

Philips Medical Systems

DICOM Conformance Statement

StentBoost / Integris 3DRA R4.1.3

Document Number Doc Nr. XPB 080-030212

January 15, 2004

DICOM Conformance Statement

Issued by:

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Document Number: XPB 080-030212

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1. INTRODUCTION

This chapter provides general information about the purpose, scope and contents of this Conformance Statement.

1.1. Scope and Field of Application

The scope of this DICOM Conformance Statement is to facilitate data exchange with equipment of Philips Medical Systems. This document specifies the compliance to the DICOM standard (formally called the NEMA PS 3.X standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

The field of application is the integration of the Philips Medical Systems equipment into an environment of medical devices. This Conformance Statement should be read in conjunction with the DICOM standard and its addenda [DICOM].

1.2. Intended Audience

This Conformance Statement is intended for:

- (potential) customers
- system integrators of medical equipment
- marketing staff interested in system functionality
- software designers implementing DICOM interfaces

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

1.3. Contents and Structure

The DICOM Conformance Statement is contained in chapter 2 through 7 and follows the contents and structuring requirements of DICOM PS 3.2.

1.4. Used Definitions, Terms and Abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3 and PS 3.4.

The word Philips in this document refers to Philips Medical Systems.

In this document, the term 'Integris 3DRA' has been used to refer to both the 3DRA application as well as the StentBoost application.

1.5. References

1.5.1. [DICOM] The Digital Imaging and Communications in Medicine

(DICOM) standard (NEMA PS 3.X):

National Electrical Manufacturers Association (NEMA)
Publication Sales 1300 N. 17th Street, Suite 1847
Rosslyn, Va. 22209, United States of America

1.6. Important Note to the Reader

This Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

Interoperability

Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.

It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.

Validation

Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.

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

New versions of the DICOM Standard

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.

The user should ensure that any non-Philips provider linking to Philips equipment, also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

1.7. General Acronyms and Abbreviations.

The following acronyms and abbreviations are used in the document.

ACC	American College of Cardiology
AE	Application Entity
ACR	American College of Radiology
ANSI	American National Standard Institute
DICOM	Digital Imaging and Communication in Medicine
DIMSE	DICOM Message Service Element
ELE	Explicit VR Little Endian
EBE	Explicit VR Big Endian
ILE	Implicit VR Little Endian
IOD	Information Object Definition
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
RIS	Radiology Information System
RWA	Real World Activity
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet protocol
UID	Unique Identifier
CD-R	Compact Disk Recordable
CD-RW	Compact Disk Re-writeable
3DRA	Three Dimensional Rotational Angiography
SC	Secondary Capture

2. IMPLEMENTATION MODEL

2.1. Implementation model for the Integris 3DRA

The Integris 3DRA R4.1.3 system of Philips Medical System is an 3D Imaging generating system and Stent enhancement software. The System contains:

- A DICOM Image export function to transfer DICOM Secondary Capture Images and private Reconstructed X-ray Images
- DICOM Print
- DICOM Verification
- DICOM Media Storage function to store DICOM Secondary Capture Images to CD-R and CD-RW media

The above DICOM Image Export and print functions are described in this document.

2.1.1. Application Data Flow Diagram for Integris 3DRA

The Integris 3DRA behaves as a system with four Application Entity (AE). The related Implementation Model is shown in Figure 1.

