EOS imaging	DICOM CONFORMANCE STATEMENT EOS 2.1.1	90190-D-DCS-DICOM Conformance Statement 2021-02-11

1 Object

This document presents the conformance statement of EOS Acquisition Workstation. It lists the services that these products implement as Service Class User (SCU).

It applies to EOS 4.0 EOS 2.1.1 release.

This document intents to list the services and to provide a frame for the technical analysis.

2 Recipients

EOS development and marketing teams, hospital staff, health system integrators. It is assumed that the recipients have a basic understanding of DICOM.

The document to be provided outside of EOS imaging members shall start from the next page. That is why the table of content lists the chapters starting from the next page.

3 Approval

Edition	Review	Approval
L. LIXI (SW Analyst)	Y. GULLEMOT (EOS Software Manager)	L. HERY (Engineering Global Manager)

4 Revision Table

Revision	Brief description of the change(s)	Date
A	Creation	19-Jun-18
B	Update for CJ3a to reflect updates from 90086-F-DRS-DICOM datasets	08-Jul-2019
C	Update for CJ3b to reflect 90086-G-DRS-DICOM datasets and print implementation feature	08/06/2020
D	Update for 2.1.1 release to reflect 90086-I-DRS-DICOM dataset and changes linked to dual energy feature	See above

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DICOM
Conformance Statement

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1 Conformance Statement Overview

EOSedge is a digital radiography system which is intended for use in general radiographic examinations and applications excluding fluoroscopy, angiography and mammography. EOSedge allows radiographic acquisition of either one or two orthogonal X-Ray images for diagnostic purposes, in one single scan, of the whole body or a reduced area of investigation of a patient in upright or seated position.

EOS Acquisition Application (EAA) is a software application that is dedicated to drive EOSedge system. EAA provides a user interface for the operator to manage patient information, control the image acquisition function, display the images for quality check and manage data output.

EOSedge produces its DX images based on patient information retrieved using the DICOM Basic Modality Worklist Management services, exports them using DICOM Storage services.

If configured, EOSedge also exports:

- X-Ray Radiation Dose Structured Reports.

EAA acts as an SCU for the following SOP Classes:

- Verification,
- Storage,
- Basic Modality Worklist Management,
- Print.

This document is intended to describe EAA conformance to DICOM.

Table 1.1 Network services

SOP Class Name	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Digital X-Ray Image Storage For Presentation	Yes	No
X-Ray Radiation Dose SR Storage	Yes	No
Worklist		
Modality Worklist Information Model – FIND	Yes	No
Print Management		
Basic Grayscale Print Management	Yes	No
Basic Film Session SOP Class	Yes	No
Basic Film Box SOP Class	Yes	No
Basic Grayscale Image Box SOP Class	Yes	No
Printer SOP Class	Yes	No

2 Introduction

2.1 Scope and field of application

This document describes (EAA) conformance to the DICOM Standard PS 3.3, 2018e listed below.

It contains a short description of application involved and provides technical information about 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.

It applies to the software version 5.1.0 of EAA and should be read in conjunction with the DICOM standard and its addenda.

2.2 Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document

- ACR American college of Radiology
- AE Application entity
- ANSI American National Standards Institute
- DICOM Digital Imaging and Communication in Medicine
- DIMSE DICOM Message Service Element
- DIMSE-C DICOM Message Service Element-Composite
- DIMSE-N DICOM Message Service Element-Normalized
- NEMA National Electrical Manufacturers Association
- PDU Protocol Data Unit
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- SR Structured Report
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

2.3 References

The DICOM Standard:

NEMA Digital Imaging and Communications in Medicine, Part 1-20
(NEMA Standards Publication PS3.X, 2013)

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

2.4 Intended audience

This Conformance Statement is intended for:

- Potential users.
- System integrators of medical equipment.
- Software designers implementing DICOM interfaces.

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

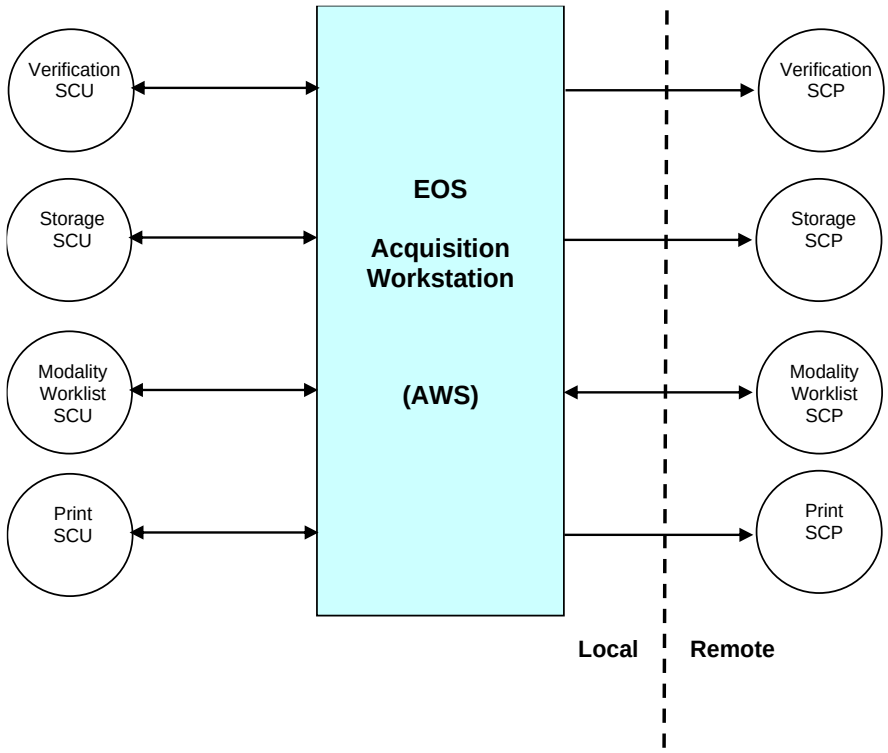
2.5 Warning to the Reader

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 is not a standard which specifies what is needed for certain applications to run on a device.

3 Networking

3.1 Implementation Model

3.1.1 Application Data Flow



3.1.2 Functional Definitions of Application Entities

EAA functions may be seen as a single configurable Application Entities, acting as SCU (EAA software itself).

3.1.2.1 Functional definitions of EAA (SCU services)

3.1.2.1.1 Verification service as SCU

EAA supports the Echo / Verification service as SCU.

Verification service is part of the EOS Settings Application. When declaring a remote AE Title, the configuration panel lets the user issue a verification request to check DICOM parameters of the remote Application Entity.

3.1.2.1.2 Storage Services as SCU

To store local objects (DX images, Dose SR), EAA establishes an association with a remote Storage SCP, negotiates its presentation contexts according to object SOP Classes and their native transfer syntax, and sends all data.

Then EAA closes the association.

3.1.2.1.3 Grayscale Printing Service as SCU

EAA may use the Print services as SCU to print films to DICOM printers.

Print requests are enqueued by EAA and processed in background in sequential order. For each print request, EAA establishes one association with the remote Print SCP, performs its print request and closes the association when printing is done, successfully or not.

3.1.2.1.4 Basic Modality Worklist Management Service as SCU

EAA makes use of the Basic Modality Worklist Management service to initialize the examination data.

For each query operation, it establishes one association with the remote Modality Worklist SCP, performs one C-FIND request, waits for responses and releases the association.

3.1.3 Sequencing of Real-World Activities

See the previous section.

