PLANMECA

DICOM Conformance Statement

Planmeca Romexis

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0. Introduction

This is a conformance statement for the Planmeca Romexis dental imaging program, which supports DICOM Storage, Storage Commitment, Print, Modality Worklist, Query/Retrieve (Q/R) and Modality Performed Procedure Step Worklist services as a Service Class User (SCU).

Romexis acquires images from Planmeca's digital panoramic (Dimax/Dimax3), digital intraoral (Dixi/Dixi2/Dixi3) x-rays and Planmeca's Promax 3D CBVT equipment. Film images can be scanned using the TWAIN standard. Images from any other digital dental x-ray can be imported into Romexis in TIFF or JPEG format or as DICOM files, with or without DICOMDIR.

1. Implementation model

Planmeca Romexis implements a DICOM Storage SCU, DICOM Storage Commitment SCU, DICOM Storage SCP, DICOM Basic Print SCU, DICOM Modality Worklist SCU, DICOM Q/R SCU, Verification SCU and MPPS Worklist SCU. Romexis can send images to a DICOM Storage Service Class Provider (SCP) and to a DICOM Basic Print SCP. Romexis can send DICOM queries and move requests to a DICOM Q/R SCP. Romexis can test the connection to remote DICOM SCPs. Romexis can send session related status messages to MPPS provider service as SCU.

1.1 Application data flow diagram

1.1.1 Storage

DICOM Standard Interface
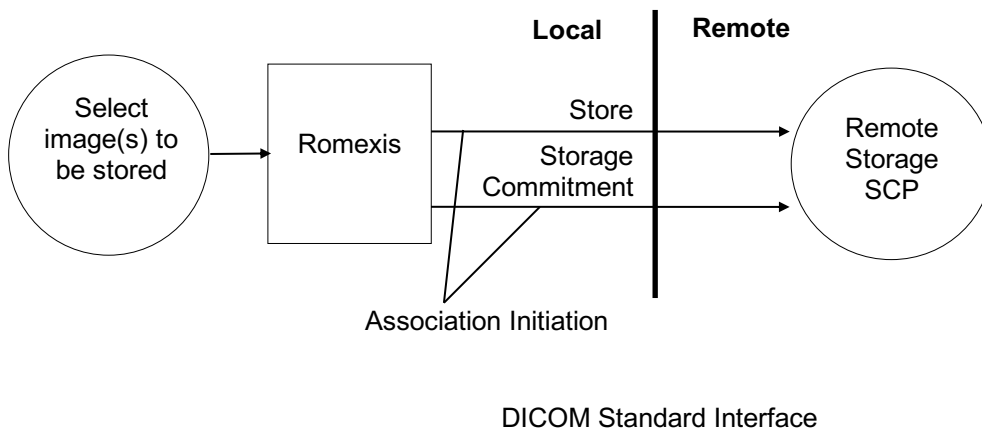
1.1.2 Print
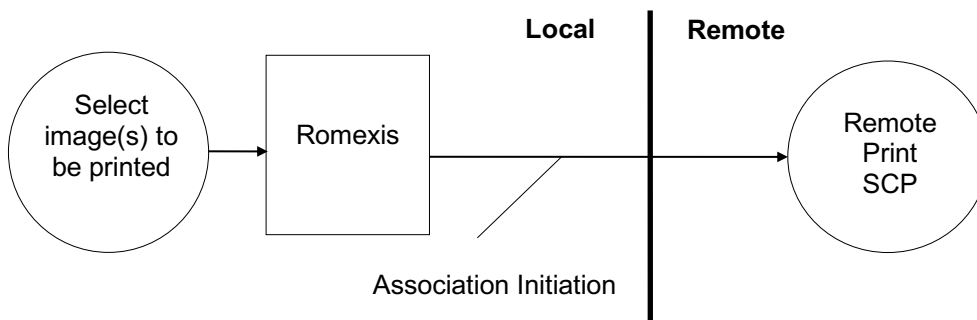
1.1.3 Worklist

1.1.4 Retrieve

1.1.5 Verification

1.2 Functional definition of Application Entities

All communications and image transfer with remote application is accomplished utilizing the DICOM protocol over a network using the TCP/IP protocol stack.

