KARL STORZ AIDA® V1.3.1
DICOM Conformance Statement

PRODUCT INFO

OR1™

Change History

Version	Date	Changes	Reason	Editor
BB-02	07.02.2017	Whole document (table numbering, spelling)	Error corrections for AIDA™ 1.3.1	VKA
BB-01	14.06.2016	Whole document	Copied from AIDA™ 1.0, adapted for AIDA™ 1.3 Added sections for MPPS and Storage Commitment	VKA
BA-08	31.08.2014	Page 9, 14, 16 + 17, 20, 21	Error corrections	UNG
BA-07	11.03.2014	Whole document Chapter 3.2.1.4 Table 7.1-7	Replaced AIDA™ FUSION by AIDA™ Replaced OR1™ FUSION by AIDA™ Updated implementation version name Updated model name	UNG
BA-06	19.01.2014	Whole document Chapter 3.2.1.4 Table 7.1-8 Table 3.2.-1 Chapter 3.2.3.3.2.1 and 3.4.2	Replaced OR1™ FUSION by AIDA™ FUSION Updated implementation identification Removed attribute image comment Updated table and chapter contents	UNG
BA-04	06.05.2013	Page 1	Review comment from PM	UNG
BA-03	08.03.2013	Table 3.2.-4	Added table	UNG
BA-02	06.03.2013	Whole document	Update	UNG
BA-01	14.08.2012	Whole document	New document	UNG

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Abbreviations

General abbreviations

DICOM	Digital Imaging and Communication in Medicine – Communication Standard in Medicine
GUI	Graphic User Interface
HL7	Health Level Seven - Communication Standard in Medicine
HIS	Hospital Information System
IHE	Integrating the Healthcare Enterprise
KST	KARL STORZ GmbH & Co. KG Tuttlingen
PACS	Picture Archiving and Communication System
SCB	Storz Communication Bus

Network specific abbreviations

IP	Internet Protocol
PDU	Protocol Data Unit
TCP	Transport Control Protocol
TLS	Transport Layer Security

DICOM specific abbreviations

AE	Application Entity
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
SOP	Service Object Pair
SCP	Service Class Provider (= Server)
SCU	Service Class User (= Client)
UID	Unique Identifier
UTF-8	Unicode Transformation Format (8 bit)
VL	Visible Light
VR	Value Representation

Definitions

IHE Integration Profiles	IHE Integration Profiles define the workflow processes and data contents which must be supported by IHE compliant applications.
Acquisition Modality	A system that acquires and creates medical images while a patient is present, e.g. an endoscope. A modality may also create other evidence objects such as Grayscale Softcopy Presentation States for the consistent viewing of images or Evidence Documents containing measurements.

References

[DICOM]	Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-3.18, 2012
[IHE TF]	IHE Technical Framework Rev. 11.0, ACC/HIMSS/RSNA, 2012

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 KARL STORZ AIDA® DICOM interface allows participation of KARL STORZ AIDA® in the actor role of "Acquisition Modality" in the IHE Radiology Integration Profile.

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

Supported IHE Radiology Integration Profiles as Acquisition Modality are:

• Scheduled Workflow (SWF)

This product of KARL STORZ 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 Procedure Step In Progress – The Acquisition Modality notifies the Performed Procedure Step Manager of the start of a new Procedure Step and the PPS Manager informs the Department System, Image Manager and the Report Manager.

Modality Procedure Step Completed – The Acquisition Modality notifies the Performed Procedure Step Manager of the completion of a Procedure Step and the PPS Manager informs the Department System, Image Manager and the Report Manager.

Modality Procedure Step Discontinued – The Acquisition Modality notifies the Performed Procedure Step Manager of the discontinuation of a formerly started Procedure Step and the PPS Manager informs the Department System, Image Manager and the Report Manager.

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

Storage Commitment – The Acquisition Modality requests that the Image Manager or Image Archive confirms ownership for the specified DICOM objects (e.g. images) that the requestor stored previously, thus allowing the sender to delete those objects now owned by the Image Manager.

Table 1-1 provides an overview of the supported network services.

Table 1-1 Supported Network Services

SOP Classes	Service User (SCU)	Service Provider (SCP)
Transfer		
Secondary Capture Image Storage	Yes	No
VL Endoscopic Image Storage	Yes	No
Video Endoscopic Image Storage	Yes	No
Storage Commitment Push Model SOP Class	Yes[1]	No[1]
Workflow Management		
Modality Worklist Information Model – FIND	Yes	No
Modality Performed Procedure Step SOP Class	Yes	No
Print Management		
None		

[1] Even if the association is initiated by the storage commitment server, an explicit switch of the roles is negotiated, where the modality acts as SCU.

Table 1-2 provides an overview of the Media Storage supported Application Profiles.

Table 1-2 Supported Media Services

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Compact Disk – Recordable		
General Purpose CD-R	No	No
DVD		
General Purpose DVD-RAM	No	No

2   INTRODUCTION

2.1   AUDIENCE

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

2.2   REMARKS

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates first-level validation for interoperability between different applications supporting the same DICOM functionality. This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with the KARL STORZ AIDA® system and other vendors' medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing interconnectivity between KARL STORZ GmbH & Co. KG and non-KARL STORZ GmbH & Co. KG equipment.
- Test procedures should be defined to validate the desired level of connectivity.

The DICOM standard will evolve to meet the user's future requirements. KARL STORZ GmbH & Co. KG is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