3.2 Application Entity Specifications

3.2.1 EAA / SCU

3.2.1.1 SOP Classes

EAA provides Standard Conformance to the following DICOM V3.0 SOP Classes

Table 3.2.1-1 Supported SOP Classes for Verification SCU

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1

Table 3.2.1-2 Supported SOP Classes for Storage SCU

SOP Class Name	SOP Class UID
Digital X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1
X-Ray Radiation Dose SR Storage	1.2.840.10008.5.1.4.1.1.88.67

Table 3.2.1-3 Supported SOP Classes for Modality Worklist SCU

SOP Class Name	SOP Class UID
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31

3.2.1.2 Association policies

3.2.1.2.1 General

The following DICOM standard application context shall be used.

Table 3.2.1-4 Application context

Application Context Name	1.2.840.10008.3.1.1.1

EAA contains the following limitations for PDU size:

Table 3.2.1-5 PDU sizes

Minimum PDU size	N/A
Maximum PDU size	16 384 bytes

3.2.1.2.2 Number of Associations

All DICOM services are performed asynchronously on user request. EAA initiates one Association at a time for each destination to which a transfer request is being processed in the active job queue list. Only one job will be active at a time, the other remains pending until the active job is completed or failed.

Thus, the maximum number of simultaneous DICOM SCU operations and associations established is 1.

Table 3.2.1-6 Number of associations as an association initiator EAA / SCU

Maximum number of simultaneous associations	1

3.2.1.2.3 Asynchronous Nature

EAA does not support asynchronous communication.

Table 3.2.1-7 Asynchronous nature as an association initiator EAA / SCU

Maximum number of outstanding asynchronous transactions	0

3.2.1.2.4 Implementation Identifying Information

EAA has the following implementation identifying parameters:

Table 3.2.1-8 Application Identifying Information for DX images

Name	SOP Class UID
Implementation Class UID	1.2.826.0.1.3680043.2.1143.107.104.103.115.2.6.3
Implementation Version Name	GDCM 2.6.3

Table 3.2.1-9 Application Identifying Information for X-Ray Radiation Dose SR

Name	SOP Class UID
Implementation Class UID	1.2.826.0.1.3680043.2.1143.107.104.103.115.2.6.3
Implementation Version Name	GDCM 2.6.3

3.2.1.3 Association Initiation Policy

3.2.1.3.1 Activity: Verification SCU

3.2.1.3.1.1 Description and sequencing of activity

All verification SCU operations are performed synchronously, on user request.

3.2.1.3.1.2 Proposed presentation contexts

Table 3.2.1-10 Proposed presentation contexts for Verification SCU

Presentation Context Table

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Verification SOP Class	1.2.840.10008.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

EEA applies the following rules for the presentation contexts: it supports the 3 syntaxes listed above and selects the first supported by the remote SCP.

3.2.1.3.1.3 SOP Specific conformance

None

3.2.1.3.2 Activity: Storage SCU

3.2.1.3.2.1 Description and sequencing of activity

All storage SCU operations are performed synchronously, on user request.

EAA will initiate an association with a Storage SCP to store local data to a remote application entity. All data then are stored on the same association and then the association is released.

3.2.1.3.2.2 Proposed presentation contexts

Table 3.2.1-11 Proposed presentation contexts for Storage SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID		Negotiation
See note	*See note*	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

Note: Abstract syntaxes and their UIDs are those listed in Table 3.2.1-2

EEA applies the following rules for the presentation contexts: it supports the 3 syntaxes listed above and selects the first supported by the remote SCP.

3.2.1.3.2.3 SOP Specific conformance

DX Images

Images sent by EAA using Storage SCU operation contain their native information. EAA never attempts to modify local stored datasets.

EAA applies the following rules for the presentation contexts proposed:

- Uncompressed transfer syntaxes are proposed for all storage operations.

Dose SR (cf DICOM PS 3.4, Annex O.4.1)

- DX images instances are referenced by instances of X-Ray Radiation Dose SR Storage SOP Class.
- Range of Value Types and Relationship Types that are supported by the SCU (cf DICOM PS 3.3, A.35.8.3.1):
    - Values Types supported: TEXT, CODE, NUM, DATETIME, UIDREF, PNAME, IMAGE, COMPOSITE, and CONTAINER
    - Relationships supported:

Source Value Type	Relationship Type (Enumerated Values)	Target Value Type
CONTAINER	CONTAINS	TEXT, CODE, NUM, DATETIME, UIDREF, PNAME, IMAGE,COMPOSITE, CONTAINER
CONTAINER	HAS OBS CONTEXT	DATETIME, CODE, TEXT, UIDREF, PNAME
TEXT, CODE, NUM	HAS OBS CONTEXT	TEXT, CODE, NUM, DATETIME, UIDREF, PNAME,COMPOSITE
CONTAINER, IMAGE,COMPOSITE	HAS ACQ CONTEXT	TEXT, CODE, NUM, DATETIME, UIDREF, PNAME, CONTAINER.
any type	HAS CONCEPT MOD	TEXT, CODE
TEXT, CODE, NUM	HAS PROPERTIES	TEXT, CODE, NUM, DATETIME, UIDREF, PNAME, IMAGE, COMPOSITE, CONTAINER.
PNAME	HAS PROPERTIES	TEXT, CODE, DATETIME, DATE, TIME, UIDREF, PNAME
TEXT, CODE, NUM	INFERRED FROM	TEXT, CODE, NUM, DATETIME, UIDREF, IMAGE, COMPOSITE, CONTAINER.

3.2.1.3.3 Activity: Modality Worklist SCU

3.2.1.3.3.1 Description and sequencing of activity

All modality worklist operations are performed synchronously, on user request, when filling examination data.

For each basic query of a remote application entity for a modality worklist list of items, EAA will initiate an association, send a C-FIND request command, wait in blocking mode for all C-FIND responses, and then release the association.

3.2.1.3.3.2 Proposed presentation contexts

EAA will propose the following Presentation Context:

Table 3.2.1-12 Modality Worklist Proposed Presentation Contexts

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

EEA applies the following rules for the presentation contexts: it supports the 3 syntaxes listed above and selects the first supported by the remote SCP.

3.2.1.3.3.3 SOP Specific conformance

EAA provides standard conformance to the DICOM Modality Worklist Service Class. EAA requests the following matching key types:

Key type matching	
SV	Single value Matching
WC	Wild card Matching
RM	Range Matching

EAA will query for the following attributes:

Table 3.2.1-13 Modality Worklist Query attributes

Module	Attribute Name	Tag	Match
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	
	› Scheduled Station AETitle	(0040,0001)	SV / WC
	› Scheduled Procedure Step Start Date	(0040,0002)	SV / WC
	› Scheduled Procedure Step Start Time	(0040,0003)	
	› Modality	(0008,0060)	SV / WC
	› Scheduled Performing Physician's Name	(0040,0006)	
	› Scheduled Station Name	(0040,0010)	
	› Scheduled Procedure Step Description	(0040,0007)	
	› Scheduled Procedure Step Location	(0040,0011)	
	› Scheduled Protocol Code Sequence	(0040,0008)	
	› Pre Medication	(0040,0012)	
	› Scheduled Procedure Step ID	(0040,0009)	
	› Requested Contrast Agent	(0032,1070)	
	› Scheduled Procedure Step Status	(0040,0020)	
Requested Procedure	Requested Procedure ID	(0040,1001)	SV / WC
	Study Instance UID	(0020,000D)	
	Patient Transport Arrangements	(0040,1004)	
	Referenced Study Sequence	(0008,1110)	
	Requested Procedure Description	(0032,1060)	
	Requested Procedure Code Sequence	(0032,1064)	
	Study Date	(0008,0020)	
	Study Time	(0008,0030)	
Imaging Service Request	Accession Number	(0008,0050)	SV / WC
	Requesting Physician	(0032,1032)	
	Referring Physician's Name	(0008,0090)	
	Requesting Service	(0032,1033)	

Visit Identification	Admission ID	(0038,0010)	
Visit Status	Current Patient Location	(0038,0300)	
Visit Relationship	Referenced Patient Sequence	(0008,1120)	
Patient Identification	Patient's Name	(0010,0010)	SV / WC
	Patient ID	(0010,0020)	SV / WC
Patient Demographic	Patient's Birth Date	(0010,0030)	SV / WC
	Patient's Sex	(0010,0040)	SV / WC
	Patient's Weight	(0010,1030)	
	Patients Size	(0010,1020)	
	Confidentiality Constraint On Patient Data	(0040,3001)	
Patient Medical	Patient State	(0038,0500)	
	Medical Alerts	(0010,2000)	
	Contrast Allergies	(0010,2110)	
	Special Needs	(0038,0050)	
	Pregnancy Status	(0010,21C0)	
	Additional Patient History	(0010,21B0)	

3.2.1.3.4 Activity: Print SCU

3.2.1.3.4.1 Description and sequencing of activity

Each user Print request made through the Film Composer is spooled and processed sequentially in a background task. Only one Print request is processed at the same time.

