Clinical*Express*® V 6.1
DICOM Conformance Statement

Revision: 2.5

February/2021

DICOM CONFORMANCE STATEMENT VIDAR ClinicalExpress

1.EXECUTIVE OVERVIEW

The ClinicalExpress version 6.1 application is an acquisition station, primarily intended to digitize films, including mammography images, and can also be used to scan paper documents and convert these into DICOM encoded images. The application has the capability to view the acquired images, perform image manipulations, associate images digitized with patient demographics, send images to a DICOM storage class service provider and/or print them. Information about the images and corresponding procedure is exchanged in the form of the DICOM workflow management services Modality Performed Procedure Step (MPPS) and Storage Commitment (STC). In addition, as an option, one can retrieve the patient demographic information from an Information System to avoid having to re-type that information.

The most important DICOM characteristic of this device is the supported SOP Classes and the respective roles (Service Class User or Provider, SCU/SCP), which is listed below:

Table 1.1
SUPPORTED SOP CLASSES

Networking SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Image Transfer and Verification:		
Verification	Yes	Yes
Digital Mammography X-Ray Image Storage – For Presentation	Yes	No
Secondary Capture Image Storage	Yes	No
Query/Retrieve		
Patient Root Query/Retrieve Information Model - FIND	Yes	No
Workflow:		
Modality Work list	*OPTION (see note)*	No
Storage Commitment Push Model	*OPTION (see note)*	No
Modality Performed Procedure Step	*OPTION (see note)*	No
Print Management:		
Basic Grayscale Print management META SOP class	Yes	No
Presentation LUT	Yes	No

Note: Workflow DICOM services are a purchasable option; contact VIDAR for details.

Table 1.2
MEDIA SERVICES

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Compact Disk - Recordable		
General Purpose CD-R	Yes	Yes

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2.GENERAL

2.1.Revision History:

Version 1.0: initial version	HJO	2000-10-31
Version 1.1: changed implementation UID	HJO	2000-11-01
Version 1.3: formatting changes and adding Modality Work list;	HJO	2002-12-19
Version 1.3.2: Add SOP Specific behavior regarding splitting images	HJO	2003-09-24
Version 1.4.0. Formatting	JMF	2004-03-04
Version 2.0: Add Print and details about Presentation LUT	HJO	2004-09-24
Version 2.1: Add Attributes and CD (PDI) support as well as Q/R	HJO	2005-09-25
Version 2.2: Add MPPS and STC	HJO	2006-12-01
Version 2.2: Add Mammography capability	HJO	2007-12-10
Version 2.4: Add Additional Tags for Acquisition Date and Time and Primary Derived option	RFM	2011-08-01

2.2.Abbreviations and Acronyms:

ASCII	American Standard Code for Information Interchange
AE	Application Entity
ANSI	American National Standards Institute
DICOM	Digital Imaging and Communications in Medicine
IE	Information Entity
IOD	Information Object Definition
ISO	International Standards Organization
MG	Mammography
MPPS	Modality Performed Procedure Step
OSI	Open Systems Interconnection
PDU	Protocol Data Unit
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
STC	Storage Commitment
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
VR	Value Representation

2.3.References and Resources:

- "Digital Imaging and Communications in Medicine (DICOM) standard", NEMA PS 3.1-3.18, 2007, http://medical.nema.org

- "DICOM Basics", www.otechimg.com

3. SCOPE

This DICOM Conformance statement documents the conformance of the *ClinicalExpress Version 6.1* software with the Digital Imaging and Communications in Medicine (DICOM) standard. This document is essential in order to evaluate whether or not another DICOM compliant device can communicate with this software product. This statement is conformant with the recommended format as described in PS 3.2 of the DICOM Standard[1].

3.1.How to use this document:

This statement consists of 5 important features that one should compare with other devices in order to determine connectivity:

1. Implementation model: The Implementation Model describes the functional relationship between the device, the so-called "real-world activities" which initiate a certain DICOM functionality, and the DICOM services. A DICOM service is implemented on a device by a software process, which is called an "Application Entity" (AE). Each AE has a unique name called the AE Title, which is used to identify it to other AE's. The AE Title is configurable to avoid two devices with the same name on a network. The "bubble diagram" (Application Data Flow Diagram) shows the interaction of the AE with the outside world across the dashed line, i.e. the DICOM interface.

2. AE Specifications: Each AE supports one or more Service-Object-Pair classes or SOP Class, which define the basic functionality. A SOP class consists of a combination of an Object or Information model with specific DICOM services. An example of such a SOP Class is the CT Image Storage Class, which consists of the combination of the DICOM C_STORE command with the CT Image object. Each of these classes is uniquely identified by an Unique Identification number (UID), which is issued by the NEMA. In addition, the "role" of the AE is specified, i.e. User or Provider, which can be compared with acting as a Client or Server. In DICOM terms, this is called a Service Class User or Service Class Provider (SCU or SCP).

In order to interconnect with another device, the SOP classes as well as their role (SCU or SCP) have to be matched, i.e. a SCU has to match a SCP at another device with an identical SOP class. Make sure to compare the SOP Class UID itself, not the description because there are SOP classes which have the same name, but support a different (newer) Object, which is identified by a different SOP Class UID.

3. Presentation Context: Each SOP class supports a particular presentation context, which is the combination of the SOP Class as specified under (2) and the Transfer Syntax. The Transfer Syntax defines the encoding of the DICOM basic elements, i.e. its attributes and how the data is represented i.e. with a data type definition. The encoding of the data type as part of the message, or Value Representation (VR), can be done in two ways - implicitly or explicitly. If a device supports an Explicit VR transfer syntax, it means that the transmitted data will include the VR information along with data and attribute tags. Implicit VR means that the VR information will not be included, and the receiving application must determine the VR type from the Attribute Tag. For example, when receiving the Attribute "Patient Name" in explicit transfer syntax, there is an additional "Person Name" ("PN") field to identify the Value Representation. In the case of an implicit Value Representation, this is assumed to be known by the receiver and not explicitly specified that this field has a type of "Person Name".

The data can be communicated in the Intel or Motorola Byte ordering, AKA "Little Endian" or "Big Endian". This means that for certain 16 bit words; the two 8 bit Bytes might have to be swapped to be able to interpret the information by a device supporting a different byte ordering.

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[1] Digital Imaging and Communications in Medicine (DICOM) 3.0, NEMA PS 3.1-16, 2004

Lastly, compression can be applied, such as JPEG, which is specified in the transfer syntax. The Transfer syntax of two devices have to match in order for them to communicate.

4. Communication Profiles: This section specifies the communication options. In practice, each device always supports an Application level interface to the OSI level 4 (Transport layer), i.e. TCP/IP stack. However, the Physical Media of two devices have to match for connectivity. Note that matching physical media can be achieved by standard off the shelf devices. For example, if one device supports standard Ethernet 10BaseT, it can be bridged to a Fast Ethernet, ATM, or whatever is supported.

5. Supported Attributes: Many devices specify which DICOM attributes they require and/or store in their internal database. It is important to compare these against the source of the information, particularly if a device requires certain attributes to accomplish specific functionality such as 3-D viewing, image processing, etc. A mismatch could have the effect that certain functionality or applications might fail.

3.2.Warning to the reader:

If another device matches this conformance statement based on the comparison with its own conformance statement, there is a chance, but no guarantee that they interoperate. DICOM only deals with communication; it does not specify what is needed for certain Applications to run on a device.

4.IMPLEMENTATION MODEL

4.1.Application Data Flow

The ClinicalExpress version 6.1 software contains one single Application Entity dealing with the DICOM communication.

Figure 4.1 - 1 Application Data Flow Diagram
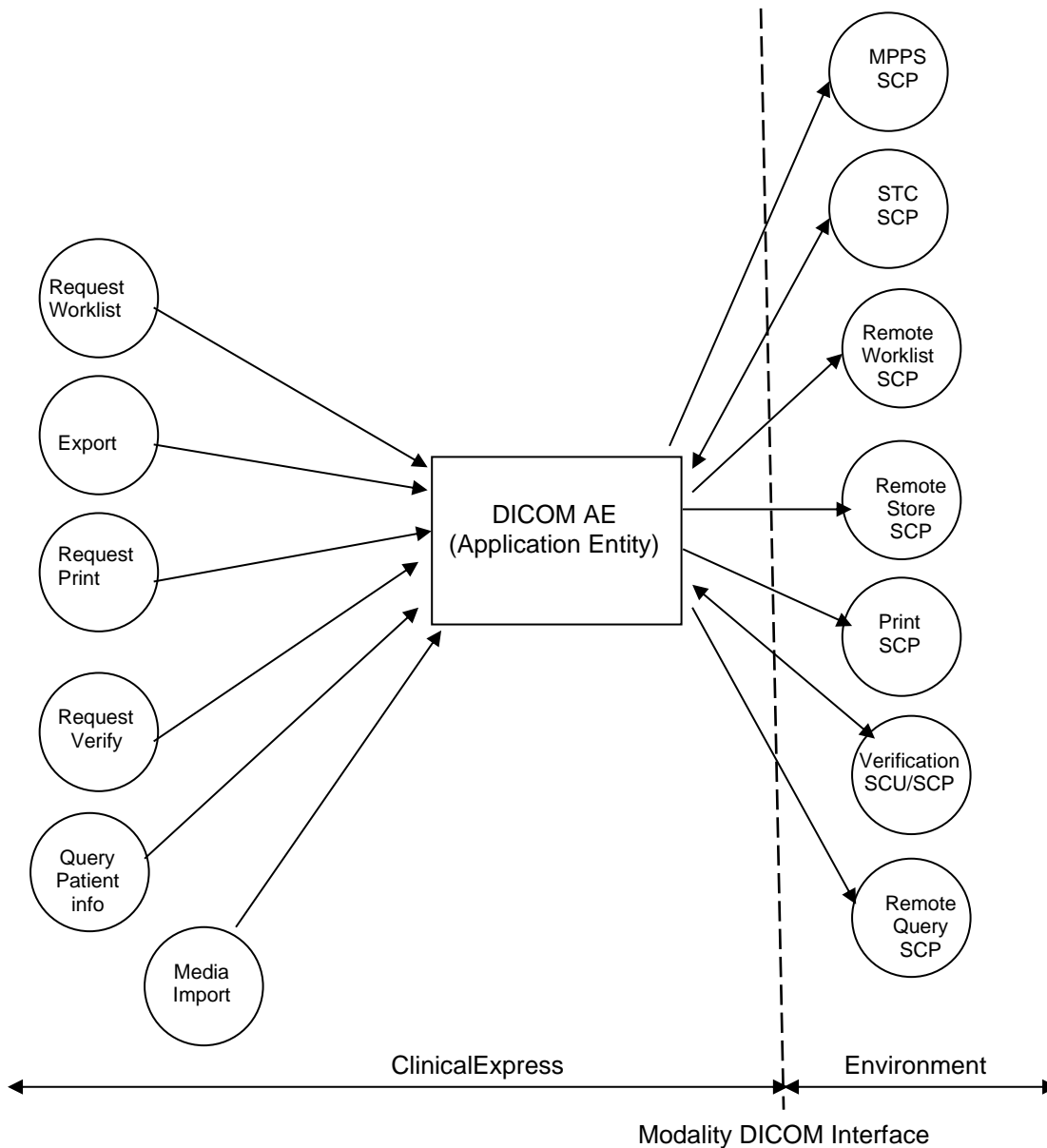
The DICOM Application Entity will initiate an Association to send films or paper documents that are digitized as so-called DICOM Secondary Capture or Digital Mammography (MG) to a destination. After

