

DICOM Conformance Statement

SmartCT R1.3 on Interventional Workspot R1.8



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1. DICOM Conformance Statement Overview

For information about this section, Refer to 1068450 DICOM Conformance Statement Interventional Workspot R1.8.

2. Contents

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3. Introduction

This DICOM Conformance Statement annex is applicable to the SmartCT R1.3 on Interventional Workspot R1.8 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 1: Revision History

Document Version	Date of Issue	Description of change
01	13-Feb-2023	First Release for SmartCT R1.3 on Interventional Workspot R1.8
02	27-Feb-2024	Second Release for SmartCT R1.3 on Interventional Workspot R1.8 <ul style="list-style-type: none"> Updated support of DICOM attribute Station Name (0008,1010) under General Equipment Module for all the applicable created SOP Classes
03	13-Aug-2025	Release for SmartCT R1.3 (L10) as a part of Interventional Workspot R1.8.10

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 2: Definitions, Terms and Abbreviations

Abbreviation/Term	Explanation
AE	Application Entity
ANSI	American National Standard Institute
AP	Application Profile
BMI	Body Mass Index
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
HSDP	HealthSuiteDigitalPlatform
ILE	DICOM Implicit VR Little Endian
IOD	Information Object Definition
IW	Interventional Workspot
MAR	Metal Artifact Reduction
MC	Motion Correction
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association

Abbreviation/Term	Explanation
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
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 - 22 (NEMA PS 3.1- PS 3.22),
 National Electrical Manufacturers Association
 1300 North 17th Street
 Suite 900
 Arlington, Virginia 22209
 Internet: <https://www.dicomstandard.org/current>

4. Networking

For information about this section, Refer to 1068450 DICOM Conformance Statement Interventional Workspot R1.8.

5. Media Interchange

For information about this section, Refer to 1068450 DICOM Conformance Statement Interventional Workspot R1.8.

6. Support of Character Set

For information about this section, Refer to 1068450 DICOM Conformance Statement Interventional Workspot R1.8.

7. Security

For information about this section, Refer to 1068450 DICOM Conformance Statement Interventional Workspot R1.8.

8. Annexes of "SmartCT R1.3 Application"

8.1. IOD Contents

This section specifies each IOD accepted and / or created by SmartCT R1.3 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 3: Supported IOD's

IOD		Supported	
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	No	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 supports the import of the following XA series from the Philips Azurion Modality:
 - 3D acquisition series
 - 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 Snapshot can be created in SmartCT application.
 - 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.

8.1.1. Acceptance Criteria

This section specifies the acceptance criteria applied by SmartCT Application to which a dataset should adhere before it can be imported into the application. This can be criteria on the highest level (e.g. data from a certain manufacturer or system model) or certain DICOM attributes mandatory to be present into the dataset holding a specific value. In case one or more Philips private attributes are required, then a list of supported Philips system models will be mentioned.

Table 4: Accepted System Models

Manufacturer	Modality	System Model Name(s)
Philips	XA	Azurion

Table 5: Accepted Transfer Syntax per IOD

For information about this Table, Refer to 1068450 DICOM Conformance Statement Interventional Workspot R1.8.

Table 6 : Accepted Attribute Values

Attribute Name	Attribute Number	Values/Comments
Not Applicable	Not Applicable	Not Applicable

8.1.2. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created. 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

8.1.2.1. List of Created SOP Classes

Table 7: 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
Multiframe 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

8.1.2.1.1 X-Ray Angiographic Image Storage SOP Class

The 2D overlay series received by SmartCT R1.3 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 8: IOD of Created X-Ray Angiographic Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Acquisition	General Acquisition Module	ALWAYS
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	Cine Module	CONDITIONAL (only present in multi frame XA runs)
	Multi-Frame Module	CONDITIONAL (only present in multi frame XA runs)
	Display Shutter Module	ALWAYS
	X-Ray Image Module	ALWAYS
	X-Ray Acquisition Module	ALWAYS
	X-Ray Table Module	ALWAYS
	XA Positioner Module	ALWAYS
	DX Detector Module	ALWAYS
	VOI LUT Module	ALWAYS
	SOP Common Module	ALWAYS

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 9: Patient Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAP	COPY	

Table 10: General Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	

Table 11: Patient Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient Weight	0010,1030	DS		ALWAYS	COPY	

