

Galileo CAD

DICOM Conformance Statement
Version 1.01

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1 Introduction

1.1 Scope and Field of Application

Galileo CAD is a system that receives digital mammographic images then runs algorithms on the images to provide computer aided detection (CAD) and creates a structured report detailing the results. Galileo CAD will use the DICOM 3.0 protocol standard to support the connectivity. It is assumed that the reader is familiar with the terminology and concepts that are used in the DICOM 3.0 standard. Readers not familiar with DICOM 3.0 terminology should first read the appropriate parts of the DICOM standard itself, prior to reading this conformance statement. Although the use of this conformance statement in conjunction with the DICOM 3.0 standard is intended to facilitate communication with other DICOM systems, it is not sufficient to guarantee, by itself, the inter-operation of the connection.

DCMTK, OFFIS DICOM Tool Kit, is used to implement and provide DICOM services.

1.2 Revision History

Document Version	Date	Author	Change
1.00	25-Nov-05	ARCADIA LAB	First Version, until Galileo CAD version 1.05
1.01	10-May-06	ARCADIA LAB	Version for Final Text

1.3 Acronyms

The following acronyms and abbreviations are used in this document.

- AE Application Entity
- ACR American College of Radiology
- ANSI American National Standards Institute
- CAD Computer Aided Detection
- DICOM Digital Imaging and Communications in Medicine
- FSE Field Service Engineer
- GUI Graphical User Interface
- HIS Hospital Information System
- IOD Information Object Definition
- NEMA National Electrical Manufacturers Association
- PACS Picture Archiving and Communications System
- PDU Protocol Data Unit
- RIS Radiological Information System
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- SR Structured Report
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

- VR Value Representation

Furthermore, all symbols, abbreviations, and definitions used herein are described in the Digital Imaging and Communications in Medicine (DICOM) standard, parts 1 through 13 (NEMA PS 3.1-13).

1.4 Related Documentation

American College of Radiology-National Electrical Manufacturers Association (ACRNEMA) Digital Imaging and Communications in Medicine (DICOM) v3.0, 2004.

1.5 Considerations

The following issues need to be considered:

- The integration of any device into a system of interconnected devices goes beyond the scope of the DICOM 3.0 standard and this conformance statement when interoperability is required. The responsibility for analyzing the systems requirements and developing a solution that integrates the Galileo CAD system with other vendors' systems is the user's responsibility and should not be underestimated.
- Testing the complete range of possibilities between the Galileo CAD system and "others" devices, before the connection is declared operational, is considered to be a necessity. The user should ensure that any "others" equipment provider accepts full responsibility for all validation required for their connection with the Galileo CAD system. The accuracy of image data once it has crossed the interface between Galileo CAD equipment and the "other" device as well as the stability of the image data for the intended applications is the responsibility of the "other" provider.
- As the DICOM 3.0 standard evolves to meet the user's growing requirements and to incorporate new features and technologies, Galileo CAD developers will follow the evolution of the standard. This evolution of the standard may require changes to devices that have implemented DICOM 3.0. The user should ensure that any other provider, who connects with Galileo CAD devices, also plans future evolution of the DICOM standard. A refusal to do so may reflect in the loss of functionality and/or connectivity between the different products.

2 Implementation Model

The Galileo CAD system is a computer-aided detection (CAD) system for mammography designed to assist the radiologist in breast cancer detection. Using cognitive systems technology, the system detects potential microcalcifications and masses, literally providing the radiologist with a 'second opinion.' The Galileo CAD system's advanced pattern recognition and image analysis is intended to aid in early breast cancer detection. The Galileo CAD system is designed for all primary communication to occur through DICOM. A remotely accessible GUI shall be provided to the Administrator to assist in simple configuration and diagnostics.

A client wishing to initiate processing on an image shall send the Galileo CAD system a CAD request via DICOM. After each image is received, CAD processing will be initiated. Once the image processing is finished, the system will send the CAD results in a DICOM message to the designated recipient.