a successful Store, a Storage Commitment (STC) exchange will be initiated. The Modality Performed Procedure Step (MPPS) information is exchanged upon a new study creation and/or closure. It can initiate a Verification to an external device to find out whether another AE can respond and another device can sent a Verification to the DICOM AE. It can print images that are imported from a DICOM media or digitized to a Print SCP. The AE can also query the Remote Worklist using Modality Work List (MWL) provider for patient demographic information and verify the Patient information by querying a remote database.

4.2. Functional Definition of AE's

4.2.1. Functional Definition of the DICOM Application Entity

A user will generate a patient record, create a study, and digitize images. The images can be sent automatically after the film(s) or paper documents are digitized, or by a specific user request. The AE will then execute a Send request to transfer the image to its destination.

The user can initiate a Verification request from the main User Interface screen and the AE will reply to a Verification initiated by another device.

A user can print the images. In addition, a remote database can be queried to verify the patient information.

The Workflow services including Worklist, Modality Performed Procedure Step and Storage Commitment are an option: the Query button in the *Patient Information Dialog* will not be enabled unless a valid license exists for this module. A user will request patient demographic information from a Modality Work list provider by specifying the Accession Number, Patient ID and/or Patient Name.

The AE will initiate an initial MPPS transaction as soon as a new Study is created. The results of the study will be communicated with the final MPPS transaction as soon as the Study is closed.

Successful Store will cause the AE to exchange the Storage Commitment with the SCP.

4.3.Sequencing of Real-World Activities
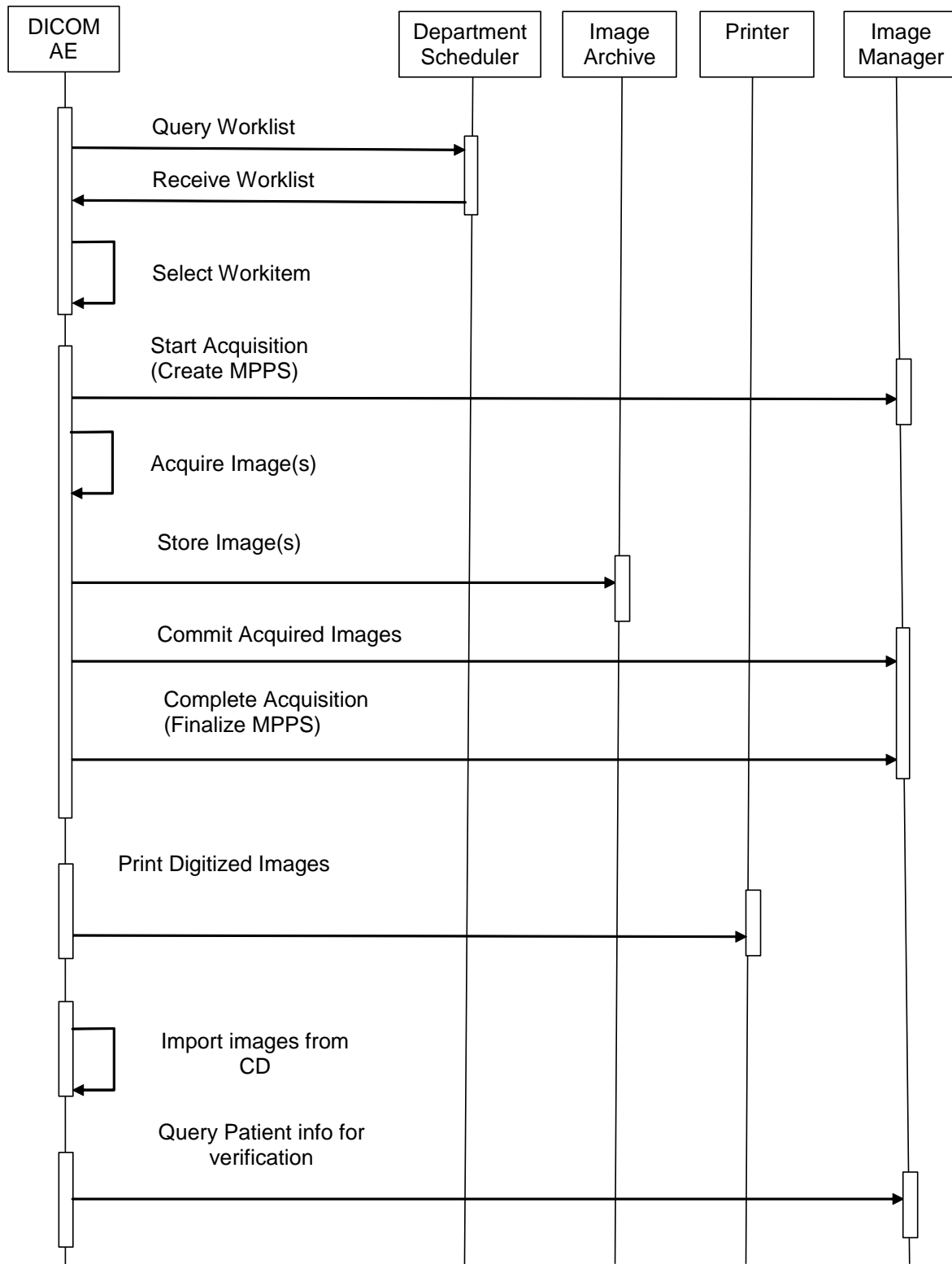
Under normal scheduled workflow conditions the sequencing constraints illustrated in the figure above apply:

1. Query Worklist

2. Receive Worklist

3. Select Work item from Worklist

4. Start the acquisition and create MPPS

5. Digitize the image(s) and/or documents

6. Store the images

7. Commit the stored images

8. Finalize the Study by sending the MPPS complete

9. If so desired, Print digitized images

10. Import images from a CD

11. Query patient information and, if applicable, coerce appropriate Attributes

Other workflow situations will have other sequencing constraints. It is possible to do a Work list query and Store and or Print operation simultaneously. (Store and/or Print can operate in the background).

4.4.AE Specifications

4.4.1.DICOM Application Entity Specification

4.4.1.1.SOP Classes

This application entity provides standard conformance to the following DICOM SOP classes:

Table 4.4.1.1-1 SOP Classes for DICOM AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	No
Basic Grayscale Print Management	1.2.840.10008.5.1.1.9	Yes	No
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.2.1.1	Yes	No
Presentation LUT	1.2.840.10008.5.1.1.23	Yes	No
Modality Work List Information Model - FIND	1.2.840.10008.5.1.4.31	Yes	No
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No

4.4.1.2.Association Establishment Policies

4.4.1.2.1.General

The DICOM standard application context name, which is always proposed, is DICOM 3.0:

Table 4.4.1.2.1 - 1 DICOM Application Context for DICOM AE

Application context name	1.2.840.10008.3.1.1.1

The PDU size is configurable and ranges from 4096-131072.

4.4.1.2.2.Number of Associations

Table 4.4.1.2.2 - 1 Number of Associations as a SCU for DICOM AE

Maximum number of simultaneous Associations for Store	10
Maximum number of simultaneous Associations for Print	Unlimited

4.4.1.2.3.Asynchronous Nature

Table 4.4.1.2.3 - 1 Asynchronous Nature as a SCU for DICOM AE

Maximum number of outstanding asynchronous transactions	1

4.4.1.2.4.Implementation Identifying Information

The implementation Information of this application is:

Table 4.4.1.2.4 - 1 DICOM Implementation Class and Version for DICOM AE

Implementation Class UID	1.2.826.0.1.3680043.2.241.1.1
Implementation version name	ClinExpV 4.0

4.4.1.3.Association Initiation Policy

4.4.1.3.1.Description of Real-World Activity "Export request"

Either a user will initiate sending one or more images, or they will be sent "as-you-go". These events will cause an association to be opened to a SC Store SCP.

4.4.1.3.1.1.Proposed Presentation Contexts

The DICOM AE acting as an SCU of the C-Store class proposes the following transfer syntaxes to exchange the instances being routed:

Table 4.4.1.3.1.1 – 1 Proposed Presentation Contexts for Activity Export Request

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossless, Non-hierarchical first-order prediction	1.2.840.10008.1.2.4.70	SCU	None
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
		DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1	SCU	None
		JPEG Lossless, Non-hierarchical first-order prediction	1.2.840.10008.1.2.4.70	SCU	None

4.4.1.3.1.2.SOP Specific Conformance for C-Store SCU

Both Implicit and Explicit VR are always proposed as Transfer Syntax; if the user selects "compression" the only transfer syntax that is proposed is JPEG.

