer-outer by GA, Chitty 1994") |
| | Hadlock84 | (121420,DCM, "Equation") | (33198-3,LN, "BPD by GA, Hadlock 1984") |
| | Jeanty | (121424,DCM, "Table of Values") | (EV-139,ESAOTE_P1, "BPD by GA, Jeanty") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-91,ESAOTE_P1, "BPD by GA, JSUM 2001") |
| | Merz | (121424,DCM, "Table of Values") | (33154-6,LN, "BPD by GA, Merz 1988") |
| | Nicolaides | (121424,DCM, "Table of Values") | (EV-92,ESAOTE_P1, "BPD by GA, Nicolaides") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-62,ESAOTE_P1, "BPD by GA, OsakaU") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-124,ESAOTE_P1, "BPD by GA, Paladini 2005") |
| CISTERNA MAGNA | Nicolaides | (121424,DCM, "Table of Values") | (EV-93,ESAOTE_P1, "Cisterna Magna by GA, Nicolaides") |
| CROWN-RUMP LENGTH | Hadlock | (121420,DCM, "Equation") | (EV-94,ESAOTE_P1, "CRL by GA, Hadlock") |
| | Hansmann | (121424,DCM, "Table of Values") | (EV-63,ESAOTE_P1, "CRL by GA, Hansmann") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-95,ESAOTE_P1, "CRL by GA, JSUM 2001") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-64,ESAOTE_P1, "CRL by GA, OsakaU") |
| | Robinson | (121424,DCM, "Table of Values") | (EV-96,ESAOTE_P1, "CRL by GA, Robinson 1975") |
| AVERAGE ULTRASOUND AGE | Average Ultrasound Age | (121420, DCM, "Equation") | (11884-4, LN, "Average Ultrasound Age") |
| ESTIM FETAL WEIGHT ⁸⁰ | Shepard82 | (121420,DCM, "Equation") | (11739-0, LN, "EFW by AC and BPD, Shepard 1982") |
| | Hadlock1 | (121420,DCM, "Equation") | (11751-5, LN, "EFW by AC, FL, Hadlock 1985") |
| | Hansmann | (121420,DCM, "Equation") | (33139-7, LN, "EFW by BPD, TTD, Hansmann 1986") |
| | Hadlock3 | (121420,DCM, "Equation") | (11735-8, LN, "EFW by AC, BPD, FL, Hadlock 1985") |

⁸⁰ The modifier will only be present when one of the listed equations is selected, otherwise it will be absent.

| ESAOTE MEASURE | REFERENCE | EQUATION OR TABLE | EQUATION OR TABLE NAME |
|--------------------------|---------------------------------|---|---|
| | Hadlock4 | (121420,DCM, "Equation") | (11732-5, LN, "EFW by AC, BPD, FL, HC, Hadlock 1985") |
| | Persson1 | (121420,DCM, "Equation") | (ESAOTE_P1, EV-125, "EFW by BPD, MAD, Persson") |
| | Persson2 | (121420,DCM, "Equation") | (ESAOTE_P1, EV-126, "EFW by BPD, MAD, FL, Persson") |
| | Hadlock2 | (121420,DCM, "Equation") | (11746-5, LN, "EFW by AC, FL, HC, Hadlock 1985") |
| EFW GROWTH VALUE RANKING | Hadlock | (121424, DCM, "Table of Values") | (33183-5, LN, "FWP by GA, Hadlock 1991") |
| FEMUR LENGTH | CFEF | (121424,DCM, "Table of Values") | (EV-98,ESAOTE_P1, "Femur length by GA, CFEF") |
| | Chitty | (121424,DCM, "Table of Values") | (33167-8, LN, "FL by GA, Chitty 1994") |
| | Hadlock84 | (121420,DCM, "Equation") | (33166-0, LN, "FL by GA, Hadlock 1984") |
| | Jeanty | (121424,DCM, "Table of Values") | (EV-140,ESAOTE_P1, "FL by GA, Jeanty") |
| | JSUM 2001 | (121424,DCM, "Table of Values") | (EV-66,ESAOTE_P1, "FL by GA, JSUM") |
| | Merz | (121424,DCM, "Table of Values") | (33169-4, LN, "FL by GA, Merz 1988") |
| | Nicolaides | (121424,DCM, "Table of Values") | (EV-67,ESAOTE_P1, "FL by GA, Nicolaides") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-65,ESAOTE_P1, "FL by GA, OsakaU") |
| PALADINI | (121424,DCM, "Table of Values") | (EV-127,ESAOTE_P1, "FL by GA, Paladini 2005") | |
| FETAL TRUNK SECT A | OSAKA U | (121424,DCM, "Table of Values") | (EV-69,ESAOTE_P1, "FTA by GA, OsakaU") |
| GEST SAC DIAM | Rempen | (121424,DCM, "Table of Values") | (33171-0, LN, "GS by GA, Rempen 1991") |
| HEAD CIRCUMFERENCE | CFEF | (121424,DCM, "Table of Values") | (EV-100,ESAOTE_P1, "HC by GA, CFEF") |
| | Chitty | (121424,DCM, "Table of Values") | (EV-72,ESAOTE_P1, "HC by GA, Chitty") |
| | Hadlock84 | (121420,DCM, "Equation") | (33173-6, LN, "HC by GA, Hadlock 1984") |
| | Jeanty | (121424,DCM, "Table of Values") | (EV-141,ESAOTE_P1, "HC by GA, Jeanty") |
| | Merz | (121424,DCM, "Table of Values") | (33176-9, LN, "HC by GA, Merz 1988") |
| | Nicolaides | (121424,DCM, "Table of Values") | (EV-73,ESAOTE_P1, "HC by GA, Nicolaides") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-128,ESAOTE_P1, "HC by GA, Paladini 2005") |
| HUMERUS LENGTH | Jeanty | (121424,DCM, "Table of Values") | (EV-143,ESAOTE_P1, "HL by GA, Jeanty") |
| | Merz | (121424,DCM, "Table of Values") | (EV-142,ESAOTE_P1, "HL by GA, Merz") |
| | Osaka U | (121424,DCM, "Table of Values") | (EV-74,ESAOTE_P1, "HL by GA, OsakaU") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-129,ESAOTE_P1, "HL by GA, Paladini 2005") |
| OCCIP FRONTAL DIAM | Chitty | (121424,DCM, "Table of Values") | (33179-3, LN, "OFD by GA, Chitty 1994") |
| | Jeanty | (121424,DCM, "Table of Values") | (EV-144,ESAOTE_P1, "OFD by GA, Jeanty") |
| | Merz | (121424,DCM, "Table of Values") | (EV-77,ESAOTE_P1, "OFD by GA, Merz") |
| | Nicolaides | (121424,DCM, "Table of Values") | (EV-130,ESAOTE_P1, "OFD by GA, Nicolaides 1994 FG") |
| RADIO LENGTH | Merz | (121424,DCM, "Table of Values") | (EV-78,ESAOTE_P1, "RL by GA, Merz") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-131,ESAOTE_P1, "RL by GA, Paladini 2005") |

| <i>ESAOTE MEASURE</i> | <i>REFERENCE</i> | <i>EQUATION OR TABLE</i> | <i>EQUATION OR TABLE NAME</i> |
|-----------------------|------------------|---------------------------------|--|
| TIBIA LENGTH | Jeanty | (121424,DCM, "Table of Values") | (EV-132,ESAOTE_P1, "TL by GA, Jeanty 1984") |
| | Merz | (121424,DCM, "Table of Values") | (EV-79,ESAOTE_P1, "TL by GA, Merz") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-133,ESAOTE_P1, "TL by GA, Paladini 2005") |
| TRANSV ABD DIAM | CFEF | (121424,DCM, "Table of Values") | (EV-106,ESAOTE_P1, "TAD by GA, CFEF") |
| | Merz | (121424,DCM, "Table of Values") | (EV-134,ESAOTE_P1, "TAD by GA, Merz 1996") |
| TRANSV CEREB DIAM | Goldstein | (121424,DCM, "Table of Values") | (33181-9,LN, "TCD by GA Goldstein 1987") |
| | Nicolaidis | (121424,DCM, "Table of Values") | (EV-135,ESAOTE_P1, "TCD by GA, Nicolaidis 1994") |
| ULNA LENGTH | Jeanty | (121424,DCM, "Table of Values") | (EV-108,ESAOTE_P1, "UL by GA, Jeanty 1984") |
| | Merz | (121424,DCM, "Table of Values") | (EV-80,ESAOTE_P1, "UL by GA, Merz") |
| | PALADINI | (121424,DCM, "Table of Values") | (EV-136,ESAOTE_P1, "UL by GA, Paladini 2005") |

8.3 ECHO-CARDIO VASCULAR AND ABDOMINAL CUSTOM FINDINGS SECTION

8.3.1 Description

For Echo-Cardio, Vascular and Abdominal reports the user can include in the exported structured report the defined custom measurements, calculations and evaluations, grouped in macromeasurements. Custom measurements for the Abdominal reports are exported in the very same way of the Vascular reports, please refer to it. In order to export this custom information, also keeping the intended grouping, but without the need to define a local dictionary of codes, we introduced a generic structure that does not assign specific codes, but uses the labels given by the user. Please note that presently only one Custom Findings Section (or none) will be present; for future estensions more than one can be used.