1.2.1 Verification

The verification SCU is available to operators for test and validation purposes of remote AEs. Romexis opens an association and sends C-ECHO request to verify specified DICOM SCP node. Upon receiving the response from SCP or in case of failure it closes the connection.

1.2.2 Storage

Romexis establishes an association with a remote AE selected by the user just prior to sending a Store request to that AE. If Storage Commitment is configured to be used in Romexis, Romexis opens another association and sends a Storage Commitment request to the AE. Alternatively, Romexis can be configured to use single association for both Store and Storage Commitment requests.

Romexis supports sending X-Ray Radiation Dose Structured Reports for CT images. Storage Commitment is not used for RDSR.
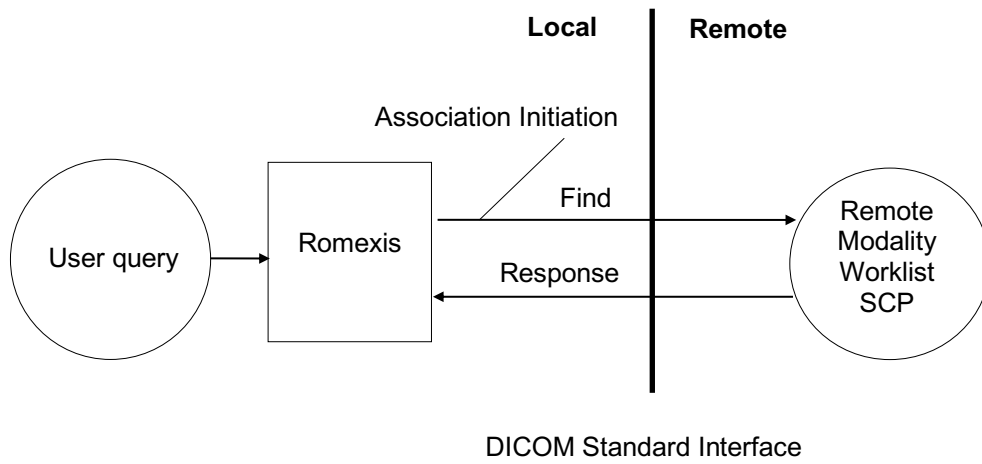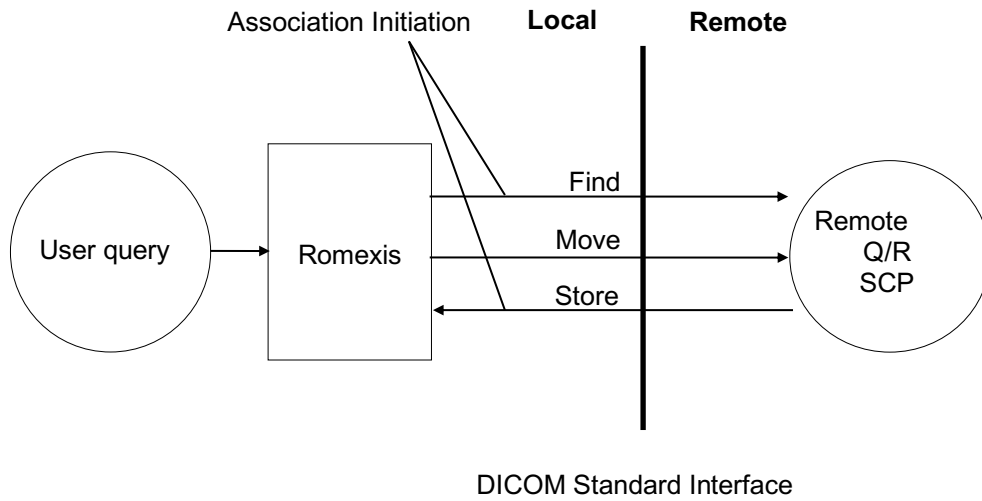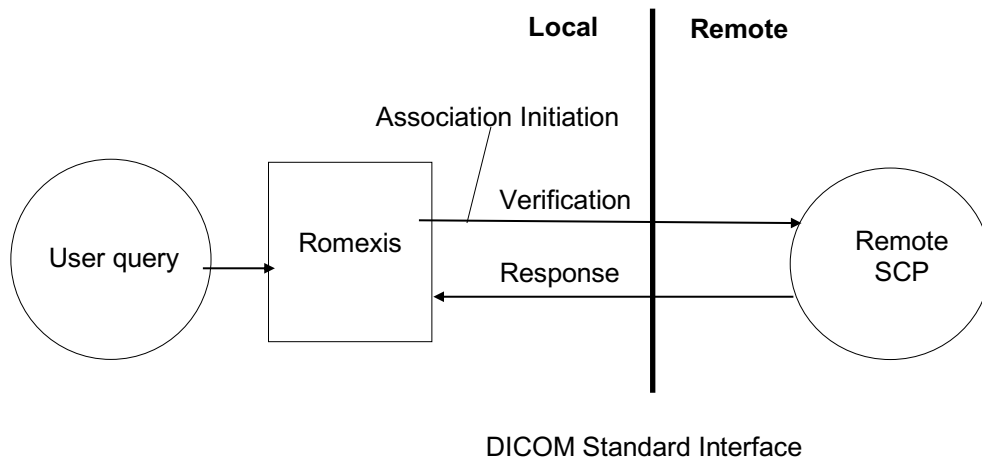
1.2.3 Print