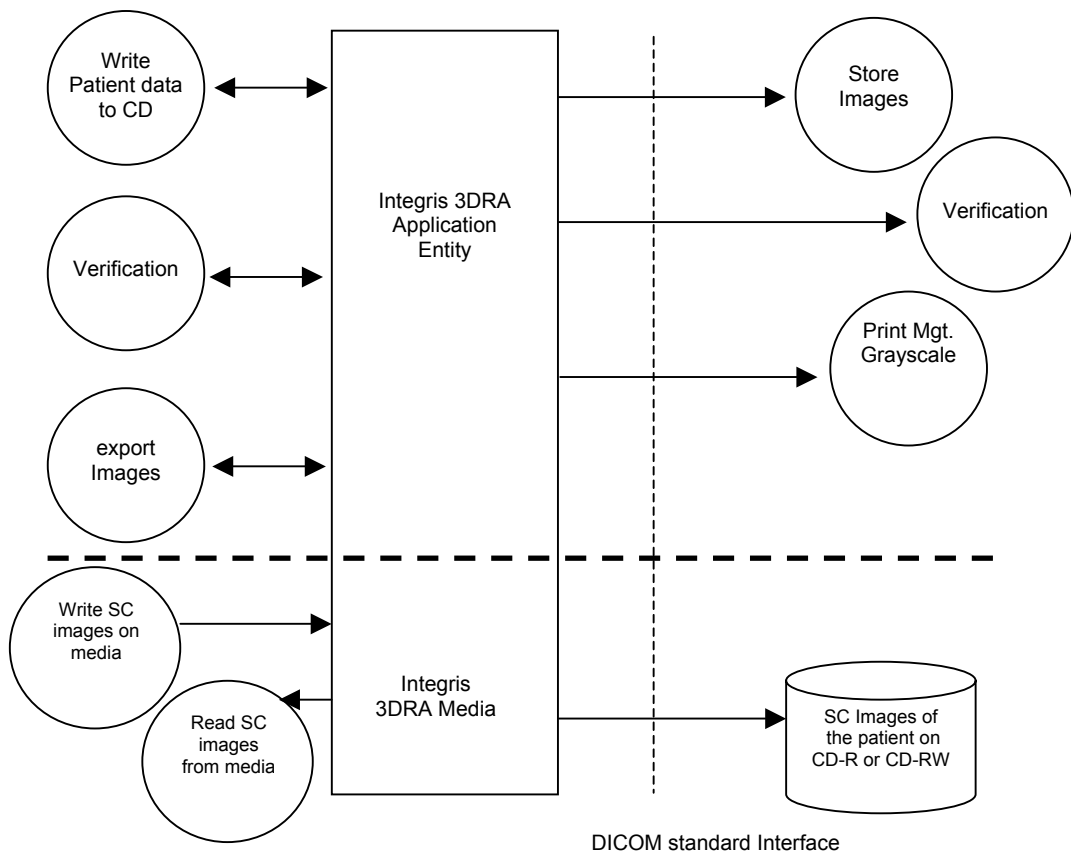


Figure 1. Implementation Model

The images to be sent are selected from one or more examinations of a patient. At export request the images will be converted into DICOM format and sent out to a remote destination. While writing images to CD, each snapshot of the selected patient will be converted to DICOM media format and written on media.

2.1.2. Functional definition of Application Entities

The Integris 3DRA DICOM Image Export AE acts as a Service Class User (SCU) of the Storage Service Class. When the export is initiated, the AE will open an association to the remote system. The selected images and related image data are converted into a DICOM message to be sent to the remote system. While writing images to CD, the Integris 3DRA acts as a File-Set Creator.

2.2. Sequencing of Real World Activities

When the examination is completed the created images can be exported via a network to the open domain.

Figure 2 gives an overview of the 3DRA system in a DICOM network.

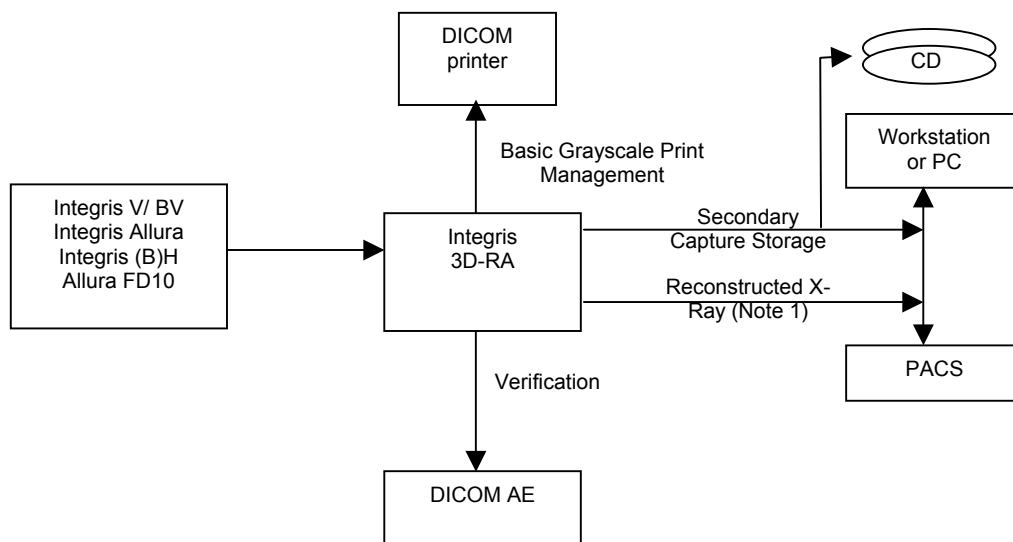


Figure 2. 3DRA in a DICOM network

3. AE SPECIFICATIONS

3.1. DICOM Image Storage AE Specification for Integris 3DRA

The Integris 3DRA DICOM Storage Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

