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DICOM Conformance Statement

TRILUX Medical GmbH & Co. KG

Paramon

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### 1 Conformance Statement Overview

This document is a DICOM conformance statement in accordance with the standard as specified in DICOM PS 3.2-2012.

The PARAMON interface supports DICOM modality worklist query and image and video storage in the actor role of “Acquisition Modality”.

Acquisition Modality is a device that acquires and creates medical images while a patient is present.

This product of TRILUX Medical GmbH & Co. KG implements the necessary DICOM services to provide the following functionality:

#### Query Modality Worklist

- Based on a query entered at the Acquisition Modality, a modality worklist is generated listing all the items that satisfy the query. This list of Scheduled Procedure Steps with selected demographic information is returned to the Acquisition Modality.

#### Modality Images Stored

- The Acquisition Modality sends the captured images and videos to an Image Manager or Image Archive (PACS).

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Secondary Capture Image Storage	Yes	N
VL Endoscopic Image Storage	Yes	N
Video Endoscopic Image Storage	Yes	N
VL Microscopic Image Storage	Yes	N
Video Endoscopic Image Storage	Yes	N
VL Photographic Image Storage	Yes	N
Video Photographic Image Storage	Yes	N
Encapsulated PDF Storage	Yes	N
Raw Data Storage	Yes	N
Modality Worklist Information Model - FIND	Yes	N
Patient Root Q/R Information Model - FIND	Yes	N
Study Root Q/R Information Model - FIND	Yes	N

Table 1: Network Services



## **2 Introduction**

### **2.1 Audience**

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

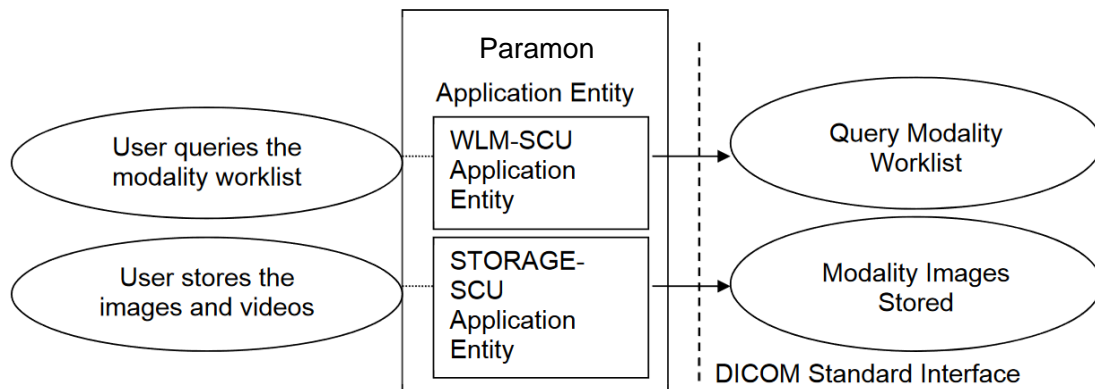
### **2.2 Definitions, Terms and Abbreviations**

ASCII	American Standard Code for Information Interchange
AE	Application Entity
ANSI	American National Standards Institute
CR	Computed Radiography
CT	Computed Tomography
DICOM	Digital Imaging and Communications in Medicine
IE	Information Entity
IOD	Information Object Definition
ISO	International Standards Organization
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
OSI	Open Systems Interconnection
PDF	Adobe Portable Document Format
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol / Internet Protocol
UID	Unique Identifier
VL	Visible Light
VM	Value Multiplicity
VR	Value Representation



### 3 Networking

#### 3.1 Implementation Model



Conceptually the network services may be modeled as the following separate AEs, though in fact all the AEs share a single configurable AE Title:

- WLM-SCU requests a modality workload based on a query entered.
- STORAGE-SCU sends acquired images and videos.

The WLM-SCU AE is invoked by the real-world action 'Query Modality Worklist'. Based on a query entered a modality workload is requested.

The query supports:

- Patient Based Worklist Query
- Broad Worklist Query

The supported matching-query-keys and return-query-keys are listed in this document.