Romexis establishes an association with a remote AE selected by the user just prior to sending a Print request to that AE.

1.2.4 Worklist

Romexis establishes an association with a remote AE selected by the user for Modality Worklist services. When an association is requested with a SCP, Romexis responds with a list of SOP Class UIDs that it will accept. If a Find request is sent, then it will wait for find responses.

1.2.5 Retrieve

Romexis establishes an association with a remote AE selected by the user for Q/R services. When an association is requested with a SCP, Romexis responds with a list of SOP Class UIDs that it will accept. If a Find request is sent, then it will wait for Find responses. If a Move request is sent, it will wait for a Move response.

1.2.6 MPPS

The Romexis DICOM Modality Performed Procedure Step (MPPS) SCU service is used together with DICOM Modality Worklist SCU service. If Romexis MPPS service is configured, it will send study ID, status of study, dates, patient name in starting the exposure, and dates and complete list of images including X-ray parameters to the server after closing exposure task.

2. Application Entity specifications

Romexis Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as a SCU:

SOP Class Name	SOP Class UID
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.2
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67
Basic Grayscale Print Management (META)	1.2.840.10008.5.1.1.9
Basic Film Session	1.2.840.10008.5.1.1.1
Basic Film Box	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box	1.2.840.10008.5.1.1.4
Printer	1.2.840.10008.5.1.1.16
Print Job	1.2.840.10008.5.1.1.14
Modality Worklist Find	1.2.840.10008.5.1.4.31
Patient Root Query/Retrieve Information Model - Find	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve Information Model - Move	1.2.840.10008.5.1.4.1.2.1.2
Verification	1.2.840.10008.1.1
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3

2.1 Association establishment policies

2.1.1 General

The maximum PDU size is 65,536 bytes.

2.1.1.1 Storage

Romexis will initiate an association as a SCU of Storage Services when a local operator requests to send images over the network to a remote Storage SCP. If RDSR is enabled, a separate association will be initiated for the RDSR storage as a SCU.

2.1.1.2 Print

Romexis will initiate an association as a SCU of Print Services when a local operator requests to print images over the network to a remote DICOM Basic Print Provider.

2.1.1.3 Worklist

Romexis will initiate an association as a Modality Worklist SCU requesting modality and patient data.

2.1.1.4 Retrieve

Romexis will initiate an association as a Query/Retrieve SCU requesting data for images and the images themselves. Romexis will wait for an association as a Store SCP.

2.1.1.5 Verification

Romexis will initiate an association as a SCU when local operator requests a verification of remote SCP node.

2.1.1.6 MPPS

Romexis will initiate an association as a MPPS when the local operator requests to capture a set of images.

2.1.2 Number of associations

Romexis only opens one association at a time.

2.1.3 Asynchronous nature

Romexis does not support asynchronous communication.

2.1.4 Implementation identifying information

The Implementation Class Unique Identifier (UID) for the Romexis Application Entity is:

> 2.16.840.1.113669.632.10.99.2

The Implementation Version Name for the Romexis Application Entity is:

> ROMEXIS 001

2.2 Association initiation by real-world activity

Romexis initiates a new association for the appropriate DICOM SCP node for verification of the specified DICOM SPC node. The association is closed when a response from SCP is received or in case of failure.