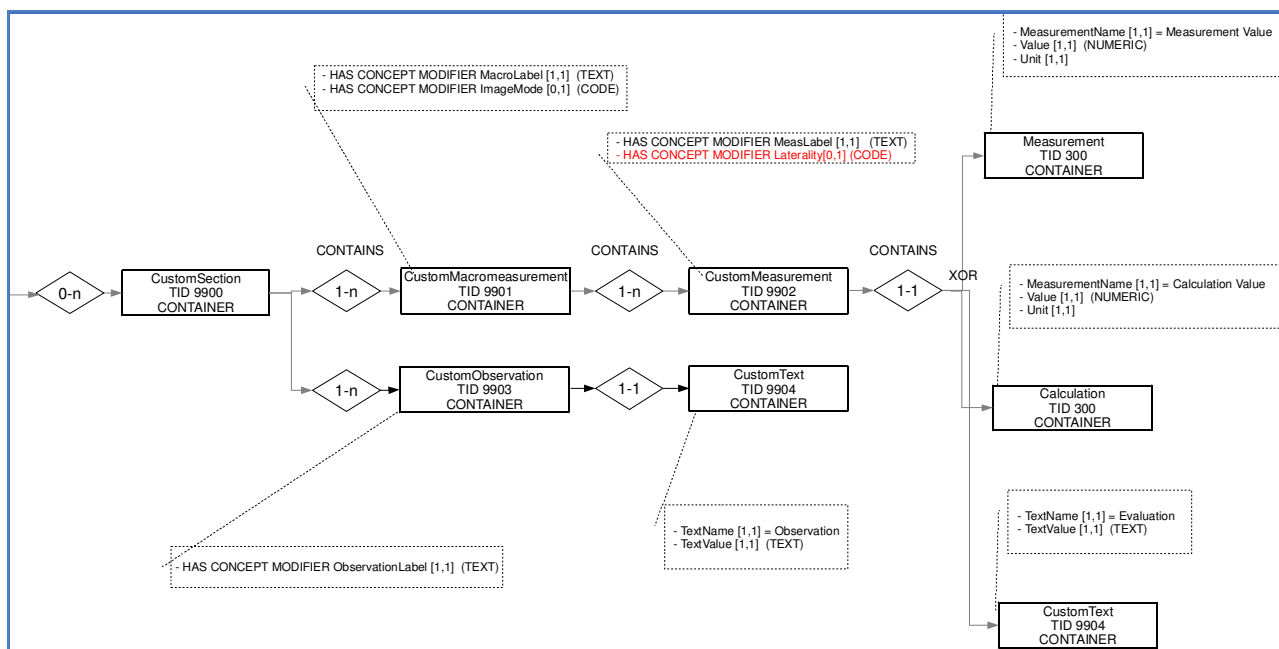


Figure 11
CUSTOM FINDINGS SECTION DIAGRAM

8.3.2 Template definition

This section contains the definition of the private templates used, according to the conventions adopted by DICOM standard (see DICOM standard document PS 3.16).

8.3.2.1 Topmost template extensions

Both topmost templates (TID 5200 and TID 5100) are of Type: Extensible. We extend them according to the following tables.

Table 87
TID 5200 – ECHOCARDIOGRAPHY PROCEDURE REPORT EXTENSION

| NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|----|-----------------|-----------|---|-------------------|----------|-----------|----------------------|
| 1 | | CONTAINER | EV (125200, DCM, "Adult Echocardiography Procedure Report") | 1 | M | | Root node |
| | | | | | | | |
| 25 | > CONTAINS | INCLUDE | DTID (9900) Custom Findings Section | 1-n ⁸¹ | U | | |

⁸¹ Presently only one Custom Findings Section (or none) will be present; for future estensions more than one can be used.

Table 88
TID 5100 – VASCULAR ULTRASOUND REPORT EXTENSION ⁸²

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|----|----|-----------------|-----------|--|-------------------|----------|-----------|----------------------|
| 1 | | | CONTAINER | EV (125100, DCM, "Vascular Ultrasound Procedure Report") | 1 | M | | |
| | | | | | | | | |
| 31 | > | CONTAINS | INCLUDE | DTID (9900) Custom Findings Section | 1-n ⁸³ | U | | |

8.3.2.2 TID 9900 Custom Findings Section

For both TID 5200 and TID 5100 we add a Custom Findings Section (TID 9900) that contains the various Custom Macrommeasurement sections (TID 9901).

Type: Extensible
Order: Significant

Table 89
TID 9900 – CUSTOM FINDINGS SECTION

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|--|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CUSTOMFIND, 99ESA_C1, "Custom Findings") | 1 | M | | |
| 2 | > | CONTAINS | INCLUDE | DTID (9901) , Custom Macrommeasurement | 1-n | M | | |

8.3.2.3 TID 9901 Custom Macrommeasurement

Each Custom Macrommeasurement section (TID 9901) contains the custom macrommeasurement label, the Image Mode (for Echo-cardio reports only), and the Custom Sections (TID 9902) for the various measurements, calculations and evaluations included in that custom macrommeasurement.

Type: Extensible
Order: Significant

Table 90
TID 9901 – CUSTOM MACROMEASUREMENT

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|--|-----|----------|-----------|-------------------------------------|
| 1 | | | CONTAINER | DT (MACROMEAS, 99ESA_C1, "Custom Macrommeasurement") | 1 | M | | |
| 2 | > | HAS CONCEPT MOD | TEXT | DT (MACROLABEL, 99ESA_C1, "Macrommeasurement Label") | 1 | M | | Free text |
| 3 | > | HAS CONCEPT MOD | CODE | EV (G-0373, SRT, "Image Mode") ⁸⁴ | 1 | U | | BCID (12224) Ultrasound Image Modes |
| 4 | > | CONTAINS | INCLUDE | DTID (9902) , Custom Measurement | 1-n | M | | |

⁸² Also valid for the Abdominal reports.

⁸³ Presently only one Custom Findings Section (or none) will be present; for future estensions more than one can be used.

⁸⁴ Although this template is used both for Echo-cardio (TID5200) and Vascular (TID5100) Structured Report, the field "Image Mode" is only used for Echo-cardio (TID5200).

8.3.2.4 TID 9902 Custom Measurement

Each Custom Measurement section (TID 9902) contains the custom label as given by the user, and the measurement, calculation or evaluation corresponding to that label.

Type: Extensible
Order: Significant

Table 91
TID 9902 – CUSTOM MEASUREMENT

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---|----|----------|-------------|--|
| 1 | | | CONTAINER | EV (MEAS, 99ESA_C1, "Custom Measurement") | 1 | M | | |
| 2 | > | HAS CONCEPT MOD | TEXT | DT (MEASLABEL, 99ESA_C1, "Measurement Label") | 1 | M | | Free text |
| 3 | > | HAS CONCEPT MOD | CODE | EV (G-C171, SRT, "Laterality") ⁸⁵ | 1 | U | | BCID(244) Laterality |
| 4 | > | CONTAINS | INCLUDE | DTID (300) Measurement | 1 | MC | XOR row 4,5 | \$Measurement = EV (MEAS_VALUE, 99ESA_C1, "Measurement Value") |
| 5 | > | CONTAINS | INCLUDE | DTID (300) Measurement | 1 | MC | XOR row 3,5 | \$Measurement = EV (CALC_VALUE, 99ESA_C1, "Calculation Value") |
| 6 | > | CONTAINS | INCLUDE | DTID (9903) , Custom Text | 1 | MC | XOR row 3,4 | \$TextName = EV (EVAL_VALUE, 99ESA_C1, "Evaluation Value") |

8.3.2.5 TID 9903 Custom Text

Each Custom Text section (TID 9903) contains the free text given by the user.

Type: Extensible
Order: Significant

Table 92
TID 9903 – CUSTOM TEXT

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|------|--------------|----|----------|-----------|----------------------|
| 1 | | | TEXT | \$TextName | 1 | M | | |

⁸⁵ Although this template is used both for Echo-cardio (TID5200) and Vascular (TID5100) Structured Report, the field "Laterality" is only used for Vascular (TID5100).

8.4 OB- GYN CUSTOM SECTIONS AND TABLES

8.4.1 Description

The user can define fetal, maternal, gynecological custom measurements, and Growth and GA estimations based on custom tables. In order to export this custom information, without the need to define a local dictionary of codes, we introduced a generic structure that does not assign specific codes, but uses the labels given by the user. See following figure for an overall of the Fetal, Maternal and Gyn Custom Sections, but refer to the tables for a complete description, as some of the details present in the figures are not implemented.