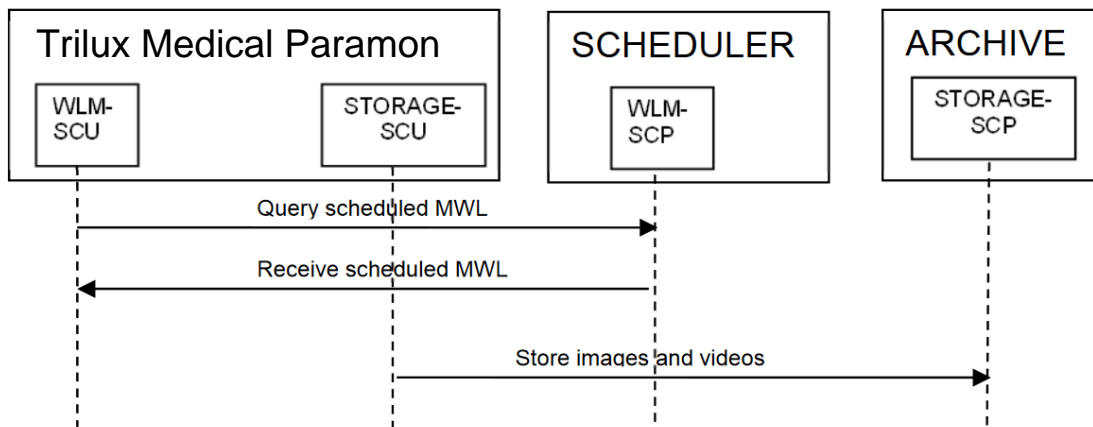
The STORAGE-SCU AE is invoked by the real-world action 'Store images and videos' or 'Finish procedure'.

It sends the captured images and videos to the storage destination.



### 3.1.1 Application Data Flow

#### Sequencing of Real World Activities



### 3.2 Application Entity Specifications

#### General Association Policies

TRILUX Medical Paramon utilizes and understands the following Application Context

Name:

DICOM V3.0 Application Context 1.2.840.10008.3.1.1.1

TRILUX Medical Paramon attempts to establish an association whenever the user invokes a DICOM related operation (query a worklist from a remote AE or store images and videos to a remote AE) in the user interface of TRILUX Medical Paramon.

The maximum PDU size which TRILUX Medical Paramon uses is configurable. The default value is 1022000 Bytes.

#### Number of Associations

Each of the TRILUX Medical Paramon initiates only one association at a time.

#### Asynchronous Nature

TRILUX Medical Paramon does not use asynchronous communication (multiple outstanding transactions over a single association).



### Implementation Identifying Information

TRILUX Medical Paramon	Implementation Class UID	1.2.276.0.67.7
TRILUX Medical Paramon	Implementation Version Name	Paramon10

### 3.2.1 Paramon DICOM Storage SCU Service

#### 3.2.1.1 SOP Classes

#### **SOP Classes**

This application entity provides Standard Conformance to the following DICOM SOPClasses:

<b>SOP Class Name</b>	<b>SOP Class UID</b>	<b>SCU</b>	<b>SCP</b>
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	No
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Yes	No
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	No
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Yes	No
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	No
Video Photographic Image	1.2.840.10008.5.1.4.1.1.77.1.4.1	Yes	No
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	Yes	No
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	No

Table 2: SOP Classes for the Paramon SCU





### 3.2.1.2 Proposed Presentation Contexts

SOP Class Name	SOP Class UID	Transfer Syntax	Role	Extended Negotiation
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	A,B,C (See below)	SCU	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	A,B (See below)	SCU	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	D,E,F,G (See below)	SCU	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	A,B (See below)	SCU	None
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	D,E,F,G (See below)	SCU	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	A,B (See below)	SCU	None
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	D,E,F,G (See below)	SCU	None
Encapsulated PDF Storage	1.2.840.10008.5.1.4.1.1.104.1	A,B (See below)	SCU	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	A,B (See below)	SCU	None

Table 3: Presentation Context Table for Activity "Send Objects"

	Transfer Syntax Name	Transfer Syntax UID
A	Implicit VR Little Endian	1.2.840.10008.1.2
B	Explicit VR Little Endian	1.2.840.10008.1.2.1
C	JPEGBaseline	1.2.840.10008.1.2.4.50
D	MPEG2MainProfile@MainLevel	1.2.840.10008.1.2.4.100
E	MPEG2MainProfile@HighLevel	1.2.840.10008.1.2.4.101
F	MPEG4 HighProfile/Level4.1	1.2.840.10008.1.2.4.102
G	MPEG4BDcompatible High Profile/Level4.1	1.2.840.10008.1.2.4.103

Table 4: Transfer Syntaxes for Activity "Send Objects"



The default behavior of Paramon Storage SCU is to provide for each of the supported SOP classes a single presentation context containing one of the transfer syntaxes shown above.

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Yes	No
Patient Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No

Table 5: SOP Classes for the Paramon DICOM Worklist SCU Service

### 3.2.1.3 SOP Specific Conformance for Worklist SOP Classes

The following table provides a description of the Paramon worklist request identifier.

The set of requested keys can be configured in the Paramon as described in the according administration manual.