If a single film contains multiple images, which is common for digital modalities such as CT, MR, or US, they can be split into multiple images by the user. Each image will be uniquely identified by its own, unique, SOP Instance UID, and are grouped in the same Series identified with a unique Series Instance UID.

Errors and warnings are logged. Normal user operation (e.g. digitizing films) will not be interrupted. The user can access the status as well as the log files.

The number of retries is configurable, 10 is the maximum value. The retry interval time depends on the queue size because the image to be resent will be put on the end of the send queue.

The following behavior will be implemented at the ClinicalExpress upon unsuccessful processing of the C-Store command by the SCP:

Table 4.4.1.3.1.2 – 1 Storage Response Status Handling Behavior

Returned Status Code	Error Comment	Behavior/Action
Error A7xx	Out of Resources	Result will be logged in the log file accessible through the User interface, the Association will be released.
Error A9xx	Data Set does not match SOP Class	
Error Cxxx	Cannot understand	
Warning B000	Coercion of Data Elements	Result will be logged as a warning in the log file, no action taken
Warning B007	Data Set does not match SOP Class	
Warning B006	Elements Discarded	

The pixel values in the SC images are normalized as so-called "P-Values", which means that if a receiver implements the Grayscale Standard Display Function (GSDF) as defined in NEMA p.s. 3.2 2004, the image display will closely match the original film appearance.

4.4.1.3.2. Description of Real-World Activity "Create and finalize MPPS"

The MPPS N-Create will be initiated upon a new Study Creation. The MPPS N-Set will be sent upon closing the Study.

4.4.1.3.2.1. Proposed Presentation Contexts

The DICOM AE acting as an SCU of the MPPS SOP Class proposes the following transfer syntaxes to exchange the instances being routed:

Table 4.4.1.3.2.1 – 1 Proposed Presentation Contexts for Create and Finalize MPPS Request

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

4.4.1.3.2.2. SOP Specific Conformance for MPPS SCU

The MPPS N-Create and N-Set are sent to the MPPS SCP; only a single MPPS SCP is allowed.

Sequencing:
   1) After every new study creation an N-Create request will be sent to the MPPS SCP.
   2) After every new study is closed (either by creating a new study or closing the application or

opening another study) an N-Set request will be sent to the MPPS SCP.
   3) The success/failure N-Create and N-Set requests will be logged.

The following behavior will be implemented at the ClinicalExpress upon unsuccessful processing of the C-Store command by the SCP:

Table 4.4.1.3.2.2 – 1 MPPS Response Status Handling Behavior

Returned Status Code	Error Comment	Behavior/Action
0000	Success	Successfully completed the MPPS
Other than 0000	Failure	Failed to complete the MPPS Create or Set;a warning entry is provided in the log screen for the user indicating that the MPPS notification has not been sent to the MPPS server. The behavior is identical for any MPPS error. The application does not attempt to retry sending the MPPS message.

4.4.1.3.2.3. MPPS Attributes

The following cases can be distinguished, each with their own set of Attribute conventions:

1. Unscheduled Case for digitizing and media import: No Modality Worklist, potential query from PACS database
2. Scheduled case for digitizing and media import : Modality Worklist

Table 4.4.1.3.2.3 - 1

1. MPPS N-CREATE / N-SET REQUEST IDENTIFIER FOR UNSCHEDULED CASE (NO MWL, POSSIBLE QUERY)

Attribute Name	Tag	N-CREATE	N-SET
Performed Procedure Step Relationship			
Scheduled Step Attributes Sequence	(0040,0270)	Always Present	
> Accession Number	(0008,0050)	Entered by user or used from image object in media if imported; 16 characters	Entered by user or used from image object in media if imported; 16 characters
> Referenced Study Sequence	(0008,1110)	Empty sequence	
>> Referenced SOP Class UID	(0008,1150)		
>> Referenced SOP Instance UID	(0008,1155)		
> Study Instance UID	(0020,000D)	Internally generated or used from image object in media if imported	

> Requested Procedure Description	(0032,1060)	Zero length	
> Scheduled Procedure Step Description	(0040,0007)	Zero length	
> Scheduled Protocol Code Sequence	(0040,0008)	Zero length	
>> Code Value	(0008,0100)		
>> Coding Scheme Designator	(0008,0102)		
>> Code Meaning	(0008,0104)		
> Scheduled Procedure Step ID	(0040,0009)	Zero length	
> Requested Procedure ID	(0040,1001)	Zero length	
Referenced Patient Sequence	(0008,1120)	Zero length	
Patient's Name	(0010,0010)	Entered by user or used from image object in media if imported: either Last name, Middle name or First name in 3 separate entry boxes; at least First name or Last names is required; 64 Characters max. Length for total field.	
Patient ID	(0010,0020)	Entered by user or used from image object in media if imported; 64 Characters max.	
Patient's Birth Date	(0010,0030)	Entered by user or used from image object in media if imported; 8 Bytes	
Patient's Sex	(0010,0040)	User selectable or used from image object in media if imported; M, F or O	
Performed Procedure Step Information			
Procedure Code Sequence	(0008,1032)		
> Code Value	(0008,0100)	Contains value, if present in the study screen or used from image object in media if imported	Contains value, if present in the study screen or used from image object in media if imported
> Coding Scheme Designator	(0008,0102)	Contains value, if present in the study screen or used from image object in media if imported	Contains value, if present in the study screen or used from image object in media if imported

> Code Meaning	(0008,0104)	Contains value, if present in the study screen or used from image object in media if imported	Contains value, if present in the study screen or used from image object in media if imported
Performed Station AE Title	(0040,0241)	ClinicalExpress AE Title	Not Applicable
Performed Station Name	(0040,0242)	ClinicalExpress Station Name	Not Applicable
Performed Location	(0040,0243)	Zero length	Not Applicable
Performed Procedure Step Start Date	(0040,0244)	Value entered by the user for the Study Date field or used from image object in media if imported.	Not Applicable
Performed Procedure Step Start Time	(0040,0245)	Value entered by the user for the Study Time field or used from image object in media if imported.	Not Applicable
Performed Procedure Step End Date	(0040,0250)	Zero length	Zero length
Performed Procedure Step End Time	(0040,0251)	Zero length	Zero length
Performed Procedure Step Status	(0040,0252)	IN PROGRESS	DISCONTINUED or COMPLETED
Performed Procedure Step ID	(0040,0253)	Automatically created or used from image object in media if imported	
Performed Procedure Step Description	(0040,0254)	Entered by user for the study description field or used from image object in media if imported; 64 characters	Entered by user for the study description field or used from image object in media if imported; 64 characters
Performed Procedure Type Description	(0040,0255)	Zero length	Zero length
Scheduled Step Attributes Sequence	(0040,0270)		
> Accession Number	(0008,0050)	Entered by user or used from image object in media if imported; 16 characters	
> Referenced Study Sequence	(0008,1110)	Zero length	
>> Referenced SOP Class UID	(0008,1150)		
>> Referenced SOP Instance	(0008,1155)		

UID			
> Study Instance UID	(0020,000D)	Automatically generated or used from image object in media if imported; not visible on UI	
> Requested Procedure Description	(0032,1060)	Zero length	
> Scheduled Procedure Step Description	(0040,0007)	Zero length	
> Scheduled Protocol Code Sequence	(0040,0008)	Zero length	
>> Code Value	(0008,0100)		
>> Coding Scheme Designator	(0008,0102)		
>> Code Meaning	(0008,0104)		
> Scheduled Procedure Step ID	(0040,0009)	Zero length	
> Requested Procedure ID	(0040,1001)	Zero length	
Image Acquisition Results			
Modality	(0008,0060)	User can select/enter the value or used from image object in media if imported	
Study ID	(0020,0010)	Entered by user or used from image object in media if imported; 16 Characters max.	
Performed Protocol Code Sequence	(0040,0260)	Zero length	Contains values:
> Code Value	(0008,0100)		Contain the value as specified in the Series screen or used from image object in media if imported
> Coding Scheme Designator	(0008,0102)		Contain the value as specified in the Series screen or used from image object in media if imported
> Code Meaning	(0008,0104)		Contain the value as specified in the Series screen or used from image object in media if imported
Performed Series Sequence	(0040,0340)	Zero length	One or more items for each series created if the protocol name was specified in series screen or used from image

			object in media if imported
> Retrieve AE Title	(0008,0054)		Zero length
> Series Description	(0008,103E)		Entered by user or used from image object in media if imported; 64 Characters max.
> Referenced Image Sequence	(0008,1140)	Zero length	One or more items
>> Referenced SOP Class UID	(0008,1150)		SOP Classes of generated objects
>> Referenced SOP Instance UID	(0008,1155)		Instances of generated objects
> Protocol Name	(0018,1030)		Entered by user or used from image object in media if imported; 16 Characters max
> Series Instance UID	(0020,000E)		Internally generated
> Referenced Standalone SOP Instance Seq.	(0040,0220)	Zero length (SOP classes not supported)	Zero length (SOP classes not supported)

Table 4.4.1.3.2.3 - 2

2. MPPS N-CREATE / N-SET REQUEST IDENTIFIER FOR SCHEDULED CASE (MWL)

Attribute Name	Tag	N-CREATE	N-SET
Performed Procedure Step Relationship			
Scheduled Step Attributes Sequence	(0040,0270)	Always Present	
> Accession Number	(0008,0050)	From Worklist (User can edit)	From Worklist (User can edit)
> Referenced Study Sequence	(0008,1110)	Empty sequence	
>> Referenced SOP Class UID	(0008,1150)		
>> Referenced SOP Instance UID	(0008,1155)		
> Study Instance UID	(0020,000D)	From Worklist or used from image object in media if imported; not visible on UI	

