

# DICOM Conformance Statement

## Application Annex: SmartCT R1.0 On Interventional Workspot R1.6



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# 1. DICOM Conformance Statement Overview

## 1.1. Data Specifications

### 1.1.1. Supported IOD's

This section specifies each IOD accepted and / or created by SmartCT Application.

- ACCEPTED The applicable IOD is accepted for storage in the repository of the hosting platform and supported for import in SmartCT Application for viewing and analysis.
- CREATED The SmartCT Application supports generation of derived data by using the applicable IOD and is able to store this data in the repository of the hosting platform.

**Table 1: Supported IOD's**

IOD		Support	
Name	UID	ACCEPTED	CREATED
X-Ray Angiographic Image Storage SOP Class*	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
Secondary Capture Image Storage SOP Class * *	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multiframe True Color Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.4	No	Yes
X-Ray 3D Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.13.1.1	Yes	Yes

\* **Note:** SmartCT XA supports the import of the following XA series from the Philips Azurion Modality:

- 3D acquisition series (imported in the hosting platform via the real time link interface or via DICOM import)
- 2D acquisition series (2D X-ray and fluoro) received during the Live tasks from the Philips Azurion modality..

Only these XA series can be recalled when the study is loaded again in SmartCT.

\*\* **Note:** The following Secondary Capture Images are created by the SmartCT application:

- DICOM snapshots containing a screen capture created in the Series&Reconstruction, Segmentation, Projections or Live Tasks
- Data objects with results of:
  - o SmartCT session data (Tasks settings automatically created when the SmartCT application is closed).
  - o Contrast/Brightness settings (for 2D X-ray overlay series)
  - o Motion Compensation ( for the 2D X-ray overlay series)
  - o Skull Segmentation data (only created for VasoCT volumes)

Only the Secondary Capture objects containing the SmartCT session information, Contrast/Brightness data, Motion Compensation data and Skull Segmentation data can be used as input in the SmartCT app.

DICOM Secondary Capture snapshots cannot be viewed in the SmartCT application, but they can be viewed in the image viewer of the Interventional Workspot and in other appropriate DICOM image viewers.

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## 3. Introduction

This DICOM Conformance Statement annex is applicable to the SmartCT on Interventional Workspot R1.6 hosting platform, later referred to as SmartCT Application.

**SmartCT** is a 3D image visualization and analysis software product (Interventional Tool) intended to provide fast and high-resolution 3D visualization of vasculature, hemorrhages, soft tissue and bone structures.

### 3.1. Revision History

The revision history provides dates and differences of the different releases.

**Table 2: Revision History**

Document Version	Date of Issue	Status	Description
00	17-FEB-2020	Approved	Final version

### 3.2. 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.

### 3.3. Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.

This DICOM 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 an 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 ensure 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).

### 3.4. Definitions, Terms and Abbreviations

**Table 3: Definitions, Terms and Abbreviations**

Abbreviation/Term	Explanation
AE	Application Entity
ANSI	American National Standard Institute
AP	Application Profile
BOT	Basic Offset Table
CD	Compact Disc
CD-R	CD-Recordable
CD-M	CD-Medical
CB	Contrast/Brightness
CR	Computed Radiography
CT	Computed Tomography
DCR	Dynamic Cardio Review
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
DX	Digital X-Ray
EBE	DICOM Explicit VR Big Endian
ELE	DICOM Explicit VR Little Endian
FSC	File-set Creator
FSR	File-set Reader
FSU	File-set Updater
GUI	Graphic User Interface
HIS	Hospital Information System
HL7	Health Level Seven
ILE	DICOM Implicit VR Little Endian
IOD	Information Object Definition
IW	Interventional Workspot
MC	Motion Correction
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association
NM	Nuclear Medicine
PDU	Protocol Data Unit
RF	X-Ray Radiofluoroscopic
RIS	Radiology Information System
RT	Radiotherapy
RWA	Real-World Activity
SC	Secondary Capture
SCM	Study Component Management
SCP	Service Class Provider
SCU	Service Class User
SES	Session

Abbreviation/Term	Explanation
SKULL	Skull Segmentation
SNS	Snapshot
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
US	Ultrasound
USMF	Ultrasound Multi-frame
WLM	Worklist Management
XA	X-Ray Angiographic

### 3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 21 (NEMA PS 3.1- PS 3.21),  
National Electrical Manufacturers Association  
1300 North 17th Street  
Suite 900  
Arlington, Virginia 22209  
Internet: <https://www.dicomstandard.org/current>

Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2019) plus all the supplements and correction items that have been approved as Final Text.

## 4. Annexes of application "SmartCT R1.0"

### 4.1. IOD Contents

#### 4.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS           The module is always present  
 CONDITIONAL    The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS           The attribute is always present with a value  
 EMPTY           The attribute is always present without any value (attribute sent zero length)  
 VNAP            The attribute is always present and its Value is Not Always Present  
                   (attribute sent zero length if no value is present)  
 ANAP            The attribute is present under specified condition – if present then it will always have a value

The abbreviations used in the Module table for the column "Source" are:

AUTO             The attribute value is generated automatically  
 CONFIG          The attribute value source is a configurable parameter  
 COPY            The attribute value source is another SOP instance  
 FIXED           The attribute value is hard-coded in the application  
 IMPLICIT        The attribute value source is a user-implicit setting  
 MPPS            The attribute value is the same as that use for Modality Performed Procedure Step  
 MWL             The attribute value source is a Modality Worklist  
 USER            The attribute value source is explicit user input

#### 4.1.1.1. List of created SOP Classes

Table 4: List of created SOP Classes

SOP Class Name	SOP Class UID
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Multi-frame True Color Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7.4
X-Ray 3D Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.13.1.1



### 4.1.1.2. X-Ray Angiographic Image Storage SOP Class

The 2D overlay series received by SmartCT from the X-ray modality in the live Task are stored as an X-ray Angiographic Image. There are 2 types of overlay series:

- 2D exposure series.
- Fluoroscopy series.