In clinical practice, the CAD results are only used by the radiologist after the completion of the initial review of the mammography images. The radiologist then views the CAD results and takes a 'second look' at the image in the locations of any areas of potential concern detected by the Galileo CAD

system. Finally, the radiologist decides whether or not true areas of concern are present at these locations. If so, the radiologist guides any additional work-up that is indicated. Note that the CAD results are not to be used to override a decision by the radiologist to further evaluate an area of concern initially detected without the assistance of the Galileo CAD system. Therefore, the CAD results can assist a radiologist in detecting areas of concern that would have been missed without its use, but it cannot cause a radiologist to miss areas of concern that would have been detected without the Galileo CAD system.

2.1 Application Data Flow Diagram

The Galileo CAD system acts as a single Application Entity based on the DICOM protocol standard. The system can act as a DICOM Storage Service Class Providers (SCP) by receiving DICOM Digital Mammography X-Ray Images and DICOM Verification messages. The Galileo CAD system can also act as a DICOM Storage Service Class User (SCU) by initiating associations to send CAD results in the form of the DICOM Mammography CAD Structured Report. Furthermore, the Galileo CAD system can also initiate DICOM Verification requests to DICOM Storage Service Class Providers (SCP) for testing communications between systems. The data flow diagram can be seen in Figure 2.1.