The table shows all keys available for a worklist query (full worklist request). The matching keys are not configurable in Paramon.

Non-matching responses, which were returned by the worklist server due to unsupported optional matching keys, are ignored. Duplicate items are removed.

Table 8 shows the attributes supported as matching or return keys for the various modules of the DICOM worklist request identifier. The following matching types are supported, if appropriate:

- Single Value Matching
- Universal Matching
- Wild Card Matching
- Range Matching
- List of UID Matching

The "Type" column specifies whether the attribute is supported as a matching key (**M**), return key (**R**) or as an optional request key (**O**) that can be enabled in the System configuration



Module	Description	Tag	Type
Patient Identification	Patient's Name	(0010,0010)	M,R
	Patient's ID	(0010,0020)	M,R
Patient Demographic	Patient's Birth Date	(0010,0030)	M,R
	Patient's Sex	(0010,0040)	M,R
Visit Identification	Admission ID	(0038,0010)	O,R
	Patient's Sex	(0010,0040)	M,R
Image Service Request	Accession Number	(0008,0050)	R
	Referring Physician's Name	(0008,0090)	R
	Institutional Department Name	(0008,1040)	R
Requested Procedure	Study Instance UID	(0020,000D)	R
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	R
	Scheduled Station AE Title	(0040,0001)	O,R
	Scheduled Procedure Step Start Date	(0040,0002)	O,R
	Scheduled Procedure Step Start Time	(0040,0003)	O,R
	Scheduled Procedure Step End Date	(0040,0004)	O,R
	Modality	(0008,0060)	O,R
	Scheduled Performing Physician's Name	(0040,0006)	M,R
	Scheduled Procedure Step Description	(0040,0007)	M,R
	Scheduled Station Name	(0040,0010)	O,R
	Scheduled Procedure Step Location	(0040,0011)	O,R
Table 6: Supported Query Keys			

### 3.3 Network Interfaces

#### 3.3.1 Physical Network Interfaces

The application is indifferent to the physical medium over which TCP/IP executes.

#### 3.3.2 Additional Protocols

When host names rather than IP addresses are used in the configuration file to specify presentation addresses for remote AEs, the application is dependent on the name resolution mechanism of the underlying operating system.



### 3.4. Local AE Titles

#### 3.4.1 Local AE Titles

The local application entity names can be configured in the configuration file, but not at runtime.

Application Entity	Default AE Title	Default TCP/IP
Paramon Storage SCU		Not applicable
Paramon DICOM Worklist SCU		None

Table 7: AE Title Configuration Table

#### 3.4.2 Remote AE Title/Presentation Address Mapping

The AE Title, host names and port numbers of remote applications can be configured in the configuration file (not at runtime). All application entities that initiate associations require that the called application entity name must be configured together with the presentation address (TCP/IP address and port number) to be used in the configuration file. This affects the following application entities:

- Paramon Storage SCU
- Paramon DICOM Worklist SCU

The Paramon configuration parameters related to DICOM communications are listed below.

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request (Application Level timeout).	Yes	60 s
General DIMSE level time-out values	No	None
Time-out waiting for response to TCP/IP connect request (Low-level timeout).	Yes	60 s
Time-out waiting for acceptance of a TCP/IP message over the network (Low-level timeout).	Yes	60 s
Time-out for waiting for data between TCP/IP packets (Low-level timeout).	Yes	60 s
Any changes to default TCP/IP settings, such as configurable stack parameters	No	None
Maximum PDU size the AEs can send	Yes	16 kB



<b>Paramon DICOM Storage SCU</b>		
Maximum PDU size the AE can receive	No	16 kB
AE specific DIMSE level time-out values	No	Unlimited
Number of simultaneous Associations	No	1
SOP Class support	Yes	VL Endoscopic Image Storage, Video Endoscopic Image Storage, VL Microscopic Image Storage, Video Microscopic Image Storage, VL Photographic Image Storage, Video Photographic Image Storage, Secondary Capture Image Storage Encapsulated PDF Storage Raw Data Storage
Transfer Syntax support	Yes	Explicit VR Little Endian, Implicit VR Little Endian, JPEGBaseline MPEG2MainProfile@MainLevel MPEG2MainProfile@HighLevel MPEG4HighProfile/Level4.1 MPEG4BDcompatibleHighProfile/Level
Retry behavior for failed transmissions	No	Manually
Other parameters that are	Yes	None
Table 8: Configuration Parameters Table		

#### 4. Media Interchange

Media Interchange is not supported.

#### 5 Support of Character Sets

The application supports different character sets depending on the used Paramon DICOM Service.