Table 1. Supported SOP Classes by the Integris 3DRA AE as SCU

SOP Class Name	UID
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Reconstructed X-ray SOP Class	1.3.46.670589.2.4.1.1
Verification	1.2.840.10008.1.1
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
> Basic Film Session SOP Class	1.2.840.10008.5.1.1.1
> Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
> Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
> Printer SOP Class	1.2.840.10008.5.1.1.16

3.1.1. Association Establishment Policies

3.1.1.1. General

Integris 3DRA uses a PDU size of 16k.

3.1.1.2. Number of Associations

Integris 3DRA will establish one association at a time.

3.1.1.3. Asynchronous Nature

Integris 3DRA does not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.1.4. Implementation Identifying Information

THE IMPLEMENTATION CLASS UID:	1.3.46.670589.7.8.1.3
THE IMPLEMENTATION VERSION NAME:	"3DRA_rel_4.1.3"

3.1.2. Association Initiation Policy

Integris 3DRA initiates associations as a result of the following local Real-World activities:

- The Image Export Request to send the Secondary Capture from the Integris 3DRA to a remote system (Section 3.1.2.4 on page 8)

3.1.2.1. Request for Verification

Real World Activity - Verification

3.1.2.2. Associated Real World Activity

Integris 3DRA will issue Verification requests in response to UI mediated requests from the user to test validity of DICOM connection.

3.1.2.3. Presentation Context Table

The Integris 3DRA will propose the following presentation contexts:

Table 2. Proposed Presentation Contexts for the request to send images

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Verification	1.2.840.10008.1.1	ILE	1.2.840.10008.1.2	SCU	None
		ELE	1.2.840.10008.1.2.1		
		EBE	1.2.840.10008.1.2.2		

3.1.2.3.1. SOP Specific Conformance

The Integris 3DRA provides Standard Conformance to the DICOM Verification Service Class.

3.1.2.4. Request to send images from Integris 3DRA to a remote system**3.1.2.4.1. Associated Real-World Activity**

After selection of an image file, the file will be sent when initiating the Send command. The Integris 3DRA initiates one association to the pre-configured peer system and uses it to send the selected images and runs via C-STORE requests (and receives the associated C-STORE responses). The association is released by Integris 3DRA after successful transfer of the images or when an error occurs. The Integris 3DRA handles each send request one after another.

3.1.2.4.2. Proposed Presentation Contexts

The Integris 3DRA will propose the following presentation contexts:

Table 3. Proposed Presentation Contexts for the request to send images

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Secondary Capture Image Storage - STORE	1.2.840.10008.5.1.4.1.1.7	ILE	1.2.840.10008.1.2	SCU	None
		ELE	1.2.840.10008.1.2.1		
		EBE	1.2.840.10008.1.2.2		

3.1.2.4.3. C-STORE SCU Conformance

A not succeeded transfer is indicated on the console with an error messages:

Table 4. C-STORE STATUS

Service Status	Codes	Further Meaning Status
Refused	A7xx	Message in console.
Error	A9xx Cxxx	Message in console. Message in console.
Warning	B00x	Message in console.
Success	0000	Message in console.

In case the association is aborted the Integris 3DRA tries to established an new association to send the images again.

Extended negotiation is not supported.

3.1.2.4.3.1. Secondary Capture SCU Conformance

Table 5 lists the applied Conditional (DICOM Type 1C and 2C) and Optional (DICOM Type 3) attributes in the Secondary Capture Image IOD.