For each print request, EAA will initiate an association with a Print SCP, process the request on this association and then release the association.

3.2.1.3.4.2 Proposed presentation contexts

EAA will propose the following different Presentation Contexts:

Table 3.2.1-14 Basic Print Management Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

3.2.1.3.4.3 SOP Specific conformance

If the DICOM Print software is unable to open an association with the selected destination AE, an error message displays in EAA. No message is displayed when successful printing operation responses are received.

After an association has been accepted and is established, EAA will send a print job to the Print Server.

Each print job includes the following steps:

- EAA first performs a N-GET request to get Printer information.
- EAA requests the server to a N-CREATE a film session SOP instance.

For each film to be printed:

- a N-CREATE request is performed to get a Film Box SOP instance
- N-SET requests are made to change some film box instance attributes and to fill image boxes with image pixel data.
- If no print collation is needed, a N-ACTION is requested for the Film Box instance. This causes the film to be printed.
- If print collation is requested, a N-ACTION is performed on the film session.

3.2.1.3.4.3.1 Basic Printer SOP Class

EAA can send the following DIMSE commands to a Film Box: N-GET.

N-GET is issued by EAA to get Print information. However, this information is not used.

3.2.1.3.4.3.2 Basic Film Session SOP Class

EAA can send the following DIMSE commands to a Film Session: N-CREATE, N-SET, N-ACTION, N-DELETE.

N-CREATE is issued by EAA to create a Film Session where film boxes will be created.

Attribute Name	Tag ID	Value / Comment
Number of Copies	(2000,0010)	

N-SET is issued by EAA to change Film Session attributes.

Attribute Name	Tag ID	Value / Comment
Number of Copies	(2000,0010)	Value is 1
Medium Type	(2000,0030)	PAPER, BLUE FILM, CLEAR FILM empty string
Film Session Label	(2000,0050)	N°page/TotalPage_PatientName

N-ACTION is issued by EAA to request printing of all Film Boxes in the Film Session.

N-DELETE is issued by EAA to request a Film Session deletion.

3.2.1.3.4.3.3 Basic Film Box SOP Class

EAA can send the following DIMSE commands to a Film Box: N-CREATE, N-SET, N-ACTION, N-DELETE.

N-CREATE is issued by EAA to create a Film Box in a Film Session, where image boxes will be created.

Attribute Name	Tag ID	Value / Comment
Image Display Format	(2010,0010)	For monoplane series: STANDARD\1,1 For biplane series: STANDARD\2,1
Film Orientation	(2010,0030)	PORTRAIT or LANDSCAPE.

N-SET is issued by EAA to create change Film Box attributes.

Attribute Name	Tag ID	Value / Comment
Image Display Format	(2010,0010)	For monoplane series: STANDARD\1,1 For biplane series: STANDARD\2,1
Film Orientation	(2010,0030)	PORTRAIT or LANDSCAPE.

Film Size ID	(2010,0050)	8INX10IN, 8_5INX11IN, 10INX12IN, 10INX14IN, 11INX14IN, 11INX17IN, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM, A4 or A3.
Empty Image Density	(2010,0110)	BLACK
Referenced Film Session Sequence	(2010,0500)	
Requested Image Size	(2020,0030)	Fixed Value
>Referenced SOP Class UID	(0008,1150)	
>Referenced SOP Instance UID	(0008,1155)	

N-ACTION is issued by EAA to request printing of a Film Boxes.

N-DELETE is issued by EAA to request a Film Box deletion.

3.2.1.3.4.3.4 Basic Grayscale Image Box SOP Class

Basic Grayscale Image Box instances are created at the time the Basic Film Box SOP instance is created. The Basic Image Box contains the presentation parameters and image pixel data that applies to a single image of a film sheet.

EAA can send the following DIMSE commands to an Image Box: N-SET.

N-SET is issued by EAA to set change Image Box attributes.

Attribute Name	Tag ID	Value / Comment
Image Position	(2020,0010)	1 to 2
Basic Grayscale Image Sequence	(2020,0110)	
>Samples Per Pixel	(0028,0002)	1
>Photometric Interpretation	(0028,0004)	MONOCHROME2
>Rows	(0028,0010)	
>Columns	(0028,0011)	
>Pixel Aspect Ratio	(0028,0034)	1\1
>Bits Allocated	(0028,0100)	16
>Bits Stored	(0028,0101)	12
>High Bit	(0028,0102)	11
>Pixel Representation	(0028,0103)	0
>Pixel Data	(7FE0,0010)	

3.3 Network interface

3.3.1 Physical network interface

EAA is indifferent to the physical medium over which TCP/IP executes; it inherits this from the system upon which it executes.

EAA provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard. It inherits its TCP/IP stack from the Windows system upon which it executes. Default Windows TCP/IP stack is supported.

3.3.2 Additional protocols

None

3.4 Configuration

EAA configuration is detailed in EAA User's Guide.

The following parameters may be configured:

- EAA AE Title: Default value is “undefined”.

4 Media Interchange

Not applicable.

5 Support of Character Sets

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

6 Annexes

6.1 Digital X-Ray Image IOD Contents

6.1.1 Created SOP Instances

Table 6.1-1 specifies the attributes of a Digital X-Ray Image transmitted by the EAA Acquisition storage application.

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

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

The abbreviations used in the “Source” column:

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

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

6.1.1.1.1 Digital X-Ray Image Storage – For Presentation

Table 6.1-1 IOD of created DX SOP Instances

IE	Module	Reference	Presence of module
Patient	Patient	Table 6.1-2	ALWAYS
Study	General Study	Table 6.1-3	ALWAYS
	Patient Study	Table 6.1-4	ALWAYS
	Patient Medical Module	*Table 6.1-4b*	*ALWAYS*
Series	General Series	Table 6.1-5	ALWAYS
	DX Series	Table 6.1-6	ALWAYS
Equipment	General Equipment	Table 6.1-7	ALWAYS
Image	General Image	Table 6.1-8	ALWAYS
	Image Pixel	Table 6.1-9	ALWAYS
	Contrast/Bolus	Table 6.1-10	ALWAYS
	DX Anatomy Imaged	Table 6.1-11	ALWAYS
	DX Image	Table 6.1-12	ALWAYS
	DX Detector	Table 6.1-13	ALWAYS
	X-Ray Collimator	Table 6.1-14	ALWAYS
	DX Positioning	Table 6.1-15	ALWAYS
	X-Ray Acquisition Dose	Table 6.1-16	ALWAYS
	X-Ray Generation	Table 6.1-17	ALWAYS
	X-Ray Filtration	Table 6.1-18	ALWAYS
	VOI LUT	Table 6.1-19	ALWAYS
	Acquisition Context	Table 6.1-20	ALWAYS
	SOP Common	Table 6.1-21	ALWAYS
	Private Application	Table 6.1-22	ALWAYS