Table 12: General Series Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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		ALWAYS	AUTO, COPY	2DXA: Copied from received 2D exposure series) FLUO: "SmartCT 2D overlay series"
Performing Physician's Name	0008,1050	PN		ANAP	COPY	
Related Series Sequence	0008,1250	SQ		VNAP	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	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Performed Procedure Step Start Date	0040,0244	DA		ANAP	COPY	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	
Request Attributes Sequence	0040,0275	SQ		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Table 13: General Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	
Institution Name	0008,0080	LO		VNAP	CONFIG	Hospital Name Configured in SW
Manufacturer's Model Name	0008,1090	LO	SmartCT	ALWAYS	FIXED	
Station Name	0008,1010	SH		ALWAYS	AUTO	Windows computer name
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Versions	0018,1020	LO	1.3.x.y	ALWAYS	AUTO	where "x.y" is the detailed application SW Version

Table 14: General Acquisition Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Acquisition Date	0008,0022	DA		ALWAYS	COPY	
Acquisition Time	0008,0032	TM		ALWAYS	COPY	

Table 15: General Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Image Type	0008,0008	CS	ORIGINAL\ PRIMARY\ SINGLE PLANE	ALWAYS	COPY	
Content Date	0008,0023	DA		VNAP	COPY	
Content Time	0008,0033	TM		ANAP	COPY	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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		ANAP	COPY	
Lossy Image Compression	0028,2110	CS		ANAP	COPY	
Icon Image Sequence	0088,0200	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
>Rows	0028,0010	US	128	ALWAYS	AUTO	
>Columns	0028,0011	US	128	ALWAYS	AUTO	
>Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
>High Bit	0028,0102	US	7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 16: Image Pixel Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Samples per Pixel	0028,0002	US	1	ALWAYS	COPY	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	COPY	
Rows	0028,0010	US		ALWAYS	COPY	
Columns	0028,0011	US		ALWAYS	COPY	
Bits Allocated	0028,0100	US	16	ALWAYS	COPY	
Bits Stored	0028,0101	US	16	ALWAYS	COPY	
High Bit	0028,0102	US	15	ALWAYS	COPY	
Pixel Representation	0028,0103	US	0	ALWAYS	COPY	
Pixel Data	7FE0,0010	OB/OW		ALWAYS	COPY	

Table 17: Cine Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Cine Rate	0018,0040	IS		ANAP	COPY	only present in multi-frame XA images
Frame Time	0018,1063	DS		ANAP	COPY	only present in multi-frame XA images

Table 18: Multi-Frame Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Number of Frames	0028,0008	IS		ANAP	COPY	only present in multi-frame XA images
Frame Increment Pointer	0028,0009	AT	00181063	ANAP	COPY	only present in multi-frame XA images

Table 19: Display Shutter Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Shutter Shape	0018,1600	CS	RECTANGULAR	ALWAYS	COPY	
Shutter Left Vertical Edge	0018,1602	IS		ALWAYS	COPY	
Shutter Right Vertical Edge	0018,1604	IS		ALWAYS	COPY	
Shutter Upper Horizontal Edge	0018,1606	IS		ALWAYS	COPY	
Shutter Lower Horizontal Edge	0018,1608	IS		ALWAYS	COPY	

Table 20: X-Ray Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Image Type	0008,0008	CS		ALWAYS	COPY	
Samples per Pixel	0028,0002	US	1	ALWAYS	COPY	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	COPY	
Frame Increment Pointer	0028,0009	AT	00181063	ANAP	COPY	
Bits Allocated	0028,0100	US	16	ALWAYS	COPY	
Bits Stored	0028,0101	US	16	ALWAYS	COPY	
High Bit	0028,0102	US	15	ALWAYS	COPY	
Pixel Representation	0028,0103	US	0	ALWAYS	COPY	
Pixel Intensity Relationship	0028,1040	CS	LIN	ALWAYS	COPY	
Lossy Image Compression	0028,2110	CS	00	ALWAYS	COPY	

Table 21: X-Ray Acquisition Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
KVP	0018,0060	DS		VNAP	COPY	
Exposure	0018,1152	IS		VNAP	COPY	
Radiation Setting	0018,1155	CS	SC	ALWAYS	COPY	
Imager Pixel Spacing	0018,1164	DS		ANAP	COPY	
Pixel Spacing	0028,0030	DS		ALWAYS	COPY	

Table 22: X-Ray Table Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Table Motion	0018,1134	CS	STATIC	VNAP	COPY	
Table Angle	0018,1138	DS		ANAP	COPY	