Attribute values in the created X-ray Angiographic IOD can be different for 2D exposure series and Fluoroscopy series.

Differences in attribute values are indicated in the table below with:

- 2DXA
- FLUO

**Table 5: IOD of Created X-Ray Angiographic Image Storage Instances**

Information Entity	Module	Presence	Conditions
Patient	Patient Module	ALWAYS	Not Applicable
Study	General Study Module	ALWAYS	Not Applicable
	Patient Study Module	CONDITIONAL	Only present when primary 3D acquisition series was imported from X-Ray Modality via DICOM in IW
Series	General Series Module	ALWAYS	Not Applicable
Equipment	General Equipment Module	ALWAYS	Not Applicable
Image	General Image Module	ALWAYS	Not Applicable
	Image Pixel Module	ALWAYS	Not Applicable
	Cine Module	ALWAYS	Not Applicable
	Multi-Frame Module	ALWAYS	Not Applicable
	Display Shutter Module	ALWAYS	Not Applicable
	X-Ray Image Module	ALWAYS	Not Applicable
	X-Ray Acquisition Module	ALWAYS	Not Applicable
	X-Ray Table Module	ALWAYS	Not Applicable
	XA Positioner Module	ALWAYS	Not Applicable
	DX Detector Module	ALWAYS	Not Applicable
	VOI LUT Module	ALWAYS	Not Applicable
	SOP Common Module	ALWAYS	Not Applicable

**Remark:** in tables below, source value = COPY means that the attribute value is copied from the imported X-Ray Angiographic run from the modality.

**Table 6: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN	-	VNAP	COPY	copied from source data
Patient ID	0010,0020	LO	-	VNAP	COPY	copied from source data
Patient's Birth Date	0010,0030	DA	-	VNAP	COPY	copied from source data
Patient's Sex	0010,0040	CS	-	VNAP	COPY	copied from source data

**Table 7: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA	-	ALWAYS	COPY	copied from source data
Study Time	0008,0030	TM	-	ALWAYS	COPY	copied from source data
Accession Number	0008,0050	SH	-	VNAP	COPY	copied from source data
Referring Physician's Name	0008,0090	PN	-	VNAP	COPY	copied from source data
Study Instance UID	0020,000D	UI	-	ALWAYS	COPY	copied from source data
Study ID	0020,0010	SH	-	VNAP	COPY	copied from source data

**Table 8: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO	-	ANAP	COPY	Copied from source
Allergies	0010,2110	LO	-	ANAP	COPY	Copied from source

**Table 9: General Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA	-	ALWAYS	AUTO	-
Series Time	0008,0031	TM	-	ALWAYS	AUTO	-
Modality	0008,0060	CS	XA	ALWAYS	FIXED	-
Series Description	0008,103E	LO	2DXA: Copied from received 2D exposure series) FLUO: " SmartCT 2D overlay series "	ALWAYS	AUTO	-
Performing Physician's Name	0008,1050	PN	-	VNAP	COPY	copied from source data
Related Series Sequence	0008,1250	SQ	-	ALWAYS	AUTO	Added by SmartCT
>Study Instance UID	0020,000D	UI	-	ALWAYS	AUTO	-
>Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
>Purpose of Reference Code Sequence	0040,A170	SQ	-	VNAP	AUTO	-
Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
Series Number	0020,0011	IS	2DXA: 5000 + y (y = series number of 2D exposure series received from the X-ray system)  FLUO: <xxxxx> (xxxxx is received from the X_ray modality via proprietary CWIS interface and is added by the SmartCT app to the series)	ALWAYS	AUTO	-
Performed Procedure Step Start Date	0040,0244	DA	-	ALWAYS	COPY	copied from source data

Performed Procedure Step Start Time	0040,0245	TM	-	ALWAYS	COPY	copied from source data
Performed Procedure Step ID	0040,0253	SH	-	ALWAYS	COPY	copied from source data

Table 10: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	-
Institution Name	0008,0080	LO	-	VNAP	CONFIG	Hospital name configured in IW
Manufacturer's Model Name	0008,1090	LO	SmartCT	ALWAYS	FIXED	
Device Serial Number	0018,1000	LO	-	ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Versions	0018,1020	LO	1.0.x.y	ALWAYS	AUTO	where "x.y" is the detailed version of the SmartCT application Version