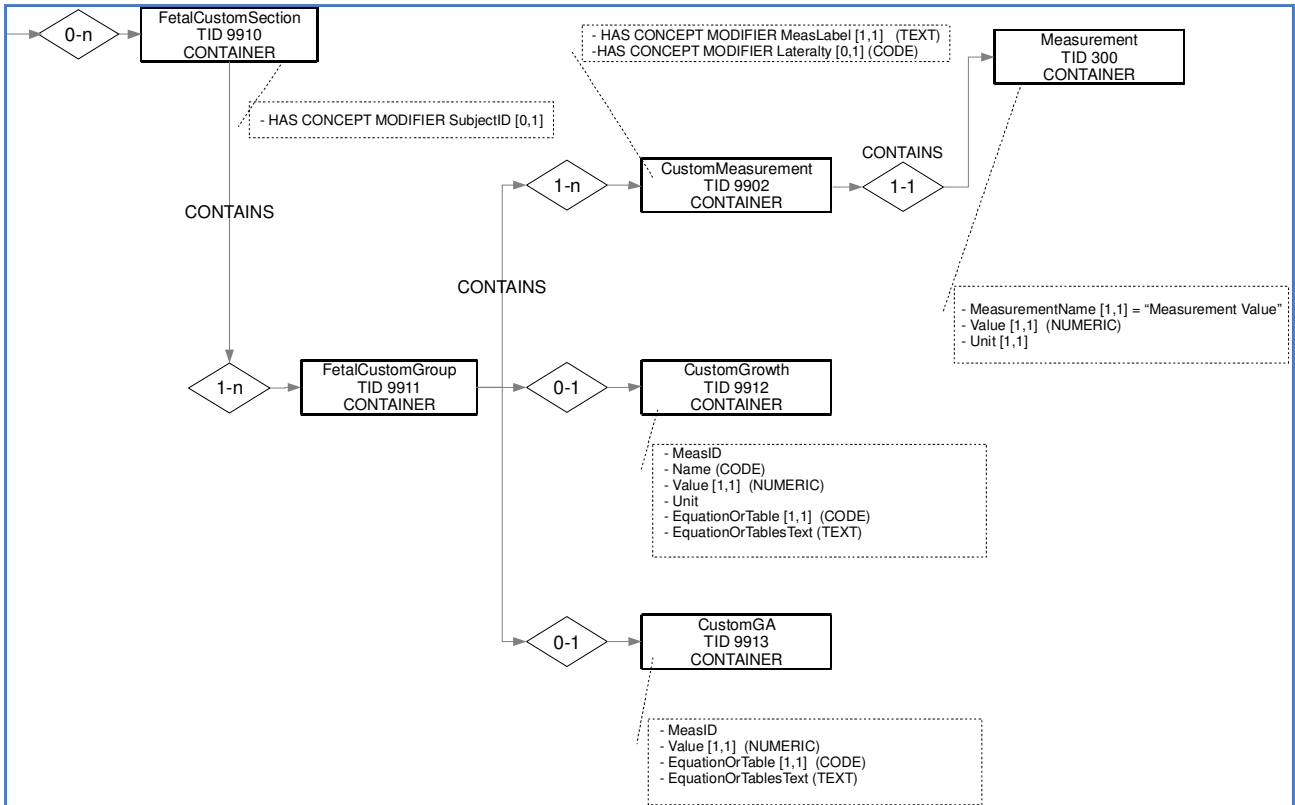


Figure 12
FETAL CUSTOM SECTION

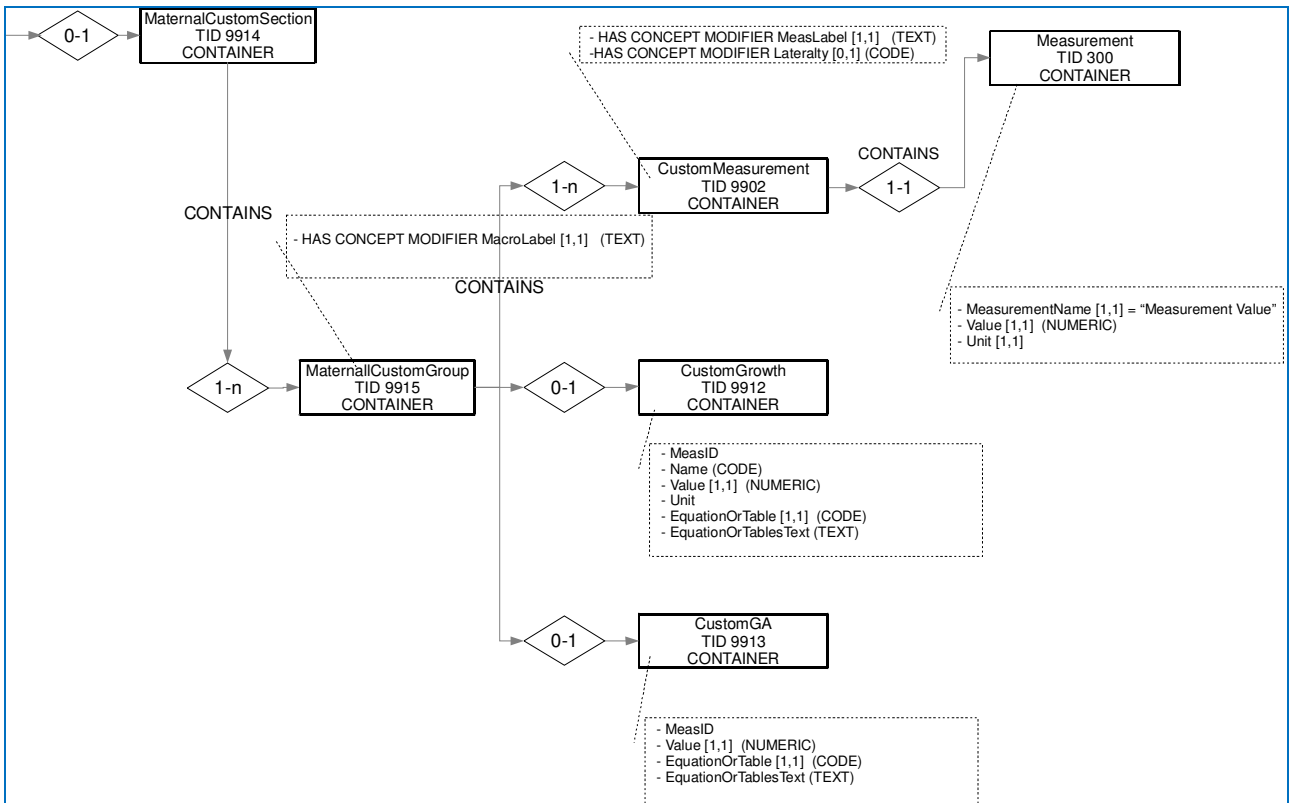


Figure 13
MATERNAL CUSTOM SECTION

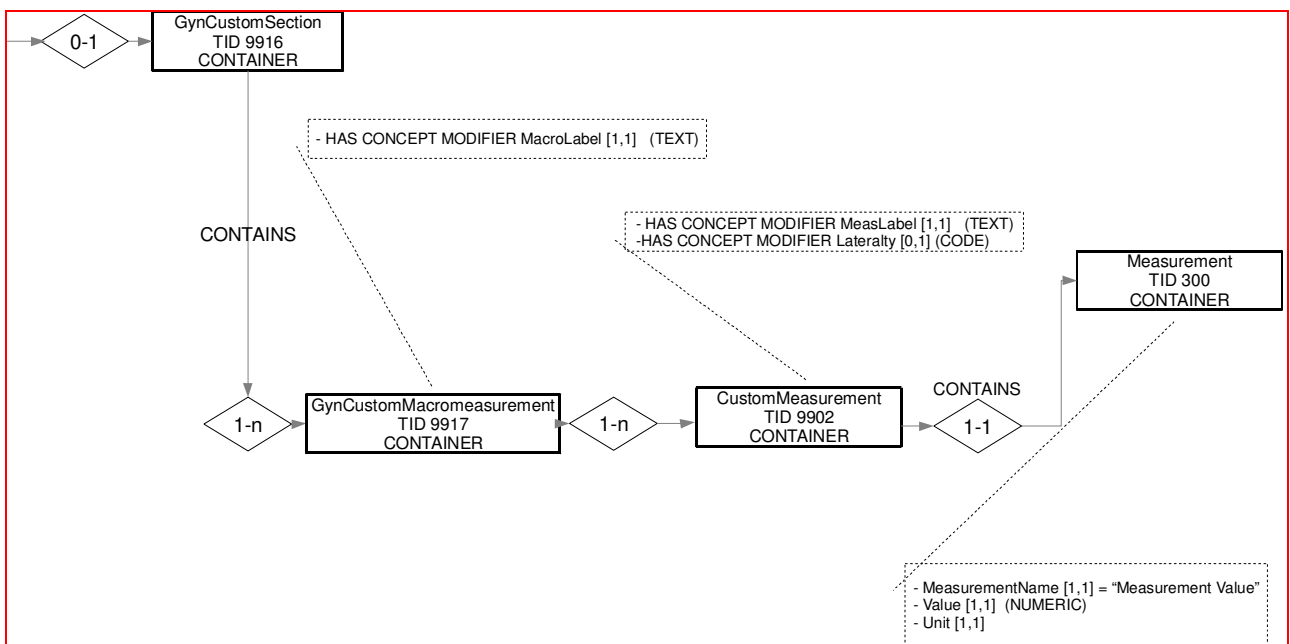


Figure 14
GYN CUSTOM SECTION

8.4.2 Template definition

This section contains the definition of the private templates used, according to the conventions adopted by DICOM standard (see DICOM standard document PS 3.16).