Table 23: XA Positioner Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Distance Source to Detector	0018,1110	DS		ALWAYS	COPY	
Distance Source to Patient	0018,1111	DS		ALWAYS	COPY	
Positioner Motion	0018,1500	CS	DYNAMIC	ANAP	COPY	Only present in dynamic scans
Positioner Primary Angle	0018,1510	DS		ALWAYS	COPY	
Positioner Secondary Angle	0018,1511	DS		ALWAYS	COPY	
Positioner Primary Angle Increment	0018,1520	DS		ANAP	COPY	Only present in dynamic scans
Positioner Secondary Angle Increment	0018,1521	DS		ANAP	COPY	Only present in dynamic scans

Table 24: DX Detector Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Imager Pixel Spacing	0018,1164	DS		ALWAYS	COPY	
Pixel Spacing	0028,0030	DS		ALWAYS	COPY	

Table 25: VOI LUT Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Window Center	0028,1050	DS		ALWAYS	COPY	
Window Width	0028,1051	DS		ALWAYS	COPY	

Table 26: SOP Common Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Specific Character Set	0008,0005	CS		ANAP	AUTO	As supported by hosting platform
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	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	

8.1.2.1.2 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 27: IOD of Created Secondary Capture Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	ALWAYS
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 28: Patient Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAP	COPY	

Table 29: General Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	

Table 30: Patient Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Weight	0010,1030	DS		ALWAYS	COPY	

Table 31: General Series Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO	SNS: Snapshot SES: SmartCT CB: X-ray run contrast brightness data MC: Motion Compensation Data SKULL: SmartCT	ALWAYS	AUTO	
Modality	0008,0060	CS	XA	ALWAYS	FIXED	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS	SNS: 8001 (incremented by 1 for each additional snapshot) SES: 5000 +y CB: 5000 +y MC: 5000 +y SKULL: 5000 +y	ALWAYS	AUTO	y = number of primary exposure series received from the X-ray system.
Patient Position	0018,5100	CS		ANAP	COPY	
Related Series Sequence	0008,1250	SQ		VNAP	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	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	COPY	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Request Attributes Sequence	0040,0275	SQ		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Table 32: General Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	
Station Name	0008,1010	SH		ALWAYS	AUTO	Windows computer name
Software Versions	0018,1020	LO	1.3.x.y	ALWAYS	AUTO	where "x.y" is the detailed application SW Version
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	12 digit MAC address of network card in IW system

Table 33: SC Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Modality	0008,0060	CS	XA	ALWAYS	FIXED	
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	

Table 34: General Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Image Type	0008,0008	CS	SNS: DERIVED\SECONDARY SES: DERIVED\SECONDARY\ SMART3D CB: DERIVED\SECONDARY\ CONBRIGHTRUN MC: DERIVED\SECONDARY\ MOTIONCOMP SKULL: DERIVED\SECONDARY\ SKULLSEGMENT	ALWAYS	AUTO	
Instance Number	0020,0013	IS	SNS: 7001 – 7nnn SES: 1 -> n CB: 1 MC: 1	ALWAYS	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
			SKULL: 2			
Patient Orientation	0020,0020	CS		VNAP	AUTO	
Content Date	0008,0023	DA		ANAP	AUTO	Only Present in SNS
Content Time	0008,0033	TM		ANAP	AUTO	Only Present in SNS

Table 35: Image Pixel Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Samples per Pixel	0028,0002	US	1: for MONOCHROME1 3: for RGB	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	SNS: RGB SES: RGB CB: MONOCHROME1 MC: MONOCHROME1 SKULL: RGB	ALWAYS	AUTO	
Planar Configuration	0028,0006	US	0	ANAP	AUTO	Only present in SNS ,SKULL and SES objects
Rows	0028,0010	US	SNS: <values depend on connected monitor resolution> SES: 128 CB: 1 MC: 1 SKULL: 128	ALWAYS	AUTO	
Columns	0028,0011	US	SNS: <values depend on connected monitor resolution> SES: 128 CB: 1 MC: 1 SKULL: 128	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
High Bit	0028,0102	US	7	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	

Table 36: SC Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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 37: VOI LUT Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Window Center	0028,1050	DS	SNS: not present SES: not present CB: 128 MC: 128 SKULL: not present	ANAP	AUTO	
Window Width	0028,1051	DS	SNS: not present SES: not present CB: 256 MC: 256 SKULL: not present	ANAP	AUTO	

Table 38: SOP Common Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Specific Character Set	0008,0005	CS		ANAP	AUTO	As supported by hosting platform
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 Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS	SNS: 7001 – 7nnn SES: 1 -> n CB: 1 MC:1 SKULL: 2	ALWAYS	AUTO	

8.1.2.1.3 Multi-Frame True Color Secondary Capture Image Storage SOP Class

Multiframe True Color Secondary capture storage objects are used for:

- Saving of an automatic movie
- 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 39: IOD of Created Multi-Frame True Color Secondary Capture Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS

Information Entity	Module	Presence Of Module
Study	General Study Module	ALWAYS
	Patient Study Module	ALWAYS
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 40: Patient Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAP	COPY	

Table 41: General Study Module

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

Table 42: Patient Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Weight	0010,1030	DS		ALWAYS	COPY	

Table 43: General Series Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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		VNAP	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
>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		ANAP	COPY	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	
Request Attributes Sequence	0040,0275	SQ		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Table 44: Frame of Reference Module

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

Table 45: General Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	
Station Name	0008,1010	SH		ALWAYS	AUTO	Windows computer name
Software Version(s)	0018,1020	LO	1.3.x.y	ALWAYS	AUTO	where "x.y" is the detailed application SW Version

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	12 digit MAC address of network card in IW system

Table 46: SC Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Modality	0008,0060	CS	XA	ALWAYS	FIXED	
Conversion Type	0008,0064	CS	WSD	ALWAYS	FIXED	

Table 47: General Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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		ANAP	AUTO	
Burned in Annotation	0028,0301	CS	YES	ALWAYS	AUTO	
Image Type	0008,0008	CS	DERIVED\SECONDARY	ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Icon Image Sequence	0088,0200	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
>Rows	0028,0010	US	128	ALWAYS	AUTO	
>Columns	0028,0011	US	128	ALWAYS	AUTO	
>Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
>High Bit	0028,0102	US	7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 48: Image Pixel Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Samples per Pixel	0028,0002	US	3	ALWAYS	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Photometric Interpretation	0028,0004	CS	RGB	ALWAYS	AUTO	
Planar Configuration	0028,0006	US	0	ALWAYS	AUTO	
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	AUTO	
Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
High Bit	0028,0102	US	7	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0000	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 49: Cine Module

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

Table 50: Multi-Frame Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	AUTO	

Table 51: Multi-Frame Functional Groups Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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)
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	

Table 52: SC Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	
Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	

Table 53: SC Multi-Frame Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Frame Increment Pointer	0028,0009	AT	00181063	ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS	YES	ALWAYS	AUTO	

Table 54: SOP Common Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7.4	ALWAYS	FIXED	
Specific Character Set	0008,0005	CS		ANAP	AUTO	As supported by hosting platform
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS	9001 -> 9nnn	ALWAYS	AUTO	For each DICOM movie a new instance

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
						number is created (where nnn is incremented in steps of 1)

8.1.2.1.4 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 55: IOD of Created X-Ray 3D Angiographic Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	ALWAYS
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 56: Patient Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Name	0010,0010	PN		VNAP	COPY	
Patient ID	0010,0020	LO		VNAP	COPY	
Patient's Birth Date	0010,0030	DA		VNAP	COPY	
Patient's Sex	0010,0040	CS		VNAP	COPY	
Other Patient IDs	0010,1000	LO		ANAP	COPY	

Table 57: General Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Study Date	0008,0020	DA		ALWAYS	COPY	
Study Time	0008,0030	TM		ALWAYS	COPY	
Accession Number	0008,0050	SH		VNAP	COPY	
Referring Physician's Name	0008,0090	PN		VNAP	COPY	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Study Instance UID	0020,000D	UI		ALWAYS	COPY	
Study ID	0020,0010	SH		VNAP	COPY	

Table 58: Patient Study Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Patient's Weight	0010,1030	DS		ALWAYS	COPY	

Table 59: General Series Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	CBCT /VasoCT volumes: <reconstruction size>%, <resolution size>, <smoothness/optimize for>, MAR, BMI, 3DRA volumes Subtracted, <reconstruction size>%, <resolution size>, <smoothness/optimize for>	ALWAYS	AUTO	MAR, BMI, and Subtracted are added when applicable
Performing Physician Name	0008,1050	PN		VNAP	COPY	
Related Series Sequence	0008,1250	SQ		VNAP	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		ANAP	COPY	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	COPY	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Performed Procedure Step ID	0040,0253	SH		ANAP	COPY	
Request Attributes Sequence	0040,0275	SQ		ANAP	COPY	
>Requested Procedure ID	0040,1001	SH		ANAP	COPY	

Table 60: Enhanced Series Module

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

Table 61: Frame of Reference Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
Position Reference Indicator	0020,1040	LO		VNAP	COPY	

Table 62: General Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	Interventional Workspot	ALWAYS	FIXED	
Station Name	0008,1010	SH		ALWAYS	AUTO	Windows computer name
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Versions	0018,1020	LO	1.8.x.y	ALWAYS	AUTO	where "x.y" is the detailed application SW Version