Table 5. Applied Conditional and Optional Attributes of the SC Image IOD

IE	Module	Conditional Attributes	Optional Attributes
Patient	Patient	-	-
Study	General Study	-	-
Series	General Series	Code Value, Code Scheme Designator, Scheduled Procedure Step ID, Requested Procedure ID	Series Date, Series Time, Performing Physician's Name, Referenced Study Component Sequence, Code Meaning, Performed Procedure Step Start Date, Performed Procedure Step Start Time, Performed Procedure Step ID, Performed procedure Step Description, Request Attributes Sequence, Scheduled Procedure Step Description, Scheduled Action Item Code Sequence,
Equipment	General Equipment SC Equipment	- -	Institution Name, Station Name, Manufacturer's Model Name, Software Version(s)
Image	General Image Image Pixel SC Image Module VOI LUT SOP Common	- - - Window Width Specific Character Set	Image Type Date of Secondary Capture, Time of Secondary Capture Window Center

The availability of attributes depends on the image obtained via the private link from the Integris.

Table 6. Applied Modules in the SC Image IOD for the Integris 3DRA

Module	Usage	Reference
Patient	M	Table 18
General Study	M	Table 19
General Series	M	Table 20
General Equipment	U	Table 21
SC Equipment	M	Table 22
General Image	M	Table 23
Image Pixel	M	Table 24
SC Image	M	Table 25
VOI LUT	U	Table 26
SOP Common	M	Table 27

3.1.2.5. Print Images**3.1.2.5.1. Associated Real-World Activity**

The operator is able to select one or more images from the internal database (via the Data Handling facility) and perform the Print operation on them.

The operator will select the print destination (out of choice list of configured printers) and some print parameters.

As a result, the Integris 3DRA will initiate an association to the selected printer and uses it to send the Print Service Elements of the Print SOP Classes.

3.1.2.5.2. Proposed Presentation Context

The Integris 3DRA will propose the following presentation contexts for Print:

Table 7. Presentation Contexts for print images

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	ILE	1.2.840.10008.1.2		
		ELE	1.2.840.10008.1.2.1	SCU	None
		EBE	1.2.840.10008.1.2.2		

3.1.2.5.3. Conformance to the Print SOP Classes

The Integris 3DRA provides standard conformance to the Basic Grayscale Print Management Meta SOP Class.

The applied order of Print Service Elements (DIMSE's) is specified in Table 8. A description and the applied optional (i.e. non-mandatory attributes as Print SCU) attributes in these Service Elements are specified too. Note that the Service Elements order is not specified by the DICOM standard.

An explicit N-DELETE Request on the created instances is not done by the Integris 3DRA; these are deleted implicitly when releasing the association.

The full list of (Mandatory and Optional) attributes applied in these Service Elements are:

Table 8. Applied order of Print Service Elements and its optional attributes

Service Element of SOP Class	Description and applied optional attributes
N-GET of the Printer SOP Class	Purpose is to retrieve printer information.
N-CREATE of the Basic Film Session SOP Class	Integris 3DRA specifies the DICOM Printer about some general presentation parameters, applicable for all films in the Film Session. Applied optional attributes are: Number of Copies, Medium Type
N-CREATE of the Basic Film Box SOP Class	Integris 3DRA specifies the DICOM Printer about some general presentation parameters, applicable for all images in the Film Box. Applied optional attributes are: Film Orientation, Film Size ID, Magnification Type, Max. Density, Configuration Information, Trim.
N-SET of the Basic Grayscale Image Box SOP Class	Integris 3DRA will send the images to be printed.
N-ACTION of the Basic Film Box SOP Class	Integris 3DRA triggers the DICOM Printer to print, this actual print action is done at film box level. No (optional) attributes are present.

The table below specifies the supported Service Elements which may be generated by the Printer at any time during the association.

Table 9. Applied sequence of Print Service Elem. and its optional attributes

Service Element of SOP Class	Note
N-EVENT-REPORT of the Printer SOP Class	May be sent at any moment by the Printer SCP (i.e. the DICOM Printer). Integris 3DRA will respond.

The Status Codes of DIMSE Responses (Success, Warning, Failure) as returned by the printer will also be logged (for service purposes) and are mapped onto window messages.

The following implementation remarks are important to achieve successful printing:

- The Integris 3DRA will release the association after the last print command has been given and a N-ACTION-RSP message from the printer SOP has been received.