8.4.2.1 Topmost template extensions

Topmost template TID 5000 is of Type: Extensible. We extend it according to the following table.

Table 93
TID 5000 – OB-GYN ULTRASOUND PROCEDURE REPORT EXTENSION

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|----|----|-----------------|-----------|--|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | EV (125000, DCM, "OB-GYN Ultrasound Procedure Report") | 1 | M | | Root node |
| | | | | | | | | |
| 25 | > | CONTAINS | INCLUDE | DTID (9910) Fetal Custom Section | 1-n | U | | |
| 26 | > | CONTAINS | INCLUDE | DTID (9914) Maternal Custom Section | 1 | U | | |
| 27 | > | CONTAINS | INCLUDE | DTID(9916) Gyn Custom Section | 1 | U | | |

8.4.2.2 TID 9910 Fetal Custom Section

For TID 5000 we add one or more Fetal Custom Section (TID 9910) that contains the various Fetal Custom Groups (TID 9911).

Type: Extensible

Order: Significant

Table 94
TID 9910 – FETAL CUSTOM SECTION

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-100, 99ESA_C1, "Fetal Custom Section") | 1 | M | | |
| 2 | | HAS CONCEPT MOD | CODE | EV (121030, DCM, "SubjectID") | 1 | U | | Free text |
| 3 | > | CONTAINS | INCLUDE | DTID (9911) , FetalCustomGroup | 1-n | M | | |

8.4.2.3 TID 9911 Fetal Custom Group

Each Fetal Custom Custom Group (TID 9911) contains one or more Custom Measurement, and possibly a Custom Growth / Custom Gestational Age estimation.

Type: Extensible

Order: Significant

Table 95
TID 9911 – FETAL CUSTOM GROUP

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-101, 99ESA_C1, "Fetal Custom Group") | 1 | M | | |
| 2 | > | CONTAINS | INCLUDE | DTID (9902) , Custom Measurement | 1-n | M | | |
| 3 | > | CONTAINS | INCLUDE | DTID (9912) , CustomGrowth | 0-1 | U | | |
| 4 | > | CONTAINS | INCLUDE | DTID (9913) , CustomGA | 0-1 | U | | |

8.4.2.4 TID 9914 Maternal Custom Section

For TID 5000 we add one Maternal Custom Section (TID 9914) that contains the various Maternal Custom Groups (TID 9915).

Type: Extensible
Order: Significant

Table 96
TID 9914 – MATERNAL CUSTOM SECTION

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|--|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-104, 99ESA_C1, "Maternal Custom Section") | 1 | M | | |
| 2 | > | CONTAINS | INCLUDE | DTID (9915) , MaternalCustomGroup | 1-n | M | | |

8.4.2.5 TID 9915 Maternal Custom Group

Each Maternal Custom Custom Group (TID 9915) contains one or more Custom Measurement, and possibly a Custom Growth / Custom Gestational Age estimation.

Type: Extensible
Order: Significant

Table 97
TID 9915 – MATERNAL CUSTOM GROUP

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|--|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-105, 99ESA_C1, "Maternal Custom Group") | 1 | M | | |
| 2 | > | HAS CONCEPT MOD | TEXT | DT (MACROLABEL, 99ESA_C1, "Macromasurement Label") | 1 | M | | |
| 3 | > | CONTAINS | INCLUDE | DTID (9902) , Custom Measurement | 1-n | M | | |
| 4 | > | CONTAINS | INCLUDE | DTID (9912) , CustomGrowth | 0-1 | U | | |
| 5 | > | CONTAINS | INCLUDE | DTID (9913) , CustomGA | 0-1 | U | | |

8.4.2.6 TID 9916 Gyn Custom Section

For TID 5000 we add one Gyn Custom Section (TID 9916) that contains the various Gyn Custom Macromeasurements (TID 9917).

Type: Extensible
Order: Significant

Table 98
TID 9916 – GYN CUSTOM SECTION

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-106, 99ESA_C1, "Gyn Custom Section") | 1 | M | | |
| 2 | > | CONTAINS | INCLUDE | DTID (9917) , GynCustomMacromeasurment | 1-n | M | | |

8.4.2.7 TID 9917 Gyn Custom Macromeasurement

Each Gyn Custom Macromeasurement (TID 9917) contains one or more Custom Measurement.

Type: Extensible
Order: Significant

Table 99
TID 9917 – GYN CUSTOM MACROMEASUREMENT

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-107, 99ESA_C1, "Gyn Custom Macrommeasurement") | 1 | M | | |
| 2 | > | HAS CONCEPT MOD | TEXT | DT (MACROLABEL, 99ESA_C1, "Macrommeasurement Label") | 1 | M | | Free text |
| 3 | > | CONTAINS | INCLUDE | DTID (9902) , Custom Measurement | 1-n | M | | |

8.4.2.8 TID 9902 Custom Measurement

Each Custom Measurement section (TID 9902) contains the custom label as given by the user, and the measurement, calculation or evaluation corresponding to that label.

Type: Extensible
Order: Significant

Table 100
TID 9902 – CUSTOM MEASUREMENT

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|---|----|----------|-------------|--|
| 1 | | | CONTAINER | EV (MEAS, 99ESA_C1, "Custom Measurement") | 1 | M | | |
| 2 | > | HAS CONCEPT MOD | TEXT | DT (MEASLABEL, 99ESA_C1, "Measurement Label") | 1 | M | | Free text |
| 3 | > | CONTAINS | INCLUDE | DTID (300) Measurement | 1 | MC | XOR row 4,5 | \$Measurement = EV (MEAS_VALUE, 99ESA_C1, "Measurement Value") |

8.4.2.9 TID 9912 Custom Growth

Each Fetal Custom Group (TID 9911) can contains the Custom Growth percentile rank, and the reference to the table of values used to estimate it.

Type: Extensible
Order: Significant

Table 101
TID 9912 – CUSTOM GROWTH

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|--|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-103, 99ESA_C1, "Custom Growth") | 1 | M | | |
| 2 | > | CONTAINS | NUM | DT (125012,DCM,"Growth Percentile Rank") | 1 | M | | |
| 2 | > | INFERRED FROM | TEXT | DT (121424,DCM,"Table of Values) | 0-1 | O | | |

8.4.2.10 TID 9913 Custom GA

Each Fetal Custom Group (TID 9911) can contains the Custom Gestational Age, and the reference to the table of values used to estimate it.

Type: Extensible
Order: Significant

Table 102
TID 9913 – CUSTOM GA

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|-----------|-------------------------------------|-----|----------|-----------|----------------------|
| 1 | | | CONTAINER | DT (CN-102, 99ESA_C1, "Custom GA") | 1 | M | | |
| 2 | > | CONTAINS | NUM | DT (18185-9, LN, "Gestational Age") | 1 | M | | |
| 2 | > | INFERRED FROM | TEXT | DT (121424, DCM, "Table of Values") | 0-1 | O | | |

8.4.3 Fetal biometry group extension to include Custom Growth and GA

The user can define Growth and GA estimations based on custom tables, not only for custom measurements, but also for standard measurements. In order to export this custom information, we extend the Fetal Biometry Group (TID 5008) inserting TID 9912 CustomGA and TID 9913 CustomGrowth defined above, as described in the table below (see text in boldface).

Table 103
TID 5508 – FETAL BIOMETRY GROUP EXTENSION

| | NL | Rel with Parent | VT | Concept Name | VM | Req Type | Condition | Value Set Constraint |
|---|----|-----------------|----------------|---|------------|----------|--|---|
| 1 | | | CONTAINER | DT (125005, DCM, "Biometry Group") | 1 | M | | |
| 2 | > | CONTAINS | INCLUDE | DTID 300 "Measurement" | 1-n | MC | At least one of row 2 and 3 shall be present | \$BiometryType \$Derivation = DCID 3627 "Measurement Type" |
| 3 | > | CONTAINS | NUM | EV (18185-9, LN, "Gestational Age") | 1 | MC | At least one of row 2 and 3 shall be present | UNITS = EV (d, UCUM, "days") |
| 4 | >> | INFERRED FROM | CODE | DCID 228 "Equation or Table" | 1 | U | | DCID 12013 "Gestational Age Equations and Tables" |
| 5 | >> | R-INFERRED FROM | NUM | | 1-n | U | | |
| 6 | >> | HAS PROPERTIES | NUM | DCID 226 "Population Statistical Descriptors" | 1-n | U | | |
| | > | CONTAINS | INCLUDE | DTID (9913) , CustomGA | 0-1 | U | | |
| 7 | > | CONTAINS | NUM | DCID 12017 "Growth Distribution Rank" | 1 | U | | |
| 8 | >> | INFERRED FROM | CODE | DCID 228 "Equation or Table" | 1 | U | | DCID 12015 "Fetal Growth Equations and Tables" |
| | > | CONTAINS | INCLUDE | DTID (9912) , CustomGrowth | 0-1 | U | | |

8.5 DATA DICTIONARY OF PRIVATE ATTRIBUTES

The Private Attributes added to created SOP Instances are listed in the Table below. The MyLab system reserves blocks of private attributes in groups 2FF1 and 6161. Further details on usage of these private attributes are contained in Section 8.1.