**Table 11: General Image Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL\PRIMARY\SINGLE PLANE	ALWAYS	COPY	copied from source data
Acquisition Date	0008,0022	DA	-	ANAP	COPY	copied from source data
Content Date	0008,0023	DA	-	ANAP	COPY	copied from source data
Acquisition Time	0008,0032	TM	-	ANAP	COPY	copied from source data
Content Time	0008,0033	TM	-	ANAP	COPY	copied from source data
Instance Number	0020,0013	IS	2DXA: 12000 + y (y = run number of 2D exposure series received from the X-ray system) FLUO: <xxxx> (xxxx is generated by the SmartCT app)	ALWAYS	AUTO	
Patient Orientation	0020,0020	CS	-	VNAP	COPY	copied from source data
Lossy Image Compression	0028,2110	CS	00	ALWAYS	COPY	copied from source data
Icon Image Sequence	0088,0200	SQ	-	ALWAYS	COPY	copied from source data
>Samples per Pixel	0028,0002	US	1	ALWAYS	COPY	copied from source data
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	COPY	copied from source data
>Rows	0028,0010	US	128	ALWAYS	COPY	copied from source data
>Columns	0028,0011	US	128	ALWAYS	COPY	copied from source data
>Bits Allocated	0028,0100	US	8	ALWAYS	COPY	copied from source data
>Bits Stored	0028,0101	US	8	ALWAYS	COPY	copied from source data
>High Bit	0028,0102	US	7	ALWAYS	COPY	copied from source data
>Pixel Representation	0028,0103	US	0	ALWAYS	COPY	copied from source data
>Pixel Data	7FE0,0010	OB	-	ALWAYS	COPY	copied from source data

**Table 12: Image Pixel Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	-
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	-
Rows	0028,0010	US	-	ALWAYS	AUTO	-
Columns	0028,0011	US	-	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	0	ALWAYS	AUTO	-
Pixel Data	7FE0,0010	OB/OW	-	ALWAYS	AUTO	-

Table 13: Cine Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Cine Rate	0018,0040	IS	-	ANAP	COPY	copied from source data
Frame Time	0018,1063	DS	-	ALWAYS	COPY	copied from source data

Table 14: Multi-Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS	-	ALWAYS	COPY	copied from source data
Frame Increment Pointer	0028,0009	AT	00181063	ALWAYS	COPY	copied from source data

Table 15: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	RECTANGULAR	ALWAYS	COPY	copied from source data
Shutter Left Vertical Edge	0018,1602	IS	-	ALWAYS	COPY	copied from source data
Shutter Right Vertical Edge	0018,1604	IS	-	ALWAYS	COPY	copied from source data
Shutter Upper Horizontal Edge	0018,1606	IS	-	ALWAYS	COPY	copied from source data
Shutter Lower Horizontal Edge	0018,1608	IS	-	ALWAYS	COPY	copied from source data

Table 16: X-Ray Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL\ PRIMARY\ SINGLE PLANE	ALWAYS	FIXED	-
Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	-
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	-
Frame Increment Pointer	0028,0009	AT	00181063	ALWAYS	COPY	copied from source data
Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	-
Bits Stored	0028,0101	US	16	ALWAYS	FIXED	-
High Bit	0028,0102	US	15	ALWAYS	FIXED	-
Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	-
Pixel Intensity Relationship	0028,1040	CS	LIN	ALWAYS	FIXED	-
Lossy Image Compression	0028,2110	CS	00	ALWAYS	COPY	-

**Table 47: X-Ray Acquisition Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS	-	VNAP	COPY	copied from source data
Exposure	0018,1152	IS	-	ALWAYS	COPY	copied from source data
Radiation Setting	0018,1155	CS	SC	ALWAYS	COPY	copied from source data
Imager Pixel Spacing	0018,1164	DS	-	ANAP	COPY	copied from source data
Pixel Spacing	0028,0030	DS	-	ALWAYS	COPY	copied from source data

**Table 58: X-Ray Table Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Table Motion	0018,1134	CS	STATIC	VNAP	COPY	copied from source data
Table Angle	0018,1138	DS	-	ANAP	COPY	copied from source data

**Table 19: XA Positioner Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS	-	ALWAYS	COPY	copied from source data
Distance Source to Patient	0018,1111	DS	-	ALWAYS	COPY	copied from source data
Positioner Motion	0018,1500	CS	DYNAMIC	ALWAYS	COPY	copied from source data
Positioner Primary Angle	0018,1510	DS	-	VNAP	COPY	copied from source data
Positioner Secondary Angle	0018,1511	DS	-	VNAP	COPY	copied from source data
Positioner Primary Angle Increment	0018,1520	DS	-	ANAP	COPY	copied from source data
Positioner Secondary Angle Increment	0018,1521	DS	-	ANAP	COPY	copied from source data

**Table 20: DX Detector Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Imager Pixel Spacing	0018,1164	DS	-	ALWAYS	COPY	copied from source data
Pixel Spacing	0028,0030	DS	-	ALWAYS	AUTO	

**Table 21: VOI LUT Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS	-	ALWAYS	COPY	copied from source data
Window Width	0028,1051	DS	-	ALWAYS	COPY	copied from source data

**Table 22: SOP Common Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	-	ANAP	COPY	Copied from source data

Instance Creation Date	0008,0012	DA	-	ALWAYS	AUTO	-
Instance Creation Time	0008,0013	TM	-	ALWAYS	AUTO	-
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.12.1	ALWAYS	FIXED	-
SOP Instance UID	0008,0018	UI	-	ALWAYS	AUTO	-
Instance Number	0020,0013	IS	2DXA: 12000 + y (y = run number of 2D exposure series received from the X-ray system) FLUO: <xxxx> (value generated by SmartCT)	ALWAYS	AUTO	-

### 4.1.1.3. Secondary Capture Image Storage SOP class

The Secondary Capture Image Storage SOP class is used for the storage of the following SmartCT objects:

- Session
- Contrast/Brightness
- Motion Compensation
- Skull Segmentation
- Snapshot

In the tables below the attributes and attribute values are specified for above objects.