> Requested Procedure Description	(0032,1060)	Zero length	
> Scheduled Procedure Step Description	(0040,0007)	From Worklist (User can edit this value through Study Description field; 64 characters)	
> Scheduled Protocol Code Sequence	(0040,0008)		
>> Code Value	(0008,0100)	From Worklist	
>> Coding Scheme Designator	(0008,0102)	From Worklist	
>> Code Meaning	(0008,0104)	From Worklist	
> Scheduled Procedure Step ID	(0040,0009)	From Worklist	
> Requested Procedure ID	(0040,1001)	From Worklist	
Referenced Patient Sequence	(0008,1120)	Zero length	
Patient's Name	(0010,0010)	From Worklist (User can edit: either Last name, Middle name or First name in 3 separate entry boxes; at least First name or Last name is required; 64 Characters max. Length for total field.)	
Patient ID	(0010,0020)	From Worklist (User can edit)	
Patient's Birth Date	(0010,0030)	From Worklist (User can edit)	
Patient's Sex	(0010,0040)	From Worklist (User can change)	
Performed Procedure Step Information			
Procedure Code Sequence	(0008,1032)		
> Code Value	(0008,0100)	Value mapped from Worklist's Requested Procedure Code Sequence - Code Value attribute (User can edit)	Value mapped from Worklist's Requested Procedure Code Sequence - Code Value attribute (User can edit)
> Coding Scheme Designator	(0008,0102)	Value mapped from Worklist's Requested Procedure Code Sequence - Coding Scheme Designator attribute (User can edit)	Value mapped from Worklist's Requested Procedure Code Sequence - Coding Scheme Designator attribute (User can edit)
> Code Meaning	(0008,0104)	Value mapped from Worklist's Requested Procedure Code Sequence - Code Meaning attribute (User can edit)	Value mapped from Worklist's Requested Procedure Code Sequence - Code Meaning attribute (User can edit)

Performed Station AE Title	(0040,0241)	ClinicalExpress AE Title	Not Applicable
Performed Station Name	(0040,0242)	ClinicalExpress Station Name	Not Applicable
Performed Location	(0040,0243)	Zero length	Not Applicable
Performed Procedure Step Start Date	(0040,0244)	Value mapped from Worklist's Scheduled Procedure Step Start Date attribute (User can edit this value through Study Date fields)	Not Applicable
Performed Procedure Step Start Time	(0040,0245)	Value mapped from Worklist's Scheduled Procedure Step Start Time attribute (User can edit this value through Study Time fields)	Not Applicable
Performed Procedure Step End Date	(0040,0250)	Zero length	Zero length
Performed Procedure Step End Time	(0040,0251)	Zero length	Zero length
Performed Procedure Step Status	(0040,0252)	IN PROGRESS	DISCONTINUED or COMPLETED
Performed Procedure Step ID	(0040,0253)	Automatically created	
Performed Procedure Step Description	(0040,0254)	Value mapped from Worklist's Scheduled Procedure Step Description attribute (User can edit this value through Study Description field)	Value mapped from Worklist's Scheduled Procedure Step Description attribute (User can edit this value through Study Description field)
Performed Procedure Type Description	(0040,0255)	Zero length	Zero length
Scheduled Step Attributes Sequence	(0040,0270)		
> Accession Number	(0008,0050)	From Worklist (User can edit)	
> Referenced Study Sequence	(0008,1110)	Zero length	
>> Referenced SOP Class UID	(0008,1150)		
>> Referenced SOP Instance UID	(0008,1155)		
> Study Instance UID	(0020,000D)	From Worklist; not visible on UI	
> Requested	(0032,1060)	Zero length	

Procedure Description			
> Scheduled Procedure Step Description	(0040,0007)	From Worklist (User can edit this value through Study Description field; 64 characters)	
> Scheduled Protocol Code Sequence	(0040,0008)		
>> Code Value	(0008,0100)	From Worklist	
>> Coding Scheme Designator	(0008,0102)	From Worklist	
>> Code Meaning	(0008,0104)	From Worklist	
> Scheduled Procedure Step ID	(0040,0009)	From Worklist	
> Requested Procedure ID	(0040,1001)	From Worklist	
Image Acquisition Results			
Modality	(0008,0060)	From Worklist (User can change the value)	
Study ID	(0020,0010)	Value mapped from Worklist's Requested Procedure ID attribute (User can edit)	
Performed Protocol Code Sequence	(0040,0260)	Zero length	Contains values:
> Code Value	(0008,0100)		Contain the value as specified in the Series screen
> Coding Scheme Designator	(0008,0102)		Contain the value as specified in the Series screen
> Code Meaning	(0008,0104)		Contain the value as specified in the Series screen
Performed Series Sequence	(0040,0340)	Zero length	One or more items for each series created if the protocol name was specified in series screen
> Retrieve AE Title	(0008,0054)		Zero length
> Series Description	(0008,103E)		Entered by user; 64 Characters max.
> Referenced Image Sequence	(0008,1140)	Zero length	One or more items
>> Referenced SOP Class UID	(0008,1150)		SOP Classes of generated objects

>> Referenced SOP Instance UID	(0008,1155)		Instances of generated objects
> Protocol Name	(0018,1030)		Entered by user; 16 Characters max
> Series Instance UID	(0020,000E)		Internally generated
> Referenced Standalone SOP Instance Seq.	(0040,0220)	Zero length (SOP classes not supported)	Zero length (SOP classes not supported)

4.4.1.3.3.Description of Real-World Activity "Storage Commitment"

The Storage Commitment transaction is initiated after a successful store of an image.

4.4.1.3.3.1.Proposed Presentation Contexts

The DICOM AE acting as an SCU of the Storage Commitment SOP class proposes the following transfer syntaxes to exchange the instances being routed:

Table 4.4.1.3.1.1 – 1 Proposed Presentation Contexts for Activity Storage Commitment

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Storage Commitment Push model SOP Class	1.2.840.10008. 1.20.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

4.4.1.3.3.2.SOP Specific Conformance for Storage Commitment SCU

4.4.1.3.3.2.1.Storage Commitment Operations (N-ACTION)

Success as well as errors and warnings are logged.

The following behavior will be implemented at the ClinicalExpress upon unsuccessful processing of the N-Action command by the SCP:

Table 4.4.1.3.1.2 – 1 Storage Commitment Response Status Handling Behavior

Returned Status Code	Error Comment	Behavior/Action
0000	Success	No action

Returned Status Code	Error Comment	Behavior/Action
Other than 0000	Failure	A warning entry is made in the log screen for the user, indicating that storage commitment request for that particular study failed. The application will retry sending the store commit message based on the timeout value configured in the UI.

STC targets can be the same as the Store target or a similar one, as mapped in the Store target property page.

4.4.1.3.3.2.2.Storage Commitment Notifications (N-EVENTREPORT)

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 (i.e. only associations established with archive devices).

The STC behavior regarding role reversal (i.e. whether it will use the same or a different Association for the STC reply) depends on the implementation by the SCP: it will accommodate both cases automatically without requiring any configuration:

   1) N-Action request will be sent for all the SOP objects of the stored study.
   2) The SCU will try to receive the N-event reports on the same association.
   3) If there are no N-event reports received in the same association, the SCU will wait to receive the response in a separate association.
   4) A time out will be triggered after the maximum wait time is over.
   5) In case of any error or maximum wait time out, the automatic retry will take place based on the 'Transmission Retries' and 'Retry Time' values. These values are configurable in the 'Local' page of the 'Administration' screen. (Same values used for Store and STC)

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

The behavior of DICOM AE when receiving particular status within the N-EVENT-REPORT is summarized in the Table below.

Table 4.4.1.3.1.2 – 1 Storage Commitment Response Status Handling Behavior

Returned Status Code	Error Comment	Behavior/Action
0000	Success	Images that were sent and committed successfully, are allowed to be deleted from the local disk

Returned Status Code	Error Comment	Behavior/Action
Other than 0000	Failure	A warning entry is made in the log screen for the user, indicating that storage commitment for that particular study failed. The application will retry sending the store commit message based on the timeout value configured in the UI. The local images are not deleted until the maximum timeout value has been reached. A warning message is popped up to the user to confirm deleting the study if the user tries to delete it manually before storage commit succeeded or the maximum timeout value was reached. If the system runs out of disk space an auto deletion algorithm routine is initiated which will clear the local disk based the age of the study and the study status. In this auto deletion case a warning entry will be made in the log screen indicating that the study was not committed.

See section on "Association Acceptance Policy" for the case that the N_EVENTREPORT is received on a different Association.

4.4.1.3.4.Description of Real-World Activity "Query request"

A user will type a Patient Name or Patient ID. Fields also could be left blank to indicate universal matching for that field. The query will be initiated by clicking on a button from the user interface. A list containing one or more patients will be built from the response(s) and displayed to the user from which the user can pick out the necessary patient information.

4.4.1.3.4.1.Proposed Presentation Contexts

The DICOM AE acting as an SCU of the C-FIND class proposes the following transfer syntaxes to retrieve the information requested:

Table 4.4.1.3.2.1 – 1 Proposed Presentation Contexts for Activity Query Request

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.2.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

4.4.1.3.4.2.Extended Negotiation

No extended negotiation is performed. In particular, relational queries are not supported.

4.4.1.3.4.3.SOP Specific Conformance for C-FIND SCU

Table 4.4.1.3.2.3 - 1
PATIENT ROOT REQUEST IDENTIFIER FOR FIND-SCU

Name	Tag	Types of Matching
PATIENT Level		
Patient's ID	(0010,0020)	S,*,U
Patient's Name	(0010,0010)	S,*,U
Patient's Birth Date	(0010,0030)	NONE
Patient's Sex	(0010,0040)	NONE

Types of Matching:
An "S" indicates the identifier attribute uses Single Value Matching, an "*" indicates wildcard matching, a 'U' indicates Universal Matching. "NONE" indicates that no matching is supported, but that values for this Element are requested to be returned.

4.4.1.3.4.4. Response Status

Success will display a screen with the query results. The error/warning codes/messages are logged in the log window. The user can access the status as well as the log files.