Table 104
DATA DICTIONARY OF PRIVATE ATTRIBUTES ⁸⁶

| Tag | Attribute Name | VR | VM |
|-------------|---|----|-----|
| (2FF1,0060) | Private Creator | LO | 1 |
| (2FF1,6001) | Private Creator Data Version | LO | 1 |
| (2FF1,6031) | Contrast master gain | DS | 1 |
| (2FF1,6032) | Anti-log law vector | IS | 256 |
| (2FF1,6033) | Gray Map curve data | IS | 256 |
| (2FF1,6035) | Palette name | LO | 1 |
| (2FF1,6036) | Contrast Red Palette Data | IS | 256 |
| (2FF1,6037) | Contrast Green Palette Data | IS | 256 |
| (2FF1,6038) | Contrast Blue Palette Data | IS | 256 |
| (2FF1,6040) | Transducer name | LO | 1 |
| (2FF1,6041) | Transducer frequency | DS | 1 |
| (2FF1,6050) | Vector of destruction-frame numbers | IS | 1-n |
| (2FF1,6051) | Number of destruction frames | IS | 1-n |
| (2FF1,6052) | Nonlinear Contrast Mode | CS | 1 |
| (2FF1,6053) | Allow Quantification | LO | 1 |
| (6161,0011) | Private Creator | LO | 1 |
| (6161,1130) | Report, in Esaote proprietary XML format | OB | 1 |
| (6161,1131) | List of the custom measures, in Esaote proprietary XML format ⁸⁷ | OB | 1 |

8.6 CODED TERMINOLOGY AND TEMPLATES

The Workflow AE is capable of supporting arbitrary coding schemes for Procedure and Protocol Codes: the value of the Code Meaning will be displayed. The contents of Requested Procedure Code Sequence (0032,1064) and Scheduled Protocol Code Sequence (0040,0008) supplied in Worklist Items will be mapped to Image IOD and MPPS attributes as described in Table 30 and Table 34.

The contents of the Performed Protocol Code Sequence (0040,0260) for cardiac US-MF images acquired in a Staged protocol (when available) are automatically filled with the codes listed in the following table, subset of Context ID 12001, Ultrasound Protocol Types.

Table 105
CODES USED FOR PERFORMED PROTOCOL CODE SEQ. FOR STAGED PROTOCOL

| ESAOTE terminology | Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|--------------------|------------------------|--------------------------------------|-------------------------------------|
| BICYCLE ERGOMETER | P2-31102 | SRT | Stress test using Bicycle Ergometer |
| DIPYRIDAMOLE | P2-3110A | SRT | Dipyridamole Stress protocol |

⁸⁶ Present only when "ADD MEASUREMENTS FILE" has been set.

⁸⁷ Only present for exams acquired with sw release 5.xx and later.

| ESAOTE terminology | Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|--------------------|------------------------|--------------------------------------|----------------------------|
| DOBUTAMINE | P2-31108 | SRT | Dobutamine Stress protocol |

The contents of the Stage Code Sequence (0040,000A) for cardiac US-MF images acquired in a Staged protocol (when available) are automatically filled with the codes listed in the following table, subset of Context ID 12002 Ultrasound Protocol Stage Types. For Stage Name (0008,2120) a corresponding defined term is adopted.

Table 106
CODES USED FOR STAGE CODE SEQ. FOR STAGED PROTOCOL

| ESAOTE terminology | Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) | Stage Name (0008,2120) | |
|------------------------|------------------------|--------------------------------------|-------------------------------|----------------------------|---------------|
| | | | | Protocol Type | |
| | | | | Dipyridamole or Dobutamine | Bicycle |
| BASELINE STATE | F-01604 | SRT | Resting state | BASELINE | PRE-EXERCISE |
| STRESS STATE | F-05019 | SRT | Cardiac stress state | LOW DOSE | PEAK-EXERCISE |
| PEAK STRESS STATE | F-05028 | SRT | Peak cardiac stress state | PEAK DOSE | PEAK-EXERCISE |
| CARDIAC RECOVERY STATE | F-05018 | SRT | Cardiac stress recovery state | RECOVERY | POST-EXERCISE |

The contents of the View Code Sequence (0054,0220) for cardiac US-MF images acquired in a Staged protocol (when available) are automatically filled with the codes listed in the following table, subset of Context ID 12226 Echocardiography Image View. For View Name (0008,2127) a corresponding defined term is adopted.

Table 107
CODES USED FOR VIEW CODE SEQ. FOR STAGED PROTOCOL

| ESAOTE terminology | Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) | View Name (0008,2127) |
|--------------------|------------------------|--------------------------------------|--|-----------------------|
| LAX | G-0396 | SRT | Parasternal long axis | LAX |
| SAX PM | G-039B | SRT | Parasternal short axis at the Papillary Muscle level | SAX_PM |
| A4C | G-A19C | SRT | Apical four chamber | A4C |
| A2C | G-A19B | SRT | Apical two chamber | A2C |
| SAX MV | G-039A | SRT | Parasternal short axis at the Mitral Valve level | SAX_MV |
| SAX AP | G-0398 | SRT | Parasternal short axis at the aortic valve level | SAX_AP |
| ALAX | G-0395 | SRT | Apical long axis | ALAX |

Structured Reporting uses codes supplied by DCMR (DICOM Code Mapping Resource, PS 3-16), LOINC, SRT and, for Vascular and OB-GYN SR, ESAOTE_P1 (Esaote Private Codes for Ultrasound), 99ESA_P1 (Esaote Private Codes for Ultrasound, alternate set) and 99ESA_C1 (Esaote Private Codes for Custom Ultrasound measurements) . See Table 108 for the list of the available ESAOTE_P1, 99ESA_P1 and

99ESA_C1 codes (please note that not all the items of this table are actually used in the produced SR documents).