**Table 6: IOD of Created Secondary Capture Image Storage SOP Class Instances**

Information Entity	Module	Presence Of Module	Condition
Patient	Patient Module	ALWAYS	-
Study	General Study Module	ALWAYS	-
	Patient Study Module	CONDITIONAL	Only present when primary 3D acquisition series was imported from X-Ray Modality via DICOM in IW
Series	General Series Module	ALWAYS	-
Equipment	General Equipment Module	ALWAYS	-
	SC Equipment Module	ALWAYS	-
Image	General Image Module	ALWAYS	-
	Image Pixel Module	ALWAYS	-
	SC Image Module	CONDITIONAL	Only present in SNS object
	VOI LUT Module	CONDITIONAL	Not present in the SES, SNS and SKULL objects
	SOP Common Module	ALWAYS	-

**Table 24: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN	-	VNAP	COPY	copied from source data
Patient ID	0010,0020	LO	-	VNAP	COPY	copied from source data
Patient's Birth Date	0010,0030	DA	-	VNAP	COPY	copied from source data
Patient's Sex	0010,0040	CS	-	VNAP	COPY	copied from source data

**Table 25: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA	-	ALWAYS	COPY	copied from source data
Study Time	0008,0030	TM	-	ALWAYS	COPY	copied from source data
Accession Number	0008,0050	SH	-	VNAP	COPY	copied from source data
Referring Physician's Name	0008,0090	PN	-	VNAP	COPY	copied from source data
Study Instance UID	0020,000D	UI	-	ALWAYS	COPY	copied from source data
Study ID	0020,0010	SH	-	VNAP	COPY	copied from source data

**Table 26: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO	-	ANAP	COPY	Copied from source data
Allergies	0010,2110	LO	-	ANAP	COPY	Copied from source data

**Table 27: General Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA	-	ALWAYS	AUTO	-
Series Time	0008,0031	TM	-	ALWAYS	AUTO	-
Modality	0008,0060	CS	XA	ALWAYS	AUTO	-
Series Description	0008,103E	LO	<b>SNS:</b> Snapshot <b>SES:</b> SmartCT <b>CB:</b> X-ray run contrast brightness data <b>MC:</b> Motion Compensation Data <b>SKULL:</b> SmartCT	ALWAYS	AUTO	-
Related Series Sequence	0008,1250	SQ	-	ALWAYS	AUTO	-
>Study Instance UID	0020,000D	UI	-	ALWAYS	AUTO	-
>Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
>Purpose of Reference Code Sequence	0040,A170	SQ	-	ANAP	AUTO	-
Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
Series Number	0020,0011	IS	<b>SNS:</b> 8001 (incremented by 1 for each additional snapshot) <b>SES:</b> 5000 +y <b>CB:</b> 5000 +y <b>MC:</b> 5000 +y <b>SKULL:</b> 5000 +y	ALWAYS	AUTO	y = number of primary exposure series received from the X-ray system.
Performed Procedure Step Start Date	0040,0244	DA	-	ALWAYS	COPY	Copied from source data
Performed Procedure Step Start Time	0040,0245	TM	-	ALWAYS	COPY	Copied from source data
Performed Procedure Step ID	0040,0253	SH	-	ALWAYS	COPY	Copied from source data



**Table 78: General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	-
Institution Name	0008,0080		-	VNAP	CONFIG	Hospital name configured in IW
Manufacturer's Model Name	0008,1090	LO	SmartCT	ALWAYS	FIXED	-
Device Serial Number	0018,1000	LO	-	ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Version(s)	0018,1020	LO	1.0.x.y	ALWAYS	AUTO	where "x.y" is the detailed version of the SmartCT application Version

**Table 29 : SC Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	XA	ALWAYS	FIXED	-
Conversion Type	0008,0064	CS	WSD	ANAP	FIXED	-

**Table 80: General Image Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	<b>SNS:</b> DERIVED\SECONDARY	ALWAYS	AUTO	-
			<b>SES:</b> DERIVED\SECONDARY\SMART3D			-
			<b>CB:</b>			-
			DERIVED\SECONDARY\CONBRIGHTRUN			-
			<b>MC:</b>			-
			DERIVED\SECONDARY\MOTIONCOMP			-
Instance Number	0020,0013	IS	<b>SNS:</b> 7001 – 7nnn	ALWAYS	AUTO	-
			<b>SES:</b> 1 → n <b>CB:</b> 1 <b>MC:</b> 1 <b>SKULL:</b> 2			-
Patient Orientation	0020,0020	CS		VNAP	AUTO	-

**Table 31: Image Pixel Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1: for MONOCHROME1	ALWAYS	FIXED	-
			3: for RGB			-
Photometric Interpretation	0028,0004	CS	<b>SNS:</b> RGB <b>SES:</b> RGB <b>CB:</b> MONOCHROME1 <b>MC:</b> MONOCHROME1 <b>SKULL:</b> RGB	ALWAYS	FIXED	-
Planar Configuration	0028,0006	US	0	ANAP	FIXED	Only present in SNS ,SKULL and SES objects