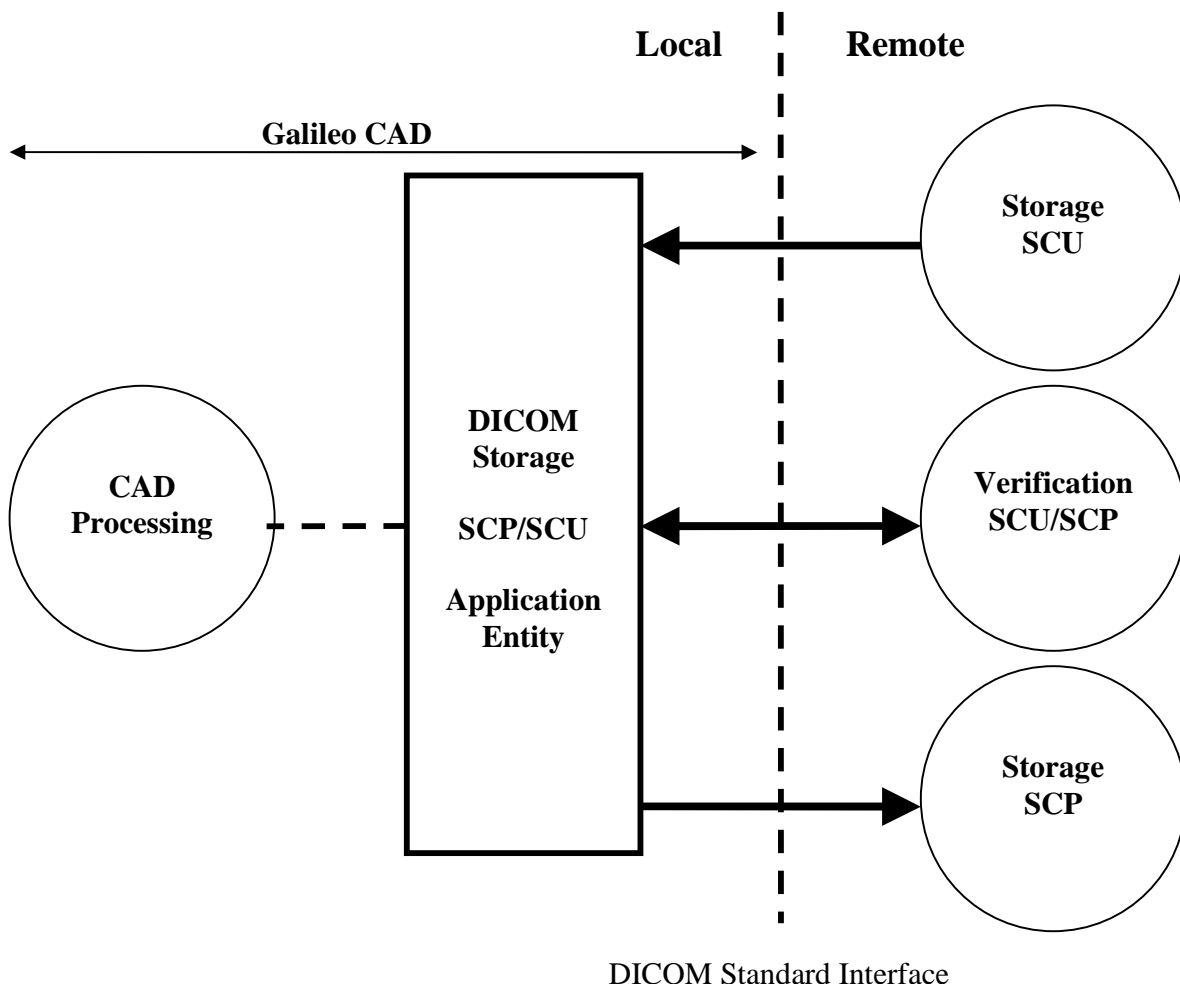


Figure 2.1 – Implementation Model

2.2 Functional Definition of Application Entities

DICOM Storage acts as a Service Class Provider (SCP) for the purpose of receiving DICOM Digital Mammography X-Ray images, and DICOM Verification messages. The DICOM Storage system acts as a Service Class User (SCU) by sending out the CAD results in the form of the DICOM Mammography CAD Structured Report. Furthermore, the Galileo CAD system acts as an SCU by initiating the DICOM Verification message for testing communications between devices.

3 AE Specifications

3.1 SCP Services

The following sections define the services used by DICOM Storage as an SCP.

3.1.1 SCP Application Entity

DICOM Storage provides SCP standard conformance to the DICOM 3.0 SOP Classes that are defined in Table 1.

Table 1 - SCP SOP Class Conformance

SOP Class	SOP Class UID
Digital Mammography X-Ray – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital Mammography X-Ray – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
Verification	1.2.840.10008.1.1

3.2 SCU Services

The following sections define the services used by DICOM Storage as an SCU.

3.2.1 SCU Application Entity

DICOM Storage provides SCU standard conformance to the DICOM 3.0 SOP Classes that are defined in Table 2.

Table 2 - SCU SOP Class Conformance

SOP Class	SOP Class UID
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50
Verification	1.2.840.10008.1.1

3.3 Association Establishment Policies

3.3.1 General

DICOM Storage contains limitations for maximum PDU size at the range 4k-128k bytes (4096..131072). The default is set to 16k bytes (16384).

3.3.2 Number of Associations

The number of parallel association is only limited by the resource of the underlying operating system. The default is set to maximal 10 associations, but can be modified in a configuration file.

3.3.3 Asynchronous Nature

Asynchronous mode is not supported. All operations are performed synchronously.

3.3.4 Implementation Identifying Information

Galileo CAD will respond with the following implementation identifying parameters by default:

- Implementation Class UID **1.3.6.1.4.1.25746.1.0.1.05**
- Implementation Version Name **GALILEO_CAD**

The Implementation Class UID is derived from the DICOM Standard PS 3.5 -2004, Annex B & Annex C, where the number 25746 is the unique identifier given to ARCADIA LAB srl, by IANA.

3.3.5 Network Configuration

Through Graphical User Interface (GUI) utility “CAD Configure” can be set the Application Entity title, IP Address and port number for Galileo CAD. The utility also sets the Application Entity title, IP Address and port number for any remote devices that want to communicate with Galileo CAD.

