

DICOM Conformance Statement
AIDA HD Connect



PRODUCT INFO
OR1™

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Abbreviations

General abbreviations

AIDA	<u>A</u> dvanced <u>I</u> mage and <u>D</u> ata <u>A</u> cquisition / <u>A</u> rchiving System = KARL STORZ AIDA™ (KST applications for endoscopic image and video acquisition with various functional options)
DICOM	<u>D</u> igital <u>I</u> maging and <u>C</u> ommunication in <u>M</u> edicine - Communication Standard in Medicine
GUI	<u>G</u> raphic <u>U</u> ser <u>I</u> nterface
HL7	<u>H</u> ealth <u>L</u> evel <u>S</u> even - Communication Standard in Medicine
HIS	<u>H</u> ospital <u>I</u> nformation <u>S</u> ystem
IHE	<u>I</u> ntegrating the <u>H</u> ealthcare <u>E</u> nterprise
KST	KARL STORZ GmbH & Co. KG = KARL STORZ Tuttlingen
PACS	<u>P</u> icture <u>A</u> rchiving and <u>C</u> ommunication <u>S</u> ystem
SCB	<u>S</u> torz <u>C</u> ommunication <u>B</u> us

Network specific abbreviations

IP	<u>I</u> nternet <u>P</u> rotocol
PDU	<u>P</u> rotocol <u>D</u> ata <u>U</u> nit
TCP	<u>T</u> ransport <u>C</u> ontrol <u>P</u> rotocol
TLS	<u>T</u> ransport <u>L</u> ayer <u>S</u> ecurity

DICOM specific abbreviations

AE	<u>A</u> pplication <u>E</u> ntity
MPPS	<u>M</u> odality <u>P</u> erformed <u>P</u> rocedure <u>S</u> tep
MWL	<u>M</u> odality <u>W</u> orklist
SOP	<u>S</u> ervice <u>O</u> bject <u>P</u> air
SCP	<u>S</u> ervice <u>C</u> lass <u>P</u> rovider (= Server)
SCU	<u>S</u> ervice <u>C</u> lass <u>U</u> ser (= Client)
UID	<u>U</u> nique <u>I</u> dentifier
UTF-8	<u>U</u> nicode <u>T</u> ransformation <u>F</u> ormat (8 bit)
VL	<u>V</u> isible <u>L</u> ight
VR	<u>V</u> alue <u>R</u> epresentation

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, 2007
[IHE TF]	IHE Technical Framework Rev. 7.0, ACC/HIMSS/RSNA, 2006

1 CONFORMANCE STATEMENT OVERVIEW

This document is a DICOM conformance statement in accordance with the standard as specified in DICOM PS 3.2-2007.

The AIDA DICOM interfaces allow participation of 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 Images Stored – The Acquisition Modality sends acquired or generated images to a 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 2.1-1 provides an overview of the network services supported by the AIDA system.

Table 2.1-1 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	No
Workflow Management		
Modality Worklist Information Model – FIND	Yes	No
Modality Performed Procedure Step SOP Class	Yes	No
Print Management		
None		

Table 2.1-2 provides an overview of the Media Storage Application Profiles supported by the AIDA system.

Table 2.1-2 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 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:

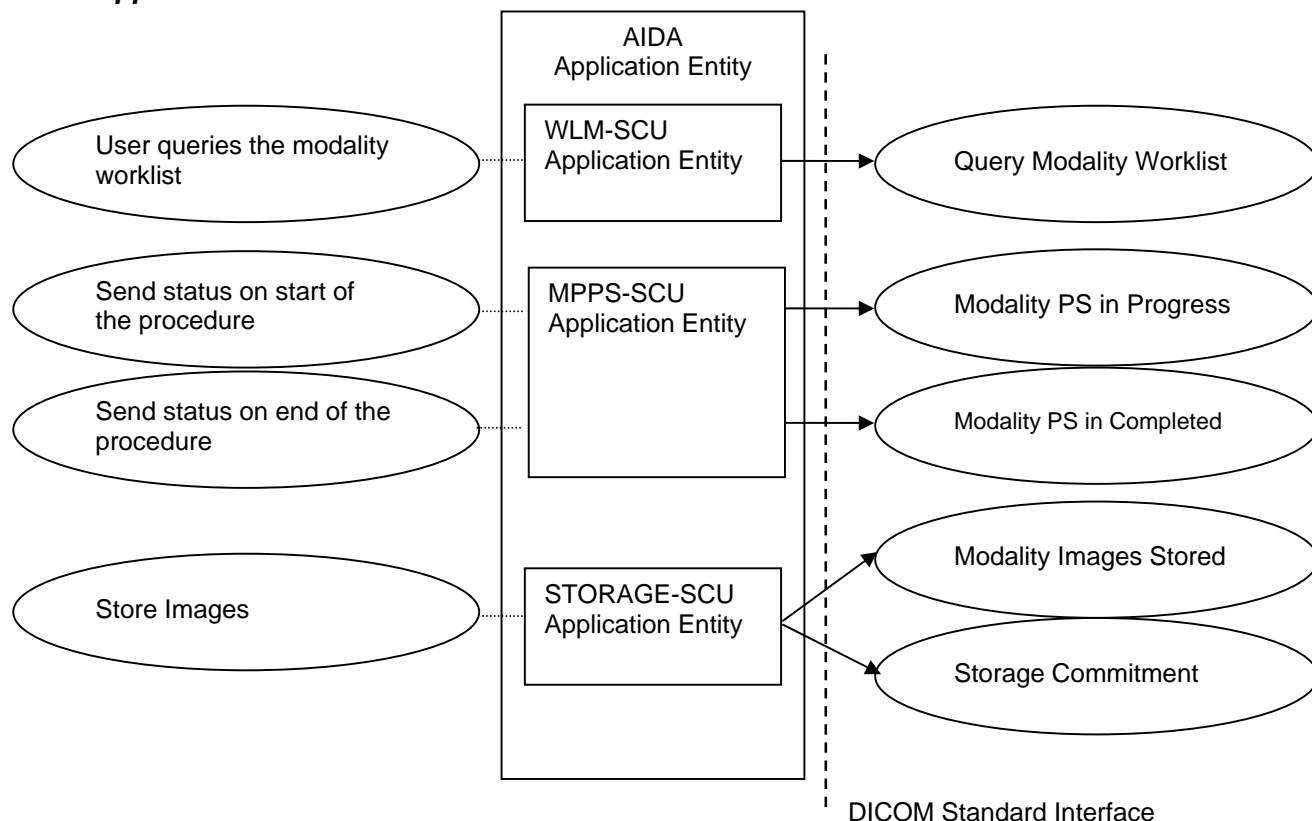
- The comparison of different conformance statements is the first step towards assessing interconnectivity between KARL STORZ GmbH & Co. KG and non- KARL STORZ GmbH & Co. KG equipment.
- Test procedures should be defined to validate the desired level of connectivity.

The DICOM standard will evolve to meet the users 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) AIDA 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, 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

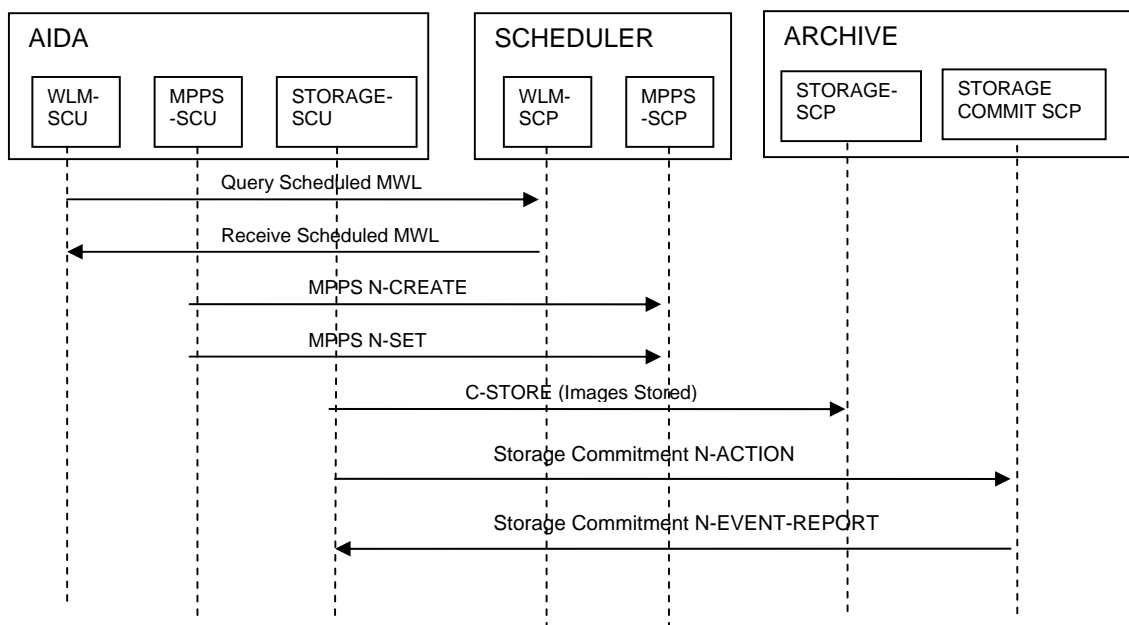
The MPPS-SCU AE is invoked by the system on start and end or cancellation of a procedure step. The possible real-world events are 'Procedure Start', 'Procedure Completed' and 'Procedure Discontinued'.