Romexis initiates a new association for the appropriate Storage Service Class that corresponds to the image(s) requested to be transferred. The association is closed when all images have been sent to the remote DICOM network node.

Romexis initiates a new association for Print Service Class. The association is closed when all images have been printed and all print jobs have completed.

Romexis initiates an association for the appropriate Q/R Services Class that corresponds to the set of images requested to be transferred. The association is closed when all queries or moves have been sent to the remote DICOM network node.

Romexis initiates an association for the appropriate Modality Worklist Service Class that corresponds to the set of data requested to be transferred. The association is closed when all queries have been sent to the remote DICOM network node.

Romexis is able to abort the association when a time out or an error occurs.

Romexis initiates an association for MPPS for a patient opened via Worklist at the moment of starting the exposure or Intracam or TWAIN capture task. The association is closed when all images are captured and the session related data sent to the server.

2.2.1 Real-world activity for Verification operation

Romexis AE provides standard conformance to the DICOM Verification Service Class as SCU.

2.2.1.1 Proposed presentation contexts for C-ECHO

The presentation contexts that are proposed by Romexis AE for the C-ECHO operation are specified in the following table.

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

2.2.2 Real-world activity for Send Image operations

Romexis initiates associations for the transfer of images to a DICOM Image Storage Server.

2.2.2.1 Associated real-world activity for Send Image operations

Once the Store Image association has been established, an image Store message is sent by Romexis.

Proposed presentation contexts for Send Image operations

The presentation contexts that are proposed by Romexis for the Send Image operation are specified in the following table:

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Rol e**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Explicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
CT Image Storage- For Presentation	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2 .1	Explicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Storage Commitment Push	1.2.840.10008.1.20.1	Explicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None

All these SOP classes conform to the standard Storage Services as specified in the DICOM Standard.

NOTE: It is possible to force a different SOP Class and Modality for an image type.

2.2.2.2 SOP Specific Conformance

Romexis sends the following attributes in C_STORE_RQ. All the mandatory attributes are sent.

(0x0008,0x0005)	SpecificCharacterSet
(0x0008,0x0008)	ImageType
(0x0008,0x0012)	InstanceCreationDate

(0x0008,0x0013)	InstanceCreationTime
(0x0008,0x0016)	SOPClassUID
(0x0008,0x0018)	SOPInstanceUID
(0x0008,0x0020)	StudyDate
(0x0008,0x0021)	SeriesDate
(0x0008,0x0022)	AcquisitionDate
(0x0008,0x0023)	ContentDate
(0x0008,0x002A)	AcquisitionDateTime
(0x0008,0x0030)	StudyTime
(0x0008,0x0031)	SeriesTime
(0x0008,0x0032)	AcquisitionTime
(0x0008,0x0033)	ContentTime
(0x0008,0x0050)	AccessionNumber
(0x0008,0x0060)	Modality
(0x0008,0x0068)	PresentationIntentType
(0x0008,0x0070)	Manufacturer
(0x0008,0x0080)	InstitutionName
(0x0008,0x1040)	InstitutionalDepartmentName
(0x0008,0x0090)	ReferringPhysicianName
(0x0008,0x1010)	StationName
(0x0008,0x1030)	StudyDescription
(0x0008,0x1090)	ManufacturerModelName

for DigitalIntraoralXRayImageStorageForPresentation,
DigitalIntraoralXRayImageStorageForProcessing only:

(0x0008,0x2218)	AnatomicRegionSequence
(0x0008,0x0100)	CodeValue
(0x0008,0x0102)	CodingSchemeDesignator
(0x0008,0x2228)	PrimaryAnatomicStructureSequence
(0x0008,0x0100)	CodeValue
(0x0008,0x0102)	CodingSchemeDesignator

Enhanced CT only:

(0x0008,0x9205)	PixelPresentation
(0x0008,0x9206)	VolumetricProperties
(0x0008,0x9207)	VolumeBasedCalculationTechnique

(0x0010,0x0010)	PatientName
(0x0010,0x0020)	PatientID
(0x0010,0x1000)	OtherPatientID
(0x0010,0x0030)	PatientBirthDate
(0x0010,0x0040)	PatientSex
(0x0010,0x2180)	Occupation