ISO\_IR 100 (ISO 8859-1: 1987 Latin Alphabet No. 1 supplementary set)

ISO\_IR 192 (UTF-8): Unicode

#### 6. Security

##### 6. 1 Security Profiles

Security Profiles are not supported.

## 6.2 Association Level Security

A list of called application entity titles may be configured.

## 6.3 Application Level Security

The Paramon has no Authentication support. Only user rights of the local system are relevant.

## 7 Annexes

### 7.1 Entity Module Definitions

#### 7.1.1 SC Image IOD Modules

This section specifies the attributes of a Secondary Capture Image transmitted by the Paramon.

Table 9 specifies the modules of the Secondary Capture Image instances, created and transmitted by Paramon.

IE	Module	Reference	Presence of Module
Patient	Patient	Table 17	ALWAYS
	Clinical Trial Subject		NEVER
Study	General Study	Table 18	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 19	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 20	ALWAYS
	SC Equipment	Table 25	ALWAYS
Image	General Image	Table 21	ALWAYS
	Image Pixel	Table 28	ALWAYS
	Device	Table 24	ALWAYS
	SC Image		NEVER
	Overlay Plane		NEVER
	Modality LUT		NEVER
	VOI LUT		NEVER
	SOP Common	Table 26	ALWAYS

Table 9: IOD of created Instances

#### 7.1.2 Visible Light Endoscopic IOD Modules Definitions

This section specifies the attributes of a Visible Light Image transmitted by Paramon.

Table 10 specifies the modules of the Visible Light Image instances created and transmitted by Paramon.



<b>IE</b>	<b>Module</b>	<b>Reference</b>	<b>Presence of Module</b>
Patient	Patient	Table 17	ALWAYS
	Specimen Identification (only for VL Microscopic and VL Photographic)	Table 28	NEVER ALWAYS (for Microscopic )
	Clinical Trial Subject		NEVER
Study	General Study	Table 18	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 19	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 20	ALWAYS
Image	General Image	Table 21	ALWAYS
	Image Pixel	Table 28	ALWAYS
	Acquisition Context	Table 29	ALWAYS
	Device	Table 24	ALWAYS
	VL Image	Table 27	ALWAYS
	Overlay Plane		NEVER
	SOP Common	Table 26	ALWAYS
Table 10: IOD of created Instances			

### 7.1.3 Visible Light Microscopic IOD Modules Definitions

Please refer to previous chapter (Visible Light Endoscopic Image IOD Modules Definitions).



#### 7.1.4 Video Endoscopic IOD Modules Definitions

IE	Module	Reference	Presence of Module
Patient	Patient	Table 17	ALWAYS
	Specimen Identification (only for VL Microscopic	Table 28	NEVER ALWAYS (for
	Clinical Trial Subject		NEVER
Study	General Study	Table 18	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 19	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 20	ALWAYS
Image	General Image	Table 21	ALWAYS
	Cine	Table 30	ALWAYS
	Multi-frame	Table 31	ALWAYS
	Image Pixel	Table 28	ALWAYS
	Acquisition Context	Table 29	ALWAYS
	Device	Table 24	ALWAYS
	VL Image	Table 27	ALWAYS
	Overlay Plane		NEVER
	SOP Common	Table 26	ALWAYS
Table 11: IOD of created Instances			

#### 7.1.5 Video Microscopic IOD Modules Definitions

Please refer to chapter Video Endoscopic IOD Modules Definitions.

#### 7.1.6 Video Photographic IOD Modules Definitions

Please refer to chapter Video Endoscopic IOD Modules Definitions.

#### 7.1.7 Encapsulated PDF IOD Modules Definitions

This section specifies the attributes of an Encapsulated PDF Image transmitted by Paramon.

Table 12 specifies the modules of the Encapsulated PDF Image instances, created and transmitted by Paramon.





<b>IE</b>	<b>Module</b>	<b>Reference</b>	<b>Presence of Module</b>
Patient	Patient	Table 17	ALWAYS
	Specimen Identification		NEVER
	Clinical Trial Subject		NEVER
Study	General Study	Table 18	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	Encapsulated Document Series	Table 32	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 20	ALWAYS
	SC Equipment	Table 25	ALWAYS
Image	General Image	Table 21	ALWAYS
Encapsulated Document	Encapsulated Document	Table 33	ALWAYS
	SOP Common	Table 26	ALWAYS
Table 12: IOD of created Instances			

### 7.1.8 Raw Data IOD Modules Definitions

This section specifies the attributes of a Raw Data Object transmitted by Paramon.

Table 13 specifies the modules of the Raw Data Object instances, created and transmitted by Paramon.