3.1.2.5.3.1. Basic Film Session SOP Class

Table 10. Basic Film Session SOP Class - N-CREATE

Attribute Name	Tag	Note
Number of Copies	2000,0010	
Print Priority	2000,0020	Applied value(s): HIGH, MED, LOW
Medium Type	2000,0030	Applied value(s): BLUE FILM, CLEAR FILM, PAPER
Film Destination	2000,0040	Applied value(s):MAGAZINE, PROCESSOR, BIN_I (with I > 0)

3.1.2.5.3.2. Basic Film Box SOP Class

Table 11. Basic Film Box SOP Class - N-CREATE

Attribute Name	Tag	Note
Image Display Format *	2010,0010	
Film Orientation	2010,0040	Applied value(s): PORTRAIT
Film Size ID *	2010,0050	DICOM specifies a number of Defined Terms. Applied value(s): 8INx10IN, 10INx12IN, 11INx14IN, 14INx14IN, 14INx17IN, 24CMx24CM, 24CMx30CM
Magnification Type *	2010,0060	Applied value(s): BILINEAR, CUBIC, NONE, REPLICATE
Max Density *	2010,0130	User selectable 0-350.
Trim	2010,0140	Applied value(s): NO
Configuration Information *	2010,0150	
Smoothing Type	2010,0080	
Border Density	2010,0100	Applied value(s): BLACK
Empty Image Density	2010,0110	Applied value(s): BLACK
Min. Density	2010,0120	Applied value(s) 0..399 (printer dependent)
Referenced Film Session Sequence	2010,0500	Parent Film Session.
> Referenced SOP Class UID	0008,1150	Applied value(s): 1.2.840.10008.5.1.1.1
> Referenced SOP Instance UID	0008,1155	

* Note: the Image Display Format, and Film Size ID are selectable.

Table 12. Basic Film Box SOP Class - N-ACTION

Attribute Name	Tag	Note
No data attributes present.		

3.1.2.5.3.3. Basic Grayscale Image Box SOP Class

Table 13. Basic Grayscale Image Box SOP Class - N-SET

Attribute Name	Tag	Note
Image Position	2020,0010	1 up to number of images on film.
Polarity	2020,0020	Applied value(s): NORMAL
Basic Grayscale Image Sequence	2020,0110	
> Samples per Pixel	0028,0002	Applied value(s): 1
> Photometric Interpretation	0028,0004	Applied value(s): MONOCHROME2
> Rows	0028,0010	Applied value(s): 512
> Columns	0028,0011	Applied value(s): 512
> Bits Allocated	0028,0100	Applied value(s): 8
> Bits Stored	0028,0101	Applied value(s): 8
> High Bit	0028,0102	Applied value(s): 7
> Pixel Representation	0028,0103	Applied value(s): 0x0000 (i.e. unsigned integer)
> Pixel Data	7FE0,0010	

3.1.2.5.3.4. Printer SOP Class

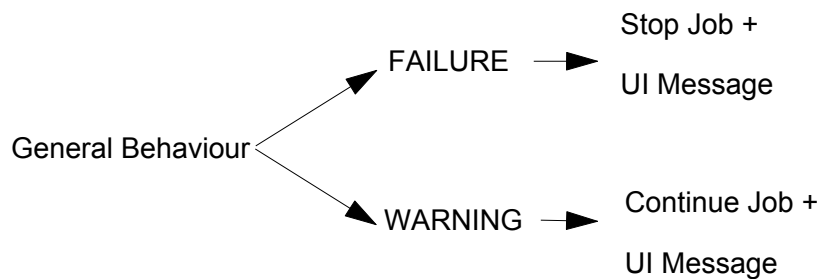
Table 14. Printer SOP Class - N-GET

Attribute Name	Tag	Note
Printer Status	2110,0010	
Printer Status Info	2110,0020	
Printer Name	2110,0030	
Manufacturer	0008,0070	
Manufacturer model name	0008,1090	
Device serial number	0018,1000	
Software Versions	0018,1020	
Date last calibration	0018,1200	

Table 15. Printer SOP Class - N-EVENT-REPORT

Attribute Name	Tag	Note
Printer Status Info	2110,0020	Conditionally sent by the Printer. The Integris 3DRA will react on notification, and will show corresponding messages on the UI for the events WARNING and FAILURE.
Film destination	2000,0040	
Printer Name	2110,0030	

The Integris 3DRA does not send an attribute list to the printer, therefore the only attributes which are needed to be supported by the printer, are the mandatory attributes listed in Table 14, "Printer SOP Class - N-GET".



3.1.3. Association Acceptance Policy

The Integris 3DRA Application Entity does not accept associations.

3.2. Integris 3DRA Media Specification

The Integris 3DRA provides Standard Conformance to the DICOM Media Storage Service and File Format (PS 3.10) and the Media Storage Application Profiles. The supported Application Profile, their Roles and the Service Class options, all defined in DICOM terminology, are listed in Table 16.