(0x0018,0x0015)	BodyPartExamined

CT only:

(0x0018,0x5100)	PatientPosition

(0x0018,0x0060)	KVP

CT only:

(0x0018,0x0050)	SliceThickness

(0x0018,0x1000)	DeviceSerialNumber
(0x0018,0x1020)	SoftwareVersion
(0x0018,0x1150)	ExposureTime
(0x0018,0x1151)	XrayTubeCurrent
(0x0018,0x115e)	ImageAreaDoseProduct

Not for CT:
(0x0018,0x1164)	ImagerPixelSpacing
(0x0018,0x700A)	DetectorID

Enhanced CT only:
(0x0018,0x9004)	ContentQualification
(0x0018,0x9073)	AcquisitionDuration
(0x0020,0x000e)	SeriesInstanceUID
(0x0020,0x0010)	StudyID
(0x0020,0x0011)	SeriesNumber

CT only:
(0x0020,0x0012)	AcquisitionNumber
(0x0020,0x0013)	InstanceNumber

CT only:
(0x0020,0x0032)	ImagePositionPatient
(0x0020,0x0037)	ImageOrientationPatient
(0x0020,0x0052)	FrameOfReferenceUID
(0x0020,0x1040)	PositionReferenceIndicator

Not for CT:
(0x0020,0x0020)	PatientOrientation
(0x0020,0x4000)	ImageComments

Enhanced CT only:
(0x0020,0x9221)	DimensionOrganizationSequence
(0x0020,0x9222)	DimensionIndexSequence
(0x0028,0x0002)	SamplesPerPixel
(0x0028,0x0004)	PhotometricInterpretation
(0x0028,0x0006)	PlanarConfiguration

Enhanced CT only:
(0x0028,0x0008)	NumberOfFrames
(0x0028,0x0010)	Rows
(0x0028,0x0011)	Columns

CT only:
(0x0028,0x0030)	PixelSpacing
(0x0028,0x0100)	BitsAllocated
(0x0028,0x0101)	BitsStored
(0x0028,0x0102)	HighBit
(0x0028,0x0103)	PixelRepresentation
(0x0028,0x0106)	SmallestImagePixelValue
(0x0028,0x0107)	LargestImagePixelValue

Not for CT:
(0x0028,0x1040)	PixelIntensityRelationship
(0x0028,0x1041)	PixelIntensityRelationshipSign
(0x0028,0x1052)	RescaleIntercept
(0x0028,0x1053)	RescaleSlope

Not for CT:
(0x0028,0x1054)   RescaleType

(0x0028,0x2110)   LossyImageCompression

for DigitalXRayImageStorageForPresentation,DigitalXRayImageStorageForProcessing only:
(0x0060,0x3002)   HistogramNumberOfBins
(0x0060,0x3004)   HistogramFirstBinValue
(0x0060,0x3006)   HistogramLastBinValue
(0x0060,0x3008)   HistogramBinWidth
(0x0060,0x3020)   HistogramData
(0x0060,0x3000)   HistogramSequence

Enhanced CT only:
(0x5200,0x9229)   SharedFunctionalGroupsSequence
(0x0028,0x9110)   PixelMeasuresSequence
(0x0018,0x0050)   SliceThickness
(0x0028,0x0030)   PixelSpacing
(0x5200,0x9230)   PerFrameFunctionalGroupsSequence
(0x0020,0x9113)   PlanePositionSequence
(0x0020,0x0032)   ImagePositionPatient

CT only:
(0x7FE0,0x0010)   PixelData

Not for CT:
(0x7FE0,0x0010)   PixelData

NOTE: RequestedProcedureDescription (received from Worklist) is copied to StudyDescription, 0x0008,0x1030, (if not received from Worklist) when creating image headers e.g. for Storage.

2.2.3   Real-world activity for Print Image operations

Romexis initiates associations for the printing of images to a Basic Print SCP. Romexis pre-formats the images before printing.

2.2.3.1   Associated real-world activity for Print Image operations

Once the Print Image association has been established, Romexis sends a Basic Film Session, N_CREATE message to the Basic Print SCP. This is followed by a Basic Film Box N_CREATE message. Romexis then sends a Basic Grayscale Image Box, N_SET message. Finally, an N_ACTION message is sent to instruct the Basic Print SCP to print either at the Basic Film Session or Basic Film Box level.