The following behavior will be implemented at the ClinicalExpress upon unsuccessful processing of the C-Find command by the SCP:

Table 4.4.1.3.2.4 - 1
RESPONSE STATUS FOR FIND-SCU AND QUERY REMOTE AE REQUEST

Service Status	Further Meaning	Status Codes	Behavior
Refused	Out of Resources	A700	Result will be logged in the log file accessible through the User interface, the Association will be released. The query message result will be displayed as "Failed"
Error	Identifier does not match SOP Class	A900	
	Unable to process	Cxxx	
Cancel	Matching terminated due to Cancel request	FE00	If the query was cancelled then the Association will be released and the query is marked as cancelled. The status meaning is logged and reported to the user. However, the response items, which were returned before the query was cancelled, are displayed and available for further processing. The query message result will be displayed as "Cancelled"
Success	Matching is complete - No final Identifier is supplied	0000	The SCP has completed the matches. Query response items are displayed in a list from which the item needed could be picked out for further processing
Pending	Matches are continuing	FF00	The response item contained in the Identifier is added to the previous

---

	Matches are continuing – Warning that one or more Optional Keys were not supported	FF01	results and displayed in a list and thereby made available for further processing.
*	*	Any other status code.	The Association is aborted and the query is marked as failed. The status meaning is logged and reported to the user. Any additional error information if available will be logged. The query message result will be displayed as "Failed"

4.4.1.3.5.Description of Real-World Activity "Cancel Query request"

When the query process is in progress, the user can cancel the process from the application. When the user cancels through the user interface, ClinicalExpress will send a C-CANCEL FIND request to cancel the FIND operation.

4.4.1.3.6.Description of Real-World Activity "Print request"

A user will initiate printing one or more images. This event will cause an association to be opened to a Print SCP.

4.4.1.3.6.1.Proposed Presentation Contexts

The DICOM AE acting as an SCU of the Print class proposes the following transfer syntaxes:

Table 4.4.1.3.4.1 – 1 Proposed Presentation Contexts for Activity Print Request

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Basic Grayscale Print Management	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
Presentation LUT	1.2.840.10008.5.1.1.23	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

4.4.1.3.6.2.SOP Specific Conformance for Basic Print Management Meta SOP Class

The DICOM AE supports the Basic Film Session SOP Class, Basic Film Box SOP Class, Basic Grayscale Image Box SOP Class and Printer SOP Class of the Basic Grayscale Print Management Meta SOP Class.

Table 4.4.1.3.2.2 - 1lists the attributes and the value ranges of those attributes supported by the Print SCU AE for each supported DIMSE Service Element of the Basic Film Session SOP Class.

Table 4.4.1.3.4.2 - 1 Basic Film Session SOP Class Attributes

DIMSE Service Element	Supported Attributes		ValueRange
	Description	Tag	
N-CREATE	Number of Copies	(2000,0010)	1-10 From User Interface
	Medium Type	(2000,0030)	From User Interface

Table 4.4.1.3.2.2 - 2 lists the attributes and the value ranges of those attributes supported by the Print SCU AE for each supported DIMSE Service Element of the Basic Film Box SOP Class.

Table 4.4.1.3.4.2 - 2 Basic Film Box SOP Class Attributes

DIMSE Service Element	Supported Attributes		ValueRange
	Description	Tag	
N-CREATE	Image Display Format	(2010,0010)	STANDARD
	Film Orientation	(2010,0040)	PORTRAIT is default (when no value configured) From User Interface
	Film size ID	(2010,0050)	From User Interface
	Magnification Type	(2010,0060)	From User Interface
	Min Density	(2010,0120)	From User Interface
	Max Density	(2010,0130)	From User Interface
	Illumination	(2010,015E)	Only sent if Presentation LUT SOP Class has been negotiated.
	Reflective Ambient Light	(2010,0160)	Only sent if Presentation LUT SOP Class has been negotiated.
	Referenced Presentation LUT Sequence	(2050,0500)	Only sent if Presentation LUT SOP Class has been negotiated.
	>Referenced SOP Class UID	(0008,1150)	1.2.840.10008.5.1.1.23
	>Referenced SOP Instance UID	(0008,1155)	From created Presentation LUT SOP Instance

N-DELETE	None		
N-ACTION	None		

Table 4.4.1.3.2.2 - 3 lists the attributes and the value ranges of those attributes supported by the Print SCU AE for each supported DIMSE Service Element in the Basic Grayscale Image Box SOP Class.

Table 4.4.1.3.4.2 - 3 Image Box SOP Class Attributes

DIMSE Service Element	Supported Attributes		ValueRange
	Description	Tag	
N-SET	Magnification Type	(2010,0060)	From User Interface
	Image Position	(2020,0010)	1
	Requested Image Size	(2020,0030)	When Requested Image Size is configured as "ACTUAL" (see 4.6), the width of the image in mm; this attribute is not sent when Requested Image Size is configured with no value
	Basic Grayscale Image Sequence	(2020,0110)	N/A
	>Samples Per Pixel	(0028,0002)	1
	>Photometric Interpretation (0028,0004)	MONOCHROME2	
	>Rows	(0028,0010)	Depends on image size
	>Columns	(0028,0011)	Depends on image size
	>Pixel Aspect Ratio	(0028,0034)	1/1
	>Bits Allocated	(0028,0100)	8 or 16
	>Bits Stored	(0028,0101)	8, 12
	>High Bit	(0028,0102)	7, 11
	>Pixel Representation (0028,0103)	0	

Table 4.4.1.3.2.2 - 4lists the attributes and the value ranges of those attributes supported by the Print SCU AE for each supported DIMSE Service Element in the Basic Grayscale Image Box SOP Class.

Table 4.4.1.3.4.2 - 4 Printer SOP Class Attributes

DIMSE	Supported Attributes		
Service Element	Description	Tag	ValueRange

N-EVENT-REPORT	Printer Status Info	(2110,0020)	Any Value

The status that is returned from each Print command is always logged. In the case the return status is "success", or a "warning", the software will proceed to the next step, in the case of an error, the association is aborted.

4.4.1.3.6.3.SOP Specific Conformance for Presentation LUT Storage SOP Class

In order to provide consistent greyscale, there are two possibilities: either the device can apply a Presentation Look Up Table (LUT) to the pixel data, or the LUT can be exchanged with the printer. In either case, the DICOM AE generates an N_Create to exchange the information with the printer, assuming the printer supports this SOP Class. In the case where the device applies the LUT itself, the Presentation LUT Shape (2050,0020) has a value of "IDENTITY". In the case the LUT is exchanged, the actual LUT data as well as bit depth, first pixel value and number of LUT entries is exchanged. If a Print SCP has its printer calibrated to support the DICOM Grayscale Standard Display Function (GSDF) as defined in NEMA p.s. 3.2 2004, the printed images will closely match the original film appearance.

4.4.1.3.7.Description of Real-World Activity "Verification request"

The Verification request activity is initiated by the user by selecting this function from the main User Interface screen. The Association is established to a remote device and a C-Echo command executed.

4.4.1.3.7.1.Proposed Presentation Contexts

The DICOM AE acting as an SCU of the C-Echo class proposes the following transfer syntaxes to exchange the instances being routed:

Table 4.4.1.3.5.1 – 1 Proposed Presentation Contexts for Activity Verification Request

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

4.4.1.3.8.Description of Real-World Activity "Work list request"

A user will type an Accession number, Patient Name or Patient ID. Fields also could be left blank to indicate universal matching for that field. The query will be initiated by clicking on a button from the user interface. A list containing one or more work list items will be built from the response(s) and displayed to the user from which the user can pick out the necessary patient demographic information.

4.4.1.3.8.1.Proposed Presentation Contexts

The DICOM AE acting as an SCU of the C-Store class proposes the following transfer syntaxes to exchange the instances being routed:

Table 4.4.1.3.6.1 – 1 Proposed Presentation Contexts for Activity Work list Request

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext.
Name	UID	Name List	UID List		Neg.
Modality Work list information model - FIND	1.2.840.10008. 5.1.4.31	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

4.4.1.3.8.2.SOP Specific Conformance for C-Find SCU

If any other SCP response status than "Success" or "Pending" or "Cancelled" is received by ClinicalExpress Modality, a message "query failed" will appear on the user interface and the error/reason determined will be logged.

The behavior of ClinicalExpress Modality, when encountering status codes in a Modality Worklist C-FIND response, is summarized in the table below. If the query succeeds, the response identifiers will be displayed in a list in the user interface. Otherwise, a message will be displayed indicating whether the query failed or was cancelled. Errors, warnings and other statuses are logged in the log file accessible through the user interface.

Table 4.4.2.3.6.2 - 1: 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. Work list items are displayed in a list from which the item needed could be picked out for further processing.
Refused	Out of Resources	A700	Result will be logged in the log file accessible through the User interface, the Association will be released. The query message result will be displayed as "Failed"
Failed	Identifier does not match SOP Class	A900	
Failed	Unable to Process	C000 – CFFF	
Cancel	Matching terminated due to Cancel request	FE00	If the query was cancelled then the Association will be released and the work list query is marked as cancelled. The status meaning is logged and reported to the user. However, the work list items, which were returned before the query was cancelled, are displayed and available for further processing. The query message result will be displayed as "Cancelled"
Pending	Matches are continuing	FF00	The work list item contained in the Identifier is added to the previous results and displayed in a list and thereby made available for further processing.
Pending	Matches are continuing – Warning that one or more Optional Keys were not supported	FF01	
*	*	Any other status code.	The Association is aborted and the work list is marked as failed. The status meaning is logged and reported to the user. Any additional error information if available will be logged. The query message result will be displayed as

			"Failed"

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

Table 4.4.2.3.6.2 – 2: Modality Work list Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and the Worklist query marked as failed. The reason is logged and reported to the user.
Association aborted by the SCP or network layers	The work list query is marked as failed. The reason is logged and reported to the user.

The table below provides a description of the ClinicalExpress Modality Work list Request Identifier. 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 it filter out possible duplicate entries.