<b>IE</b>	<b>Module</b>	<b>Reference</b>	<b>Presence of Module</b>
Patient	Patient	Table 17	ALWAYS
	Clinical Trial Subject		NEVER
Study	General Study	Table 18	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 19	ALWAYS
	Clinical Trial Series		NEVER
Frame of Reference	Frame of Reference		NEVER
	Synchronization		NEVER
Equipment	General Equipment	Table 20	ALWAYS
Image	General Image	Table 21	ALWAYS
Raw Data	Acquisition Context	Table 33	ALWAYS
	Specimen		NEVER
	Raw Data	Table 34	ALWAYS
	SOP Common	Table 26	ALWAYS
Table 13: IOD of created Instances			

### 7.1.9 Worklist Query IOD Modules

This section (Table 14) specifies the attributes of the DICOM Worklist SCU used by Paramon.

IE	Module	Reference	Presence of Module
Study	Scheduled Procedure	Table 35	ALWAY
	Requested Procedure	Table 36	ALWAY
	Imaging Service Request	Table 37	ALWAY
Patient	Patient	Table 38	ALWAY

Table 14: IOD of created Instances

### 7.2 Information Object Definition (Send Objects)

The following tables specify the attributes sent for the modules created as part of the IODs which are specified in sections 7.1.1. The "Value" column specifies the attribute content. If the content is not specified, all values that are legal for this attribute may be sent. The tables use a number of abbreviations. The abbreviations used in the "Presence of ..." column are:

- ALWAYS Always Present
- ANAP Attribute Not Always Present
- VNAP Value Not Always Present (may be zero length)
- EMPTY Attribute is sent without a value

The abbreviations used in the "Source" column are:

- USER The attribute value source comes from user input or a previous system like HIS or from another worklist broker.
- AUTO The attribute value is generated automatically.
- CONFIG The attribute value source is a configurable parameter.

Attribute	Tag	VR	Value	Presence	Source
Patient's Name	(0010,0010)	PN		VNAP	USER
Patient ID	(0010,0020)	LO		VNAP	USER
Patient's Birth Date	(0010,0030)	DA		VNAP	USER
Patient's	(0010,0040)	CS		VNAP	USER
Other Patient IDs	(0010,1000)	LO		ANAP	USER

Table 15: Patient Module Attributes



### 7.2.1 General Study Module

Attribute Name	Tag	VR	Value	Presence	Source
Study Instance UID	(0020,000D)	UI		ALWAYS	AUTO
Study Date	(0008,0020)	DA		VNAP	USER
Study Time	(0008,0030)	TM		VNAP	AUTO
Referring Physician's Name	(0008,0090)	PN		ANAP	USER
Study ID	(0020,0010)	SH		VNAP	AUTO
Accession Number	(0008,0050)	SH		VNAP	USER
Study Description	(0008,1030)	LO		VNAP	USER
Reading Physician's Name	(0008,1060)	PN		ANAP	USER

Table 16: General Study Module Attributes

### 7.2.2 General Series Module

Attribute Name	Tag	VR	Value	Presence	Source
Modality	(0008,0060)	CS		ALWAYS	CONFIG
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Laterality	(0020,0060)	CS	"R", "L"	ANAP	USER
Series Date	(0008,0021)	DT		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Performing Physician	(0008,1050)	PN		VNAP	USER
Series Description	(0008,103E)	LO	Value: = (0008,1030)	VNAP	AUTO

Table 17: General Series Module Attributes

### 7.2.3 General Equipment Module

Attribute Name	Tag	VR	Value	Presence	Source
Manufacturer	(0008,0070)	LO		VNAP	CONFIG
Institution Name	(0008,0080)	LO		VNAP	CONFIG
Institution Address	(0008,0081)	ST		VNAP	CONFIG
Station Name	(0008,1010)	SH		VNAP	CONFIG
Institutional Department Name	(0008,1040)	LO		VNAP	CONFIG



Manufacturer's Model Name	(0008,1090)	LO		VNAP	CONFIG
Device Serial Number	(0018,1000)	LO		ANAP	AUTO
Software Versions	(0018,1020)	LO		ANAP	AUTO
Table 18: General Equipment Module Attributes					