Table 6.1-2 Patient module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Patient's Name	(0010,0010)	PN	From Modality Worklist or user input. Values supplied via Modality Worklist will be entered as received. Values supplied via user input will contain all 5 components (some possibly empty).	ALWAYS	MWL/ USER
Patient ID	(0010,0020)	LO	From Modality Worklist, or user input. If user lets it empty, generated by device.	ALWAYS	MWL/ USER / AUTO
Patient's Birth Date	(0010,0030)	DA	From Modality Worklist or user input.	ALWAYS	MWL/ USER
Patient's Sex	(0010,0040)	CS	From Modality Worklist or user input.	ALWAYS	MWL/ USER

Table 6.1-3 General Study module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Study Instance UID	(0020,000D)	UI	From Modality Worklist or generated by device with timestamp.	ALWAYS	MWL/ AUTO
Study Date	(0008,0020)	DA	‹yyyymmdd›	ALWAYS	AUTO
Study Time	(0008,0030)	TM	‹hhmmss›	ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN	From Modality Worklist, or user input.	VNAP	MWL/USER
Study ID	(0020,0010)	SH	From Modality Worklist (Requested Procedure ID) or generated by device.	ALWAYS	MWL/ AUTO
Accession Number	(0008,0050)	SH	From Modality Worklist or user input.	VNAP	MWL/ USER
Study Description	(0008,1030)	LO	From Modality Worklist, or empty.	VNAP	MWL
Referenced Study Sequence	(0008,1110)	SQ	From Modality Worklist.	VNAP	AUTO
› Referenced SOP Class UID	(0008,1150)	UI	"1.2.840.10008.3.1.2.3.1" (i.e. Detached Study Management SOP Class (Retired))	ALWAYS	AUTO
› Referenced SOP Instance UID	(0008,1155)	UI	From Modality Worklist.	ALWAYS	MWL
Procedure Code Sequence	(0008,1032)	SQ	From Modality Worklist. Absent if "Requested Procedure Code Sequence" is empty in worklist.	ANAP	AUTO
› Code Value	(0008,0100)	SH	From Modality Worklist.	ALWAYS	AUTO
› Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist.	ALWAYS	AUTO
› Code Meaning	(0008,0104)	LO	From Modality Worklist.	ALWAYS	AUTO

Table 6.1-4 Patient Study module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Patient's Age	(0010,1010)	AS	Calculated from DoB input on base of actual Date.	ALWAYS	AUTO
Patient's Size	(0010,1020)	DS	From Modality Worklist or user input. Length or size of the Patient, in meters.	VNAP	MWL/ USER
Patient's Weight	(0010,1030)	DS	From Modality Worklist or user input. Weight of the Patient, in kilograms.	VNAP	MWL/ USER
Additional Patient's History	(0010,21B0)	LT	From Modality Worklist (Medical Alerts (0010,2000)).	VNAP	MWL

Table 6.1-5 General Series module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Series Instance UID	(0020,000E)	UI	Generated by device with timestamp.	ALWAYS	AUTO
Series Number	(0020,0011)	IS	Generated by device.	ALWAYS	AUTO
Series Date	(0008,0021)	DA	Date of acquisition	ALWAYS	AUTO
Series Time	(0008,0031)	TM	Time of acquisition	ALWAYS	AUTO
Performing Physicians' Name	(0008,1050)	PN	From Modality Worklist or user input	VNAP	MWL/USER
Series Description	(0008,103E)	LO	Name of selected protocol	ALWAYS	AUTO
Operators' Name	(0008,1070)	PN	Selected user account. Maximum 64 characters.	ALWAYS	USER
Body Part Examined	(0018,0015)	CS	Mapped from Anatomical Region Codes using the table Annex L-1 provided in DICOM PS 3.16.	VNAP	AUTO
Request Attributes Sequence	(0040,0275)	SQ	From Modality Worklist.	ANAP	MWL
› Requested Procedure ID	(0040,1001)	SH	From Modality Worklist.	ALWAYS	MWL
› Requested Procedure Description	(0032,1060)	LO	From Modality Worklist.	VNAP	MWL
› Scheduled Procedure Step ID	(0040,0009)	SH	From Modality Worklist.	ALWAYS	MWL
› Scheduled Procedure Step Description	(0040,0007)	LO	From Modality Worklist.	VNAP	MWL
› Scheduled Protocol Code Sequence	(0040,0008)	SQ	From Modality Worklist. Absent if empty in worklist.	ANAP	MWL
›› Code Value	(0008,0100)	SH	From Modality Worklist.	ALWAYS	MWL
›› Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist.	ALWAYS	MWL
›› Code Meaning	(0008,0104)	LO	From Modality Worklist.	ALWAYS	MWL
Performed Procedure Step ID	(0040,0253)	SH	Generated by device.	ALWAYS	AUTO
Performed Procedure Step Start Date	(0040,0244)	DA	Date of EOS Exam workflow	ALWAYS	AUTO
Performed Procedure Step Start Time	(0040,0245)	TM	Time of EOS Exam workflow	ALWAYS	AUTO
Performed Procedure Step Description	(0040,0254)	LO	Same as Study Description	ALWAYS	AUTO

Table 6.1-6 DX Series module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Modality	(0008,0060)	CS	DX	ALWAYS	AUTO
Presentation Intent Type	(0008,0068)	CS	FOR PRESENTATION	ALWAYS	AUTO

Table 6.1-7 General Equipment module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Manufacturer	(0008,0070)	LO	EOS imaging	ALWAYS	AUTO
Institution Name	(0008,0080)	LO	From configuration.	ALWAYS	CONFIG
Institution Address	(0008,0081)	ST	From configuration.	ALWAYS	CONFIG
Station Name	(0008,1010)	SH	From configuration	ALWAYS	CONFIG
Manufacturer's Model Name	(0008,1090)	LO	From configuration	ALWAYS	CONFIG
Device Serial Number	(0018,1000)	LO	From configuration.	ALWAYS	CONFIG
Software Versions	(0018,1020)	LO	Software version (4.x.y.zzzz)	ALWAYS	AUTO
Date of Last Calibration	(0018,1200)	DA	‹yyyymmdd› Date of the last calibration of detectors	ANAP	CONFIG
Time of Last Calibration	(0018,1201)	TM	‹hhmmss› Time of the last calibration of detectors	ANAP	CONFIG

Table 6.1-8 General Image module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Instance Number	(0020,0013)	IS	Generated by device.	ALWAYS	AUTO
Content Date	(0008,0023)	DA	Date of acquisition	ALWAYS	AUTO
Content Time	(0008,0033)	TM	Time of acquisition	ALWAYS	AUTO
Acquisition Date	(0008,0022)	DA	Date of acquisition	ALWAYS	AUTO
Acquisition Time	(0008,0032)	TM	Time of acquisition	ALWAYS	AUTO
Referenced Image Sequence	(0008,1140)	SQ	present if (0008,0008) = ORIGINAL\PRIMARY\\BIPLANE A or ORIGINAL\PRIMARY\\BIPLANE B	ANAP	AUTO
›Referenced SOP Class UID	(0008,1150)	UI	From referenced image.	ANAP	AUTO
›Referenced SOP Instance UID	(0008,1155)	UI	From referenced image.	ANAP	AUTO
›Purpose of Reference Code Sequence	(0040,A170)	SQ	One item	ANAP	AUTO
››Code Value	(0008,0100)	SH	121314	ANAP	AUTO
››Coding Scheme Designator	(0008,0102)	SH	DCM	ANAP	AUTO
››Code Meaning	(0008,0104)	LO	Other image of biplane pair	ANAP	AUTO
Source Image Sequence	(0008,2112)	SQ	From referenced image.	ALWAYS	AUTO
› Referenced SOP Class UID	(0008,1150)	UI	SOP Class UID of source image “for processing”	ALWAYS	AUTO
› Referenced SOP Instance UID	(0008,1155)	UI	SOP Instance UID of source image “for processing”	ALWAYS	AUTO
› Purpose of Reference Code Sequence	(0040,A170)	SQ		ALWAYS	AUTO
›› Code Value	(0008,0100)	SH	"121322"	ALWAYS	AUTO
›› Coding Scheme Designator	(0008,0102)	SH	"DCM"	ALWAYS	AUTO
›› Code Meaning	(0008,0104)	LO	"Source image for image processing operation"	ALWAYS	AUTO