Rows	0028,0010	US	<b>SNS:</b> <values depends on connected monitor resolution> <b>SES:</b> 128 <b>CB:</b> 1 <b>MC:</b> 1 <b>SKULL:</b> 128	ALWAYS	AUTO	-
Columns	0028,0011	US	<b>SNS:</b> <values depends on connected monitor resolution> <b>SES:</b> 128 <b>CB:</b> 1 <b>MC:</b> 1 <b>SKULL:</b> 128	ALWAYS	AUTO	-
Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	-
Bits Stored	0028,0101	US	8	ALWAYS	FIXED	-
High Bit	0028,0102	US	7	ALWAYS	FIXED	-
Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	-
Pixel Data	7FE0,0010	OW/ OB	-	ALWAYS	AUTO	-

Table 32 : SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA	-	ANAP	AUTO	Only present in SNS
Time of Secondary Capture	0018,1014	TM	-	ANAP	AUTO	Only present in SNS

Table 33: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS	<b>SNS:</b> not present <b>SES:</b> not present <b>CB:</b> 128 <b>MC:</b> 128 <b>SKULL:</b> not present	ANAP	AUTO	-
Window Width	0028,1051	DS	<b>SNS:</b> not present <b>SES:</b> not present <b>CB:</b> 256 <b>MC:</b> 256 <b>SKULL:</b> not present	ANAP	AUTO	-

Table 34: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	-	ANAP	COPY	Copied from source data
Instance Creation Date	0008,0012	DA	-	ANAP	AUTO	-
Instance Creation Time	0008,0013	TM	-	ANAP	AUTO	-
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	FIXED	-
SOP Instance UID	0008,0018	UI	-	ALWAYS	AUTO	-

Instance Number	0020,0013	IS	SNS: 7001 – 7nnn SES: 1 → n CB: 1 MC:1 SKULL: 2	ALWAYS	AUTO	-
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#### 4.1.1.4. Multiframe True Color Secondary Capture Image Storage SOP class

Multiframe True Color Secondary capture storage objects are used for:

- saving of automatic movies
- saving of free interaction movies

In the tables below, for the attributes where source value = “COPY” it means that the value is copied from the imported XA run. The other attribute values are defined by the SmartCT application or by the IW platform.

**Table 35: IOD of Created Multiframe True Color Secondary Capture Image Storage SOP Class Instances**

Information Entity	Module	Presence Of Module	Condition
Patient	Patient Module	ALWAYS	-
Study	General Study Module	ALWAYS	-
	Patient Study Module	CONDITIONAL	Only present when primary 3D acquisition series was imported from X-Ray Modality via DICOM in IW
Series	General Series Module	ALWAYS	-
Frame of Reference	Frame of Reference Module	ALWAYS	-
Equipment	General Equipment Module	ALWAYS	-
	SC Equipment Module	ALWAYS	-
Image	General Image Module	ALWAYS	-
	Image Pixel Module	ALWAYS	-
	Cine Module	ALWAYS	-
	Multi-Frame Module	ALWAYS	-
	Multi-Frame Functional Groups Module	ALWAYS	-
	SC Image Module	ALWAYS	-
	SC Multi-frame Image Module	ALWAYS	-
	SOP Common Module	ALWAYS	-

**Table 36: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN	-	VNAP	COPY	copied from source data
Patient ID	0010,0020	LO	-	VNAP	COPY	copied from source data
Patient's Birth Date	0010,0030	DA	-	VNAP	COPY	copied from source data
Patient's Sex	0010,0040	CS	-	VNAP	COPY	copied from source data

**Table 37: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA	-	ALWAYS	COPY	copied from source data

Study Time	0008,0030	TM	-	ALWAYS	COPY	copied from source data
Accession Number	0008,0050	SH	-	VNAP	COPY	copied from source data
Referring Physician's Name	0008,0090	PN	-	VNAP	COPY	copied from source data
Study Instance UID	0020,000D	UI	-	ALWAYS	COPY	copied from source data
Study ID	0020,0010	SH	-	VNAP	COPY	copied from source data

**Table 98: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO	-	ANAP	COPY	copied from source data
Allergies	0010,2110	LO	-	ANAP	COPY	copied from source data

**Table 39: General Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA	-	ALWAYS	AUTO	-
Series Time	0008,0031	TM	-	ALWAYS	AUTO	-
Modality	0008,0060	CS	XA	ALWAYS	FIXED	-
Series Description	0008,103E	LO	Movie	ALWAYS	AUTO	-
Related Series Sequence	0008,1250	SQ	-	ALWAYS	AUTO	-
>Study Instance UID	0020,000D	UI	-	ALWAYS	AUTO	-
>Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
>Purpose of Reference Code Sequence	0040,A170	SQ	-	VNAP	AUTO	-
Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	Each DICOM movie has a unique value.
Series Number	0020,0011	IS	6001 → 6nnn	ALWAYS	AUTO	For each DICOM movie a new series number is created (where nnn is incremented in steps of 1)
Performed Procedure Step Start Date	0040,0244	DA	-	ALWAYS	COPY	copied from source data
Performed Procedure Step Start Time	0040,0245	TM	-	ALWAYS	COPY	copied from source data
Performed Procedure Step ID	0040,0253	SH	-	ALWAYS	COPY	copied from source data

**Table 40: Frame of Reference Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI	-	ALWAYS	AUTO	-
Position Reference Indicator	0020,1040	LO	-	VNAP	AUTO	-