3.3.6 Association Initiation by Real World Activity

Galileo CAD will issue a new association with a remote device when CAD results and verification messages are to be transmitted.

3.3.6.1 Verify Communication with a Remote System

3.3.6.2 Associated Real World Activity - Verification

Galileo CAD can issue a Verification request to any of the configured remote devices through the “CAD Scope” GUI. Galileo CAD will respond to any Verification request as long as the Galileo CAD’s service is started.

3.3.6.3 Presentation Context Table - Verification

Galileo CAD will propose for a Verification request the Presentation Contexts and support the transfer syntaxes listed in Table 3.

Table 3 – Verification SOP Class

Abstract Syntax		Transfer Syntax			Extended Negotiation
SOP Class	SOP Class UID	Name	UID	Role	
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None

3.3.6.4 SOP Specific Conformance – Verification

The response codes for the DICOM Verification message are displayed in Table 4. If there was an error in creating the Verification response, no response shall be sent.

Table 4 - Verification Response Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000	None	Operation performed properly

3.3.6.5 Receive Images from a Remote System

3.3.6.6 Associated Real World Activity – Receive

Galileo CAD will receive images from remote devices that wish to have CAD process the patient.

3.3.6.7 Presentation Context Table – Receive

Galileo CAD supports the transfer syntaxes listed in Table 5. When sending CAD output, Galileo CAD will propose the Presentation Contexts listed in Table 6.

Table 5 - Receive Image Transfer Syntaxes

Transfer Syntaxes	UID
Implicit VR Little Endian	1.2.840.10008.1.2
Explicit Little Endian	1.2.840.10008.1.2.1
Explicit Big Endian	1.2.840.10008.1.2.2

Table 6 – Presentation Contexts for Receive from Remote Systems

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Digital Mammography X-Ray – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Declared in Table 6	SCP	None
Digital Mammography X-Ray – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Declared in Table 6	SCP	None

3.3.6.8 SOP Specific Conformance – Receive

The Galileo CAD SCP conforms to the SOP’s of the Storage Service Class at Level 2 (Full) as described in Section B.4.1 of PS 3.4 -2004 of the DICOM Standard. Galileo CAD will receive Digital Mammography X-Ray – For Processing images and Digital Mammography X-Ray – For Presentation images. The status codes shown in Table 7 may be sent back to the Remote SCU after the SCU tries to open an association with the Galileo CAD system.

Table 7 – C-Store Response Status Codes

Status Code	Service Status	Meaning	Explanation
A700	Refused	Out of resources	Application out of memory, file system or database write error (e. g. full)
0000	Success	Success	Indicates that an association was successfully established and an image was successfully stored and queued for processing.

The status codes shown in Table 8 may be sent back to the Remote SCU after the SCU tries to open an association with the Galileo CAD system and the association gets rejected.

Table 8 - Reject Association Response Status Codes

Result	Source	Reason	Description
Rejected permanent	Provider	Temporary congestion	Resource limitation: process creation Failed
Rejected transient	User	Application context name not supported	Incorrect application context name

All Type 1 attributes for the Digital Mammography X-Ray Image Information Object Definition (IOD) are expected to be present with a valid value (not zero length), and all Type 2 attributes are expected to be present. The general Type 2 and Type 3 attributes that are required to be present with a valid value (not zero length) are shown below.

The Digital Mammography X-Ray Information Object Definition (IOD) modules are defined in Table 9.