#### 7.2.4 General Image Module

Attribute Name	Tag	VR	Value	Presence	Source
Instance Number	(0020,0013)	IS		ALWAYS	AUTO
Patient	(0020,0020)	CS		ANAP	USER
Content Date	(0008,0023)	DA		ANAP	AUTO
Content Time	(0008,0033)	TM		ANAP	AUTO
Acquisition Date	(0008,0022)	DT		ANAP	AUTO
Acquisition Time	(0008,0032)	TM		ANAP	AUTO
Image Comments	(0020,4000)	LT		ANAP	USER
Lossy Image Compression	(0028,2110)	CS	Value: "01"	ANAP	AUTO
Lossy Image Compression Ratio	(0028,2112)	DS		ANAP	AUTO
Lossy Image CompressionMethod	(0028,2114)	CS	Value: "ISO_10918_1" (JPG), "ISO_13818_1" (MPEG2)	ANAP	AUTO
Icon Image Sequence	(0088,0200)	SQ		ANAP	AUTO
Image Pixel Macro (see Table 20)				ANAP	AUTO
Table 19: General Image Module Attributes					

#### 7.2.5 Image Pixel Macro Module

Attribute Name	Tag	VR	Value	Presence	Source
Samples per Pixel	(0028,0002)	US	Value: 3	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	Value: "RGB"	ALWAYS	AUTO
Rows	(0028,0010)	US		ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	Value: 8	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	Value: 8	ALWAYS	AUTO
High Bit	(0028,0102)	US	Value: 7	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	Value: 0	ALWAYS	AUTO



Pixel Data	(7FE0,0010)	OB		ALWAYS	AUTO
Planar Configuration	(0028,0006)	US		ANAP	AUTO
Pixel Aspect Ratio	(0028,0034)	IS		ANAP	AUTO
Red Palette Color	(0028,1101)	US		ANAP	AUTO
Green Palette Color	(0028,1102)	US		ANAP	AUTO
Blue Palette Color	(0028,1103)	US		ANAP	AUTO
Red Palette Color	(0028,1201)	OW		ANAP	AUTO
Green Palette Color	(0028,1202)	OW		ANAP	AUTO
Blue Palette Color	(0028,1203)	OW		ANAP	AUTO

Table 20: Image Pixel Macro Module Attributes

### 7.2.6 Image Pixel Module

Attribute Name	Tag	VR	Value	Presence	Source
Samples per Pixel	(0028,0002)	US	Values: 3 or 1	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	Values: "RGB" or "MONOCHROME2"	ALWAYS	AUTO
Rows	(0028,0010)	US		ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	Value: 8	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	Value: 8	ALWAYS	AUTO
High Bit	(0028,0102)	US	Value: 7	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	Value: 0	ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OB		ALWAYS	AUTO
Planar Configuration	(0028,0006)	US	Value: 1	ALWAYS	AUTO

Table 21: Image Pixel Module Attributes

### 7.2.7 Device Module

Attribute Name	Tag	VR	Value	Presence	Source
Device ID	(0018,1003)	LO		VNAP	AUTO

Table 22: Device Module Attributes



### 7.2.8 SC Equipment Module

Attribute Name	Tag	VR	Value	Presence	Source
Conversion Type	(0008,0064)	CS	Values: DV = Digitized Video (1) WSD = Workstation (2)	ALWAYS	AUTO
Secondary Capture Device ID	(0018,1010)	LO		VNAP	CONFIG
Secondary Capture Device Manufacturer	(0018,1016)	LO		VNAP	CONFIG
Secondary Capture Manufacturer's Model Name	(0018,1018)	LO		ALWAYS	AUTO
Secondary Capture Device Software Version	(0018,1019)	LO		ALWAYS	AUTO

Table 23: SC Equipment Module Attributes

### 7.2.9 SOP Common Module

Attribute	Tag	VR	Value	Presence	Source	
Specific Character Set	(0008,0005)	CD		ANAP	CONFIG	
SOP Class UID	(0008,0016)	UI	1.2.840.10008.5.1.4.1.1.7, 1.2.840.10008.5.1.4.1.1.77.1.1, 1.2.840.10008.5.1.4.1.1.77.1.2, 1.2.840.10008.5.1.4.1.1.77.1.4 1.2.840.10008.5.1.4.1.1.77.1.1.1, 1.2.840.10008.5.1.4.1.1.77.1.2.1, 1.2.840.10008.5.1.4.1.1.77.1.4.1, 1.2.840.10008.5.1.4.1.1.104.1 1.2.840.10008.5.1.4.1.1.66		ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI		ALWAYS	AUTO	
Instance Creation	(0008,0012)	DA		ALWAYS	AUTO	
Instance Creation	(0008,0013)	TM		ALWAYS	AUTO	