**Table 41: General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	-

Institution Name	0008,0080	LO	-	VNAP	CONFIG	Hospital name configured in IW
Manufacturer's Model Name	0008,1090	LO	SmartCT	ALWAYS	FIXED	-
Device Serial Number	0018,1000	LO	-	ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Version(s)	0018,1020	LO	1.0.x.y	ALWAYS	AUTO	where "x.y" is the detailed version of the SmartCT application Version

Table 42 : SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	XA	ALWAYS	FIXED	-
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	-

Table 43: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	DERIVED\SECONDARY	ALWAYS	FIXED	-
Content Date	0008,0023	DA	-	ALWAYS	AUTO	-
Content Time	0008,0033	TM	-	ALWAYS	AUTO	-
Instance Number	0020,0013	IS	9001->9nnn	ALWAYS	AUTO	For each DICOM movie a new instance number is created (where nnn is incremented in steps of 1)
Patient Orientation	0020,0020	CS	-	ALWAYS	EMPTY	-
Burned in Annotation	0028,0301	CS	YES	ALWAYS	AUTO	-
Icon Image Sequence	0088,0200	SQ	-	ALWAYS	AUTO	-
> Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	-
> Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	-
> Rows	0028,0010	US	128	ALWAYS	FIXED	-
> Columns	0028,0011	US	128	ALWAYS	FIXED	-
> Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	-
> Bits Stored	0028,0101	US	8	ALWAYS	FIXED	-
> High Bit	0028,0102	US	7	ALWAYS	FIXED	-
> Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	-
> Pixel Data	7FE0,0010	OW/OB	-	ALWAYS	AUTO	-

Table 44: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	3	ALWAYS	FIXED	
Photometric Interpretation	0028,0004	CS	RGB	ALWAYS	FIXED	
Planar Configuration	0028,0006	US	0	ALWAYS	FIXED	

Rows	0028,0010	US		ALWAYS	AUTO	Value depends on: - monitor resolution - navigation pane expanded (Y/N) - main view maximized (Y/N)
Columns	0028,0011	US		ALWAYS	AUTO	Value depends on: - monitor resolution - navigation pane expanded (Y/N) - main view maximized (Y/N)
Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	-
Bits Stored	0028,0101	US	8	ALWAYS	FIXED	-
High Bit	0028,0102	US	7	ALWAYS	FIXED	-
Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	-
Pixel Data	7FE0,0010	OW/OB	-	ALWAYS	AUTO	-

**Table 45: Cine Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Cine Rate	0018,0040	IS	10	ALWAYS	AUTO	-
Frame Time	0018,1063	DS	100	ALWAYS	AUTO	-

**Table 46: Multi-Frame Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS	-	ALWAYS	AUTO	Value depends on: - movie type (auto or free) - 2D or 3D view recording - slice thickness (2D)
Frame Increment Pointer	0028,0009	AT	00181063	ALWAYS	FIXED	

**Table 47: Multi-Frame Functional Groups Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA	-	ALWAYS	AUTO	-
Content Time	0008,0033	TM	-	ALWAYS	AUTO	-
Instance Number	0020,0013	IS	9001 -> 9nnn	ALWAYS	AUTO	For each DICOM movie a new instance number is created (where nnn is incremented in steps of 1)
Number of Frames	0028,0008	IS	-	ALWAYS	AUTO	Value depends on: - movie type (auto or free) - 2D or 3D view recording - slice thickness (2D)

**Table 48: SC Image Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA	-	ALWAYS	AUTO	-
Time of Secondary Capture	0018,1014	TM	-	ALWAYS	AUTO	-

**Table 49: SC Multi-Frame Image Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Increment Pointer	0028,0009	AT	00181063	ALWAYS	COPY	copied from source
Burned In Annotation	0028,0301	CS	YES	ALWAYS	AUTO	-

**Table 50: SOP Common Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	-	ANAP	COPY	Copied from source data
Instance Creation Date	0008,0012	DA	-	ANAP	AUTO	-
Instance Creation Time	0008,0013	TM	-	ANAP	AUTO	-
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7.4	ALWAYS	FIXED	-
SOP Instance UID	0008,0018	UI	-	ALWAYS	AUTO	-
Instance Number	0020,0013	IS	9001 -> 9nnn	ANAP	AUTO	For each DICOM movie a new instance number is created (where nnn is incremented in steps of 1)

### 4.1.1.5. X-Ray 3D Angiographic Image Storage SOP class.

The X-Ray 3D angiographic Image is created from the 3D acquisition run that is received from the X-ray system. In the SmartCT application the X-ray 3D angiographic image is created as a result of:

- New reconstruction.
- Subtracted reconstruction.