Table 16. Application Profile, Activities and Roles of Integris 3DRA

Application Profile	Identifier	Real World Activity	Role	SC Option
General Purpose CD-R Image Interchange Profile	STD-GEN-CD	Write image(s) on CD-R disk	FSC	Interchange
	STD-GEN-CD	Write image(s) on CD-RW disk	FSC	Interchange

Note: Secondary Capture images only

3.2.1. AE Specification DICOM Recording

3.2.1.1. Application Entity Title

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

APPLICATION ENTITY TITLE	"3DRAexport"
--------------------------	--------------

3.2.1.2. Request to write Patient data to CD

3.2.1.3. Associated Real World Activity

After one or more patients are selected, the operator can choose to store the data onto a portable medium (CD-R or CD-RW). All the snapshots belonging to the selected patients will be stored on the portable medium as DICOM Secondary Capture images, in DICOM media format.

Though the entire patient data can extend to more than one CD, the DICOM Secondary Capture images are stored in the first CD itself. Hence, if the user wants to read the secondary capture images at a DICOM File-Set-Reader (FSR), he/she only needs the first CD of the series.

Note: If no snapshots have been created for any of the patients selected, then the resulting CD will not contain any DICOM data. Hence it will not be a DICOM medium.

3.2.1.4. File Meta Information

The Implementation Class UID and Implementation Version Name in the File Meta Header is specified in 3.1.1.4

3.2.1.5. SOP Classes and Transfer Syntaxes

IOD	SOP Class	Transfer Syntax and UID	FSC	FSR	FSU
Basic Directory	1.2.840.10008.1.3.10	ELE 1.2.840.10008.1.2.1	YES	YES	YES
SC Image Storage	1.2.840.10008.5.1.4.1.1.7	ELE 1.2.840.10008.1.2.1	YES	YES *	NO

* File Set Reader (FSR) functionality will be supported by 3DRA for specialized non-DICOM information only.

3.2.1.6. SOP FSC Conformance (Secondary Capture)

All Attributes from Table 5 and in addition all Type 1 attributes in the File Meta Information are written to the image files.

3.2.1.7. SOP FSU Conformance (Basic Directory)

3DRA will not delete any snapshots, which are already written to the File Set.

4. COMMUNICATION PROFILES

4.1. Supported Communication Stacks

The Integris 3DRA provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2. TCP/IP Stack

The Integris 3DRA uses the TCP/IP program stack of the Windows 2000 work station is used for the image transport.

4.3. Physical Media Support

The Integris 3DRA supports Ethernet (ISO 8802-3), 10 and 100-BaseT for the Image and Printer Interface.

For Media ISO 9660 is supported to write Data to CD-R and CD-RW.

5. EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

Table 17. Mapping between UI elements and DICOM attributes

DICOM Attribute name	Tag	UI element	Note
Patient's Name	(0010,0010)	Patient Name	
Patient Sex	(0010, 0040)	Patient Sex	
Patient's Birth Date	(0010, 0030)	Patient Birthdate	
Patient ID	(0010, 0020)	Patient Id	
Study ID	(0020, 0010)	Exam Id	The User Interface "Exam ID" can be Study ID, Accession Number, Requested Procedure ID or the Study Instance UID, depending on the configuration setting.
Accession Number	(0008,0050)	Exam Id	
Study Instance UID	(0020,000D)	Exam Id	
Requested Procedure ID	(0040,1001)	Exam Id	
Study Date	(0008, 0020)	Exam Date	
Series Date	(0008, 0021)	Run Date	
Series Time	(0008, 0031)	Run Time	
Series Number	(0020, 0011)	Run Number	

6. CONFIGURATION

6.1. AE Title/Presentation Address mapping

6.1.1. Local AE Titles and Presentation Addresses

The Integris 3DRA AE titles are configurable the default values are:

➤ Import Provider	3DRAimport
➤ Remote Print	3DRAprint
➤ Remote Store SC	3DRAexport
➤ Remote Store Reconstr. X-ray SC	3DRAexportvol
➤ Echo	3DRAecho
➤ Media Storage	3DRAexport

6.1.2. Remote AE Titles and Presentation Addresses

For remote applications that act as Service Class Provider the following additional information must be provided:

- The host name on which the application resides, is configurable, Section 6.2

6.2. Configurable parameters.

- IP address.
- The port number

7. SUPPORT OF EXTENDED CHARACTER SETS

The Integris 3DRA supports Extended Character Set "ISO_IR 100" which is the Latin alphabet No 1, supplementary set.