3 NETWORKING

3.1 IMPLEMENTATION MODEL

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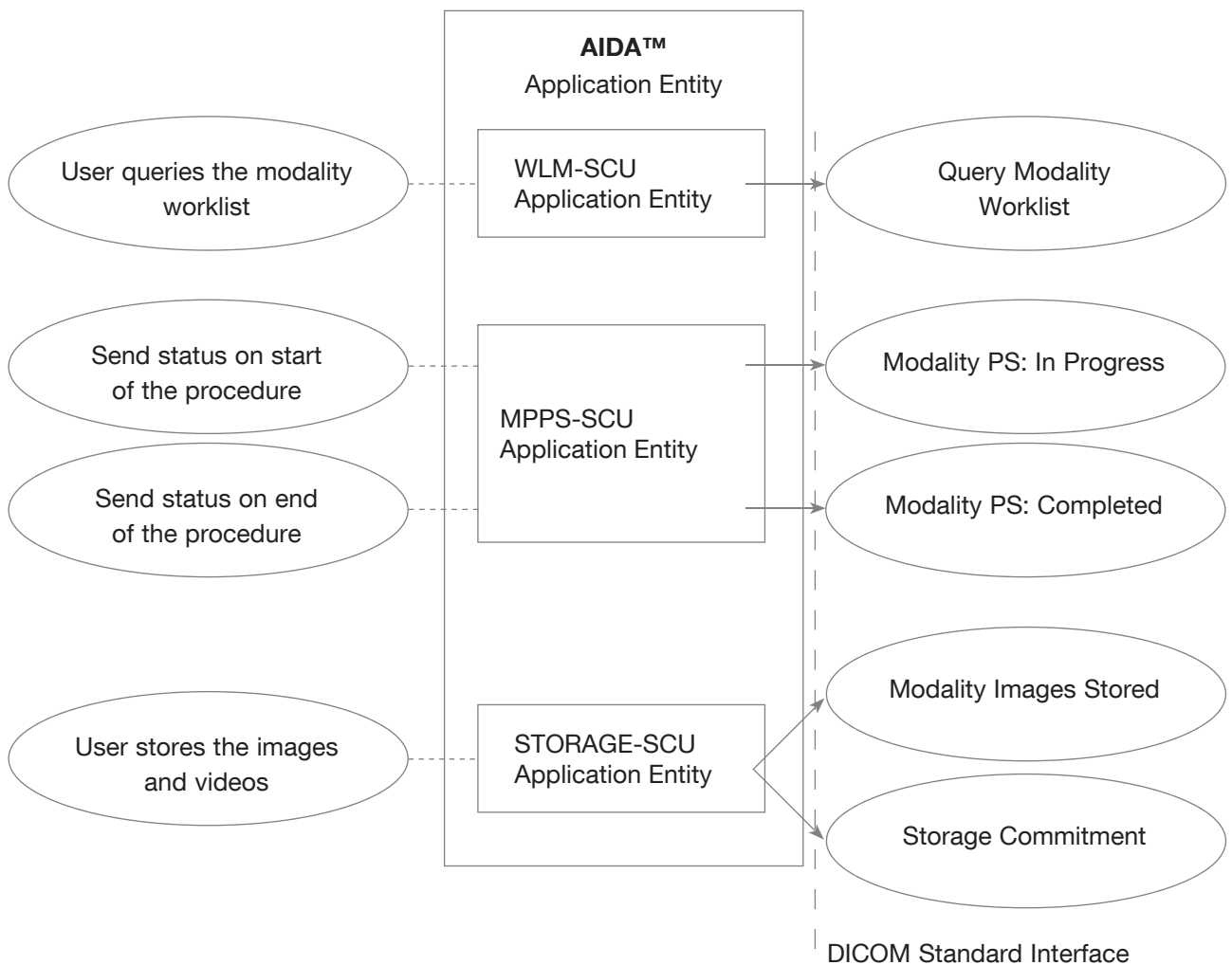
Conceptually the network services may be modeled as the following separate AEs, though in fact all the AEs share a single configurable AE Title:

- WLM-SCU   requests a modality worklist based on a query entered.
- MPPS-SCU   notifies of the start of a new procedure step or the completion or cancellation of a procedure step.
- STORAGE-SCU   sends acquired images and videos, sends requests that the remote node confirms ownership for the specified DICOM objects, and handles the corresponding notification events.

3.1.2 Functional Definition of AEs

3.1.2.1 Functional Definition of WLM-SCU Application Entity

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

3.1.2.2 Functional Definition of MPPS-SCU Application Entity

The MPPS-SCU AE is invoked by the system on start and end or cancellation of a procedure step.
The possible real-world events are 'Procedure Start', 'Procedure Completed' and 'Procedure Discontinued'.

3.1.2.3 Functional Definition of STORAGE-SCU Application Entity

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.

The STORAGE-SCU AE optionally requests that the Storage Commitment Acceptor confirms ownership for the specified DICOM objects (e.g. images) that the requestor stored in the storage destination, thus allowing the sender to delete those objects now owned by the storage destination.