Table 108
ESAOTE PRIVATE CODES FOR ULTRASOUND

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-------------------------------|---|---------------------------------|
| CN-02 | ESAOTE_P1 | Cervix |
| CN-03 | ESAOTE_P1 | Fundus |
| CN-04 | ESAOTE_P1 | Left Adnexa |
| CN-05 | ESAOTE_P1 | Right Adnexa |
| CN-06 | ESAOTE_P1 | Head |
| CN-07 | ESAOTE_P1 | Cord Insertion |
| CN-08 | ESAOTE_P1 | Spine |
| CN-09 | ESAOTE_P1 | Cord Vessels |
| CN-10 | ESAOTE_P1 | Heart Chambers |
| CN-11 | ESAOTE_P1 | Bowel |
| CN-12 | ESAOTE_P1 | Thorax |
| CN-13 | ESAOTE_P1 | Left Kidney |
| CN-14 | ESAOTE_P1 | Right Kidney |
| CN-15 | ESAOTE_P1 | Stomach |
| CN-16 | ESAOTE_P1 | Bladder |
| CN-17 | ESAOTE_P1 | Heart Rhythm |
| CN-18 | ESAOTE_P1 | Placenta Grade |
| CN-19 | ESAOTE_P1 | Placenta Location H |
| CN-20 | ESAOTE_P1 | Placenta Location V |
| CN-24 | ESAOTE_P1 | Fetal Position |
| CN-25 | ESAOTE_P1 | Uterus Position |
| CN-26 | ESAOTE_P1 | Uterus Version |
| CN-29 | ESAOTE_P1 | Fibroma Characteristics |
| CN-30 | ESAOTE_P1 | Fibroma Site |
| CN-31 | ESAOTE_P1 | Ovary Mass Characteristics |
| CN-40 | ESAOTE_P1 | Corpus Luteum Left Ovary |
| CN-41 | ESAOTE_P1 | Corpus Luteum Right Ovary |
| CN-42 | ESAOTE_P1 | Mass Kind |
| CN-43 | ESAOTE_P1 | Fetal Mass Section |
| EV-01 | ESAOTE_P1 | Anterior |
| EV-02 | ESAOTE_P1 | Posterior |
| EV-03 | ESAOTE_P1 | Mid |
| EV-04 | ESAOTE_P1 | Low |
| EV-05 | ESAOTE_P1 | Previa |
| EV-06 | ESAOTE_P1 | Fundus |
| EV-07 | ESAOTE_P1 | Yes |
| EV-08 | ESAOTE_P1 | No |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|---------------------------------|
| EV-09 | ESAOTE_P1 | Undefined |
| EV-10 | ESAOTE_P1 | Fetal Age |
| EV-11 | ESAOTE_P1 | Fetal Growth |
| EV-12 | ESAOTE_P1 | Cephalic |
| EV-13 | ESAOTE_P1 | Transverse |
| EV-14 | ESAOTE_P1 | Oblique |
| EV-15 | ESAOTE_P1 | Breech |
| EV-16 | ESAOTE_P1 | EDD by DGA |
| EV-17 | ESAOTE_P1 | Date Of FDGA |
| EV-18 | ESAOTE_P1 | DGA by EDD |
| EV-19 | ESAOTE_P1 | DGA by FDGA |
| EV-20 | ESAOTE_P1 | First DGA |
| EV-21 | ESAOTE_P1 | BPD/FL |
| EV-22 | ESAOTE_P1 | AC, Nicolaides 1993 |
| EV-23 | ESAOTE_P1 | AC, Chitty 1994 |
| EV-24 | ESAOTE_P1 | AC, JSUM 2001 |
| EV-25 | ESAOTE_P1 | AFI, Moore Cayle |
| EV-26 | ESAOTE_P1 | BPD, Campbell 1991 |
| EV-27 | ESAOTE_P1 | BPD, Yale 1983 |
| EV-28 | ESAOTE_P1 | BPD, Nicolaides |
| EV-29 | ESAOTE_P1 | BPD, JSUM |
| EV-30 | ESAOTE_P1 | CRL, OsakaU 1983 |
| EV-31 | ESAOTE_P1 | CRL, JSUM |
| EV-32 | ESAOTE_P1 | FL, Nicolaides 1993 |
| EV-33 | ESAOTE_P1 | FL, OBrien 1981 |
| EV-34 | ESAOTE_P1 | FL, Chitty 1994 |
| EV-35 | ESAOTE_P1 | FL, Mertz 1991 |
| EV-36 | ESAOTE_P1 | FL, Quennan 1981 |
| EV-37 | ESAOTE_P1 | FL, Campbell |
| EV-38 | ESAOTE_P1 | FL, OsakaU 1983 |
| EV-39 | ESAOTE_P1 | FL, JSUM 2001 |
| EV-40 | ESAOTE_P1 | GSD, Hansmann 1985 |
| EV-41 | ESAOTE_P1 | HC, Campbell 1991 |
| EV-42 | ESAOTE_P1 | HC, Hadlock 1982 |
| EV-43 | ESAOTE_P1 | HC, Nicolaides 1993 |
| EV-44 | ESAOTE_P1 | HC, Hoffbauer 1979 |
| EV-45 | ESAOTE_P1 | HL, OsakaU 1988 |
| EV-46 | ESAOTE_P1 | MAD, Rempen |
| EV-47 | ESAOTE_P1 | OFD, Nicolaides 1994 |
| EV-48 | ESAOTE_P1 | OFD, Chitty 1994 |
| EV-49 | ESAOTE_P1 | OFD, Merz 1991 |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|---------------------------------------|
| EV-50 | ESAOTE_P1 | TDC, Bernascheck 1997 |
| EV-51 | ESAOTE_P1 | TCD, Hill 1983 |
| EV-52 | ESAOTE_P1 | TL, Jeanty 1984 |
| EV-53 | ESAOTE_P1 | FTA, Osaka 1984 |
| EV-54 | ESAOTE_P1 | EFW, Warsof |
| EV-55 | ESAOTE_P1 | EFW, German |
| EV-56 | ESAOTE_P1 | EFW, Todai 1996 |
| EV-57 | ESAOTE_P1 | EFW, OsakaU |
| EV-58 | ESAOTE_P1 | EFW, JSUM |
| EV-59 | ESAOTE_P1 | JSUM 2001 |
| EV-60 | ESAOTE_P1 | BPD by GA, Chitty |
| EV-61 | ESAOTE_P1 | BPD by GA, Todai 1996 |
| EV-62 | ESAOTE_P1 | BPD by GA, OsakaU |
| EV-63 | ESAOTE_P1 | CRL by GA, Hansmann |
| EV-64 | ESAOTE_P1 | CRL by GA, OsakaU |
| EV-65 | ESAOTE_P1 | FL by GA, OsakaU |
| EV-66 | ESAOTE_P1 | FL by GA, JSUM |
| EV-67 | ESAOTE_P1 | FL by GA, Nicolaidis |
| EV-68 | ESAOTE_P1 | FOL by GA, Mercer 1987 |
| EV-69 | ESAOTE_P1 | FTA by GA, OsakaU |
| EV-70 | ESAOTE_P1 | GSD by GA, Nyberg 1987 |
| EV-71 | ESAOTE_P1 | HC by GA, Tamura 1995 |
| EV-72 | ESAOTE_P1 | HC by GA, Chitty |
| EV-73 | ESAOTE_P1 | HC by GA, Nicolaidis |
| EV-74 | ESAOTE_P1 | HL by GA, OsakaU |
| EV-75 | ESAOTE_P1 | HL by GA, Jeanty Romero |
| EV-76 | ESAOTE_P1 | OFD by GA, Chitty |
| EV-77 | ESAOTE_P1 | OFD by GA, Merz |
| EV-78 | ESAOTE_P1 | RL by GA, Merz |
| EV-79 | ESAOTE_P1 | TL by GA, Merz |
| EV-80 | ESAOTE_P1 | UL by GA, Merz |
| EV-81 | ESAOTE_P1 | APTD * TTD |
| EV-82 | ESAOTE_P1 | Max Amniotic Diameter |
| EV-83 | ESAOTE_P1 | Amniotic Fluid Index |
| EV-84 | ESAOTE_P1 | Heart Beat |
| EV-85 | ESAOTE_P1 | AC by GA, CFEF |
| EV-86 | ESAOTE_P1 | AC by GA, Nicolaidis |
| EV-87 | ESAOTE_P1 | AFI by GA, Moore Cayle |
| EV-88 | ESAOTE_P1 | Binocular Distance by GA, Bernascheck |
| EV-89 | ESAOTE_P1 | Binocular Distance by GA, Merz 1995 |
| EV-90 | ESAOTE_P1 | BPD by GA, CFEF |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|---|
| EV-91 | ESAOTE_P1 | BPD by GA, JSUM 2001 |
| EV-92 | ESAOTE_P1 | BPD by GA, Nicolaides |
| EV-93 | ESAOTE_P1 | Cisterna Magna by GA, Nicolaides |
| EV-94 | ESAOTE_P1 | CRL by GA, Hadlock |
| EV-95 | ESAOTE_P1 | CRL by GA, JSUM 2001 |
| EV-96 | ESAOTE_P1 | CRL by GA, Robinson 1975 |
| EV-97 | ESAOTE_P1 | Ear Length by GA, Lettieri |
| EV-98 | ESAOTE_P1 | Femur length by GA, CFEF |
| EV-99 | ESAOTE_P1 | Fibula Length by GA, Merz 1988 |
| EV-100 | ESAOTE_P1 | HC by GA, CFEF |
| EV-101 | ESAOTE_P1 | Interocular Distance by GA, Bernascheck |
| EV-102 | ESAOTE_P1 | Interocular Distance by GA, Merz 1995 |
| EV-103 | ESAOTE_P1 | Lateral Ventricle by GA, Pretorius |
| EV-104 | ESAOTE_P1 | Nose Bone Length by GA, Guisville |
| EV-105 | ESAOTE_P1 | OFD by GA, Jeanty Romero |
| EV-106 | ESAOTE_P1 | TAD by GA, CFEF |
| EV-107 | ESAOTE_P1 | TAD by GA, Eriksen |
| EV-108 | ESAOTE_P1 | UL by GA, Jeanty 1984 |
| EV-109 | ESAOTE_P1 | APAD, Eriksen 1985 |
| EV-110 | ESAOTE_P1 | BPD, Bessis |
| EV-111 | ESAOTE_P1 | FL, Bessis |
| EV-112 | ESAOTE_P1 | Length of Vertebra, Todai |
| EV-113 | ESAOTE_P1 | Length Of Vertebra |
| EV-114 | ESAOTE_P1 | Binocular Distance |
| EV-115 | ESAOTE_P1 | Ear Length |
| EV-116 | ESAOTE_P1 | Interocular Distance |
| EV-117 | ESAOTE_P1 | Nose Bone Length |
| EV-118 | ESAOTE_P1 | EFW by GA, Hadlock 1982 |
| EV-119 | ESAOTE_P1 | YES |
| EV-120 | ESAOTE_P1 | NO |
| EV-121 | ESAOTE_P1 | Spiral Artery |
| EV-122 | ESAOTE_P1 | AC by GA, Paladini 2005 |
| EV-123 | ESAOTE_P1 | APAD by GA, Merz 1996 |
| EV-124 | ESAOTE_P1 | BPD by GA, Paladini 2005 |
| EV-125 | ESAOTE_P1 | EFW by BPD, MAD, Persson |
| EV-126 | ESAOTE_P1 | EFW by BPD, MAD, FL, Persson |
| EV-127 | ESAOTE_P1 | FL by GA, Paladini 2005 |
| EV-128 | ESAOTE_P1 | HC by GA, Paladini 2005 |
| EV-129 | ESAOTE_P1 | HL by GA, Paladini 2005 |
| EV-130 | ESAOTE_P1 | OFD by GA, Nicolaides 1994 FG |
| EV-131 | ESAOTE_P1 | RL by GA, Paladini 2005 |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|--------------------------------------|
| EV-132 | ESAOTE_P1 | TL by GA, Jeanty 1984 |
| EV-133 | ESAOTE_P1 | TL by GA, Paladini 2005 |
| EV-134 | ESAOTE_P1 | TAD by GA, Merz 1996 |
| EV-135 | ESAOTE_P1 | TCD by GA, Nicolaidis 1994 |
| EV-136 | ESAOTE_P1 | UL by GA, Paladini 2005 |
| EV-137 | ESAOTE_P1 | TCD, Goldstein 1987 |
| EV-138 | ESAOTE_P1 | TCD, Hill 1990 |
| EV-139 | ESAOTE_P1 | BPD by GA, Jeanty |
| EV-140 | ESAOTE_P1 | FL by GA, Jeanty |
| EV-141 | ESAOTE_P1 | HC by GA, Jeanty |
| EV-142 | ESAOTE_P1 | HL by GA, Merz |
| EV-143 | ESAOTE_P1 | HL by GA, Jeanty |
| EV-144 | ESAOTE_P1 | OFD by GA, Jeanty |
| EV-145 | ESAOTE_P1 | FTA, Osaka |
| EV-146 | ESAOTE_P1 | HL, Osaka |
| EV-147 | ESAOTE_P1 | AC by GA, Jeanty |
| EV-148 | ESAOTE_P1 | HL, Jeanty |
| MN-04 | ESAOTE_P1 | Acceleration |
| MN-11 | ESAOTE_P1 | Reflux Duration Time |
| MN-13 | ESAOTE_P1 | Fibroma Width |
| MN-14 | ESAOTE_P1 | Left Ovary Mass Width |
| MN-15 | ESAOTE_P1 | RightOvary Mass Width |
| MN-16 | ESAOTE_P1 | Fibroma Length |
| MN-17 | ESAOTE_P1 | Left Ovary Mass Length |
| MN-18 | ESAOTE_P1 | Right Ovary Mass Length |
| MN-19 | ESAOTE_P1 | Fibroma Height |
| MN-20 | ESAOTE_P1 | Left Ovary Mass Height |
| MN-21 | ESAOTE_P1 | Right Ovary Mass Height |
| MN-22 | ESAOTE_P1 | Fibroma Volume |
| MN-23 | ESAOTE_P1 | Left Ovary Mass Volume |
| MN-24 | ESAOTE_P1 | Right Ovary Mass Volume |
| MN-25 | ESAOTE_P1 | Time Averaged Velocity |
| MN-26 | ESAOTE_P1 | Vessel Thickness |
| MN-27 | ESAOTE_P1 | Reverse Velocity |
| MN-28 | ESAOTE_P1 | Diastolic To Systolic Velocity Ratio |