Table 9 – Digital Mammography X-Ray Image IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient	PS 3.3 –2004 C.7.1.1	Table 10	M
	Specimen Identification	PS 3.3 –2004 C.7.1.2	Not used	U
	Clinical Trial Subject	PS 3.3 –2004 C.7.1.3	Not used	U
Study	General Study	PS 3.3 – 2004 C.7.2.1	Table 11	M
	Patient Study	PS 3.3 – 2004 C.7.2.2	Not used	U
	Clinical Trial Study	PS 3.3 – 2004 C.7.2.3	Not used	U
Series	General Series	PS 3.3 – 2004 C.7.3.1	Table 12	M
	Clinical Trial Series	PS 3.3 – 2004 C.7.3.2	Not used	U
	DX Series	PS 3.3 – 2004 C.8.11.1	Table 13	M
	Mammography Series	PS 3.3 – 2004 C.8.11.6	Table 14	M
	Frame of Reference	PS 3.3 – 2004 C.7.4.1	Not Used	C
Equipment	General Equipment	PS 3.3 – 2004 C.7.5.1	Table 15	M
Image	General Image	PS 3.3 – 2004 C.7.6.1	Table 16	M
	Image Pixel	PS 3.3 – 2004 C.7.6.3	Table 17	M
	Contrast/Bolus	PS 3.3 – 2004 C.7.6.4	Not used	U
	Display Shutter	PS 3.3 – 2004 C.7.6.11	Not used	U
	Device	PS 3.3 – 2004 C.7.6.12	Not used	U
	Intervention	PS 3.3 – 2004 C.7.6.13	Not used	U
	DX Anatomy Imaged	PS 3.3 – 2004 C.8.11.2	Table 18	M
	DX Image	PS 3.3 – 2004 C.8.11.3	Table 19	M
	DX Detector	PS 3.3 – 2004 C.8.11.4	Table 20	M
	X-Ray Collimator	PS 3.3 – 2004 C.8.7.3	Not used	U
	DX Positioning	PS 3.3 – 2004 C.8.11.5	Not used	U
	X-Ray Tomo Acquisition	PS 3.3 – 2004 C.8.7.7	Not used	U
	X-Ray Acquisition Dose	PS 3.3 – 2004 C.8.7.8	Not used	U
	X-Ray Generation	PS 3.3 – 2004 C.8.7.9	Not used	U
	X-Ray Filtration	PS 3.3 – 2004 C.8.7.10	Not used	U
	X-Ray Grid	PS 3.3 – 2004 C.8.7.11	Not used	U
	Mammography Image	PS 3.3 – 2004 C.8.11.7	Table 21	M
	Overlay Plane	PS 3.3 – 2004 C.9.2	Not used	C
	Curve	PS 3.3 – 2004 C.10.2	Not used	U
	VOI LUT	PS 3.3 – 2004 C.11.2	Not used	C
Image Histogram	PS 3.3 – 2004 C.11.5	Not used	U	
Acquisition Context	PS 3.3 – 2004 C.7.6.14	Table 23	M	
SOP Common	PS 3.3 – 2004 C.12.1	Table 24	M	

Table 10 - Patient Module Attributes – mandatory – ref. PS 3.3 - 2004 C.7.1.1

Group and Element	VR	Type	Description	Value
(0010,0010)	PN	2	Patient's Name	Patient's full name.
(0010,0020)	LO	2	Patient ID	Primary hospital identification number or code for the patient.

(0010,0030)	DA	2	Patient's Birth	Date Birth date of the patient.
(0010,0040)	CS	2	Patient's Sex	Sex of the named patient. Enumerated Values: M = male F = female O = other
(0008,1120)	SQ	3	Referenced Patient Sequence	Not used
>(0008,1150)	UI	1C	Referenced SOP Class UID	Not used
>(0008,1155)	UI	1C	Referenced SOP Instance UID	Not used
(0010,0032)	TM	3	Patient Birth Time	Not used
(0010,1000)	LO	3	Other Patient ID	Not used
(0010,1001)	PN	3	Other Patient Names	Not used
(0010,2160)	SH	3	Ethnic Group	Not used
(0010,4000)	LT	3	Patient Comments	Not used

Table 11 - General Study Module Attributes – Mandatory - ref. PS 3.3 - 2004 C.7.2.1