3.1.3 Sequencing of Real World Activities
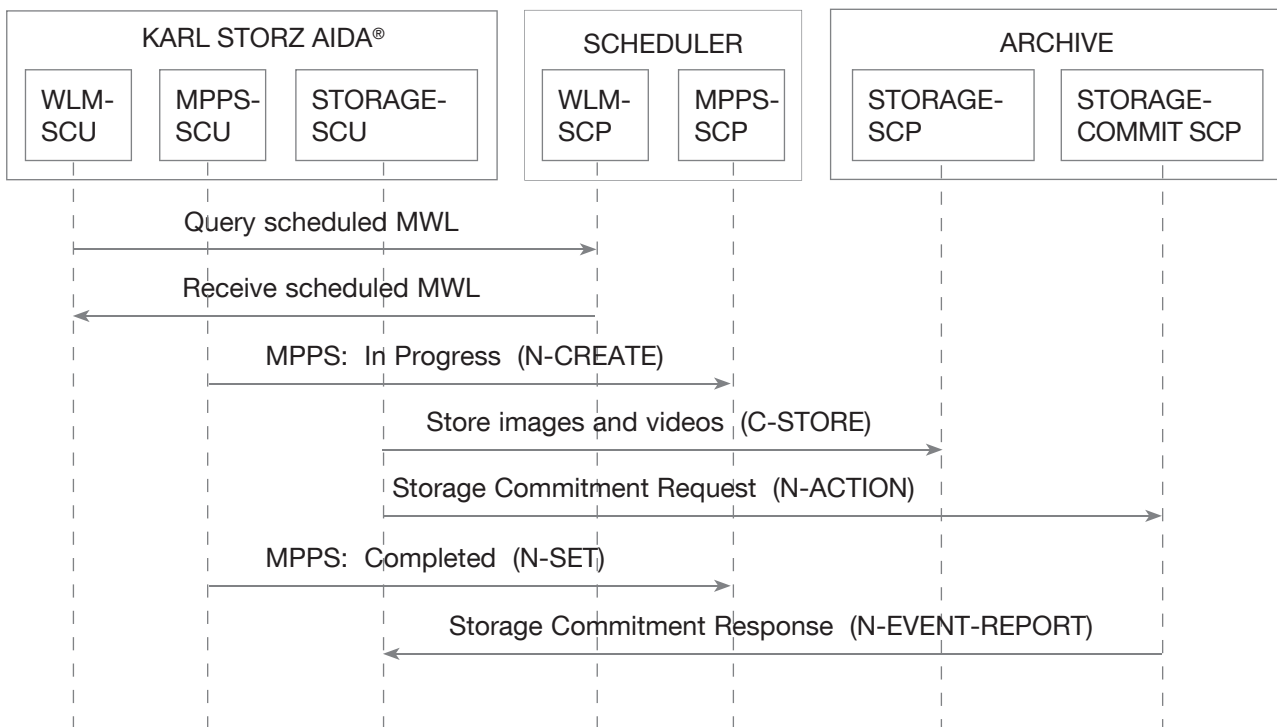
3.2 AE SPECIFICATIONS

3.2.1 General Association Policies

3.2.1.1 General

KARL STORZ AIDA® utilizes and understands the following Application Context Name:

- DICOM V3.0 Application Context 1.2.840.10008.3.1.1.1

KARL STORZ AIDA® 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 KARL STORZ AIDA®.

The maximum PDU size which KARL STORZ AIDA® uses is configurable. The default value is 1022000 Bytes.

3.2.1.2 Number of Associations

Each of the KARL STORZ AIDA® initiates only one association at a time. It accepts up to four open associations.

3.2.1.3 Asynchronous Nature

KARL STORZ AIDA® does not use asynchronous communication (multiple outstanding transactions over a single association).

3.2.1.4 Implementation Identifying Information

KARL STORZ AIDA® Implementation Class UID   1.2.276.0.67.7

KARL STORZ AIDA® Implementation Version Name   AIDA13

3.2.2 WLM-SCU AE Specification

3.2.2.1 SOP Classes

The KARL STORZ AIDA® system provides Standard Conformance to the following SOP Classes:

Table 3.2-1 SOP Classes for WLM-SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No

3.2.2.2 Association Policies

See 3.2.1 General Association Policies.

3.2.2.3 Association Initiation Policy

KARL STORZ AIDA® attempts to initiate a new association for the following service operations:

- Query Modality Worklist

3.2.2.3.1   Associated Real-World Activity – Query Worklist of a remote AE

If the user enters a query key, a patient based query is initiated, otherwise a broad query.

3.2.2.3.2   Proposed Presentation Contexts – Query Worklist of a remote AE

The Presentation Contexts proposed by KARL STORZ AIDA® are defined in the following table:

Table 3.2-2 SOP Presentation Context Table - Query Worklist of a remote AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Modality Work-list Information Model – FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

3.2.2.3.2.1   SOP Specific Conformance Statement – Query Worklist of a remote AE

KARL STORZ AIDA® establishes an association to the remote AE, sends the C-FIND request and closes it after receiving the responses. It uses the following query keys in the C-FIND request:

Table 3.2-3 Modality Worklist Query Keys

Attribute Name	Tag	Broad Query	Patient Query	Additional information
SOP Common Module				
Specific Character Set	(0008,0005)	Y	Y	ISO IR 100 or ISO IR 192
Modality Worklist Module				
Scheduled Procedure Step Sequence	(0040,0100)	Y	Y	
Modality	>(0008,0060)	Y [1]	N	configurable value
Scheduled Station AE Title	>(0040,0001)	Y [1]	N	configurable option
Scheduled Procedure Step Start Date	>(0040,0002)	Y [1,2]	N	configurable option
Scheduled Performing Physician	>(0040,0006)	Y [1]	N	user entry
Patient's Name	(0010,0010)	N	Y [1]	user entry
Patient ID	(0010,0020)	N	Y [1]	user entry
Accession Number	(0008,0050)	N	Y [1]	user entry
Admission ID / Case ID	(0038,0010)	N	Y [1]	user entry
Requested Procedure ID	(0040,1001)	N	Y [1]	user entry

[1] may be empty   [2] date range query as configurable option, default is single value query

KARL STORZ AIDA® checks for the following status codes in the response to the C-FIND request:

- SUCCESS (0000)
- PENDING (FF00)
- PENDING with WARNING (FF01)
- All other status codes are interpreted as errors. Errors are displayed to the user and logged to file.

KARL STORZ AIDA® does not request matching on optional matching key attributes. It also does not require optional return key attributes. It supports ISO IR 100 and ISO IR 192 character sets.

Table 3.2-4 Modality Worklist Attributes

Attribute Name	Tag	Requested	Read	Additional information
SOP Common Module				
Specific Character Set	(0008,0005)	Y	Y	ISO IR 100 or ISO IR 192
Patient Module				
Patient Name	(0010,0010)	Y	Y	
Patient ID	(0010,0020)	Y	Y	
Patient's Birth Date	(0010,0030)	Y	Y	
Patient's Sex	(0010,0040)	Y	Y	
Other Patient IDs	(0010,1000)	Y	Y	
Visit Module				
Admission ID	(0038,0010)	Y	Y	
Referenced Patient Sequence	(0008,1120)	N	Y	
>Referenced SOP Class UID	(0008,1150)	N	Y	
>Referenced SOP Instance UID	(0008,1155)	N	Y	
Imaging Service Request Module				
Accession Number	(0008,0050)	Y	Y	
Referring Physician's Name	(0008,0090)	Y	Y	
Requested Procedure Module				
Study Date	(0008,0020)	Y	Y	
Study Time	(0008,0030)	N	Y	
Referenced Study Sequence	(0008,1110)	Y	Y	
>Referenced SOP Class UID	(0008,1150)	Y	Y	
>Referenced SOP Instance UID	(0008,1155)	Y	Y	
Study Instance UID	(0020,000D)	Y	Y	
Study ID	(0020,0010)	N	Y	
Requested Procedure Description	(0032,1060)	Y	Y	
Requested Procedure Code Sequence	(0032,1064)	Y	Y	
>Code Value	(0008,0100)	Y	Y	
>Coding Scheme Designator	(0008,0102)	Y	Y	
>Coding Scheme Version	(0008,0103)	Y	Y	
>Code Meaning	(0008,0104)	Y	Y	
Requested Procedure ID	(0040,1001)	Y	Y	