Images in Acquisition	(0020,1002)	IS	Generated by device.	ALWAYS	AUTO
Image Comments	(0020,4000)	LT	"EOS frontal" for a frontal image TE. "EOS lateral" for a lateral image TE.	ALWAYS	AUTO
Irradiation Event UID	(0008,3010)	UI	Generated by device (field not available on EOS 2.0.0)	ANAP	AUTO

Table 6.1-9 Image Pixel module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Rows	(0028,0010)	US	Generated by device.	ALWAYS	AUTO
Columns	(0028,0011)	US	Generated by device.	ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OW	The Pixel Data itself does not contain any burned-in annotation.	ALWAYS	AUTO

Table 6.1-10 Contrast/Bolus module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Contrast/Bolus Agent	(0018,0010)	LO	From Modality Worklist.	VNAP	MWL

Table 6.1-11 DX Anatomy Imaged module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Image Laterality	(0020,0062)	CS	U	ALWAYS	AUTO
Anatomic Region Sequence	(0008,2218)	SQ	From Acquisition parameters.	ALWAYS	USER
>Code Value	(0008,0100)	SH	Anatomic code selected from a catalog (see CID 4009 in DICOM PS3.16).	ALWAYS	AUTO
>Coding Scheme Designator	(0008,0102)	SH	SRT	ALWAYS	AUTO
>Code Meaning	(0008,0104)	LO	Anatomic code selected from a catalog (see see CID 4009 in DICOM PS3.16).	ALWAYS	AUTO

Table 6.1-12 DX Image module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Image Type	(0008,0008)	CS	ORIGINAL\PRIMARY\\BIPLANE A = acquired frontal images of biplane pair ORIGINAL\PRIMARY\\BIPLANE B = acquired lateral images of biplane pair ORIGINAL\PRIMARY\\SINGLE PLANE A = acquired frontal images ORIGINAL\PRIMARY\\SINGLE PLANE B = acquired lateral images	ALWAYS	AUTO

Patient Orientation	(0020,0020)	CS	Depends on orientation selected by user before acquisition, and if user flipped image at review.	ALWAYS	USER
Samples per Pixel	(0028,0002)	US	1	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	MONOCHROME2	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	16	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	16	ALWAYS	AUTO
High Bit	(0028,0102)	US	15	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	0000H	ALWAYS	AUTO
Pixel Intensity Relationship	(0028,1040)	CS	LOG	ALWAYS	AUTO
Pixel Intensity Relationship Sign	(0028,1041)	SS	-1	ALWAYS	AUTO
Rescale Intercept	(0028,1052)	DS	0	ALWAYS	AUTO
Rescale Slope	(0028,1053)	DS	1	ALWAYS	AUTO
Rescale Type	(0028,1054)	LO	US	ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	00	ALWAYS	AUTO
Burned In Annotation	(0028,0301)	CS	NO	ALWAYS	AUTO
Window Center	(0028,1050)	DS	Generated by device	ALWAYS	AUTO
Window Width	(0028,1051)	DS	Generated by device	ALWAYS	AUTO
Presentation LUT Shape	(2050,0020)	CS	IDENTITY	ALWAYS	AUTO

Table 6.1-13 DX Detector module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Detector Type	(0018,7004)	CS	DIRECT	ALWAYS	AUTO
Detector Configuration	(0018,7005)	CS	SLOT	ALWAYS	AUTO
Detector Description	(0018,7006)	LT	Vertical Scanning Photon Counting X-ray Detector	ALWAYS	AUTO
Detector Binning	(0018,701A)	DS	From Acquisition parameters.	ALWAYS	AUTO
Target Exposure Index	(0018,1412)	DS	From selected protocol, for images only (not for previews).	VNAP	AUTO
Field of View Shape	(0018,1147)	CS	RECTANGLE	ALWAYS	AUTO
Field of View Origin	(0018,7030)	DS	0\0	ALWAYS	AUTO
Field of View Rotation	(0018,7032)	DS	0	ALWAYS	AUTO
Field of View Horizontal Flip	(0018,7034)	CS	Generated by device	ALWAYS	AUTO
Detector Active Dimension(s)	(0018,7026)	DS	From Acquisition parameters.	ALWAYS	AUTO
Field of View Dimension(s)	(0018,1149)	IS	From Acquisition parameters.	ALWAYS	USER
Imager Pixel Spacing	(0018,1164)	DS	Image pixel width, in detector plane, in mm.	ALWAYS	AUTO
Pixel Spacing	(0028,0030)	DS	Generated by device.	ALWAYS	AUTO
Pixel Spacing Calibration Type	(0028,0A02)	CS	GEOMETRY	ALWAYS	AUTO

Pixel Spacing Calibration Description	(0028,0A04)	LO	BICUBIC	ALWAYS	AUTO

Table 6.1-14 X-Ray Collimator module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Collimator Shape	(0018,1700)	CS	RECTANGULAR	ALWAYS	AUTO
Collimator Left Vertical Edge	(0018,1702)	IS	From Acquisition parameters.	ALWAYS	USER
Collimator Right Vertical Edge	(0018,1704)	IS	From Acquisition parameters.	ALWAYS	USER
Collimator Upper Horizontal Edge	(0018,1706)	IS	0	ALWAYS	AUTO
Collimator Lower Horizontal Edge	(0018,1708)	IS	From Acquisition parameters.	ALWAYS	USER

Table 6.1-15 DX Positioning module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
View Code Sequence	(0054,0220)	SQ	N.A.	ALWAYS	AUTO
› Code Value	(0008,0100)	SH	From Context ID 4010 (cf PS 3.16)	ALWAYS	AUTO
› Coding Scheme Designator	(0008,0102)	SH	From Context ID 4010 (cf PS 3.16)	ALWAYS	AUTO
› Code Meaning	(0008,0104)	LO	From Context ID 4010 (cf PS 3.16)	ALWAYS	AUTO
Positioner Type	(0018,1508)	CS	Zero length (No value available)	EMPTY	AUTO

Table 6.1-16 X-Ray Acquisition Dose module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Distance Source to Detector	(0018,1110)	DS	Generated by device	ALWAYS	AUTO
Distance Source to Patient	(0018,1111)	DS	From Acquisition parameters: reference plane can be adjusted	ALWAYS	USER
Image and Fluoroscopy Area Dose Product	(0018,115E)	DS	From Acquisition parameters.	ALWAYS	USER/ AUTO
Entrance Dose in mGy	(0040,8302)	DS	Same value as Dose (RP)	ALWAYS	AUTO
Entrance Dose Derivation	(0040,8303)	CS	“IAK”	ALWAYS	AUTO
Exposed Area	(0040,0303)	US	From Acquisition parameters.	ALWAYS	USER
Comments on Radiation Dose	(0040,0310)	ST	Explanation text depending on biplane or single plane acquisition	ALWAYS	AUTO

Table 6.1-17 X-Ray Generation module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
KVP	(0018,0060)	DS	From Acquisition parameters.	ALWAYS	USER/ AUTO
X-Ray Tube Current	(0018,1151)	IS	From Acquisition parameters.	ALWAYS	USER/ AUTO
Exposure Time	(0018,1150)	IS	From Acquisition parameters.	ALWAYS	USER
Focal Spot	(0018,1190)	DS	From Acquisition parameters.	ALWAYS	AUTO