3.1.2.3 Functional Definition of STORAGE-SCU Application Entity

The STORAGE-SCU AE is invoked by the real-world action 'Store Images' or 'Finish procedure'. It sends acquired or generated images 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

AIDA will utilize and understand the following Application Context Name:

- DICOM V3.0 Application Context 1.2.840.10008.3.1.1.1

AIDA will attempt to establish an association whenever the user invokes a DICOM related operation (query a worklist from a remote AE or store images to a remote AE) in the user interface of AIDA.

The maximum PDU size, which AIDA will use, is configurable. The default value is 1022000 Bytes.

3.2.1.2 Number of Associations

AIDA initiates only one association at a time. It accepts up to four open associations.

3.2.1.3 Asynchronous Nature

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

3.2.1.4 Implementation Identifying Information

AIDA Implementation Class UID 1.2.276.0.67.3
 Implementation Version Name AIDAHDC

3.2.2 WLM-SCU AE Specification

3.2.2.1 SOP Classes

The 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

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

Depending on the configuration, the user initiates either a broad query or a patient based query. For broad queries, the user can specify if a specific date or date range and the station AE title shall be used. For patient based queries the user specifies the attributes (Patient's Name, Patient ID, Accession Number) which the remote application should use to query its worklist database.

3.2.2.3.2 Proposed Presentation Contexts – Query Worklist of a remote AE

The Presentation Contexts proposed by 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 Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	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		

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

AIDA establishes an association to the remote AE, sends the C-FIND request and closes it after receiving the responses. AIDA 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	Addition 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 *)	N	
Station AE Title	>(0040,0001)	Y *)	N	option or user selection
Scheduled Procedure Step Start Date	>(0040,0002)	Y *)	N	option or user selection
Patient's Name	(0010,0010)	N	Y	user entry *)
Patient ID	(0010,0020)	N	Y	user entry *)
Accession Number	(0008,0050)	N	Y	user entry *)
Requested Procedure ID	(0040,1001)	N	Y	user entry *)

*) may be empty

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.

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

3.2.3 MPPS-SCU AE Specification

3.2.3.1 SOP Classes

The AIDA provides Standard Conformance to the following SOP Classes:

Table 3.2-4 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

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

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

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

When the surgery is started, 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, 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 AIDA are defined in the following table:

Table 3.2-5 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, AIDA sends a 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 3.2-6 Modality Performed Procedure Step Attributes

Attribute Name	Tag	N-CREATE	N-SET	Addition information
SOP Common Module				
Specific Character Set	(0008,0005)	Y	N	ISO IR 100 and 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	

Attribute Name	Tag	N-CREATE	N-SET	Addition information
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	
>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	Y	
Performed Procedure Type Description	(0040,0255)	Y	Y	
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

3.2.4 STORAGE and STORAGE COMMITMENT SCU AE Specification

3.2.4.1 SOP Classes

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

Table 3.2-7 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

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

- Store Image(s) to a 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 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 requests automatically 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 AIDA are defined in the following table:

Table 3.2-8 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 Endoscopic 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 Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	MPEG2 Main Profile @ Main Level	1.2.840.10008.1.2.4.100	SCU	None
Storage Commitment 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, AIDA establishes an association to the remote AE, sends the storage requests and closes it after receiving the responses.