**Table 51: IOD of Created X-Ray 3D Angiographic Image Storage Instance.**

Information Entity	Module	Presence Of Module	Condition
Patient	Patient Module	ALWAYS	-
Study	General Study Module	ALWAYS	-
	Patient Study Module	CONDITIONAL	Only present when primary 3D acquisition series was imported from X-Ray Modality via DICOM in IW
Series	General Series Module	ALWAYS	-
	Enhanced Series Module	ALWAYS	-
Frame of Reference	Frame Of Reference Module	ALWAYS	-
Equipment	General Equipment Module	ALWAYS	-
	Enhanced General Equipment Module	ALWAYS	-
Image	Image Pixel Module	ALWAYS	-
	Acquisition Context Module	ALWAYS	-
	Multi-frame Functional Groups Module	ALWAYS	-
	X-Ray 3D Image Module	ALWAYS	-
	X-Ray 3D Reconstruction Module	ALWAYS	-
	SOP Common Module	ALWAYS	-

**Table 52: Patient Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN	-	VNAP	COPY	copied from source data
Patient ID	0010,0020	LO	-	VNAP	COPY	copied from source data
Patient's Birth Date	0010,0030	DA	-	VNAP	COPY	copied from source data
Patient's Sex	0010,0040	CS	-	VNAP	COPY	copied from source data

**Table 53: General Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA	-	ALWAYS	COPY	copied from source data
Study Time	0008,0030	TM	-	ALWAYS	COPY	copied from source data
Accession Number	0008,0050	SH	-	VNAP	COPY	copied from source data
Referring Physician's Name	0008,0090	PN	-	VNAP	COPY	copied from source data
Study Instance UID	0020,000D	UI	-	ALWAYS	COPY	copied from source data
Study ID	0020,0010	SH	-	VNAP	COPY	copied from source data



**Table 54: Patient Study Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO	-	ANAP	COPY	Copied from source data
Allergies	0010,2110	LO	-	ANAP	COPY	Copied from source data

**Table 55: General Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA	-	ALWAYS	AUTO	-
Series Time	0008,0031	TM	-	ALWAYS	AUTO	-
Modality	0008,0060	CS	XA	ALWAYS	AUTO	-
Series Description	0008,103E	LO	CBCT /VasoCT volumes:  <reconstruction size>%, <resolution size>, <smoothness/optimize for>, <b>MAR, BMI</b>  3DRA volumes  <b>Subtracted</b> , <reconstruction size>%, <resolution size>, <smoothness/optimize for>	ALWAYS	AUTO	<b>MAR, BMI</b> and <b>Subtracted</b> are added when applicable
Performing Physician's Name	0008,1050	PN	-	VNAP	COPY	Copied from source
Related Series Sequence	0008,1250	SQ	-	ALWAYS	AUTO	-
> Study Instance UID	0020,000D	UI	-	ALWAYS	AUTO	-
> Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
> Purpose of Reference Code Sequence	0040,A170	SQ	-	ANAP	AUTO	-
Series Instance UID	0020,000E	UI	-	ALWAYS	AUTO	-
Series Number	0020,0011	IS	5000 + y (y = number of primary acquisition run received from the X-ray system)	ALWAYS	AUTO	-
Performed Procedure Step Start Date	0040,0244	DA	-	ALWAYS	COPY	Copied from source
Performed Procedure Step Start Time	0040,0245	TM	-	ALWAYS	COPY	Copied from source
Performed Procedure Step ID	0040,0253	SH	-	ALWAYS	COPY	Copied from source

**Table 56: Enhanced Series Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Number	0020,0011	IS	5nnn	ALWAYS	AUTO	nnn = number 3D acq run from X-ray system

**Table 57: Frame of Reference Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI	-	ALWAYS	AUTO	-
Position Reference Indicator	0020,1040	LO	-	VNAP	COPY	Copied from source

**Table 58: General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	-
Institution Name	0008,0080	LO	-	VNAP	CONFIG	Hospital name configured in IW
Manufacturer's Model Name	0008,1090	LO	SmartCT	ALWAYS	FIXED	-
Device Serial Number	0018,1000	LO	-	ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Versions	0018,1020	LO	1.0.x.y	ALWAYS	AUTO	where "x.y" is the detailed version of the SmartCT application Version

**Table 59: Enhanced General Equipment Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	-
Manufacturer's Model Name	0008,1090	LO	SmartCT	ALWAYS	FIXED	Hospital name configured in IW
Device Serial Number	0018,1000	LO	-	ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Versions	0018,1020	LO	1.0.x.y	ALWAYS	AUTO	where "x.y" is the detailed version of the SmartCT application Version

**Table 60: Image Pixel Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	-
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	-
Rows	0028,0010	US	-	ALWAYS	AUTO	Value depends on: - reconstruction type (subtracted/non-subtracted) - selected reconstruction size

Columns	0028,0011	US	-	ALWAYS	AUTO	Value depends on: - reconstruction type (subtracted/non-subtracted) - selected reconstruction size
Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	-
Bits Stored	0028,0101	US	16	ALWAYS	FIXED	-
High Bit	0028,0102	US	15	ALWAYS	FIXED	-
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	-
Pixel Data	7FE0,0010	OW	-	ALWAYS	AUTO	-