Attribute Name	Tag	Requested	Read	Additional information
Scheduled Procedure Step Module				
Scheduled Procedure Step Sequence	(0040,0100)	Y	Y	
>Modality	(0008,0060)	Y	Y	
>Scheduled Station AE Title	(0040,0001)	Y	Y	
>Scheduled Procedure Step Start Date	(0040,0002)	Y	Y	
>Scheduled Procedure Step Start Time	(0040,0003)	Y	Y	
>Scheduled Procedure Step End Date	(0040,0004)	Y	N	
>Scheduled Performing Physician's Name	(0040,0006)	Y	Y	
>Scheduled Procedure Step Description	(0040,0007)	Y	Y	
>Scheduled Protocol Code Sequence	(0040,0008)	Y	Y	
>>Code Value	(0008,0100)	Y	Y	
>>Coding Scheme Designator	(0008,0102)	Y	Y	
>>Coding Scheme Version	(0008,0103)	Y	Y	
>>Code Meaning	(0008,0104)	Y	Y	
>Scheduled Procedure Step ID	(0040,0009)	Y	Y	
>Scheduled Station Name	(0040,0010)	Y	Y	
>Scheduled Procedure Step Location	(0040,0011)	Y	Y	

3.2.3   MPPS-SCU AE Specification

3.2.3.1   SOP Classes

The KARL STORZ AIDA® system provides Standard Conformance to the following SOP Classes:

Table 3.2-5 SOP Classes for MPPS-SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No

3.2.3.2   Association Policies

See 3.2.1 General Association Policies.

3.2.3.3   Association Initiation Policy

KARL STORZ AIDA® attempts to initiate a new association for the following service operations:

- Start Procedure Step
- Finish Procedure Step
- Discontinue Procedure Step

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3.2.3.3.1 Associated Real-World Activity – Send Status message to remote AE

When the surgery is started, KARL STORZ AIDA® creates an MPPS (Modality Performed Procedure Step) object from the information that was provided by a previous C-Find request for a worklist from a remote Worklist SCP.

When the surgery is finished, KARL STORZ AIDA® updates the status of the MPPS object (to 'Completed' or 'Discontinued').

3.2.3.3.2 Proposed Presentation Contexts – Send Status message to remote AE

The Presentation Contexts proposed by KARL STORZ AIDA® are defined in the following table:

Table 3.2-6 SOP Presentation Context Table - Send MPPS Message to remote AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

3.2.3.3.2.1 SOP Specific Conformance Statement – Send Status message to remote AE

Once the MPPS association has been established, KARL STORZ AIDA® sends an N-CREATE-RQ or N-SET-RQ message to the MPPS SCP. After the response is received the association is closed. The table below lists all Modality Performed Procedure Step attributes, which may be created by N-CREATE and updated by N-SET.

Table 3.2-7 Modality Performed Procedure Step Attributes

Attribute Name	Tag	N-CREATE	N-SET	Additional information
SOP Common Module				
Specific Character Set	(0008,0005)	Y	N	ISO IR 100 or ISO IR 192
Performed Procedure Step Relationship Module				
Referenced Patient Sequence	(0008,1120)	Y	N	
>Referenced SOP Class UID	(0008,1150)	N	N	
>Referenced SOP Instance UID	(0008,1155)	N	N	
Patient Name	(0010,0010)	Y	N	
Patient ID	(0010,0020)	Y	N	
Patient's Birth Date	(0010,0030)	Y	N	
Patient's Sex	(0010,0040)	Y	N	
Other Patient IDs	(0010,1000)	Y	N	
Admission ID	(0038,0010)	Y	N	
Scheduled Step Attribute Sequence	(0040,0270)	Y	N	
>Accession Number	(0008,0050)	Y	N	

Attribute Name	Tag	N-CREATE	N-SET	Additional information
>Referenced Study Sequence	(0008,1110)	Y	N	
>>Referenced SOP Class UID	(0008,1150)	Y	N	
>>Referenced SOP Instance UID	(0008,1155)	Y	N	
>Study Instance UID	(0020,000D)	Y	N	
>Requested Procedure ID	(0040,1001)	Y	N	
>Requested Procedure Description	(0032,1060)	Y	N	
>Scheduled Procedure Step ID	(0040,0009)	Y	N	
>Scheduled Procedure Step Description	(0040,0007)	Y	N	
>Scheduled Protocol Code Sequence	(0040,0008)	Y	N	
>>Code Value	(0008,0100)	Y	N	
>>Coding Scheme Designator	(0008,0102)	Y	N	
>>Coding Scheme Version	(0008,0103)	Y	N	
>>Coding Meaning	(0008,0104)	Y	N	
Performed Procedure Step Information				
Procedure Code Sequence	(0008,1032)	Y	Y	
>Code Value	(0008,0100)	Y	Y	
>Coding Scheme Designator	(0008,0102)	Y	Y	
>Coding Scheme Version	(0008,0103)	Y	Y	
>Code Meaning	(0008.0104)	Y	Y	
Performed Station AE Title	(0040,0241)	Y	N	
Performed Station Name	(0040,0242)	Y	N	
Performed Location	(0040,0243)	Y	N	
Performed Procedure Step Start Date	(0040,0244)	Y	N	
Performed Procedure Step Start Time	(0040,0245)	Y	N	
Performed Procedure Step End Date	(0040,0250)	Y	Y	Always empty in N-CREATE
Performed Procedure Step End Time	(0040,0251)	Y	Y	Always empty in N-CREATE
Performed Procedure Step Status	(0040,0252)	Y	Y	
Performed Procedure Step ID	(0040,0253)	Y	N	
Performed Procedure Step Description	(0040,0254)	Y[1]	Y[1]	
Performed Procedure Type Description	(0040,0255)	Y	Y	

Attribute Name	Tag	N-CREATE	N-SET	Additional information
Image Acquisition Results				
Modality	(0008,0060)	Y	N	
Study ID	(0020,0010)	Y	N	
Performed Protocol Code Sequence	(0040,0260)	Y	Y	
>Code Value	(0008,0100)	Y	Y	
>Coding Scheme Designator	(0008,0102)	Y	Y	
>Coding Scheme Version	(0008,0103)	Y	Y	
>Code Meaning	(0008,0104)	Y	Y	
Performed Series Sequence	(0040,0340)	Y	Y	
>Performing Physician's Name	(0008,1050)	Y	Y	
>Operator's Name	(0008,1070)	Y	Y	
>Protocol Name	(0018,1030)	Y	Y	
>Series Instance UID	(0020,000E)	Y	Y	
>Series Description	(0008,103E)	Y	Y	
>Retrieve AE Title	(0008,0054)	Y	Y	
>Referenced Image Sequence	(0008,1140)	Y	Y	Always empty in N-CREATE
>>Referenced SOP Class UID	(0008,1150)	N	Y	
>>Referenced SOP Instance UID	(0008,1155)	N	Y	
>Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)	Y	Y	Always empty

[1] The values in N-CREATE are the same as in the selected worklist entry. If those are changed on the AIDA™ the new values will be included in the N-SET message for updating the MPPS server's information.