Table 6.1-18 X-Ray Filtration module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Filter Material	(0018,7050)	CS	From Acquisition parameters.	ALWAYS	AUTO
Filter Thickness Minimum	(0018,7052)	DS	From configuration	ALWAYS	AUTO
Filter Thickness Maximum	(0018,7054)	DS	From configuration	ALWAYS	AUTO

Table 6.1-19 VOI LUT module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Window Center	(0028,1050)	DS	Generated by device	ALWAYS	AUTO
Window Width	(0028,1051)	DS	Generated by device	ALWAYS	AUTO

Table 6.1-20 Acquisition Context module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Acquisition Context Sequence	(0040,0555)	SQ	Zero length.	EMPTY	AUTO

Table 6.1-21 SOP Common module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.1.1	ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI	Generated by device with timestamp.	ALWAYS	AUTO
Specific Character Set	(0008,0005)	CS	ISO_IR 100	ALWAYS	AUTO
Instance Creation Date	(0008,0012)	DA	‹yyyymmdd›	ALWAYS	AUTO

Table 6.1-22 Private Application module attributes of created SOP Instances

Attribute Name	Tag	VR	Presence of Value	Source
Internal data	(0873,0010)	LO	ALWAYS	AUTO
Internal data	(0873,1000)	US	ALWAYS	AUTO
Internal data	(0873,1032)	SL	ALWAYS	AUTO
Internal data	(0873,1033)	SL	ALWAYS	AUTO
Internal data	(0873,1034)	FL	ANAP	AUTO
Internal data	(0873,1036)	SL	ALWAYS	AUTO
Internal data	(0873,1040)	FL	ALWAYS	AUTO
Internal data	(0873,1041)	FL	ALWAYS	AUTO
Internal data	(0873,1043)	FL	ALWAYS	CONFIG
Internal data	(0873,1045)	FL	ALWAYS	CONFIG
Internal data	(0873,1047)	SL	ALWAYS	USER
Internal data	(0873,1057)	CS	ALWAYS	AUTO
Internal data	(0873,1059)	CS	ALWAYS	AUTO
Internal data	(0873,1060)	CS	ALWAYS	USER
Internal data	(0873,1061)	US	ALWAYS	USER
Internal data	(0873,1063)	FL	ALWAYS	AUTO
Internal data	(0873,1065)	DS	ALWAYS	CONFIG
Internal data	(0873,1066)	US	ALWAYS	USER
Internal data	(0873,1070)	DS	ALWAYS	USER
Internal data	(0873,1071)	CS	ALWAYS	AUTO
Internal data	(0873,1072)	OB	VNAP	AUTO
Internal data	(0873,1073)	*DS*	VNAP	AUTO
Internal data	(0873,1074)	US	VNAP	AUTO
Internal data	(0873,1079)	FL	ALWAYS	USER
Internal data	(0873,1080)	OB	VNAP	USER
Internal data	(0873,1081)	UT	VNAP	USER
Internal data	(0873,1082)	CS	ALWAYS	USER
Internal data	(0873,1083)	FL	ALWAYS	AUTO
Internal data	(0873,1084)	FL	ANAP	AUTO
Internal data	(0873,1085)	DS	ALWAYS	AUTO
Internal data	(0873,1086)	US	ALWAYS	AUTO
Internal data	(0873,1087)	DS	ALWAYS	AUTO
Internal data	(0873,1088)	DS	ALWAYS	AUTO
Internal data	(0873,1089)	US	ALWAYS	AUTO

NOTE: EOS imaging private fields are specifically managed. However, this management is not described in this document.

The following attributes are not required in the Digital X-Ray Image IOD Module but the EAA Acquisition storage application adds them.

Table 6.1-23 Additional attribute of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Allergies	(0010,2110)	LO	From Modality Worklist or user input.	VNAP	MWL/ USER
Distance Source to Isocenter	(0018,9402)	FL	Generated by device.	ALWAYS	AUTO
Requesting Physician	(0032,1032)	PN	From Modality Worklist or user input.	VNAP	MWL/USER

6.2 Digital X-Ray Image: data dictionary of private attributes

The Private Attributes added to create SOP Instances are listed in the Table below. EAA reserves blocks of private attributes in group 0873.

Table 6.2-1 Data Dictionary of private attributes
listed in Table 6.1-22 Private Application module attributes of created SOP Instances

Attribute Name	Tag	VR	VM
Internal data	(0873,0010)	LO	1
Internal data	(0873,1000)	US	2
Internal data	(0873,1032)	SL	1
Internal data	(0873,1033)	SL	1
Internal data	(0873,1034)	FL	1
Internal data	(0873,1036)	SL	1
Internal data	(0873,1040)	FL	1
Internal data	(0873,1041)	FL	1
Internal data	(0873,1043)	FL	1
Internal data	(0873,1045)	FL	1
Internal data	(0873,1047)	SL	1
Internal data	(0873,1057)	CS	1
Internal data	(0873,1059)	CS	1
Internal data	(0873,1060)	CS	1
Internal data	(0873,1061)	US	1
Internal data	(0873,1063)	FL	1
Internal data	(0873,1065)	DS	1
Internal data	(0873,1066)	US	1
Internal data	*(0873,1069)*	*DS*	*1*
Internal data	(0873,1070)	DS	1
Internal data	(0873,1071)	CS	1
Internal data	(0873,1072)	OB	1
Internal data	(0873,1073)	DS	1
Internal data	(0873,1074)	US	1
Internal data	(0873,1079)	FL	1
Internal data	(0873,1080)	OB	1
Internal data	(0873,1081)	UT	1
Internal data	(0873,1082)	CS	1
Internal data	(0873,1083)	FL	1
Internal data	*(0873,1084)*	FL	1
Internal data	*(0873,1085)*	DS	1
Internal data	*(0873,1086)*	US	1
Internal data	*(0873,1087)*	DS	1
Internal data	*(0873,1088)*	DS	1
Internal data	*(0873,1089)*	US	1

6.3 X-Ray Radiation Dose SR IOD Contents

6.3.1 Created SOP Instances

Table 6.3-1 specifies the attributes of an X-Ray Radiation Dose SR transmitted by the EAA Acquisition storage application.

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

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

- ANAP Attribute Not Always Present
- ALWAYS Always Present
- EMPTY Attribute is sent without a value

The abbreviations used in the “Source” column:

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

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

6.3.1.1 X-Ray Radiation Dose SR Storage

Table 6.3-1 IOD of created X-RAY RADIATION DOSE SR SOP Instances

IE	Module	Reference	Presence of module
Patient	Patient	Table 6.3-2	ALWAYS
Study	General Study	Table 6.3-3	ALWAYS
	Patient Study	Table 6.3-4	ALWAYS
Series	SR Document Series	Table 6.3-5	ALWAYS
Equipment	General Equipment	Table 6.3-6	ALWAYS
	Enhanced General Equipment	Table 6.3-7	ALWAYS
Document	SR Document General	Table 6.3-8	ALWAYS
	SR Document Content	§6.3.1.1.1	ALWAYS
	SOP Common	Table 6.3-9	ALWAYS

The template used in the SR Document is TID 10001 "Projection X-Ray Radiation Dose Report".