Table 4.4.2.3.6.2 – 3: Worklist Request Identifier-

Module Name/ Attribute Name	Tag	VR	M	R	Q	D
Imaging Service Request						
Accession Number	(0008,0050)	SH	S,*,?	X	X	X
Referring Physician Name	(0008,0090)	PN				
Requested Procedure						
Study Instance UID	(0020,000D)	UI		X		
Requested Procedure ID	(0040,1001)	SH	S,*,?	X	X	X
Referenced Study Sequence	(0008,1110)	SQ		X		
Referenced SOP Class UID	(0008,1150)	UI		X		
Referenced SOP Instance UID	(0008,1155)	UI		X		
Requested Procedure Code Sequence	(0032,1064)	SQ		X		
Code Value	(0008,0100)	SH		X		
Coding Scheme Designator	(0008,0102)	SH		X		
Code Meaning	(0008,0104)	LO		X		
Scheduled Procedure Step						
Modality	(0008,0060)	CS	S,*	X	X	X
Scheduled Station AE Title	(0040,0001)	AE	S,*,?	X	X	X
Scheduled Procedure Step Start Date	(0040,0002)	DA	S,R	X	X	X
Scheduled Procedure Step Start Time	(0040,0003)	TM		X		X
Scheduled Procedure Step ID	(0040,0009)	SH		X		
Scheduled Procedure Step Description	(0040,0007)	LO		X		
Scheduled Protocol Code Sequence	(0040,0008)	SQ		X		
Code Value	(0008,0100)	SH		X		
Coding Scheme Designator	(0008,0102)	SH		X		
Code Meaning	(0008,0104)	LO		X		

Patient Identification						
Patient Name	(0010,0010)	PN	S,*,?	X	X	X
Patient ID	(0010,0020)	LO	S,*,?	X	X	X
Other Patient IDs	(0010,1000)	LO		X		
Patient Demographic						
Patient's Birth Date	(0010,0030)	DA		X		X
Patient's Sex	(0010,0040)	CS		X		X
Patient Visit						
Admitting Diagnosis	(0008,1080)	LO		X		
Patient Medical						
Additional Patient History	(0010,21B0)	LT		X		

The above table should be read as follows:

Attribute Name:	Attributes supported to build a ClinicalExpress Modality Worklist Request Identifier.
Tag:	DICOM tag for this attribute.
VR:	DICOM VR for this attribute.
M:	Matching keys for (automatic) Worklist Update. A "S" will indicate that ClinicalExpress Modality will supply an attribute value for Single Value Matching, a "R" will indicate Range Matching, a "*" will denote wildcard matching and a '?' will denote a single value replacement type of wildcard matching.
R:	Return keys. An "X" will indicate that ClinicalExpress Modality will supply this attribute as Return Key with zero length for Universal Matching.
Q:	Interactive Query Key. An "X " will indicate that ClinicalExpress Modality will supply this attribute as matching key, if entered in the Query Patient Work list dialog. For example, the Patient Name can be entered thereby restricting Work list responses for that patient.
D:	Displayed keys. An "X" indicates that this Work list attribute is displayed to the user during a patient registration dialog. For example, Patient Name will be displayed when registering the patient prior to an examination.

4.4.1.3.9. Description of Real-World Activity "Cancel Work list request"

When the query process is in progress, the user can cancel the process from the application. When the user cancels through the user interface, ClinicalExpress Modality will send a C-CANCEL FIND request to cancel the FIND operation.

4.4.1.4. Association Acceptance Policy

4.4.1.4.1. Activity – Receive Storage Commitment Response

4.4.1.4.1.1. Description and Sequencing of Activities

The Storage AE might accept associations in order to receive responses to a Storage Commitment Request. This only applies when the response is NOT received on the same Association as the Request.
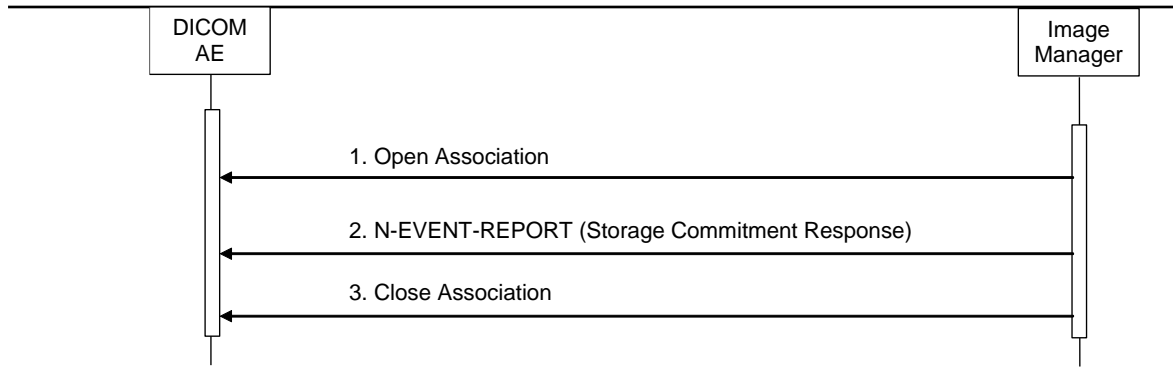
Figure 4.4.1.4.1.1-1
SEQUENCING OF ACTIVITY - RECEIVE STORAGE COMMITMENT RESPONSE

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.

4.4.1.4.1.2. Accepted Presentation Contexts

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

Table 4.4.1.4.1.2
ACCEPTABLE PRESENTATION CONTEXTS FOR
ACTIVITY RECEIVE STORAGE COMMITMENT RESPONSE

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**			**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**	**Role**	
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU (see note)	None
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Note: The DICOM 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.

4.4.1.4.1.3. SOP Specific Conformance for Storage Commitment SOP Class

The N-EVENT-REPORT receiver service will be started during the application start up. This process will wait to listen from the STC SCPs for the N-event reports. The behavior is identical as if the Response was received on the same Association (see applicable section is this document).
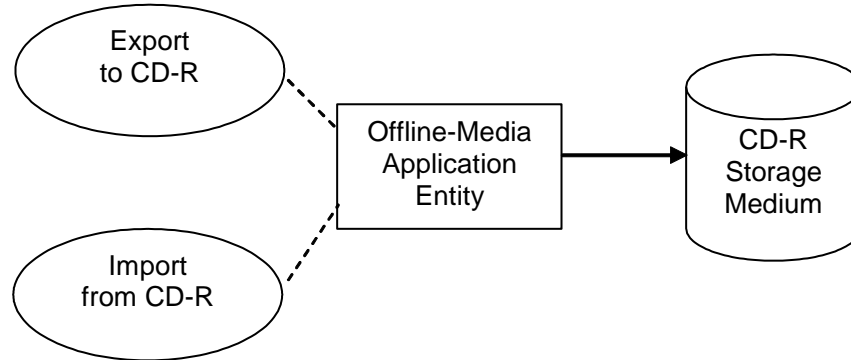
4.4.1.4.1.4.SOP Specific Conformance for Verification SOP Class

The Storage AE provides standard conformance to the Verification SOP Class as an SCP. If the C-ECHO request was successfully received, a 0000 (Success) status code will be returned in the C-ECHO response.

5.MEDIA INTERCHANGE

5.1. IMPLEMENTATION MODEL

5.1.1.   Application Data Flow

Figure 5.1.1-1
APPLICATION DATA FLOW DIAGRAM FOR MEDIA STORAGE

The Offline-Media Application Entity imports images from, and can export images to a CD-R Storage medium. When importing, the user first views the list of patients/studies in the CD. Then chooses to import directly or reconcile manually (view, enter/edit the new patient information or query and edit the patient information) and then do the import.

5.1.2.   File Meta Information Options

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

Table 5.1.2 -1
DICOM IMPLEMENTATION CLASS AND VERSION FOR MEDIA STORAGE

Implementation Class UID	Automatically generated
Implementation Version Name	ClinExp V6.1

5.2. AE SPECIFICATIONS

5.2.1.   Offline-Media Application Entity Specification

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

Table 5.2.1 -1
APPLICATION PROFILES, ACTIVITIES AND ROLES FOR OFFLINE-MEDIA

Application Profiles Supported	Real World Activity	Role
STD-GEN-CD	Export to CD-R	FSC
STD-GEN-CD	Import from CD-R	FSR

5.2.1.1.   Real-World Activities

5.2.1.1.1. Activity – Export to CD-R

The user configures the CD drives to which studies could be exported. The user then picks one or more studies from a screen which displays the list of studies available in ClinicalExpress. Finally the user chooses the target drive and clicks on Export button to start the export process. To export the study that is currently open in ClinicalExpress, the user simply chooses the target and clicks on Export from the menu item to execute export.

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

Table 5.2.1.1.1 - 1
IODS, SOP CLASSES AND TRANSFER SYNTAXES FOR OFFLINEMEDIA

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
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

5.2.1.1.2. Activity – Import from CD-R

The user configures the CD drives from which studies could be imported. The user then chooses the target drive and clicks on import from the application's menu. The list of available studies from the DICOMDIR is read and listed. The user then chooses one or more studies from the list and clicks on import button to transfer the studies into ClinicalExpress

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

Table 5.2.1.1.2 - 1
IODS, SOP CLASSES AND TRANSFER SYNTAXES FOR OFFLINEMEDIA

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
All IMAGE Storage SOP Classes as defined by PS 3.6 -2004	1.2.840.10008.5.1.4.1.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1

5.3.Communication Profiles

5.3.1.Supported Communication Stacks

DICOM Upper Layer over TCP/IP is supported.

5.3.2.OSI Stack

Not supported.

5.3.3.TCP/IP Stack

The TCP/IP stack is inherited from the underlying operating system

5.3.3.1.Physical Media Support

DICOM is indifferent to the physical medium over which TCP/IP executes. TCP/IP over Ethernet and phone lines is supported.

Point-to-Point Stack is not supported.