3.2.4 STORAGE (and STORAGE COMMITMENT) SCU AE Specification

3.2.4.1 SOP Classes

The KARL STORZ AIDA® system provides Standard Conformance to the following SOP Classes:

Table 3.2-8 SOP Classes for STORAGE-SCU AE

SOP Class Name	SOP Class UID	SCU	SCP
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
Storage Commitment Push Model	1.2.840.10008.1.20.1	Yes	No

3.2.4.2 Association Policies

See 3.2.1 General Association Policies.

3.2.4.3 Association Initiation Policy

KARL STORZ AIDA® attempts to initiate a new association for the following service operations:

- Store images and videos to remote AE (Storage Service)
- Request Storage Commitment from a remote AE (if enabled)

3.2.4.3.1 Associated Real-World Activity – Store Image on a remote AE and request Commitment

The associated real-world activity is a storage request initiated by the user after the surgical procedure. All images and videos taken during the surgery are stored to a remote provider (for example archive). If the storage response from the remote AE contains a status other than success, an error message is displayed to the user.

If Storage Commitment is enabled, AIDA™ automatically requests a storage commitment after the storage. Based on the settings the Storage Commitment is requested in one request for all images or image-by-image. Also based on the settings a timed-out commit request is automatically repeated once or twice.

3.2.4.3.2 Proposed Presentation Contexts – Store Image to a remote AE and request Commitment

The Presentation Contexts proposed by KARL STORZ AIDA® are defined in the following table:

Table 3.2-9 Presentation Context Table - Store Image to a remote AE and request Commitment

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Secondary Capture Image Storage	1.2.840.10008.5. 1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
VL Endo-scopic Image Storage	1.2.840.10008.5. 1.4.1.1.77.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Video Endo-scopic Image Storage	1.2.840.10008.5. 1.4.1.1.77.1.1.1	MPEG2 Main Profile @ Main Level MPEG2 Main Profile @ High Level MPEG-4 AVC/H.264 High Profile / Level 4.1	1.2.840.10008.1.2. 4.100 1.2.840.10008.1.2. 4.101 1.2.840.10008.1.2 4.102	SCU	None
Storage Commit-ment Push Model	1.2.840.10008.1. 20.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

3.2.4.3.2.1. *SOP Specific Conformance Statement – Store Image to a remote AE and request Commitment*

For storage, KARL STORZ AIDA® establishes one or more associations to the remote AE, sends the storage requests and closes the associations after receiving the responses. KARL STORZ AIDA® sends the images, the MPEG2 videos and the MPEG4 videos in three separate associations.

For storage commitment, KARL STORZ AIDA® establishes an association to the remote AE, sends the storage commitment requests and closes it after receiving the responses.

If Storage Commitment is enabled, KARL STORZ AIDA® requests the Storage Commitment on a new association after all objects have been stored (storage requests have been sent). It accepts the Storage Commitment N-EVENT-RQ either immediately afterwards on that association (if so configured), or later on a separate association.

The images and videos sent by KARL STORZ AIDA® conform to the DICOM IOD definitions. Depending on the capture settings, the number or rows and columns of the videos may deviate from the DICOM transfer syntax definitions. If the storage of those videos is refused, a strictly DICOM compliant MPEG2 Main Profile @ Main Level video is stored. Extended negotiation is not supported. KARL STORZ AIDA® supports ISO IR 100 and ISO IR 192 character sets.

3.2.4.4   *Association Acceptance Policy*

KARL STORZ AIDA® accepts an association request for the following service operation:

• Receive Storage Commitment from a remote AE (if enabled)

KARL STORZ AIDA® accepts an association request for storage commitment events if the requested AE title and the requestor's AE title and IP address correspond to the configured values.

3.2.4.4.1   *Associated Real-World Activity – Receive Storage Commitment*

The remote provider (archive) sends a storage commitment when they take over the responsibility for the stored image. After receiving this commitment for all objects of the procedure, KARL STORZ AIDA® marks the procedure as committed.

3.2.4.4.2   *Accepted Presentation Contexts – Receive Storage Commitment*

The Presentation Contexts proposed by KARL STORZ AIDA® are defined in the following table:

Table 3.2-10 Acceptable Presentation Context Table - Receive Storage Commitment

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

3.2.4.4.2.1   *SOP Specific Conformance Statement – Receive Storage Commitment*

None

3.3   NETWORK INTERFACES

3.3.1   Physical Network Interface

The KARL STORZ AIDA® system provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard (PS 3.8 Network Communication Support for Message Exchange).

3.3.1.1   OSI Stack

No OSI Stack communications are provided.

3.3.1.2   TCP/IP Stack

KARL STORZ AIDA® uses the TCP/IP stack from Windows 7 upon which it executes.

3.3.2   Physical Media Support

KARL STORZ AIDA® is independent of the physical medium over which TCP/IP executes.

3.4   CONFIGURATION

The most important configurations are performed through the KARL STORZ AIDA® user interface. This configuration can be done by an administrator. The settings are stored in a configuration file where additional less important configurations can be set.

3.4.1   AE Title/Presentation Address Mapping

The mapping of the application entity titles to host IP addresses and port numbers can be configured by an administrator through the user interface of KARL STORZ AIDA®. The mapping is also stored in the configuration file.

- The application entity title of KARL STORZ AIDA® and the port number of KARL STORZ AIDA® can also be configured through the user interface of KARL STORZ AIDA®.