Group and Element	VR	Type	Description	Value
(0020,000D)	UI	1	Study Instance UID	Unique identifier for the Study.
(0008,0020)	DA	2	Study Date	Date the Study started.
(0008,0030)	TM	2	Study Time	Time the Study started.
(0008,0090)	PN	2	Referring Physician's Name	Not used
(0020,0010)	SH	2	Study ID	User or equipment generated Study identifier.
(0008,0096)	SQ	3	Referring Physician Identification Sequence	Not used
(0008,0050)	SH	2	Accession Number	A RIS generated number, that identifies the order for the Study.
(0008,1030)	LO	3	Study Description	Not used
(0008,1048)	PN	3	Physicians Of Record	Not used
(0008,1049)	SQ	3	Physician(s) of Record Identification Sequence	Not used
(0008,1060)	PN	3	Name Of Physicians Reading Study	Not used
(0008,1062)	SQ	3	Physician(s) Reading Study Identification Sequence	Not used
(0008,1110)	SQ	3	Referenced Study Sequence	Not used
(0008,1032)	SQ	3	Procedure Code Sequence	Not used

Table 12 - General Series Module Attributes– Mandatory - ref. PS 3.3 - 2004 C.7.3.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG
(0020,000E)	UI	1	Series Instance UID	Unique identifier of the Series.
(0020,0011)	IS	2	Series Number	A number that identifies this Series.
(0020,0060)	CS	2C	Laterality	Laterality of (paired) body part examined. Required if the body part examined is a paired structure and Image Laterality (0020,0062) is not sent. Enumerated Values: R = right

				L = left
(0008,0021)	DA	3	Series Date	Not used
(0008,0031)	TM	3	Series Time	Not used
(0008,1050)	PN	3	Performing Physician's Name	Not used
(0008,1052)	SQ	3	Performing Physician Identification Sequence	Not used
(0018,1030)	LO	3	Protocol Name	Not used
(0008,103E)	LO	3	Series Description	Not used
(0008,1070)	PN	3	Operators' Name	Not used
(0008,1072)	SQ	3	Operator Identification Sequence	Not used
(0008,1111)	SQ	3	Referenced Performed Procedure Step Sequence	Not used
(0018,0015)	CS	3	Body Part Examined	Not used
(0018,5100)	CS	2C	Patient Position	Not used
(0028,0108)	US or SS	3	Smallest Pixel Value in Series	Not used
(0028,0109)	US or SS	3	Largest Pixel Value in Series	Not used
(0040,0275)	SQ	3	Request Attributes Sequence	Not used
(0040,0253)	SH	3	Performed Procedure Step ID	Not used
(0040,0244)	DA	3	Performed Procedure Step Start Date	Not used
(0040,0245)	TM	3	Performed Procedure Step Start Time	Not used
(0040,0254)	LO	3	Performed Procedure Step Description	Not used
(0040,0260)	SQ	3	Performed Protocol Code Sequence	Not used
(0040,0280)	ST	3	Comments on the Performed Procedure Step	Not used

Table 13 – DX Series Module Attributes – mandatory – ref. PS 3.3 - 2004 C.8.11.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG
(0008,1111)	SQ	1C	Referenced Performed Procedure Step Sequence	Not used
(0008,0068)	CS	1	Presentation Intent Type	Identifies the intent of the images that are contained within this Series. Enumerated Values: FOR PRESENTATION, FOR PROCESSING

Table 14 – Mammography Series Module Attributes – mandatory – ref. PS 3.3 – 2004 C.8.11.6

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG

Table 15 - General Equipment Module Attributes - Mandatory – ref. PS 3.3 - 2004 C.7.5.1