5.4.Configurable Parameters

- Maximum PDU size; default setting is 16000
- Time out value (for response); value of "0" means that it will wait indefinitely (default)
- Number of retries
    - Local and remote AE title; 16 chars as specified by DICOM
    - Port and responding IP Address of destination
    - The list of required attributes is configurable:
        - Patient Birth date
        - Referring Physician
        - Study ID
        - Accession Number
        - Study Description
        - Admitting diagnosis
        - Additional Patient history
        - Modality
        - Series Description
        - Procedure Code sequence (and contents)
        - Body part examined

    - Print parameters: (values depend on supported range by Print SCP)
        - Medium Type
        - Magnification Type
        - Density Min/Max
        - Film orientation (Portrait is default)

- Film Size ID
- Magnification Type
- Requested Image Size (ACTUAL or empty) Note: when configured as ACTUAL, it will match the size of the original film, when empty, it will minify the image to fit the printable area. Please see printer specific documentation for setup of this attribute.
- Begin Printable Area (This is not a DICOM parameter it is VIDAR application specific)
- Presentation LUT applied or sent
- Illumination and Reflective Ambient Light (only if Presentation LUT is supported)

- STC parameters: Maximum Wait Time (for N-EVENTREPORT)

5.5. Support of extended character sets

Extended character sets are not supported.

6.ANNEXES

  6.1.Created IOD Instances

    6.1.1.Secondary Capture Standard Extended IOD Definition

Table 6.1.1 Secondary Capture IOD			
Module	**Attribute**	**Tag**	**Value and/or length, range, and origin**
PATIENT	Patient Name	(0010,0010)	From MWL or entered by user or used from image object in media if imported: either Last name, Middle name or First name in 3 separate entry boxes; at least First name or Last name is required; 64 Characters max. length for total field.
	Patient ID	(0010,0020)	From MWL or entered by user or used from image object in media if imported; 64 Characters max.
	Other Patient IDs	(0010,1000)	From MWL or entered by user or used from image object in media if imported; 64 Characters max.
	Patient Sex	(0010,0040)	From MWL or user selectable or used from image object in media if imported; M, F or O
	Patient Birth Date	(0010,0030)	From MWL or entered by user; 8 Bytes
GENERAL STUDY	Study Instance UID	(0020,000D)	From MWL or automatically generated or used from image object in media if imported; not visible on UI
	Study ID	(0020,0010)	Auto generated; (Editable by the user) format is SID_xyz_wwwwwwww, where 'xyz' are respectively the first letter of the patient name components (first letter from last, first & middle name boxes), 'wwwwwwww' is an auto incrementing number or used from image object in media if imported; max 16 characters
	Study Date	(0008,0020)	User option to enter or to set the current date or used from image object in media if imported; 8 bytes
	Study Time	(0008,0030)	User option to enter or to set the current time or used from image object in media if imported; 6 Bytes
	Referring Physician's Name	(0008,0090)	From MWL or entered by user or used from image object in media if imported; 64 Characters max.
	Accession Number	(0008,0050)	From MWL or entered by user or used from image object in media if imported; 16 characters

	Study Description	(0008,1030)	Entered by user or used from image object in media if imported; 64 Characters max.
	Procedure Code Sequence	(0008,1032)	
	Code value	(0008,0100)	Entered by user or used from image object in media if imported
	Coding Scheme	(0008,0102)	Entered by user or used from image object in media if imported
	Code Meaning	(0008, 0104)	Entered by user or used from image object in media if imported
PATIENT STUDY	Admitting Diagnosis	(0008,1080)	Entered by user or from MWL or used from image object in media if imported; 64 Characters max.
	Additional Patient History	(0010,21B0)	Entered by user or from MWL or used from image object in media if imported; Max 1024
GENERAL SERIES	Modality	(0008,0060)	Selected or entered by user or from MWL or used from image object in media if imported
	Conversion Type	(0008,0064)	DF fixed
	Body Part examined	(0018,0015)	Selected by user; can be modified or used from image object in media if imported
	Series Number	(0020,0011)	Automatically generated or used from image object in media if imported
	Series Instance UID	(0020,000E)	Automatically generated or used from image object in media if imported
	Series Description	(0008,103E)	Entered by user or used from image object in media if imported; 64 chars max.
	Series Date	(0008,0020)	User option to enter or to set the current date or used from image object in media if imported; 8 bytes
	Series Time	(0008,0030)	User option to enter or to set the current time or used from image object in media if imported; 6 Bytes
	Request Attributes Sequence	(0040,0275)	Present if requested procedure ID, scheduled procedure ID, scheduled procedure description and scheduled protocol code sequence contain values
	Requested Procedure ID	>(0040,1001)	The value pulled from MWL or used from image object in media if imported
	Scheduled Procedure Step ID	>(0040,0009)	The value pulled from MWL or used from image object in media if imported
	Scheduled Procedure Step Description	>(0040,0007)	The value pulled from MWL or used from image object in media if imported
	Scheduled Protocol Code Sequence	>(0040,0008)	
	Code Value	>>(0008,0100)	The value pulled from MWL or used from image object in media if imported
	Coding Scheme Designator	>>(0008,0102)	The value pulled from MWL or used from image object in media if imported

	Code Meaning	>>(0008,0104)	The value pulled from MWL or used from image object in media if imported
	Performed Procedure Step ID	(0040,0253)	Internally generated or used from image object in media if imported
	Performed Procedure Step Start Date	(0040,0244)	The value pulled from MWL or given for the Study Date field or used from the Study Date attribute value of the image object in media if imported
	Performed Procedure Step Start Time	(0040,0245)	The value pulled from MWL or given for the Study Time field or used from the Study Time attribute value of the image object in media if imported
	Performed Procedure Step Description	(0040,0254)	The value pulled from MWL or given for the Study Description field or used from the Study Description attribute value of the image object in media if imported
	Referenced Study Sequence	(0008,1110)	
	Referenced SOP Class UID	>(0008,1150)	The value pulled from MWL or used from image object in media if imported
	Referenced SOP Instance UID	>(0008,1155)	The value pulled from MWL or used from image object in media if imported
	Protocol Name	(0018,1030)	Entered by user in the Series screen or used from image object in media if imported
	Performed Protocol Code Sequence	(0040,0260)	For studies that are imported a sequence item containing code value, coding scheme designator and code meaning of IRWF001, IHETFRAD and Import should be present.
	Code Value	>(0008,0100)	Entered by the user in the series screen or used from image object in media if imported.
	Coding Scheme Designator	>(0008,0102)	Entered by the user in the series screen or used from image object in media if imported.
	Code Meaning	>(0008,0104)	Entered by the user in the series screen or used from image object in media if imported.
GENERAL IMAGE	Image Type	(0008,0008)	Default is DERIVED\SECONDARY Based on a user setting the Image Type can be set to DERIVED\PRIMARY
	Instance Number	(0020,0013)	Automatically generated
General Equipment	Manufacturer	(0008,0070)	VIDAR
	Institution Name	(0008,0080)	Entered by user or used from image object in media if imported.
	Station Name	(0008,1010)	Entered by user
	Manufacturer's Model Name	(0008,1090)	Entered by user

	Software Versions	(0018,1020)	Auto identified (Actual software version)
IMAGE PIXEL	Samples per Pixel	(0028,0002)	1
	Photometric Interpretation	(0028,0004)	MONOCHROME2
	Rows	(0028,0010)	Depends on the number of rows
	Columns	(0028,0011)	Depends on the number of columns
	Bits Allocated	(0028,0100)	8 for a 8 bit pixel data and 16 bits for 12 or 16 bit pixel data
	Bits Stored	(0028,0101)	8 for a 8 bit, 12 for 12 bit and 16 for 16 bit pixel data
	High Bit	(0028,0102)	7 for a 8 bit, 11 for 12 bit and 15 for 16 bit pixel data
	Pixel Representation	(0028,0103)	Always 0
	Pixel Data	(7FE0,0010)	
VOI LUT	Window Center	(0028,1050)	Default 127, 2047 or 32767 for 8,12, 16 bits if not changed by user, otherwise modified value – now default is different and configurable
	Window Width	(0028,1051)	Default 255, 4095 or 65535 for 8,12, 16 bits if not changed by user, otherwise modified value– now default is different and configurable
N/A See Note (1)	Film Size ID	(2010,0050)	Film size, determined; automatically detected
SOP COMMON MODULE	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.7
	SOP Instance UID	(0008,0018)	Automatically generated
	Original Attributes Sequence	(0400,0561)	Present for images that are imported and if the original values in the header are modified
	Source of Previous Values	>(0400,0564)	Should contain the value "CD Import"
	Attribute Modification Date Time	>(0400,0562)	Should be present and contain the date and time when the attributes were modified
	Modifying System	>(0400,0563)	Should contain the value "ClinicalExpress"
	Reason for the Attribute Modification	>(0400,0565)	Should contain the value "COERCE"
	Modified Attributes Sequence	>(0400,0550)	Should contain an item with all the attributes that were modified For e.g. verify the following attributes >>Patient Name >>Patient ID >>Patient Birth Date >>Patient Sex >>Accession Number >>Modality

Note (1): This Attribute is added and not part of the SC IOD definition in the DICOM standard, therefore, it is defining this IOD as a Standard Extended IOD.