3.4.2   Parameters

The following DICOM parameters can be configured through the KARL STORZ AIDA® user interface:

- Application entity title of the KARL STORZ AIDA®
- Modality type used for stored images and videos
- Character Set
- Own port of KARL STORZ AIDA®
- Application entity title, time-out, IP address and port number for a worklist server and for a MPPS server
- Application entity title, IP address and port number, time-out and video format to be used for storage servers
- Option to enable storage commitment with the same server as used for storage
- Modality worklist date filter

The following DICOM parameters can be configured in the configuration file:

- Communication security
- Maximum PDU size
- Institution and department name
- Station name and location
- Modality type used for modality worklist queries
- Modality worklist AE title filter
- Date range option for worklist query
- Timeout for storage commitment requests
- Various storage options

The following capture parameters can be configured through the KARL STORZ AIDA® user interface:

- Video format
- Video quality
- Video resolution
- Video duration

The KARL STORZ AIDA® user interface allows the configuration of the video format to be used for each DICOM storage server to be either a strictly DICOM compliant MPEG2 Main Profile @ Main Level video or a video with the selected capture parameters.

The capture settings of KARL STORZ AIDA® allow parameter combinations which result in videos which are not fully DICOM compliant and may or may not be stored or replayed in the customer's PACS systems. If the storage of those videos is refused, a strictly DICOM compliant MPEG2 Main Profile @ Main Level video is stored.

4   MEDIA INTERCHANGE

KARL STORZ AIDA® does not support Media Storage.

5 SUPPORT OF CHARACTER SETS

5.1 OVERVIEW

The application supports all character sets defined in the Table 5.2-1.

Support extends to correctly decoding and displaying the correct symbol for all names and strings received over the network.

No specific support for sorting of strings other than in the default character set is provided in the browsers.

5.2 CHARACTER SETS

In addition to the default character repertoire, the Specific Character Sets in Table 5.2-1 are supported:

Table 5.2-1 Supported Specific Character Sets

Character Set Description	Defined Term
Latin alphabet No. 1	ISO_IR 100
Unicode in UTF-8	ISO_IR 192

5.3 CHARACTER SET CONFIGURATION

The character set configuration of all components in the customer PACS (worklist server, modalities, archive) should agree. If KARL STORZ AIDA® receives worklist items with another than the configured character set it may or may not display the characters correctly. Even if the characters are displayed correctly it may however be unable to store the images and videos captured for such worklist items.

6 SECURITY

6.1 SECURITY PROFILES

The implementation adheres to the following Security Profiles:

SECURE USE PROFILES

The implementation adheres to the following Secure Use Profiles:

- None.

SECURE TRANSPORT CONNECTION PROFILES

The implementation adheres to the following Secure Transport Connection Profiles:

- None.

DIGITAL SIGNATURE PROFILE

The implementation adheres to the following Digital Signature Profiles:

- None.

MEDIA STORAGE SECURITY PROFILES

The implementation adheres to the following Media Storage Application Profiles which in turn require conformance to one or more Media Storage Security Profiles:

- None.

6.2 MANAGEMENT PROFILES

The implementation adheres to the following Management Profiles:

NETWORK ADDRESS MANAGEMENT PROFILES

The implementation adheres to the following Network Address Management Profiles:

- None.

TIME SYNCHRONIZATION PROFILES

The implementation adheres to the following Time Synchronization Profiles:

- None.

APPLICATION CONFIGURATION MANAGEMENT PROFILES

The implementation adheres to the following Application Configuration Management Profiles:

- None.

6.3 ASSOCIATION LEVEL SECURITY

Only configured AE Titles may open an Association.

6.4 APPLICATION LEVEL SECURITY

None.

7 Annexes

7.1 IOD CONTENTS

7.1.1 Created SOP Instance(s)

The KARL STORZ AIDA® application creates the following IODs for SOP Instances:

- VL Endoscopic Image Storage
- VIDEO Endoscopic Image Storage
- Secondary Capture Storage

Table 7.1-1 specifies the attributes of a VL Endoscopic Image transmitted by the application.

Table 7.1-2 specifies the attributes of a Video Endoscopic Image transmitted by the application.

Table 7.1-3 specifies the attributes of a Secondary Capture Image transmitted by the application.

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

ALWAYS	Always Present
ANAP	Attribute Not Always Present
VNAP	Value Not Always Present (attribute sent with zero length if no value is present)
EMPTY	Attribute is sent without a value
NEVER	Never Present

The abbreviations used in the "Source" column are:

MWL	the attribute value source is Modality Worklist
USER	the attribute value source is User Input
AUTO	the attribute value is generated automatically
MPPS	the attribute value is the same as that used for Modality Performed Procedure Step
CONFIG	the attribute value source is a configurable parameter

All dates and times are encoded in the local configured calendar and time zone.

7.1.1.1 VL Endoscopic Image IOD

Table 7.1-1 IOD OF CREATED VL ENDOSCOPIC IMAGE IOD

IE	Module	Reference	Presence of Module
Patient	Patient	Table 7.1-4	ALWAYS
	Clinical Trial Subject		NEVER
Study	General Study	Table 7.1-5	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 7.1-6	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 7.1-7	ALWAYS
Image	General Image	Table 7.1-8	ALWAYS
	Image Pixel	Table 7.1-9	ALWAYS
	SOP Common	Table 7.1-10	ALWAYS
	Acquisition Context	Table 7.1-11	ALWAYS
	VL Image	Table 7.1-12	ALWAYS
	Overlay Plane		NEVER
	VOI LUT	Table 7.1-13	ALWAYS

7.1.1.2 VIDEO Endoscopic Image IOD

Table 7.1-2 IOD OF CREATED VIDEO ENDOSCOPIC IMAGE IOD

IE	Module	Reference	Presence of Module
Patient	Patient	Table 7.1-4	ALWAYS
	Clinical Trial Subject		NEVER
Study	General Study	Table 7.1-5	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 7.1-6	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 7.1-7	ALWAYS
Image	General Image	Table 7.1-8	ALWAYS
	Image Pixel	Table 7.1-9	ALWAYS
	SOP Common	Table 7.1-10	ALWAYS
	Acquisition Context	Table 7.1-14	ALWAYS
	VL Image	Table 7.1-15	ALWAYS
	Cine	Table 7.1-16	ALWAYS
	Multi-frame	Table 7.1-17	ALWAYS
	Overlay Plane		NEVER
	VOI LUT		NEVER