Table 61: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ	-	VNAP	AUTO	-

Table 62: Multi-frame Functional Groups Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Date	0008,0023	DA	-	ALWAYS	AUTO	-
Content Time	0008,0033	TM	-	ALWAYS	AUTO	-
Instance Number	0020,0013	IS	1	ALWAYS	AUTO	-
Number of Frames	0028,0008	IS	-	ALWAYS	USER	Value depends on: - reconstruction type (subtracted/non-subtracted) - selected reconstruction size
Shared Functional Groups Sequence	5200,9229	SQ	-	ALWAYS	AUTO	-
>Frame Anatomy Sequence	0020,9071	SQ	-	ALWAYS	AUTO	-
>>Anatomic Region Sequence	0008,2218	SQ	-	ALWAYS	AUTO	-
>>>Code Value	0008,0100	SH	-	ALWAYS	AUTO	-
>>>Coding Scheme Designator	0008,0102	SH	-	ALWAYS	AUTO	-
>>>Code Meaning	0008,0104	LO	-	ALWAYS	AUTO	-
>>Frame Laterality	0020,9072	CS	U	ALWAYS	AUTO	-
>Pixel Measures Sequence	0028,9110	SQ	-	ALWAYS	AUTO	-
>>Slice Thickness	0018,0050	DS	-	ALWAYS	AUTO	-
>>Pixel Spacing	0028,0030	DS	-	ALWAYS	AUTO	-
>Frame VOI LUT Sequence	0028,9132	SQ	-	ALWAYS	AUTO	-
>>Window Center	0028,1050	DS	-	ALWAYS	AUTO	-
>>Window Width	0028,1051	DS	-	ALWAYS	AUTO	-
Per-frame Functional Groups Sequence	5200,9230	SQ	-	ALWAYS	AUTO	-
>X-Ray 3D Frame Type Sequence	0018,9504	SQ	-	ALWAYS	AUTO	-
>>Frame Type	0008,9007	CS	DERIVED\PRIMARY\VOLUME\NONE	ALWAYS	AUTO	-
>>Pixel Presentation	0008,9205	CS	MONOCHROME	ALWAYS	AUTO	-

>>Volumetric Properties	0008,9206	CS	VOLUME	ALWAYS	AUTO	-
>>Volume Based Calculation Technique	0008,9207	CS	NONE	ALWAYS	AUTO	-
>>Reconstruction Index	0020,9536	US	1 → n	ALWAYS	AUTO	Value incremented by 1 for each new reconstruction
>Frame Content Sequence	0020,9111	SQ	-	VNAP	AUTO	-
>Plane Position Sequence	0020,9113	SQ	-	ALWAYS	AUTO	-
>>Image Position (Patient)	0020,0032	DS	-	ALWAYS	AUTO	-
>Plane Orientation Sequence	0020,9116	SQ	-	ALWAYS	AUTO	-
>>Image Orientation (Patient)	0020,0037	DS	-	ALWAYS	AUTO	-

Table 63: X-Ray 3D Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	For 3DRA volume: DERIVED\SECONDARY\ AXIAL\3DRA_PROP or 3DRA_ROLL  For CBCT/VasoCT volume: DERIVED\SECONDARY\ AXIAL\XPERCT_PROP or XPERCT_ROLL	ALWAYS	AUTO	4 <sup>th</sup> value indicates if the scan was acquired with: - 3DRA or CBCT procedure - prop or roll scan
Pixel Presentation	0008,9205	CS	MONOCHROME	ALWAYS	FIXED	-
Volumetric Properties	0008,9206	CS	VOLUME	ALWAYS	FIXED	-
Volume Based Calculation Technique	0008,9207	CS	NONE	ALWAYS	FIXED	-
Content Qualification	0018,9004	CS	PRODUCT	ALWAYS	FIXED	-
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	-
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	-
Bits Allocated	0028,0100	US	16	ALWAYS	FIXED	-
Bits Stored	0028,0101	US	16	ALWAYS	FIXED	-
High Bit	0028,0102	US	15	ALWAYS	FIXED	-
Burned In Annotation	0028,0301	CS	NO	ALWAYS	FIXED	-
Lossy Image Compression	0028,2110	CS	00	ALWAYS	AUTO	-
Icon Image Sequence	0088,0200	SQ		ALWAYS	AUTO	-
>Samples per Pixel	0028,0002	US	1	ALWAYS	FIXED	-
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	FIXED	-
>Rows	0028,0010	US	128	ALWAYS	FIXED	-
>Columns	0028,0011	US	128	ALWAYS	FIXED	-
>Bits Allocated	0028,0100	US	8	ALWAYS	FIXED	-
>Bits Stored	0028,0101	US	8	ALWAYS	FIXED	-
>High Bit	0028,0102	US	7	ALWAYS	FIXED	-
>Pixel Representation	0028,0103	US	0	ALWAYS	FIXED	-
>Pixel Data	7FE0,0010	OW		ALWAYS	AUTO	-
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	FIXED	-

**Table 64: X-Ray 3D Reconstruction Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
X-Ray 3D Reconstruction Sequence	0018,9530	SQ	-	ALWAYS	AUTO	-
>Application Name	0018,9524	LO	Interventional Workspot	ALWAYS	FIXED	
>Application Version	0018,9525	LO	1.6.x	ALWAYS	AUTO	where "x" is the detailed Interventional Workspot (hosting platform) version
>Application Manufacturer	0018,9526	LO	Philips	ALWAYS	FIXED	-
>Algorithm Type	0018,9527	CS	FILTER_BACK_PROJ	ALWAYS	FIXED	-
>Acquisition Index	0020,9518	US	1	ALWAYS	AUTO	-

**Table 65: SOP Common Module**

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	-	ANAP	COPY	copied from source data
Instance Creation Date	0008,0012	DA	-	ANAP	AUTO	-
Instance Creation Time	0008,0013	TM	-	ANAP	AUTO	-
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.13.1.1	ALWAYS	FIXED	-
SOP Instance UID	0008,0018	UI	-	ALWAYS	AUTO	-
Original Specialized SOP Class UID	0008,001B	UI	-	ALWAYS	AUTO	-
Content Qualification	0018,9004	CS	PRODUCT	ALWAYS	FIXED	-
Instance Number	0020,0013	IS	1	ANAP	AUTO	-