Table 6.3-2 Patient module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Patient's Name	(0010,0010)	PN	From Modality Worklist or user input.	ALWAYS	MWL/ USER
Patient ID	(0010,0020)	LO	From Modality Worklist or user input. If user lets it empty, generated by device.	ALWAYS	MWL/ USER/A UTO
Patient's Birth Date	(0010,0030)	DA	From Modality Worklist or user input.	ALWAYS	MWL/ USER
Patient's Sex	(0010,0040)	CS	From Modality Worklist or user input.	ALWAYS	MWL/ USER

Table 6.3-3 General study module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Study Instance UID	(0020,000D)	UI	From Modality Worklist or generated by device with timestamp.	ALWAYS	MWL/ AUTO
Study Date	(0008,0020)	DA	‹yyyymmdd›	ALWAYS	AUTO
Study Time	(0008,0030)	TM	‹hhmmss›	ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN	From Modality Worklist.	VNAP	MWL
Study ID	(0020,0010)	SH	From Modality Worklist (Requested Procedure ID) or generated by device.	ALWAYS	MWL/ AUTO
Accession Number	(0008,0050)	SH	From Modality Worklist or user input.	VNAP	MWL/ USER
Study Description	(0008,1030)	LO	From Modality Worklist, or empty.	VNAP	MWL
Physician(s) of Record	(0008,1048)	PN	From Modality Worklist (Scheduled Performing Physician's Name (0040,0006)) or user input.	ANAP	MWL/USER
Procedure Code Sequence	(0008,1032)	SQ	From Modality Worklist. Absent if "Requested Procedure Code Sequence" is empty in worklist.	ANAP	AUTO
› Code Value	(0008,0100)	SH	From Modality Worklist.	ALWAYS	AUTO
› Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist.	ALWAYS	AUTO
› Code Meaning	(0008,0104)	LO	From Modality Worklist.	ALWAYS	AUTO

Table 6.3-4 Patient Study module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Patient's Age	(0010,1010)	AS	Calculated from DoB input on base of actual Date.	ALWAYS	AUTO
Patient's Size	(0010,1020)	DS	From Modality Worklist or user input.	ANAP	MWL/ USER
Patient's Weight	(0010,1030)	DS	From Modality Worklist or user input.	ANAP	MWL/ USER
Additional Patient's History	(0010,21B0)	LT	From Modality Worklist (Medical Alerts (0010,2000)).	ANAP	MWL

Table 6.3-5 SR Document Series module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Modality	(0008,0060)	CS	"SR"	ALWAYS	AUTO
Series Instance UID	(0020,000E)	UI	Generated by device with timestamp.	ALWAYS	AUTO
Series Number	(0020,0011)	IS	Generated by device.	ALWAYS	AUTO
Series Date	(0008,0021)	DA	Date of exam closure.	ALWAYS	AUTO
Series Time	(0008,0031)	TM	Time of exam closure.	ALWAYS	AUTO
Series Description	(0008,103E)	LO	"Radiation Dose Information"	ALWAYS	AUTO

Table 6.3-6 General Equipment module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Institution Name	(0008,0080)	LO	From configuration.	ALWAYS	CONFIG
Institution Address	(0008,0081)	ST	From configuration.	ALWAYS	CONFIG
Station Name	(0008,1010)	SH	From configuration.	ALWAYS	CONFIG
Date of Last Calibration	(0018,1200)	DA	‹yyyymmdd›	ALWAYS	AUTO
Time of Last Calibration	(0018,1201)	TM	‹hhmmss›	ALWAYS	AUTO

Table 6.3-7 Enhanced General Equipment module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Manufacturer	(0008,0070)	LO	EOS imaging	ALWAYS	AUTO
Manufacturer's Model Name	(0008,1090)	LO	From configuration.	ALWAYS	CONFIG
Device Serial Number	(0018,1000)	LO	From configuration.	ALWAYS	CONFIG
Software Versions	(0018,1020)	LO	Software version (4.x.y.zzzz).	ALWAYS	AUTO

Table 6.3-8 SR Document General module attributes of created SOP Instances

Attribute Name	Tag	VR	Values	Presence of Value	Source
Instance Number	(0020,0013)	IS	Genrated by device.	ALWAYS	AUTO
Preliminary Flag	(0040,A496)	CS	"FINAL"	ALWAYS	AUTO
Completion Flag	(0040,A491)	CS	"COMPLETE" Note: the Dose SR contains all the irradiation events within the Scope of Accumulation (PPS)	ALWAYS	AUTO
Verification Flag	(0040,A493)	CS	"UNVERIFIED"	ALWAYS	AUTO
Content Date	(0008,0023)	DA	Creation date of Dose SR	ALWAYS	AUTO
Content Time	(0008,0033)	TM	Creation time of Dose SR	ALWAYS	AUTO
Referenced Request Sequence	(0040,A370)	SQ	From Modality Worklist, or absent.	ANAP	MWL
>Study Instance UID	(0020,000D)	UI	From Modality Worklist.	ALWAYS	MWL
>Referenced Study Sequence	(0008,1110)	SQ	N/A	EMPTY	AUTO
>Accession Number	(0008,0050)	SH	From Modality Worklist	VNAP	MWL
>Placer Order Number/Imaging Service Request	(0040,2016)	LO	N/A	EMPTY	AUTO
>Filler Order Number/Imaging Service Request	(0040,2017)	LO	N/A	EMPTY	AUTO
>Requested Procedure ID	(0040,1001)	SH	From Modality Worklist.	ALWAYS	MWL
>Requested Procedure Description	(0032,1060)	LO	From Modality Worklist.	VNAP	MWL
>Requested Procedure Code Sequence	(0032,1064)	SQ	From Modality Worklist, or empty.	VNAP	MWL
>>Code Value	(0008,0100)	SH	From Modality Worklist.	ALWAYS	MWL
>>Coding Scheme Designator	(0008,0102)	SH	From Modality Worklist.	ALWAYS	MWL
>>Code Meaning	(0008,0104)	LO	From Modality Worklist.	ALWAYS	MWL
Performed Procedure Code Sequence	(0040,A372)	SQ	N/A	EMPTY	AUTO
Current Requested Procedure Evidence Sequence	(0040,A375)	SQ	Present if images were created during the exam.	VNAP	AUTO
> Study Instance UID	(0020,000D)	UI	Copied from original images	ALWAYS	AUTO
> Referenced Series Sequence	(0008,1115)	SQ	Present if images were created during the exam.	ALWAYS	AUTO
>> Series Instance UID	(0020,000E)	UI	Copied from original images	ALWAYS	AUTO
>> Referenced SOP Sequence	(0008,1199)	SQ	Present if images were created during the exam	ALWAYS	AUTO
>>> Referenced SOP Class UID	(0008,1150)	UI	Copied from original images	ALWAYS	AUTO
>>> Referenced SOP Instance UID	(0008,1155)	UI	Copied from original images	ALWAYS	AUTO

Table 6.3-9 SOP Common module

Attribute Name	Tag	VR	Values	Presence of Value	Source
SOP Class UID	(0008,0016)	UI	"1.2.840.10008.5.1.4.1.1.88.67"	ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI	Generated by device with timestamp.	ALWAYS	AUTO
Instance Creation Date	(0008,0012)	DA	Creation date of Dose SR	ALWAYS	AUTO
Instance Creation Time	(0008,0013)	TM	Creation time of Dose SR	ALWAYS	AUTO