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

If Storage Commitment is disabled, AIDA sends all images on one association.

If Storage Commitment is enabled, AIDA sends first all images on one association and then requests the Storage Commitment on a new association. It accepts the Storage Commitment N-EVENT-RQ either immediately afterwards on that association, or later on a separate association.

The DICOM images sent by AIDA conform to the DICOM IOD definitions. Extended negotiation is not supported. AIDA supports ISO IR 100 and ISO IR 192 character sets.

3.2.4.4 Association Acceptance Policy

AIDA accepts an association request for the following service operation:

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

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 he takes over the responsibility for the stored image. After receiving this commitment, AIDA marks the procedure as committed.

3.2.4.4.2 Accepted Presentation Contexts – Receive Storage Commitment

The Presentation Contexts accepted by AIDA are defined in the following table:

Table 3.2-9 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 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

3.2.4.4.2.1 SOP Specific Conformance Statement – Receive Storage Commitment

None.

3.3 NETWORK INTERFACES

3.3.1 Physical Network Interface

The 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

AIDA uses the TCP/IP stack from Windows XP Embedded upon which it executes.

3.3.2 Physical Media Support

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

3.3.3 Additional Protocols

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

3.4 CONFIGURATION

All configurations are performed through AIDA. This configuration can be done by an administrator.

These settings are stored in a configuration file.

3.4.1 AE Title/Presentation Address Mapping

The mapping of the application entity titles to host names and port numbers can be configured by the user or an administrator through the user interface of AIDA. The mapping is stored in a configuration file.

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

3.4.2 Parameters

The following parameters can be configured:

- Application entity title and port number of AIDA
- Time-outs
- Modality type
- Character Set
- Communication security
- Maximum PDU size
- Application entity title and port number for a worklist server
- Application entity title and port number for a MPPS server
- Application entity title and port number for a storage server
- Application entity title and port number for a storage commitment server
- Institution and department name
- Station name and location
- Modality worklist date filter and AE title filter
- Storage commitment activation, request mode, time-out and time-out action
- Storage commitment option for response on same association as request

4 MEDIA INTERCHANGE

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 found in the DICOMDIR, in storage instances from media and received over the network, and in the local database.

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

Whether or not characters are displayed correctly depends on the presence of font support in the underlying operating system. Typically, as described in the release notes, it may be necessary for the administrator to add one of the “all Unicode” fonts to the system configuration in order to correctly display characters that would not typically be used in the default locale.

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.

- Basic TLS Secure Transport Connection profile with cipher suites
TLS_DHE_RSA_WITH_3DES_EDE_CBC_SHA
TLS_DHE_RSA_WITH_DES_CBC_SHA

The IP port “2762-dicom-tls” is used for this profile.

The IP port on which the implementation accepts TLS connections can be configured through the configuration setting.

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 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 AIDA system.

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

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

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. Date, Time 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

IE	Module	Reference	Presence of Module
	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

Attribute Name	Tag	VR	Value	Presence	Source
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 Phycisian(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 Phycisian'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		NEVER	
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	"Karl Storz"	ALWAYS	AUTO
Manufacturer's Model Name	(0008,1090)	LO	"AIDA HD Connect"	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		EMPTY	
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	(0008,0033)	TM		NEVER	
Content Date	(0008,0023)	DA		ALWAYS	AUTO
Content Time	(0008,0033)	TM		ALWAYS	AUTO
Acq. Datetime	(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	
Image Comment	(0020,4000)	LT		ANAP	USER
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

Attribute Name	Tag	VR	Value	Presence	Source
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)	SQ		ALWAYS	AUTO
Window Width	(0028,1051)	ST		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
Data 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)	SQ		ALWAYS	AUTO
Window Width	(0028,1051)	ST		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	Sched. Proc. Step Description
Sched. Protocol Code Seq.	Sched. Protocol Code Seq.	Sched. Protocol Code Seq.
Scheduled Station Name	---	---
Sched. Proc. Step Location	---	---
---	Protocol Name	Protocol Name
Scheduled Performing Physician	Performing Physician’s Name	Performing Physician’s Name
Scheduled Performing Physician	Operators Name	Operators 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.