

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

DICOM Conformance Statement CAAS A-Valve

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Table of contents

1	Introduction	3
1.1	Revision history	3
1.2	Audience	3
1.3	Definitions Terms and Abbreviations	3
1.4	References	3
2	Media Interchange	4
2.1	Implementation Model	4
2.1.1	<i>Application Data Flow</i>	4
2.1.2	<i>Functional Definitions of AE's</i>	4
2.1.3	<i>Sequencing of Real-World Activities</i>	4
2.2	AE Specifications	5
2.2.1	CAAS A-Valve	5
2.3	Augmented and Private Profiles	6
2.3.1	<i>Augmented Profiles</i>	6
2.3.2	<i>Private Profiles</i>	6
2.4	MEDIA Configuration	6
3	SUPPORT OF CHARACTER SETS	7
3.1	Overview	7
4	SECURITY	8
4.1	Security Profiles	8
4.2	Association level security	8
4.3	Application level security	8
5	ANNEXES	9
5.1	IOD contents	9
5.1.1	<i>Created SOP Instances</i>	9

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

1 Introduction

This document describes the DICOM interface for the Pie Medical Imaging CAAS product in terms of part 2 of the DICOM standard.

1.1 Revision history

Document Version	Date of Issue	Author	Description
1.0	October 14, 2011	Pie Medical Imaging	First release version
2.0	May 16, 2013	Pie Medical Imaging	CAAS A-Valve 2.0 Version

1.2 Audience

This Conformance Statement is intended for:

- (Potential) customers
- Hospital staff
- Health system integrators
- Software designers implementing system interfaces

It is assumed that the reader is at least familiar with the DICOM standard.

1.3 Definitions Terms and Abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3 and PS 3.4.

The following acronyms and abbreviations are used in this document:

AE	Application Entity
ANSI	American National Standard Institute
AP	Application Profile
CD	Compact Disc
CD-R	CD-Recordable
CD-M	CD-Medical
CR	Computed Radiography
DICOM	Digital Imaging and Communications in Medicine
FSC	File-set Creator
FSR	File-set Reader
GUI	Graphic User Interface
HIS	Hospital Information System
IOD	Information Object Definition
NEMA	National Electrical Manufacturers Association
SC	Secondary Capture
SOP	Service Object Pair
UID	Unique Identifier
XA	X-Ray Angiographic

1.4 References

- [DICOM] DICOM PS-3:2016
 Digital Imaging and Communications in Medicine, Part 1 – 18
 (NEMA PS 3.1– PS 3.18),
 National Electrical Manufacturers Association (NEMA)
 Publication Sales 1300 N. 17th Street, Suite 1847
 Rosslyn, Virginia. 22209, United States of America
 Internet: <http://medical.nema.org/>
 Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2011) plus all the supplements and correction items that have been approved as Final Text.

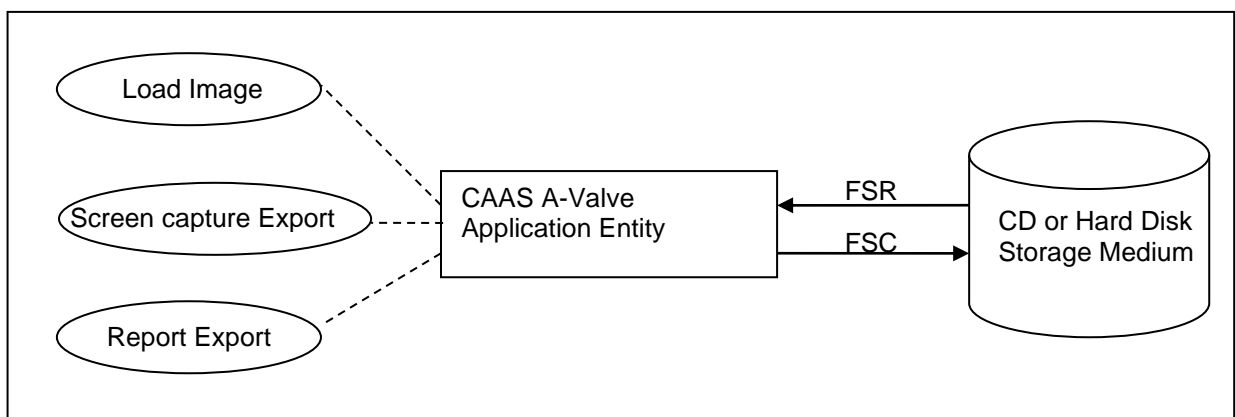
Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

2 Media Interchange

2.1 Implementation Model

CAAS A-Valve is intended for Quantitative analysis of medical diagnostic Angiographic images of the human heart and peripheral vessels. It partly implements a DICOM Media Storage Service as a File-set Reader (FSR) and File-set Creator (FSC) at the DICOM file format level on CD-R, DVD, Harddisk or Network file shares. It does not support creation of media formats on specific physical media, or creation or interpretation of a DICOMDIR.

2.1.1 Application Data Flow



2.1.2 Functional Definitions of AE's

CAAS A-Valve implements the following Real-World Activities (Functions):

- Existing DICOM File-sets can be loaded as FSR from Hard Disk, Media and network shares. These (multi-frame) images can be selected by the user through a file selection user interface. These files should be PS 3.10 compliant. Each file read is then displayed in a thumbnail view where instances may be selected for analysis.
- The AE can export screen captures as FSC of images under analysis on media. These files will be DICOM Datasets compliant to PS3.10.
- The AE can export results of an analysis in files on media. These files will be DICOM Datasets compliant to PS3.10.