6.1.2.Digital Mammography IOD Definition

	Table 6.1.1 - 1 Digital Mammography IOD		
Module	**Attribute**	**Tag**	**Value and/or length, range, and origin**
PATIENT	Patient Name	(0010,0010)	From MWL or entered by user: either Last name, Middle name or First name in 3 separate entry boxes; at least one is required; 64 Characters max. length for total field.
	Patient ID	(0010,0020)	From MWL or entered by user; 64 Characters max.
	Other Patient IDs	(0010,1000)	From MWL or entered by user or used from image object in media if imported; 64 Characters max.
	Patient Sex	(0010,0040)	From MWL or user selectable; M, F or O
	Patient Birth Date	(0010,0030)	From MWL or entered by user; 8 Bytes
GENERAL STUDY	Study Instance UID	(0020,000D)	From MWL or automatically generated; not visible on UI
	Study ID	(0020,0010)	Auto generated; format is xx_yy_SID_zzz, where xx is the first 2 letters of the patient name (starting with the entry in the last name box, yy is the first 2 characters in the Patient ID, zzz is an auto incrementing number; max 16 characters
	Study Date	(0008,0020)	Automatically generated when study is created; 8 bytes
	Study Time	(0008,0030)	Automatically generated when study is created; 6 Bytes
	Referring Physician's Name	(0008,0090)	From MWL or entered by user; 64 Characters max.
	Accession Number	(0008,0050)	From MWL or entered by user; 16 characters
	Study Description	(0008,1030)	Entered by user; 64 Characters max.
	Procedure Code Sequence	(0008,1032)	From MWL, consists of Code, coding scheme and meaning
	>Code value	(0008,0100)	Entered by user or used from image object in media if imported
	>Coding Scheme	(0008,0102)	Entered by user or used from image object in media if imported
	>Code Meaning	(0008, 0104)	Entered by user or used from image object in media if imported
PATIENT STUDY	Admitting Diagnosis	(0008,1080)	Entered by user or from MWL; 64 Characters max.
	Additional Patient History	(0010,21B0)	Entered by user or from MWL; Max 1024

GENERAL SERIES	Series Number	(0020,0011)	Always set to 1
	Series Instance UID	(0020,000E)	Automatically generated
	Series Description	(0008,103E)	Entered by user; 64 chars max.
	Series Date	(0008,0020)	User option to enter or to set the current date or used from image object in media if imported; 8 bytes
	Series Time	(0008,0030)	User option to enter or to set the current time or used from image object in media if imported; 6 Bytes
	Request Attributes Sequence	(0040,0275)	Present if requested procedure ID, scheduled procedure ID, scheduled procedure description and scheduled protocol code sequence contain values
	>Requested Procedure ID	(0040,1001)	The value pulled from MWL or used from image object in media if imported
	>Scheduled Procedure Step ID	(0040,0009)	The value pulled from MWL or used from image object in media if imported
	>Scheduled Procedure Step Description	(0040,0007)	The value pulled from MWL or used from image object in media if imported
	>Scheduled Protocol Code Sequence	(0040,0008)	
	>>Code Value	(0008,0100)	The value pulled from MWL or used from image object in media if imported
	>>Coding Scheme Designator	(0008,0102)	The value pulled from MWL or used from image object in media if imported
	>>Code Meaning	(0008,0104)	The value pulled from MWL or used from image object in media if imported
	Performed Procedure Step ID	(0040,0253)	Internally generated or used from image object in media if imported
	Performed Procedure Step Start Date	(0040,0244)	The value pulled from MWL or given for the Study Date field or used from the Study Date attribute value of the image object in media if imported
	Performed Procedure Step Start Time	(0040,0245)	The value pulled from MWL or given for the Study Time field or used from the Study Time attribute value of the image object in media if imported
	Performed Procedure Step Description	(0040,0254)	The value pulled from MWL or given for the Study Description field or used from the Study Description attribute value of the image object in media if imported
	Referenced Study Sequence	(0008,1110)	
	>Referenced SOP Class UID	(0008,1150)	The value pulled from MWL or used from image object in media if imported
	>Referenced SOP Instance UID	(0008,1155)	The value pulled from MWL or used from image object in media if imported
	Protocol Name	(0018,1030)	Entered by user in the Series screen or used from image object in media if imported

	Performed Protocol Code Sequence	(0040,0260)	For studies that are imported a sequence item containing code value, coding scheme designator and code meaning of IRWF001, IHETFRAD and Import should be present.
	>Code Value	(0008,0100)	Entered by the user in the series screen or used from image object in media if imported.
	>Coding Scheme Designator	(0008,0102)	Entered by the user in the series screen or used from image object in media if imported.
	>Code Meaning	(0008,0104)	Entered by the user in the series screen or used from image object in media if imported.
DX SERIES	Presentation Intent Type	(0008,0068)	FOR PRESENTATION
MAMMOGRAPHY SERIES	Modality	(0008,0060)	MG
GENERAL EQUIPMENT	Manufacturer	(0008,0070)	VIDAR
	Institution Name	(0008,0080)	Entered by user or used from image object in media if imported.
	Station Name	(0008,1010)	Entered by user
	Manufacturer's Model Name	(0008,1090)	Entered by user
	Software Versions	(0018,1020)	Auto identified (Actual software version)
GENERAL IMAGE	Acquisition Date	(0008, 0022)	The value given for the Study Date field or used from the Study Date attribute value of the image object in media if imported
	Acquisition Time	(0008,0032)	The value given for the Study Time field or used from the Study Time attribute value of the image object in media if imported
	Instance Number	(0020,0013)	Automatically generated
DX IMAGE	Image Type	(0008,0008)	Default is DERIVED\SECONDARY Based on a user setting the Image Type can be set to DERIVED\PRIMARY
	Pixel Intensity relationship	(0028,1040)	LOG
	Pixel Intensity relationship Sign	(0028,1041)	1
	Presentation LUT Shape	(2050,0020)	IDENTITY
	Lossy Image compression	(0028,2110)	00
	Patient Orientation	(0020,0020)	User selectable, values are: P\F, P\FL, P\FR, P\L, A\F, A\FL, A\FR, A\L
	Burned in Annotation	(0028,0301)	Selected by user; YES or NO
DX DETECTOR	Detector Type	(0018,7004)	FILM

	Imager Pixel Spacing	(0018,1164)	Spacing in mm
MAMMOGRAPHY IMAGE	Positioner Type	(0018,1508)	MAMMOGRAPHIC
	Image Laterality	(0020,0062)	Entered by user, R, L or B
	Organ Exposed	(0040,0318)	BREAST
	Anatomic Region Sequence	(0008,2218)	T-04000/SNOMED/Breast
	View Code Sequence	(0054,0220)	Selected by user from DICOM CID 4014: ML, MLO, LM, LMO, CC, FB, SIO, XCC, XCCL, XCCM
	View Modifier Code Sequence	(0054,0222)	Selected by user from DICOM CID 4015: CV,AT. …RL, …RM, …RI, …RS, …ID, M…,S…,TAN
IMAGE PIXEL	Samples per Pixel	(0028,0002)	1
	Photometric Interpretation	(0028,0004)	MONOCHROME2
	Rows	(0028,0010)	Depends on the number of rows
	Columns	(0028,0011)	Depends on the number of columns
	Bits Allocated	(0028,0100)	8 for a 8 bit pixel data and 16 bits for 12 or 16 bit pixel data
	Bits Stored	(0028,0101)	8 for a 8 bit, 12 for 12 bit and 16 for 16 bit pixel data
	High Bit	(0028,0102)	7 for a 8 bit, 11 for 12 bit and 15 for 16 bit pixel data
	Pixel Representation	(0028,0103)	Always 0
	Pixel Data	(7FE0,0010)	
VOI LUT	Window Center	(0028,1050)	Default 127, 2047 or 32767 for 8,12, 16 bits if not changed by user, otherwise modified value – now default is different and configurable
	Window Width	(0028,1051)	Default 255, 4095 or 65535 for 8,12, 16 bits if not changed by user, otherwise modified value– now default is different and configurable
SOP COMMON MODULE	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.1.2
	SOP Instance UID	(0008,0018)	Automatically generated
	Original Attributes Sequence	(0400,0561)	Present for images that are imported and if the original values in the header are modified
	>Source of Previous Values	(0400,0564)	Should contain the value "CD Import"
	>Attribute Modification Date Time	(0400,0562)	Should be present and contain the date and time when the attributes were modified
	>Modifying System	(0400,0563)	Should contain the value "ClinicalExpress"

	>Reason for the Attribute Modification	(0400,0565)	Should contain the value "COERCE"
	>Modified Attributes Sequence	(0400,0550)	Should contain an item with all the attributes that were modified e.g. >>Patient Name >>Patient ID >>Patient Birth Date >>Patient Sex >>Accession Number >>Modality

6.2. Attribute Mapping

The relationships between attributes received via Modality Work list, and stored in acquired images are summarized in the Table below.

Table 6.2 - 1: Attribute Mapping between Modality Worklist, MPPS and Image IOD

Field	Tag	MWL	MPPS	DICOM IOD
Patient's Name	(0010,0010)	X	X	X
Patient ID	(0010,0020)	X	X	X
Other Patient IDs	(0010,1000)	X	---	X
Patient's Birth Date	(0010,0030)	X	X	X
Patient's Sex	(0010,0040)	X	X	X
Study Instance UID	(0020,000D)	X	X	X
Referring Physician's Name	(0008,0090)	X	---	X
Accession Number	(0008,0050)	X	X	X
Admitting Diagnoses Description	(0008,1080)	X	---	X
Additional Patient's History	(0010,21B0)	X	---	X
Scheduled Procedure Step Sequence	(0040,0100)			
Modality	>(0008,0060)	X	X	X
Scheduled Station AE Title	>(0040,0001)	X	---	---
Scheduled Procedure Step Start Date	>(0040,0002)	X	X+	X#
Scheduled Procedure Step Start Time	>(0040,0003)	X	X+	---
Scheduled Procedure Step ID	>(0040,0009)	X	X	X
Scheduled Procedure Step Description	>(0040,0007)	X	X	X
Scheduled Protocol Code Sequence	>(0040,0008)			
Code Value	>>(0008,0100)	X	X	X
Coding Scheme Designator	>>(0008,0102)	X	X	X
Code Meaning	>>(0008,0104)	X	X	X
Referenced Study Sequence	(0008,1110)			
Referenced SOP Class UID	>(0008,1150)	X	---	---
Referenced SOP Instance UID	>(0008,1155)	X	---	---
Requested Procedure ID	(0040,1001)	X	X	X
Requested Procedure Code Sequence	(0032,1064)			
Code Value	>(0008,0100)	X	X*	X*
Coding Scheme Designator	>(0008,0102)	X	X*	X*
Code Meaning	>(0008,0104)	X	X*	X*

+ Values are mapped with the Performed Procedure Step Start Date/Time attributes of the MPPS IODs.
* Attribute values are mapped with the Procedure Code Sequence of the MPPS/DICOM IODs.
\# Mapped to Study Date in the IOD

6.3. Coerced/Modified Fields

The DICOM AE acting as a MWL will not truncate any attribute values received in the response to a Modality Worklist Query if the value length is longer than the maximum length permitted by the attribute's VR. They will not be taken up for further processing and the user will be prompted to edit the values and make them valid.