6.3.1.1.1 *SR Document Content module (templates)*

Table 6.3-10 TID 10001 PROJECTION X-RAY RADIATION DOSE

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			CONTAINER	EV (113701, DCM, “X-Ray Radiation Dose Report”)	ALWAYS	
2	›	HAS CONCEPT MOD	CODE	EV (121058, DCM, ”Procedure reported”)	ALWAYS	EV (113704, DCM, “Projection X-Ray”)
3	»	HAS CONCEPT MOD	CODE	EV (G-CoE8, SRT, “Has Intent”)	ALWAYS	EV (R-408C3, SRT, “Diagnostic Intent”)
5	›		INCLUDE	DTID 1002 "Observer Context"	ALWAYS	See table TID 1002.
6	›	HAS OBS CONTEXT	CODE	EV (113705, DCM, “Scope of Accumulation”)	ALWAYS	EV (113016, DCM, "Performed Procedure Step")
7	»	HAS PROPERTIES	UIDREF	EV (121126, DCM, "Performed Procedure Step SOP Instance UID")	ALWAYS	MPPS SOP Instance UID automatically generated
8	›	CONTAINS	CODE	EV (113945, DCM, "X-Ray Detector Data Available")	ALWAYS	EV (R-0038D, SRT, "Yes")
9	›	CONTAINS	CODE	EV (113943, DCM, "X-Ray Source Data Available")	ALWAYS	EV (R-0038D, SRT, "Yes")
12	›	CONTAINS	INCLUDE	DTID 10002 "Accumulated X-Ray Dose"	ALWAYS	See table TID 10002.
13	›	CONTAINS	INCLUDE	DTID 10002 "Accumulated X-Ray Dose"	ALWAYS	See table TID 10002.
14	›	CONTAINS	INCLUDE	DTID 10003 "Irradiation Event X-Ray Data"	ALWAYS	See table TID 10003.
18	›	CONTAINS	CODE	EV (113854, DCM, “Source of Dose Information”)	ALWAYS	EV (113856, DCM, "Automated Data Collection")

Table 6.3-11 TID 1002 OBSERVER CONTEXT

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1		HAS OBS CONTEXT	CODE	EV (121005,DCM, “Observer Type”)	ALWAYS	EV (121007, DCM, "Device")
3		HAS OBS CONTEXT	INCLUDE	DTID 1004 "Device observer identifying attributes"	ALWAYS	See table TID 1004.

Table 6.3-12 TID 1004 DEVICE OBSERVER IDENTIFYING ATTRIBUTES

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			UIDREF	EV (121012,DCM, “Device Observer UID”)	ALWAYS	AUTO (generated by device)

2			TEXT	EV (121013,DCM, “Device Observer Name”)	ALWAYS	CONFIG
3			TEXT	EV (121014,DCM, “Device Observer Manufacturer”)	ALWAYS	”EOS imaging”
4			TEXT	EV (121015,DCM, “Device Observer Model Name”)	ALWAYS	CONFIG
5			TEXT	EV (121016,DCM, “Device Observer Serial Number”)	ALWAYS	CONFIG
7			CODE	EV (113876, DCM, “Device Role in Procedure”)	ALWAYS	EV (113859, DCM, "Irradiating Device")

Table 6.3-13 TID 10002 ACCUMULATED X-RAY DOSE

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			CONTAINER	EV (113702, DCM, ”Accumulated X-Ray Dose Data”)	ALWAYS	
2	›	HAS CONCEPT MOD	CODE	EV (113764, DCM, “Acquisition Plane”)	ALWAYS	EV (113620, DCM, ”Plane A”) or EV (113621, DCM, ”Plane B”)
12	›	CONTAINS	INCLUDE	DTID 10004 “Accumulated Projection X-RAY Dose”	ALWAYS	See table TID 10004.

Table 6.3-14 TID 10004 ACCUMULATED PROJECTION X-RAY DOSE

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			NUM	EV (113722, DCM, "Dose Area Product Total")	ALWAYS	AUTO
2			NUM	EV (113725, DCM, "Dose (RP) Total")	ALWAYS	AUTO
6			NUM	EV (113727, DCM, "Acquisition Dose Area Product Total")	ALWAYS	AUTO
7			NUM	EV (113729, DCM, "Acquisition Dose (RP) Total")	ALWAYS	AUTO
8			NUM	EV (113855, DCM, "Total Acquisition Time")	ALWAYS	AUTO
12			TEXT	EV (113780, DCM, "Reference Point Definition")	ALWAYS	AUTO

Table 6.3-15 TID 10003 IRRADIATION EVENT X-RAY DATA

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			CONTAINER	EV (113706, DCM, ”Irradiation Event X-Ray Data”)	ALWAYS	
2	›	HAS CONCEPT MOD	CODE	EV (113764, DCM, “Acquisition Plane”	ALWAYS	EV (113620, DCM, ”Plane A”) or EV (113621, DCM, ”Plane B”)
3	›	CONTAINS	UIDREF	EV (113769, DCM, “Irradiation Event UID”)	ALWAYS	AUTO
6	›	CONTAINS	DATETIME	DT (111526, DCM, “DateTime Started”)	ALWAYS	AUTO
7	›	CONTAINS	CODE	EV (113721, DCM, “Irradiation Event Type”)	ALWAYS	EV (113611, DCM, “Stationary Acquisition”)
8	›	CONTAINS	TEXT	EV (125203, DCM, “Acquisition Protocol”)	ALWAYS	AUTO
17	›	CONTAINS	CODE	EV (123014, DCM, (“Target Region”)	ALWAYS	AUTO
18	›	CONTAINS	NUM	EV (122130, DCM, “Dose Area Product”)	ALWAYS	AUTO
25	›	CONTAINS	TEXT	EV (121106, DCM, “Comment”)	ALWAYS	AUTO

26	›	CONTAINS	INCLUDE	DTID 1020 "Person Participant"	ALWAYS	See table TID 1020.
27	›	CONTAINS	INCLUDE	DTID 10003A “Irradiation Event X-Ray Detector Data”	ALWAYS	See table TID 10003A.
28	›	CONTAINS	INCLUDE	DTID 10003B “Irradiation Event X-Ray Source Data”	ALWAYS	See table TID 10003B.

Table 6.3-16 TID 10003A IRRADIATION EVENT X-RAY DETECTOR DATA

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
5			IMAGE	EV (113795, DCM, “Acquired Image”)	ALWAYS	AUTO

Table 6.3-17 TID 10003B IRRADIATION EVENT X-RAY SOURCE DATA

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			NUM	EV (113738, DCM, “Dose (RP)”)	ALWAYS	AUTO
2			TEXT	EV (113780, DCM, “Reference Point Definition”)	ALWAYS	AUTO
7			NUM	EV (113768, DCM, “Number of Pulses”)	ALWAYS	AUTO
11			NUM	EV (113733, DCM, “KVP”)	ALWAYS	AUTO
12			NUM	EV (113734, DCM, “X-Ray Tube Current”)	ALWAYS	AUTO
14			NUM	EV (113824, DCM, “Exposure Time”)	ALWAYS	AUTO
16			NUM	EV (113766, DCM, “Focal Spot Size”)	ALWAYS	AUTO
18			CONTAINER	EV (113771, DCM, “X-Ray Filters”)	ALWAYS	
19	›	CONTAINS	CODE	EV (113772, DCM, “X-Ray Filter Type”)	ALWAYS	AUTO
20	›	CONTAINS	CODE	EV (113757, DCM, “X-Ray Filter Material”)	ALWAYS	AUTO
21	›	CONTAINS	NUM	EV (113758, DCM, “X-Ray Filter Thickness Minimum”)	ALWAYS	AUTO
22	›	CONTAINS	NUM	EV (113773, DCM, “X-Ray Filter Thickness Maximum”)	ALWAYS	AUTO
23			NUM	EV (113790, DCM, “Collimated Field Area”)	ALWAYS	AUTO
24			NUM	EV (113788, DCM, “Collimated Field Height”)	ALWAYS	AUTO
25			NUM	EV (113789, DCM, “Collimated Field Width”)	ALWAYS	AUTO

Table 6.3-18 TID 1020 PERSON PARTICIPANT

	NL	Rel with Parent	VT	Concept Name	Presence of Value	Value
1			PNAME	EV (113870, DCM, "Person Name")	ALWAYS	AUTO
2	›	HAS PROPERTIES	CODE	EV (113875, DCM, "Person Role in Procedure")	ALWAYS	AUTO
ttr6	›	HAS PROPERTIES	CODE	EV (113874, DCM, "Person Role in Organization")	ALWAYS	AUTO