2.1.3 Sequencing of Real-World Activities

Images are selected by the user for import, or pushed to the application by means of a command-line interface. These images are then displayed and can be selected and analyzed. During the analysis Screen captures can be saved to a storage medium in the form of DICOM Secondary Capture instances.

The analysis results can be saved to a storage medium as a multi-frame Screen capture of the on-screen report in the form of a DICOM Secondary Capture instance.

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

2.2 AE Specifications

2.2.1 CAAS A-Valve

CAAS A-Valve provides standard conformance to the Media Storage Service Class.

Application Profiles, Activities, and Roles for MEDIA-FSR

Application Profiles Supported	Real World Activity	Role
STD-GEN-CD	Load Image	FSR
	Screen Capture Export	FSC
	Export Report	FSC

Note: The application is media neutral and dependent on the underlying hardware. Any (non-secure) General Purpose Profile can be supported.

The following table specifies all supported SOP Classes and Transfer Syntaxes in the STD-GEN-CD profile.

SUPPORTED STD-GEN-CD SOP CLASSES AND TRANSFER SYNTAXES

Abstract Syntax		Transfer Syntax		
SOP Class	SOP Class UID	Name List	UID List	Role
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	FSR
		Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1	FSR
		Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2	FSR
		Lossy JPEG image compression for 8-bit images.	1.2.840.10008.1.2.4.50	FSR
		Lossy JPEG image compression for 12-bit images.	1.2.840.10008.1.2.4.51	FSR
		JPEG Lossless, Non-Hierarchical First-Order Prediction compression	1.2.840.10008.1.2.4.70	FSR
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	FSR
		Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1	FSR
		Lossy JPEG image compression for 8-bit images.	1.2.840.10008.1.2.4.50	FSR
		Lossy JPEG image compression for 12-bit images.	1.2.840.10008.1.2.4.51	FSR
		JPEG Lossless, Non-Hierarchical First-Order Prediction compression	1.2.840.10008.1.2.4.70	FSR
Secondary Capture	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little	1.2.840.10008.1.2.1	FSC

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

Image Storage		Endian		
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2.2.1.1 File Meta Information for the Application Entity

DICOM IMPLEMENTATION CLASS AND VERSION

Implementation Class UID	1.3.76.2.5
Implementation Version Name	DCM_GEN 3.24.2

2.2.1.2 Real World Activities

2.2.1.2.1 Activity – Load Image

The File Load activity is activated through the user interface or command line interface.

2.2.1.2.1.1 Application Profile Specific Conformance

There are no extensions or specializations.

2.2.1.2.2 Activity – Screen capture Export

The screen capture export is activated through the user interface.

2.2.1.2.2.1 Application Profile Specific Conformance

There are no extensions or specializations.

2.2.1.2.3 Activity – Report Export

The report export is activated through the user interface, a DICOM structured report is saved and a secondary capture containing a rendering of it.

2.2.1.2.3.1 Application Profile Specific Conformance

There are no extensions or specializations.

2.3 Augmented and Private Profiles

2.3.1 Augmented Profiles

None.

2.3.2 Private Profiles

None.

2.4 MEDIA Configuration

None.

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

3 SUPPORT OF CHARACTER SETS

3.1 Overview

CAAS A-Valve supports the following character sets:

Supported Specific Character Set Defined Terms

Character Set Description	Defined Term
Latin alphabet No. 1	ISO_IR 100
Latin alphabet No. 2	ISO_IR 101
Latin alphabet No. 3	ISO_IR 109
Latin alphabet No. 4	ISO_IR 110
Cyrillic	ISO_IR 144
Arabic	ISO_IR 127
Greek	ISO_IR 126
Hebrew	ISO_IR 138
Latin alphabet No. 5	ISO_IR 148
Unicode UTF-8	ISO_IR 192
Japanese	ISO_IR 13
Simplified Chinese (4 Byte)	GB18030
Default repertoire	ISO 2022 IR 6
Latin alphabet No. 1	ISO 2022 IR 100
Latin alphabet No. 2	ISO 2022 IR 101
Latin alphabet No. 3	ISO 2022 IR 109
Latin alphabet No. 4	ISO 2022 IR 110
Cyrillic	ISO 2022 IR 144
Arabic	ISO 2022 IR 127
Greek	ISO 2022 IR 126
Hebrew	ISO 2022 IR 138
Latin alphabet No. 5	ISO 2022 IR 148
Japanese	ISO 2022 IR 13
Thai	ISO 2022 IR 166
Japanese	ISO 2022 IR 87
Japanese	ISO 2022 IR 159
Korean	ISO 2022 IR 149

Files created are encoded in Unicode UTF-8 - ISO IR 192.

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

4 SECURITY

4.1 Security Profiles

None supported.

4.2 Association level security

None supported.

4.3 Application level security

None supported.

Date: 2-Mar-23	CAAS A-Valve	
Version: 2.0	DICOM Conformance Statement	

5 ANNEXES

5.1 IOD contents

5.1.1 Created SOP Instances

The applied modules for all IODs that can be created by CAAS A-Valve are listed in the following tables:

5.1.1.1 MULTI-FRAME GRAYSCALE WORD SC IMAGE IOD MODULES

IE	Module	Reference	Usage
Patient	Patient	C.7.1.1	M
Study	General Study	C.7.2.1	M
Series	General Series	C.7.3.1	M
Equipment	General Equipment	C.7.5.1	U
	SC Equipment	C.8.6.1	M
Image	General Image	C.7.6.1	M
	Image Pixel	C.7.6.3	M
	Cine	C.7.6.5	C - Required if Frame Increment Pointer (0028,0009) is Frame Time (0018,1063) or Frame Time Vector (0018,1065)
	Multi-frame	C.7.6.6	M
	SC Multi-frame Image	C.8.6.3	M
	SOP Common	C.12.1	M