Table 24: SOP Common Module Attributes



### 7.2.10 VL Image Module

Attribute Name	Tag	VR	Value	Presence	Source
Image Type	(0008,0008)	CS	[ORIGINAL\PRIMARY]	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	Value: "RGB", "YBR_PARTIAL_420)	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	Value: 8	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	Value: 8	ALWAYS	AUTO
High Bit	(0028,0102)	US	Value: 7	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	Value: 0	ALWAYS	AUTO
Samples per Pixel	(0028,0002)	US	Value: 3	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US	Value: 0	ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	Value: " 00"	ANAP	AUTO
Anatomic Region Sequence	(0008,2218)	SQ	DCID 4040 for Video Endoscopic IOD	ANAP	USER
Code Value	(0008,0100)	SH		ALWAYS	USER
Code Scheme	(0008,0102)	SH		ALWAYS	USER
Code Scheme Version	(0008,0103)	SH		ALWAYS	AUTO
Code Meaning	(0008,0104)	LO		ALWAYS	AUTO
Table 25: VL Image Module Attributes					

### 7.2.11 Specimen Identification Module

Attribute Name	Tag	VR	Value	Presence	Source
Specimen Accession Number	(0040,050A)	LO		EMPTY	AUTO
Specimen Sequence	(0040,0550)	SQ		EMPTY	AUTO
Table 26: Specimen Identification Module Attributes					

### 7.2.12 Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence	Source
Acquisition Context Sequence	(0040,0555)	SQ		EMPTY	AUTO
Table 27: Acquisition Context Module Attributes					

### 7.2.13 Cine Module



Attribute Name	Tag	VR	Value	Presence	Source
Frame Time	(0018,1063)	DS		ALWAYS	AUTO

Table 28: Cine Module Attributes

#### 7.2.14 Multi-frame Module

Attribute Name	Tag	VR	Value	Presence	Source
Number of Frames	(0088,0008)	IS		ALWAYS	AUTO
Frame Increment Pointer	(0028,0009)	AT	"(0028,1063)"	ALWAYS	AUTO

Table 29: Multi-frame Module Attributes

#### 7.2.15 Encapsulated Document Series Module

Attribute Name	Tag	VR	Value	Presence	Source
Modality	(0008,0030)	CS	Value: OT	ALWAYS	AUTO
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO

Table 30: Encapsulated Document Series Module Attributes

#### 7.2.16 Encapsulated Document Module

Attribute Name	Tag	VR	Value	Presence	Source
Instance Number	(0020,0013)	IS		ALWAYS	AUTO
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Acquisition Date Time	(0008,002A)	DT		ALWAYS	AUTO
Burned In Annotation	(0028,0301)	CS	Value: NO	ALWAYS	AUTO
Document Title	(0041,0010)	ST		EMPTY	AUTO
Concept Name Code Sequence	(0010,A043)	SQ		EMPTY	AUTO
MIME Type of Encapsulate	(0042,0012)	LO	Value: application/pdf	ALWAYS	AUTO
Encapsulated Document	(0042,0011)	OB		ALWAYS	AUTO

Table 31: Encapsulated Document Module Attributes

#### 7.2.17 Raw Data Module





Attribute Name	Tag	VR	Value	Presence	Source
Instance Number	(0020,0013)	IS		ALWAYS	AUTO
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Acquisition Date Time	(0008,002A)	DT		ALWAYS	AUTO
Image Laterality	(0020,0062)	CS		NEVER	
Creator-Version UID	(0008,9123)	UI		ALWAYS	AUTO
Referenced Instance Sequence	(0008,114A)	SQ		NEVER	
Purpose of Reference	(0040,A170)	SQ		NEVER	
Private Creator	(7FE1,0013)	LO	"PARAMON RAW DATA"	ALWAYS	AUTO
Original Filename	(7FE1,1300)	LO	Name of imported file	ALWAYS	AUTO
Length of Raw Data	(7FE1,1301)	DS	Size of imported file	ALWAYS	AUTO
Raw Data	(7FE1,1302)	OB	Imported file	ALWAYS	USER

Table 32: Raw Data Module Attributes

### 7.3 Information Object Definition (Worklist Query)

The following tables specify attributes which are sent for the modules created as part of the IODs. The "Value" column defines the attribute content. If the content is not specified, all values that are legal for this attribute may be sent. The tables use a number of abbreviations.

Within the "Presence of ..." column, the following abbreviations are used:

- ALWAYS Always Present
- ANAP Attribute Not Always Present
- VNAP Value Not Always Present (may be zero length)
- EMPTY Attribute is sent without a value

The abbreviations used in the "Source" column are:

- USER The attribute value source comes from user input or a previous system, like HIS, or from another worklist broker.
- AUTO The attribute value is generated automatically.
- CONFIG The attribute value source is a configurable parameter.