7.1.1.3 Secondary Capture Image IOD

Table 7.1-3 IOD OF CREATED SECONDARY IMAGE IOD

IE	Module	Reference	Presence of Module
Patient	Patient	Table 7.1-4	ALWAYS
	Clinical Trial Subject		NEVER
Study	General Study	Table 7.1-5	ALWAYS
	Patient Study		NEVER
	Clinical Trial Study		NEVER
Series	General Series	Table 7.1-6	ALWAYS
	Clinical Trial Series		NEVER
Equipment	General Equipment	Table 7.1-7	NEVER
	SC Equipment	Table 7.1-18	ALWAYS
Image	General Image	Table 7.1-8	ALWAYS
	Image Pixel	Table 7.1-9	ALWAYS
	SOP Common	Table 7.1-10	ALWAYS
	SC Image	Table 7.1-19	ALWAYS
	Overlay Plane		NEVER
	VOI LUT	Table 7.1-20	ALWAYS

7.1.1.4 Common Modules

Table 7.1-4 PATIENT MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Patient's Name	(0010,0010)	PN	Values supplied by Modality Worklist are sent as received (no checks made).	VNAP	MWL/USER
Patient ID	(0010,0020)	LO		VNAP	MWL/USER
Patient's Birth Date	(0010,0030)	DA		VNAP	MWL/USER
Patient's Birth Time	(0010,0032)	TM		NEVER	
Patient's Sex	(0010,0040)	CS		VNAP	MWL/USER
Other Patient IDs	(0010,1000)	LO		ANAP	MWL
Other Patient Names	(0010,1001)	PN		NEVER	
Ethnic Group	(0010,2160)	SH		NEVER	
Patient Comments	(0010,4000)	LT		NEVER	

Table 7.1-5 GENERAL STUDY MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Study Date	(0008,0020)	DA		VNAP	MWL/AUTO
Study Time	(0008,0030)	TM		VNAP	MWL/AUTO
Accession Number	(0008,0050)	SH		VNAP	MWL/USER
Referring Physician's Name	(0008,0090)	PN		ANAP	MWL
Study Description	(0008,1030)	LO		ANAP	MWL
Physician(s) of Record	(0008,1048)	PN		NEVER	
Name of Physician(s) Reading Study	(0008,1060)	PN		NEVER	
Study Instance UID	(0020,000D)	UI		ALWAYS	MWL/AUTO
Study ID	(0020,0010)	SH		VNAP	MWL
Admission ID	(0038,0010)	LO		ANAP	MWL

Table 7.1-6 GENERAL SERIES MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Series Date	(0008,0021)	DA		ALWAYS	AUTO
Series Time	(0008,0031)	TM		ALWAYS	AUTO
Series Description	(0008,103E)	LO		ANAP	MWL/USER
Performing Physician's Name	(0008,1050)	PN		ANAP	MWL/USER
Operator's Name	(0008,1070)	PN		ANAP	MWL/USER
Ref. Performed Proc. Step Seq.	(0008,1111)	SQ		ANAP	
>Referenced SOP Class UID	(0008,1150)	UI		ANAP	MPPS
> Referenced SOP Instance UID	(0008,1155)	UI		ANAP	MPPS
Body Part Examined	(0018,0015)	CS		NEVER	
Protocol Name	(0018,1030)	LO		ALWAYS	MWL/USER
Patient Position	(0018,5100)	CS		NEVER	
Series Instance UID	(0020,000E)	UI		ALWAYS	AUTO
Series Number	(0020,0011)	IS		ALWAYS	AUTO
Laterality	(0020,0060)	CS		VNAP	USER
Anatomic Region	(0008,2218)	SQ		VNAP	
>Code Value	>(0008,0100)	SQ		VNAP	USER
>Coding Scheme	>(0008,0102)	SQ		VNAP	USER
>Code Meaning	>(0008,0104)	SQ		VNAP	USER
Performed Proc. Step Start Date	(0040,0244)	DA		NEVER	
Performed Proc. Step Start Time	(0040,0245)	TM		NEVER	
Performed Proc. Step ID	(0040,0253)	LO		ANAP	MWL/USER
Performed Proc. Step Description	(0040,0254)	LO		ANAP	MWL/USER
Comments on the Perf. Proc. Step	(0040,0280)	ST		ANAP	USER

Table 7.1-7 GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Manufacturer	(0008,0070)	LO	"KARLSTORZ"	ALWAYS	AUTO
Manufacturer's Model Name	(0008,1090)	LO	"AIDA"	ALWAYS	AUTO
Software Versions	(0018,1020)	LO		ALWAYS	AUTO
Station Name	(0008,1010)	SH		ANAP	CONFIG
Institution Name	(0008,0080)	LO		ANAP	CONFIG
Institution Address	(0008,0081)	ST		ANAP	CONFIG
Institutional Department Name	(0008,1040)	LO		ANAP	CONFIG

Table 7.1-8 GENERAL IMAGE MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Image Type	(0008,0008)	CS		ALWAYS	AUTO
Acquisition Date	(0008,0022)	DA		NEVER	
Acquisition Time	(0008,0032)	TM		NEVER	
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Acq. Date/Time	(0008,002A)	DT		NEVER	
Derivation Descr.	(0008,2111)	ST		NEVER	
Acquisition Number	(0020,0012)	IS		NEVER	
Instance Number	(0020,0013)	IS		VNAP	AUTO
Patient Orientation	(0020,0020)	CS		EMPTY	
Lossy Image Compression	(0028,2110)	CS		EMPTY	

Table 7.1-9 IMAGE PIXEL MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Samples per Pixel	(0028,0002)	US		ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS		ALWAYS	AUTO
Planar Configuration	(0028,0006)	US		ALWAYS	AUTO
Number of Frames	(0028,0008)	US		ALWAYS	AUTO
Rows	(0028,0010)	US		ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	IS		ANAP	AUTO
Bits Allocated	(0028,0100)	US		ALWAYS	AUTO
Bits Stored	(0028,0101)	US		ALWAYS	AUTO
High bit	(0028,0102)	US		ALWAYS	AUTO
Pixel Representation	(0028,0103)	US		ALWAYS	AUTO
Smallest Image Pixel Value	(0028,0106)	US		ALWAYS	AUTO
Largest Image Pixel Value	(0028,0107)	US		ALWAYS	AUTO
Pixel Data	(7FE0,0010)	OW		ALWAYS	AUTO