2.2.3.2   Proposed presentation contexts for Print Image operations

The presentation contexts that are proposed by Romexis AE for the Print Image operation are specified in the following table.

All these SOP classes conform to the standard Print Services as specified in the DICOM standard.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Rol e	Ext. Neg.
Name	UID	Name List	UID List		
Basic Grayscale Print Management (META)	1.2.840.10008.5.1.1.9	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Print Job	1.2.840.10008.5.1.1.14	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None

2.2.3.3   SOP Specific Conformance

Attribute values for SOP classes proposed by Romexis are specified in the following table.

SOP Class Name	Command	Attribute Name	Valid Range	Default Value
Basic Film Session	N_CREATE	Number of Copies	1-10	1
		Print Priority	HIGH, MEDIUM, LOW	HIGH
		Medium Type	PAPER, CLEAR FILM, BLUE FILM	None
		Film Destination	N/A	None
		Film Session Label	N/A	None
Basic Film Session	N_ACTION	Referenced Print Job Sequence		None
Basic Film Box	N_CREATE	Image Display Format	STANDARD\1,1 STANDARD\1,2 STANDARD\2,2 STANDARD\2,3 STANDARD\3,3 STANDARD\3,4 STANDARD\3,5 STANDARD\4,4 STANDARD\4,5 STANDARD\4,6	Mandatory, no default
		Film Orientation	PORTRAIT, LANDSCAPE	PORTRAIT
		Film Size ID	8INX10IN, 10INX14IN, 14INX14IN, 24CMX24CM, 10INX12IN, 11INX14IN, 14INX17IN,24CMX30CM	None
		Magnification Type	REPLICATE, BILINEAR, CUBIC	None
		Configuration Information	This information is printer specific	None
		Smoothing Type	N/A	None
		Border Density	BLACK, WHITE	BLACK
		Empty Image Density	BLACK, WHITE	BLACK

SOP Class Name	Command	Attribute Name	Valid Range	Default Value
Basic Film Box	N_ACTION	Referenced Print Job Sequence		None
Basic Grayscale Image Box	N_SET	Image Position	1-24	Mandatory, no default
		Samples Per Pixel	1/3	None
		Photometric Interpretation	MONOCHROME1, MONOCHROME2	MONO-CHROME2
		Rows	any integer	None
		Columns	any integer	None
		Pixel Aspect Ratio	1/1	1/1
		Pixel Representation	0 (unsigned), 1 (signed)	0
		Requested Image Size	N/A	None
Printer	N_GET / N_EVENT_REPORT	Printer Status	*	None
		Printer Status Info	*	None
		Printer Name	*	None
		Manufacturer	*	None
		Manufacturer Model Name	*	None
		Software Version	*	None

* Romexis will display any information returned for Printer messages

2.2.4   Real-world activity for Find and Move Execution operations for Modality Worklist services

Romexis opens an association and performs C-FINDs. The association is closed after an error or when the initiator requests that it be closed.

2.2.4.1   Associated real-world activity for Find and Move Execution operations

Once the association has been established, Romexis will send a Find message to the Modality Worklist SCP and wait for respond.

2.2.4.2   Presentation context table for Find and Move Execution operations for Basic Modality

Worklist Management. Acceptable Find execution presentation contexts for Romexis are:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Modality Worklist Find	1.2.840.10008.5.1.4.31	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None

2.2.4.3   SOP Specific Conformance

The following attributes can be used as search criteria in C_FIND_RQ:

0008,0060	Modality
0040,0001	Scheduled Station AE Title
0040,0002	Scheduled Procedure Step Start Date (date range can be used)
0010,0010	Patient's name
0010,0020	Patient ID
0008,0050	Accession Number
0032,1032	Requesting Physician

Romexis reads the following attributes from a C_FIND_RSP message:

(0020,000D)	Study Instance UID
(0008,0050)	Accession Number
(0010,0010)	Patient's name
(0010,0020)	Patient ID
(0010,0030)	Patient's Birth Date
(0010,0040)	Patient's Sex
0008,0060	Modality
0032,1032	Requesting Physician

2.2.5 Real-world activity for Find and Move Execution operations for Q/R services

Romexis opens an association and performs C-FINDs or C-MOVEs.