### 7.3.1 Scheduled Procedure Step Module

Attribute Name	Tag	VR	Value	Presence	Source
Scheduled Procedure Step Sequence	(0040,0100)	SQ		ALWAYS	AUTO
Scheduled Station AE Title	(0040,0001)	AE		ANAP	CONFIG
Scheduled Procedure Step Start Date	(0040,0002)	DA		ANAP	USER
Scheduled Procedure Step Start Time	(0040,0003)	TM	Always zero length	ANAP	CONFIG
Scheduled Procedure Step End Date	(0040,0004)	DA		ANAP	USER
Modality	(0008,0060)	CS		ANAP	CONFIG
Scheduled Performing Physician	(0040,0006)	PN		VNAP	USER
Scheduled Procedure Step Description	(0040,0007)	LO		VNAP	USER
Scheduled Station Name	(0040,0010)	SH		ANAP	CONFIG
Scheduled Procedure Step Location	(0040,0011)	SH		ANAP	CONFIG

Table 33: Scheduled Procedure Step Module Attributes

### 7.3.2 Requested Procedure Module

Attribute Name	Tag	VR	Value	Presence	Source
Study Instance UID	(0020,000D)	UI	Always zero length	VNAP	AUTO

Table 34: Requested Procedure Module Attributes



### 7.3.3 Imaging Service Request Module

Attribute Name	Tag	VR	Value	Presence	Source
Accession Number	(0008,0050)	SH	Always zero length	VNAP	AUTO
Referring Physician's	(0008,0090)	PN	Always zero length	VNAP	AUTO
Institutional Department Name	(0008,1040)	LO	Always zero length	VNAP	AUTO

Table 35: Imaging Service Request Module Attributes

### 7.3.4 Patient Module

Attribute Name	Tag	VR	Value	Presence	Source
Patient's Name	(0010,0010)	PN		VNAP	USER
Patient ID	(0010,0020)	LO		VNAP	USER
Patient's Birth Date	(0010,0030)	DA		VNAP	USER
Patient's Sex	(0010,0040)	CS		VNAP	USER

Table 36: Patient Module Attributes

## 7.4 Attribute Mapping

Attribute Mapping is not applicable.

## 7.5 Data Dictionary of Private Attributes

For captured still image data, the image data is stored in the field "Pixel Data" (7FE0,0010). If the captured data bargained for videos and the videos are stored as Secondary Capture Image Storage, two private tags are used:

Attribute Name	Tag	VR	Value	Presenc	Source
Private Creator	(7FE1,0011)	LO	"PARAMON MPEG"	ANAP	AUTO
Pixel Data	(7FE1,1101)	OB		ANAP	USER
Video Encoding Info	(7FE1,1102)	LO		ANAP	CONFIG

Table 37: Private Tags: SC Video

For Raw Data Object also private attributes are used.



Attribute Name	Tag	VR	Value	Presence	Source
Private Creator	(7FE1,0013)	LO	"PARAMON RAW"	ALWAYS	AUTO
Original Filename	(7FE1,1300)	LO	Name of imported file	ALWAYS	AUTO
Length of Raw Dat	(7FE1,1301)	DS	Size of imported file	ALWAYS	AUTO
Raw Data	(7FE1,1302)	OB	Imported file	ALWAYS	USER

Table 38: Private Tags: Raw Data

For the entered extended study data the following private attributes are used.

Attribute Name	Tag	VR	Value	Presence	Source
Private Creator	(7FE1,0017)	LO	" PARAMON EXTENDED STUDY	ALWAYS	AUTO
Specialism	(7FE1,1700)	ST		ALWAYS	USER
Referring Physician	(7FE1,1701)	ST		ALWAYS	USER
Referral Indicator	(7FE1,1702)	ST		ALWAYS	USER
Diagnosis	(7FE1,1703)	ST		ALWAYS	USER
Treatment	(7FE1,1704)	ST		ALWAYS	USER
DBC_Code	(7FE1,1705)	ST		ALWAYS	USER
ImplantsLeft	(7FE1,1706)	ST		ALWAYS	USER
Implants Right	(7FE1,1707)	ST		ALWAYS	USER
Capture Moment	(7FE1,1708)	ST		ALWAYS	USER
Photographer	(7FE1,1709)	ST		ALWAYS	USER

Table 39: Private Tags: Extended Study Info

## 7.6 Coded Terminology and Templates

Codes and Controlled Terminology are not used.

## 7.7 Grayscale Image Consistency

Support for the Grayscale Standard Display Function (GSDf) depends on the installation. Using appropriate hardware, the graphics board or device driver of underlying operating systems can be calibrated for GSDf conformance.

## 7.8 Standard Extended/Specialized/Private SOP Classes

Standard Extended/Specialized/Private SOP Classes are not supported.

## 7.9 Private Transfer Syntaxes

Private Transfer Syntaxes are not supported.