Table 63: Enhanced General Equipment Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Manufacturer	0008,0070	LO	Philips	ALWAYS	FIXED	
Manufacturer's Model Name	0008,1090	LO	Interventional Workspot	ALWAYS	FIXED	Hospital name configured in IW

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	12 digit MAC address of network card in IW system
Software Versions	0018,1020	LO	1.8.x.y	ALWAYS	AUTO	where "x.y" is the detailed version of the SmartCT application Version

Table 64: Image Pixel Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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	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	OW		ALWAYS	AUTO	

Table 65: Acquisition Context Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Acquisition Context Sequence	0040,0555	SQ		VNAP	AUTO	

Table 66: Multi-Frame Functional Groups Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Instance Number	0020,0013	IS	1	ALWAYS	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Number of Frames	0028,0008	IS		ALWAYS	AUTO	Value depends on: - reconstruction type (subtracted/non-subtracted) - selected reconstruction size
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
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		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		ALWAYS	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
>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 67: X-Ray 3D Image Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
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 th value indicates if the scan was acquired with: - 3DRA or CBCT procedure - prop or roll scan
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	
Content Qualification	0018,9004	CS	PRODUCT	ALWAYS	AUTO	
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	
Burned In Annotation	0028,0301	CS	NO	ALWAYS	AUTO	
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	AUTO	
>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
>Rows	0028,0010	US	128	ALWAYS	AUTO	
>Columns	0028,0011	US	128	ALWAYS	AUTO	
>Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	8	ALWAYS	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
>High Bit	0028,0102	US	7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	OW		ALWAYS	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	

Table 68: X-Ray 3D Reconstruction Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
X-Ray 3D Reconstruction Sequence	0018,9530	SQ		ALWAYS	AUTO	
>Application Name	0018,9524	LO	Interventional Workspot/SmartCT	ALWAYS	FIXED	
>Application Version	0018,9525	LO	1.8.x	ALWAYS	AUTO	where "x" is the detailed Interventional Workspot/SmartCT 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	
>Instance Creation Date	0008,0012	DA		ANAP	AUTO	
>Instance Creation Time	0008,0013	TM		ANAP	AUTO	
>Content Date	0008,0023	DA		ANAP	AUTO	
>Content Time	0008,0033	TM		ANAP	AUTO	
>Window Center	0028,1050	DS		ANAP	AUTO	
>Window Width	0028,1051	DS		ANAP	AUTO	
>Rescale Intercept	0028,1052	DS		ANAP	AUTO	
>Rescale Slope	0028,1053	DS		ANAP	AUTO	
>Rescale Type	0028,1054	LO		ANAP	AUTO	
>Frame VOI LUT Sequence	0028,9132	SQ		ANAP	AUTO	
>>Window Center	0028,1050	DS		ANAP	AUTO	
>>Window Width	0028,1051	DS		ANAP	AUTO	
>Icon Image Sequence	0088,0200	SQ		ANAP	AUTO	
>>Samples per Pixel	0028,0002	US	1	ANAP	AUTO	
>>Photometric Interpretation	0028,0004	CS	MONOCHROME2	ANAP	AUTO	
>>Rows	0028,0010	US	128	ANAP	AUTO	

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
>>Columns	0028,0011	US	128	ANAP	AUTO	
>>Bits Allocated	0028,0100	US	8	ANAP	AUTO	
>>Bits Stored	0028,0101	US	8	ANAP	AUTO	
>>High Bit	0028,0102	US	7	ANAP	AUTO	
>>Pixel Representation	0028,0103	US	0	ANAP	AUTO	
>>Pixel Data	7FE0,0010	OW/OB		ANAP	AUTO	
>>Rescale Intercept	0028,1052	DS		ANAP	AUTO	
>>Rescale Slope	0028,1053	DS		ANAP	AUTO	
>>Rescale Type	0028,1054	LO		ANAP	AUTO	
>Isocenter Position	300A,012C	DS		ANAP	AUTO	

Table 69: SOP Common Module

Attribute Name	TAG	VR	Value	Presence of Value	Source	Comments
Specific Character Set	0008,0005	CS		ANAP	AUTO	As supported by hosting platform
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	
Instance Creation Date	0008,0012	DA		ALWAYS	AUTO	
Instance Creation Time	0008,0013	TM		ALWAYS	AUTO	
Instance Number	0020,0013	IS	1	ALWAYS	AUTO	
Original Specialized SOP Class UID	0008,001B	UI		ALWAYS	AUTO	
Content Qualification	0018,9004	CS	PRODUCT	ALWAYS	AUTO	

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