ANNEX 1. Secondary Capture Image Storage SOP Class

Table 18. Secondary Capture Image Storage SOP Class- Patient Module

Attribute Name	Tag	Note
Patient's Name	0010,0010	Received from RIS
Patient ID	0010,0020	Received from RIS
Patient's Birth Date	0010,0030	Received from RIS
Patient's Sex	0010,0040	Received from RIS

Table 19. SC Image Storage SOP Class- General Study Module

Attribute Name	Tag	Note
Study Date	0008,0020	
Study Time	0008,0030	
Accession Number	0008,0050	Received from RIS
Referring Physician's Name	0008,0090	Received from RIS
Study Instance UID	0020,000D	Received from RIS
Study ID	0020,0010	

Table 20. SC Image Storage SOP Class- General Series Module

Attribute Name	Tag	Note
Series Date	0008,0021	
Series Time	0008,0031	
Modality	0008,0060	Applied Value(s): XA
Performing Physician's Name	0008,1050	
Referenced Study Component Sequence	0008,1111	
>Referenced SOP Class UID	0008,1150	Uniquely identifies the referenced Modality Performed Procedure SOP Class. Applied Value(s): 1.2.840.10008.3.1.2.3.3
>Referenced SOP Instance UID	0008,1155	
Patient Position	0018,5100	
Series Instance UID	0020,000E	
Series Number	0020,0011	Applied Value(s): 1
Performed Procedure Step Start Date	0040,0244	
Performed Procedure Step Start Time	0040,0245	
Performed Procedure Step ID	0040,0253	
Performed Procedure Step Description	0040,0254	Received from RIS
Request Attributes Sequence	0040,0275	
>Scheduled Procedure Step Description	0040,0007	Received from RIS
>Scheduled Action Item Code Sequence	0040,0008	Received from RIS
>>Code Value	0008,0100	
>>Coding Scheme Designator	0008,0102	
>>Code Meaning	0008,0104	
>Scheduled Procedure Step ID	0040,0009	Received from RIS
>Requested Procedure ID	0040,1001	Received from RIS

Table 21. SC Image Storage SOP Class- General Equipment Module

Attribute Name	Tag	Note
Manufacturer	0008,0070	Applied Value(s): Philips Medical Systems (Netherlands)
Institution Name	0008,0080	Received from RIS
Station Name	0008,1010	
Manufacturer's Model Name	0008,1090	Applied Value(s): Dell
Software Version(s)	0018,1020	

Table 22. SC Image Storage SOP Class- Sc Image Equipment Module

Attribute Name	Tag	Note
Conversion Type	0008,0064	Applied Value(s): WSD

Table 23. SC Image Storage SOP Class- General Image Module

Attribute Name	Tag	Note
Image Type	0008,0008	Applied Value(s): DERIVEDSECONDARY
Instance Number	0020,0013	
Patient Orientation	0020,0020	Applied Value(s): (Empty string)

Table 24. SC Image Storage SOP Class- Image Pixel Module

Attribute Name	Tag	Note
Samples per Pixel	0028,0002	Applied Value(s): 1
Photometric Interpretation	0028,0004	Applied Value(s): MONOCHROME2
Rows	0028,0010	Applied Value(s): 512
Columns	0028,0011	Applied Value(s): 512
Bits Allocated	0028,0100	Applied Value(s): 8
Bits Stored	0028,0101	Applied Value(s): 8
High Bit	0028,0102	Applied Value(s): 7
Pixel Representation	0028,0103	Applied Value(s): 0000
Pixel Data	7FE0,0010	

Table 25. SC Image Storage SOP Class- Sc Image Module

Attribute Name	Tag	Note
Date of Secondary Capture	0018,1012	
Time of Secondary Capture	0018,1014	

Table 26. SC Image Storage SOP Class- Voi Lut Module

Attribute Name	Tag	Note
Window Center	0028,1050	Applied Value(s): 127.5
Window Width	0028,1051	Applied Value(s): 255

Table 27. SC Image Storage SOP Class- Sop Common Module

Attribute Name	Tag	Note
Specific Character Set	0008,0005	Applied Value(s): ISO_IR 100
SOP Class UID	0008,0016	Applied Value(s): 1.2.840.10008.5.1.4.1.1.7, 1.3.46.760589.2.4.1.1
SOP Instance UID	0008,0018	