2.2.5.1 Associated real-world activity for Find and Move Execution operations

Once the association has been established, Romexis sends a Find Q/R Service message. After response has been received, Romexis sends a request for a Move Service message and waits for incoming Storage association.

2.2.5.2 Presentation context table for Find and Move Execution operations

Acceptable Find and Move presentation contexts for Romexis Q/R services are:

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Rol e**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Patient Root Query/Retrieve Information Model – Find	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None
Patient Root Query/Retrieve Information Model-Move	1.2.840.10008.5.1.4.1.2.1.2	Explicit VR Little Endian Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2 1.2.840.10008.1.2.2	SCU	None

2.2.5.3 SOP Specific Conformance

The following attributes can be used as search criteria in C_FIND_RQ:

0010,0010	Patient's name
0010,0020	Patient ID

Romexis reads the following attributes from a C_FIND_RSP message:

(0010,0010)	Patient's name
(0010,0020)	Patient ID
(0010,0030)	Patient's Birth Date

2.2.6 Real-world activity for MPPS

Once the MPPS association is established, Romexis invokes either an N-CREATE or N-SET

request to the server. When the starting the x-ray capture, intracam or TWAIN capture task, Romexis sends an N-CREATE request to the server. When the status of the MPPS instance is to be updated, Romexis will initiate the MPPS N-SET service request to update the status of the MPPS instance. The COMPLETE status will be finally delivered with the MPPS N-SET request after all associated images are captured.

2.2.6.1 Presentation context table 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	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	SCU	None

2.2.6.2 SOP Specific Conformance

The following attributes are either required, provided or supported.

Scheduled Step Attribute Sequence	0040,0270	required
Study Instance UID	0020,000D	required
Accession Number	0008,0050	provided
Requested Procedure ID	0040,1001	provided
Patient's Name	0010,0010	provided
Patient ID	0010,0020	provided
Patient's Birth Date	0010,0030	provided
Patient's Sex	0010,0040	provided
Performed Procedure Step ID	0040,0253	required
Performed Station AE Title	0040,0241	required
Performed Station Name	0040,0242	supported
Performed Procedure Step Start Date	0040,0244	required
Performed Procedure Step Start Time	0040,0245	required
Performed Procedure Step Start Status	0040,0252	required
Performed Procedure Step End Date	0040,0250	supported
Performed Procedure Step End Time	0040,0251	supported
Modality	0008,0060	required
Study ID	0020,0010	supported
Performed Series Sequence	0040,0340	supported
Performing Physician's Name	0008,1050	supported
Protocol Name	0018,1030	required
Series Instance UID	0020,000E	required
Total Number of Exposures	0040,0301	supported
Image Area Dose Product	0018,115E	supported
KVP	0018,0060	supported
X-Ray Tube Current in μA	0018,8151	supported
Exposure Time (msec)	0018,1150	supported

2.3 Association acceptance policy

Romexis handles and accepts incoming Storage requests for allowed AE titles and IP addresses.

3. Communication Profiles

3.1 Supported communication stacks

Romexis provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the DICOM Standard.

3.2 TCP/IP stack

Romexis communicates over the TCP/IP stack on any physical interconnection media supporting the TCP/IP stack. Romexis inherits the TCP/IP stack from the Operating System environment.

3.2.1 Physical media support

Romexis is indifferent to the physical medium over which TCP/IP executes on the Operating System. It runs over the TCP/IP protocol stack on any physical interconnection media supporting the TCP/IP stack.

4. Extensions/Specializations/Privatizations

Not supported

5. AE title / presentation address mapping

Presentation address mapping is configured in Romexis / DICOM Settings. Please see Romexis Installation Manual for details.

6. Support of extended character sets

Not supported.

7. Version history

7.1 Version 3.0 changes

- Added support for the Requesting Physician (0032,1032) tag in Worklist.
- RequestedProcedureDescription (received from Worklist) is copied to StudyDescription tag, 0x0008,0x1030, (if not received from Worklist) when creating image headers e.g. for Storage.

7.2 Version 4.0 changes
- Updated for version 4.0

7.3 Version 5.0 changes
- Updated for version 5.0

7.4 Version 5.3 changes

- Added support for the RDSR SOP Class regarding CT images.

8. Further information

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