Table 7.1-10 SOP COMMON MODULE OF CREATED SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Spec. Character Set	(0008,0005)	CS	ISO_IR 100 or ISO_IR 192	ANAP	CONFIG
SOP Class UID	(0008,0016)	UI		ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI		ALWAYS	AUTO

7.1.1.5   *VL Endoscopic Image Modules*

Table 7.1-11 ACQUISITION CONTEXT MODULE OF CREATED VL ENDOSCOPIC SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Acquisition Context	(0040,0555)	SQ		EMPTY	
Acq. Context Descr.	(0040,0556)	ST		NEVER	

Table 7.1-12 VL IMAGE MODULE OF CREATED VL ENDOSCOPIC SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Image Type	(0008,0008)	CS	"ORIGINAL"	ALWAYS	AUTO
Referenced Image Sequence	(0008,1140)	SQ		NEVER	
Samples per Pixel	(0028,0002)	US		ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	"RGB"	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US		ALWAYS	AUTO
Number of Frames	(0028,0008)	US		ALWAYS	AUTO
Rows	(0028,0010)	US		ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	IS		NEVER	
Bits Allocated	(0028,0100)	US		ALWAYS	AUTO
Bits Stored	(0028,0101)	US		ALWAYS	AUTO
High bit	(0028,0102)	US		ALWAYS	AUTO
Pixel Representation	(0028,0103)	US		ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS		EMPTY	

Table 7.1-13 VOI LUT MODULE OF CREATED VL ENDOSCOPIC SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Window Center	(0028,1050)	DS		ALWAYS	AUTO
Window Width	(0028,1051)	DS		ALWAYS	AUTO

7.1.1.6 *Video Endoscopic Image Modules*

Table 7.1-14 ACQUISITION CONTEXT MODULE OF CREATED VIDEO ENDOSCOPIC SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Acquisition Context	(0040,0555)	SQ		EMPTY	
Acq. Context Descr.	(0040,0556)	ST		NEVER	

Table 7.1-15 VL IMAGE MODULE OF CREATED VIDEO ENDOSCOPIC SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Image Type	(0008,0008)	CS	"ORIGINAL"	ALWAYS	AUTO
Referenced Image Sequence	(0008,1140)	SQ		NEVER	
Samples per Pixel	(0028,0002)	US		ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	"YBR_PARTIAL_420"	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US		ALWAYS	AUTO
Number of Frames	(0028,0008)	US		ALWAYS	AUTO
Rows	(0028,0010)	US		ALWAYS	AUTO
Columns	(0028,0011)	US		ALWAYS	AUTO
Pixel Aspect Ratio	(0028,0034)	IS		ALWAYS	AUTO
Bits Allocated	(0028,0100)	US		ALWAYS	AUTO
Bits Stored	(0028,0101)	US		ALWAYS	AUTO
High bit	(0028,0102)	US		ALWAYS	AUTO
Pixel Representation	(0028,0103)	US		ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	"01"	ALWAYS	AUTO

Table 7.1-16 CINE MODULE OF CREATED VIDEO ENDOSCOPIC SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Frame Time	(0018,1063)	DS		ALWAYS	AUTO
Frame Time Vector	(0018,1065)	DS		NEVER	

Table 7.1-17 MULTI FRAME MODULE OF CREATED VIDEO ENDOSCOPIC SOP INSTANCES

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

7.1.1.7 Secondary Capture Modules

Table 7.1-18 SC EQUIPMENT MODULE OF CREATED SEC. CAPTURE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Modality	(0008,0060)	CS		ALWAYS	CONFIG
Conversion Type	(0008,0064)	CS	"DV"	ALWAYS	AUTO

Table 7.1-19 SECONDARY CAPTURE IMAGE MODULE OF CREATED SEC. CAPT. SOP. INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Date of Secondary Capture	(0018,1012)	DA		NEVER	
Time of Secondary Capture	(0018,1014)	TM		NEVER	

Table 7.1-20 VOU LUT MODULE OF CREATED SEC. CAPTURE SOP INSTANCES

Attribute Name	Tag	VR	Value	Presence	Source
Window Center	(0028,1050)	DS		ALWAYS	AUTO
Window Width	(0028,1051)	DS		ALWAYS	AUTO

7.1.2 Attribute Mapping

Table 7.1-21 ATTRIBUTE MAPPING BETWEEN MODALITY WORKLIST, IMAGE AND MPPS

Modality Worklist	Image IOD	MPPS IOD
Patient Name	Patient Name	Patient Name
Patient ID	Patient ID	Patient ID
Patient's Birth Date	Patient's Birth Date	Patient's Birth Date
Patient's Sex	Patient's Sex	Patient's Sex
Other Patient IDs	Other Patient IDs	Other Patient IDs
Admission ID	Admission ID	Admission ID
Study Instance UID	Study Instance UID	Study Instance UID
Accession Number	Accession Number	Accession Number
Referenced Study Sequence	Referenced Study Sequence	Referenced Study Sequence
Requested Procedure ID	---	Requested Procedure ID
Req. Procedure Description	Study Description	Req. Procedure Description
Req. Procedure Code Sequence	---	---
Sched. Proc. Step Sequence	Request Attributes Sequence	Sched. Step Attribute Sequence
Modality	Modality	Modality
Sched. Procedure Step ID	Sched. Procedure Step ID	Sched. Procedure Step ID
Sched. Proc. Step Description	Sched. Proc. Step Description Series Description Protocol Name	Sched. Proc. Step Description Protocol Name
Sched. Protocol Code Seq.	Sched. Protocol Code Seq.	Sched. Protocol Code Seq.
Scheduled Station Name	---	---
Sched. Proc. Step Location	---	---
Scheduled Performing Physician	Performing Physician's Name Operator's Name	Performing Physician's Name Operator's Name

7.2 DATA DICTIONARY OF PRIVATE ATTRIBUTES

None.

7.3 CODED TERMINOLOGY AND TEMPLATES

None.

7.4 GRAYSCALE IMAGE CONSISTENCY

None.

7.5 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOP CLASSES

None.

7.6 PRIVATE TRANSFER SYNTAXES

None.