ANNEX 2. XA reconstructed X-Ray SOP Class (private)

Table 28. XA reconstructed X-ray SOP Class (private)- Patient Module

Attribute Name	Tag	Note
Patient's Name	0010,0010	Received from RIS
Patient ID	0010,0020	Received from RIS
Patient's Birth Date	0010,0030	Received from RIS
Patient's Sex	0010,0040	Received from RIS

Table 29. XA reconstructed X-ray SOP Class (private)- General Study Module

Attribute Name	Tag	Note
Study Date	0008,0020	
Study Time	0008,0030	
Accession Number	0008,0050	Received from RIS
Referring Physician's Name	0008,0090	Received from RIS
Study Instance UID	0020,000D	Received from RIS
Study ID	0020,0010	

Table 30. XA reconstructed X-ray SOP Class (private)- General Series Module

Attribute Name	Tag	Note
Series Date	0008,0021	
Series Time	0008,0031	
Modality	0008,0060	Applied Value(s): XA
Performing Physician's Name	0008,1050	
Series Instance UID	0020,000E	
Series Number	0020,0011	Applied Value(s): 1
Performed Procedure Step Start Date	0040,0244	
Performed Procedure Step Start Time	0040,0245	
Performed Procedure Step ID	0040,0253	
Performed Procedure Step Description	0040,0254	Received from RIS
Request Attributes Sequence	0040,0275	
>Scheduled Procedure Step Description	0040,0007	Received from RIS
>Scheduled Procedure Step ID	0040,0009	Received from RIS
>Requested Procedure ID	0040,1001	Received from RIS
Patient Position	0018,5100	Applied Value(s): HFP, HFS, FFP, FFS, HFDR, FFDR, HFDL and FFDL

Table 31. XA reconstr. X-ray SOP Class (private)- Frame of Reference Module

Attribute Name	Tag	Note
Frame of Reference UID	0020,0052	
Position Reference Indicator	0020,1040	

Table 32. XA reconstr. X-ray SOP Class (private)- General Equipment Module

Attribute Name	Tag	Note
Manufacturer	0008,0070	Applied Value(s): Philips Medical Systems (Netherlands)
Institution Name	0008,0080	Received from RIS
Station Name	0008,1010	
Manufacturer's Model Name	0008,1090	Applied Value(s): Dell
Software Version(s)	0018,1020	

Table 33. XA reconstructed X-ray SOP Class (private)- General Image Module

Attribute Name	Tag	Note
Image Type	0008,0008	Applied Value(s): DERIVED/ SECONDARY
Instance Number	0020,0013	
Patient Orientation	0020,0020	Applied Value(s): (Empty string)

Table 34. XA reconstructed X-ray SOP Class (private)- Image Plane Module

Attribute Name	Tag	Note
Slice Thickness	0018,0050	
Image Position (Patient)	0020,0032	
Image Orientation (Patient)	0020,0037	
Pixel Spacing	0028,0030	
Slice Location	0020,1041	

Table 35. XA reconstructed X-ray SOP Class (private)- Image Pixel Module

Attribute Name	Tag	Note
Samples per Pixel	0028,0002	
Photometric Interpretation	0028,0004	Applied Value(s): MONOCHROME2
Rows	0028,0010	Applied Value(s): 64,128,256,512
Columns	0028,0011	Applied Value(s): 64,128,256,512
Bits Allocated	0028,0100	Applied Value(s): 16
Bits Stored	0028,0101	Applied Value(s): 16
High Bit	0028,0102	Applied Value(s): 15
Pixel Representation	0028,0103	Applied Value(s): 0000
Pixel Data	7FE0,0010	

Table 36. XA reconstructed X-ray SOP Class (private)- Voi Lut Module

Attribute Name	Tag	Note
Window Center	0028,1050	Applied Value(s): 32767.5
Window Width	0028,1051	Applied Value(s): 65535

Table 37. XA reconstructed X-ray SOP Class (private)- Sop Common Module

Attribute Name	Tag	Note
Specific Character Set	0008,0005	Applied Value(s): ISO_IR 100
SOP Class UID	0008,0016	Applied Value(s): 1.3.46.670589.2.4.1.1
SOP Instance UID	0008,0018	