| MN-29 | ESAOTE_P1 | Fetal Mass Volume |
| MN-30 | ESAOTE_P1 | Mass Volume |
| MN-31 | ESAOTE_P1 | Fetal Mass Width |
| MN-32 | ESAOTE_P1 | Mass Width |
| MN-33 | ESAOTE_P1 | Fetal Mass Length |
| MN-34 | ESAOTE_P1 | Mass Length |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|---|
| MN-35 | ESAOTE_P1 | Fetal Mass Height |
| MN-36 | ESAOTE_P1 | Mass Height |
| FS-01 | 99ESA_P1 | Dialysis Graft |
| AG-01 | 99ESA_P1 | Superficial Vein |
| AG-02 | 99ESA_P1 | Deep Vein |
| AG-03 | 99ESA_P1 | Segmental Artery 1 |
| AG-04 | 99ESA_P1 | Segmental Artery 2 |
| AG-05 | 99ESA_P1 | Arterial Vessel |
| AG-06 | 99ESA_P1 | Arterial Anastomosis |
| AG-07 | 99ESA_P1 | Arterial Graft |
| AG-08 | 99ESA_P1 | Not Applicable |
| AG-09 | 99ESA_P1 | III Ventricular |
| AG-10 | 99ESA_P1 | Venous Vessel |
| AG-11 | 99ESA_P1 | Puncture1 |
| AG-12 | 99ESA_P1 | Puncture2 |
| AG-13 | 99ESA_P1 | Puncture3 |
| AG-14 | 99ESA_P1 | Venous Junction |
| AG-15 | 99ESA_P1 | Outflow Vessel |
| TM-01 | 99ESA_P1 | Upper Pole |
| TM-02 | 99ESA_P1 | Lower Pole |
| RM-01 | 99ESA_P1 | Superior Mesenteric Artery/Aorta Velocity Ratio |
| RM-02 | 99ESA_P1 | Proximal Renal Artery/Aorta Velocity Ratio |
| RM-03 | 99ESA_P1 | Distal Renal Artery/Aorta Velocity Ratio |
| RM-04 | 99ESA_P1 | Mid Renal Artery/Aorta Velocity Ratio |
| MFS-01 | 99ESA_P1 | Anterior Mitral Annulus |
| MFS-02 | 99ESA_P1 | Inferior Mitral Annulus |
| MFS-03 | 99ESA_P1 | Septal Mitral Annulus |
| MN-100 | 99ESA_P1 | QAS Diameter Distension |
| MN-101 | 99ESA_P1 | QAS Diameter Distension Standard Deviation |
| MN-102 | 99ESA_P1 | QAS Mean Diameter |
| MN-103 | 99ESA_P1 | QAS Mean Diameter Standard Deviation |
| MN-104 | 99ESA_P1 | QAS Brachial Pressure |
| MN-105 | 99ESA_P1 | Quality Intima Media Thickness |
| MN-106 | 99ESA_P1 | Quality Intima Media Thickness Standard Deviation |
| MN-107 | 99ESA_P1 | QIMT Diameter |
| MN-108 | 99ESA_P1 | QIMT Diameter Standard Deviation |
| MN-109 | 99ESA_P1 | QIMT ROI Width |
| MN-110 | 99ESA_P1 | Delta CSA |
| MN-111 | 99ESA_P1 | III Ventricular Width |
| MN-112 | 99ESA_P1 | Venous Hemodynamic Insufficiency Severity Score |
| MN-113 | 99ESA_P1 | Chronic Cerebrospinal Venous Insufficiency |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|---|
| MN-114 | 99ESA_P1 | Min Velocity |
| MN-115 | 99ESA_P1 | Max Velocity |
| MN-116 | 99ESA_P1 | QSC Compliance Coefficient |
| MN-117 | 99ESA_P1 | QSC Distensibility Coefficient |
| MN-118 | 99ESA_P1 | QSC Alpha Coefficient |
| MN-119 | 99ESA_P1 | QSC Beta Coefficient |
| MN-120 | 99ESA_P1 | QSC Pulse Wave Velocity |
| MN-121 | 99ESA_P1 | DWC Local Systolic Pressure |
| MN-122 | 99ESA_P1 | DWC Local Diastolic Pressure |
| MN-123 | 99ESA_P1 | DWC Isovolumetric Contraction Period |
| MN-124 | 99ESA_P1 | DWC Ejection Duration |
| MN-125 | 99ESA_P1 | DWC Inflection Point P_T1 |
| MN-126 | 99ESA_P1 | DWC Augmentation Index |
| MN-127 | 99ESA_P1 | DWC Augmented Pressure |
| MN-128 | 99ESA_P1 | Expected QIMT |
| MN-129 | 99ESA_P1 | Aortic Area To BSA Ratio |
| MN-130 | 99ESA_P1 | LV Diastolic Volume To BSA Ratio |
| MN-131 | 99ESA_P1 | LV Systolic Volume To BSA Ratio |
| MN-132 | 99ESA_P1 | IVC Size To BSA Ratio |
| MN-133 | 99ESA_P1 | Left Atrium Length |
| MN-134 | 99ESA_P1 | Left Atrium Systolic Volume To BSA Ratio |
| MN-135 | 99ESA_P1 | Aortic Coaptation Line |
| MN-136 | 99ESA_P1 | Aortic Excentricity Index |
| MN-137 | 99ESA_P1 | Aortic Permeability Index |
| MN-138 | 99ESA_P1 | Aortic Valve Area by Continuity |
| MN-139 | 99ESA_P1 | Aortic Valve Area by Continuity To BSA Ratio |
| MN-140 | 99ESA_P1 | Aortic Valve Closure Time |
| MN-141 | 99ESA_P1 | Aortic Valve Opening Time |
| MN-142 | 99ESA_P1 | Aortic Valve PreEjection Time |
| MN-143 | 99ESA_P1 | A-Wave Peak Gradient |
| MN-144 | 99ESA_P1 | A'-Wave Peak Velocity |
| MN-145 | 99ESA_P1 | DVI_LVOT Peak Velocity To Aorta Peak Velocity Ratio |
| MN-146 | 99ESA_P1 | Ejection Time |
| MN-147 | 99ESA_P1 | E-Septum Distance |
| MN-148 | 99ESA_P1 | E'-Wave Peak Velocity |
| MN-149 | 99ESA_P1 | Inferior Vena Cava Collapsability Index |
| MN-150 | 99ESA_P1 | Interventricular Mechanical Delay |
| MN-151 | 99ESA_P1 | IVC Max Diameter To IVC Min Diameter Ratio |
| MN-152 | 99ESA_P1 | Left Ventricle Mass To BSA Ratio |
| MN-153 | 99ESA_P1 | Mean Lateral-Septal Early Diastolic Tissue Velocity |
| MN-154 | 99ESA_P1 | Mean Lateral-Septal Tissue Velocity During Atrial Systole |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|--|
| MN-155 | 99ESA_P1 | Mitral Annular Plane Systolic Excursion |
| MN-156 | 99ESA_P1 | Mitral Valve Closure Time |
| MN-157 | 99ESA_P1 | Mitral Valve Coaptation Depth |
| MN-158 | 99ESA_P1 | Mitral Valve Opening Time |
| MN-159 | 99ESA_P1 | Mitral Valve Tenting Area |
| MN-160 | 99ESA_P1 | PDA Patent Ductus Arteriosus |
| MN-161 | 99ESA_P1 | Post Peak Velocity |
| MN-162 | 99ESA_P1 | Post Peak Velocity To Rest Peak Velocity Ratio |
| MN-163 | 99ESA_P1 | Pulmonary Artery Area |
| MN-164 | 99ESA_P1 | Pulmonary Artery Diameter |
| MN-165 | 99ESA_P1 | Pulmonary Artery Pressure Offset |
| MN-166 | 99ESA_P1 | Pulmonary Mitral A-wave Duration Difference |
| MN-167 | 99ESA_P1 | Pulmonary Valve PreEjection Time |
| MN-168 | 99ESA_P1 | Ratio Of LV Peak Tissue Velocity E To LV Peak Tissue Velocity A |
| MN-169 | 99ESA_P1 | Ratio Mean LV Peak Tissue Vel E To Mean LV Peak Tissue Vel A |
| MN-170 | 99ESA_P1 | Ratio Of MV Peak Velocity To Mean LV Peak Tissue Velocity E-Wave |
| MN-171 | 99ESA_P1 | Ratio Of RV Peak Tissue Velocity E To RV Peak Tissue Velocity A |
| MN-172 | 99ESA_P1 | Ratio Tricuspid Peak Vel To RV Peak Tissue Vel E-Wave |
| MN-173 | 99ESA_P1 | Rest Peak Velocity |
| MN-174 | 99ESA_P1 | Right Atrium Length |
| MN-175 | 99ESA_P1 | Right Atrium Volume |
| MN-176 | 99ESA_P1 | Right Ventricle Outflow Tract Area |
| MN-177 | 99ESA_P1 | Right Ventricle Outflow Tract Diameter |
| MN-178 | 99ESA_P1 | Right Ventricular Area |
| MN-179 | 99ESA_P1 | Right Ventricular Basal Dimension |
| MN-180 | 99ESA_P1 | Right Ventricular Fractional Area Change |
| MN-181 | 99ESA_P1 | Right Ventricular Longitudinal Dimension |
| MN-182 | 99ESA_P1 | Right Ventricular Mid Cavity Dimension |
| MN-183 | 99ESA_P1 | Right Ventricular Volume |
| MN-184 | 99ESA_P1 | RV Diameter To LV Diameter Ratio |
| MN-185 | 99ESA_P1 | Septum To Posterior Wall Delay |
| MN-186 | 99ESA_P1 | S'-Wave Peak Velocity |
| MN-187 | 99ESA_P1 | S-Wave Peak Velocity |
| MN-188 | 99ESA_P1 | Time To Onset Anterior Wall |
| MN-189 | 99ESA_P1 | Time To Onset Inferior Wall |
| MN-190 | 99ESA_P1 | Time To Onset Lateral Wall |
| MN-191 | 99ESA_P1 | Time To Onset Septal Wall |
| MN-192 | 99ESA_P1 | Time To Peak Anterior Wall |
| MN-193 | 99ESA_P1 | Time To Peak Inferior Wall |
| MN-194 | 99ESA_P1 | Time To Peak Lateral Wall |
| MN-195 | 99ESA_P1 | Time To Peak Septal Wall |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|-----------------------------------|---|--|
| MN-196 | 99ESA_P1 | Tricuspid Annular Plane Systolic Excursion |
| MN-197 | 99ESA_P1 | E-Wave Peak Gradient |
| MN-198 | 99ESA_P1 | LV Diastolic Area To BSA Ratio |
| ABD-01 | 99ESA_P1 | Anatomic Structures |
| ABD-02 | 99ESA_P1 | Anatomic Structures (unilateral) |
| ABD-03 | 99ESA_P1 | Kidney mass 1 |
| ABD-04 | 99ESA_P1 | Kidney mass 2 |
| ABD-04A | 99ESA_P1 | Kidney cyst 1 |
| ABD-05 | 99ESA_P1 | Kidney cyst 2 |
| ABD-06 | 99ESA_P1 | Kidney calculi 1 |
| ABD-07 | 99ESA_P1 | Kidney calculi 2 |
| ABD-08 | 99ESA_P1 | Kidney pelvis |
| ABD-09 | 99ESA_P1 | Cortex/Medulla RT |
| ABD-10 | 99ESA_P1 | Ureter wall |
| ABD-11 | 99ESA_P1 | Ureter calculi 1 |
| ABD-12 | 99ESA_P1 | Ureter calculi 2 |
| ABD-13 | 99ESA_P1 | Adrenal cranial pole |
| ABD-14 | 99ESA_P1 | Adrenal gland mass 1 |
| ABD-15 | 99ESA_P1 | Adrenal gland mass 2 |
| ABD-16 | 99ESA_P1 | Urinary bladder wall |
| ABD-17 | 99ESA_P1 | Urinary bladder calc 1 |
| ABD-18 | 99ESA_P1 | Urinary bladder calc 2 |
| ABD-19 | 99ESA_P1 | Urinary bladder mass 1 |
| ABD-20 | 99ESA_P1 | Urinary bladder mass 2 |
| ABD-21 | 99ESA_P1 | Post void bladder volume |
| ABD-22 | 99ESA_P1 | Pancreas body |
| ABD-23 | 99ESA_P1 | Pancreas lobe |
| ABD-24 | 99ESA_P1 | Pancreas duct |
| ABD-25 | 99ESA_P1 | Pancreas mass 1 |
| ABD-26 | 99ESA_P1 | Pancreas mass 2 |
| ABD-27 | 99ESA_P1 | Pancreas cyst 1 |
| ABD-28 | 99ESA_P1 | Pancreas cyst 2 |
| ABD-29 | 99ESA_P1 | Spleen mass 1 |
| ABD-30 | 99ESA_P1 | Spleen mass 2 |
| ABD-31 | 99ESA_P1 | Stomach body |
| ABD-32 | 99ESA_P1 | Stomach fundus |
| ABD-33 | 99ESA_P1 | Stomach pylorus |
| ABD-34 | 99ESA_P1 | Mucosa |
| ABD-35 | 99ESA_P1 | Muscularis |
| ABD-36 | 99ESA_P1 | Pyl mucosa/musc |
| ABD-37 | 99ESA_P1 | Liver mass 1 |

| Code Value (0008,0100) | Coding Scheme designator (0008,0102) | Code Meaning (0008,0104) |
|------------------------|--------------------------------------|----------------------------|
| ABD-38 | 99ESA_P1 | Liver mass 2 |
| ABD-39 | 99ESA_P1 | Gallbladder wall |
| ABD-40 | 99ESA_P1 | Gallbladder calculi 1 |
| ABD-41 | 99ESA_P1 | Gallbladder calculi 2 |
| ABD-42 | 99ESA_P1 | Prostate lobe |
| ABD-43 | 99ESA_P1 | Cortex |
| ABD-44 | 99ESA_P1 | Medulla |
| ABD-45 | 99ESA_P1 | Urinary bladder |
| ABD-46 | 99ESA_P1 | Ratio distance |
| CALC_VALUE | 99ESA_C1 | Calculation Value |
| CUSTOMFIND | 99ESA_C1 | Custom Findings |
| EVAL_VALUE | 99ESA_C1 | Evaluation Value |
| MEAS | 99ESA_C1 | Custom Measurement |
| MACROMEAS | 99ESA_C1 | Custom Macromasurement |
| MACROLABEL | 99ESA_C1 | Macromasurement Label |
| MEASLABEL | 99ESA_C1 | Measurement Label |
| MEAS_VALUE | 99ESA_C1 | Measurement Value |
| CN-100 | 99ESA_C1 | Fetal Custom Section |
| CN-101 | 99ESA_C1 | Fetal Custom Group |
| CN-102 | 99ESA_C1 | Custom GA |
| CN-103 | 99ESA_C1 | Custom Growth |
| CN-104 | 99ESA_C1 | Maternal Custom Section |
| CN-105 | 99ESA_C1 | Maternal Custom Group |
| CN-106 | 99ESA_C1 | Gyn Custom Section |
| CN-107 | 99ESA_C1 | Gyn Custom Macromasurement |

8.7 STANDARD EXTENDED / SPECIALIZED / PRIVATE SOP CLASSES

No Specialized or Private SOP Classes are supported.

8.7.1 US, US Multiframe and Secondary Capture Image Storage SOP Classes

The US, US Multiframe and Secondary Capture Image Storage, and Comprehensive SR Storage SOP Classes are extended to create Standard Extended SOP Classes by addition of standard and private attributes to the created SOP Instances as documented in Section 8.1.

8.8 PRIVATE TRANSFER SYNTAXES

No Private Transfer Syntaxes are supported.