Group and Element	VR	Type	Description	Value
(0008,0070)	LO	2	Manufacturer	Manufacturer of the equipment that produced the composite instances.
(0008,0080)	LO	3	Institution Name	Not used
(0008,0081)	ST	3	Institution Address	Not used
(0008,1010)	SH	3	Station Name	Not used
(0008,1040)	LO	3	Institutional Department Name	Not used
(0008,1090)	LO	3	Manufacturer's Model Name	Not used
(0018,1000)	LO	3	Device Serial Number	Not used
(0018,1020)	LO	3	Software Version	Not used
(0018,1050)	DS	3	Spatial Resolution	Not used
(0018,1200)	DA	3	Date of Last Calibration	Not used
(0018,1201)	TM	3	Time of Last Calibration	Not used
(0028,0120)	US	3	Pixel Padding Value	Not used

Table 16 – General Image Module Attributes – mandatory – ref. PS 3.3 - 2004 C.7.6.1

Group and Element	VR	Type	Description	Value
(0020,0013)	IS	2	Instance Number	A number that identifies this image.
(0020,0020)	CS	2C	Patient Orientation	Patient direction of the rows and columns of the image. Required if image does not require Image Orientation (Patient) (0020,0037) and Image Position (Patient) (0020,0032).
(0008,0023)	DA	2C	Content Date	Not used
(0008,0033)	TM	2C	Content Time	Not used
(0008,0008)	CS	3	Image Type	Not used
(0020,0012)	IS	3	Acquisition Number	Not used
(0008,0022)	DA	3	Acquisition Date	Not used
(0008,0032)	TM	3	Acquisition Time	Not used
(0008,002A)	DT	3	Acquisition Datetime	Not used
(0008,1140)	SQ	3	Referenced Image Sequence	Not used
(0008,2111)	ST	3	Derivation Description	Not used
(0008,9215)	SQ	3	Derivation Code Sequence	Not used
(0008,2112)	SQ	3	Source Image Sequence	Not used
(0008,113A)	SQ	3	Referenced Waveform Sequence	Not used
(0020,1002)	IS	3	Images in Acquisition	Not used
(0020,4000)	LT	3	Image Comments	Not used
(0028,0300)	CS	3	Quality Control Image	Not used
(0028,0301)	CS	3	Burned In Annotation	Not used
(0028,2110)	CS	3	Lossy Image Compression	Not used
(0028,2112)	DS	3	Lossy Image Compression Ratio	Not used
(0028,2114)	CS	3	Lossy Image Compression Method	Not used
(0088,0200)	SQ	3	Icon Image Sequence	Not used
(2050,0020)	CS	3	Presentation LUT Shape	Not used

Table 17 – Image Pixel Module Attributes – mandatory – ref. PS 3.3 - 2004 C.7.6.3

Group and Element	VR	Type	Description	Value
(0028,0002)	US	1	Samples per Pixel	Number of samples (planes) in this image.
(0028,0004)	CS	1	Photometric Interpretation	Specifies the intended interpretation of the pixel data: MOMOCHROME1 / MOMOCHROME2
(0028,0010)	US	1	Rows	Number of rows in the image.
(0028,0011)	US	1	Columns	Number of columns in the image.
(0028,0100)	US	1	Bits Allocated	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated.
(0028,0101)	US	1	Bits Stored	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored.
(0028,0102)	US	1	High Bit	Most significant bit for pixel sample data. Each sample shall have the same high bit.
(0028,0103)	US	1	Pixel Representation	Data representation of the pixel samples. Each sample shall have the same pixel representation. Enumerated Value: 0000H = unsigned integer 0001H = 2's complement.
(7FE0,0010)	OW or OB	1	Pixel Data	A data stream of the pixel samples that comprise the Image.
(0028,0006)	US	1C	Planar Configuration	Not used
(0028,0034)	IS	1C	Pixel Aspect Ratio	Not used
(0028,0106)	US or SS	3	Smallest Image Pixel Value	Not used
(0028,0107)	US or SS	3	Largest Image Pixel Value	Not used
(0028,1101)	US or SS	1C	Red Palette Color Lookup Table Descriptor	Not used
(0028,1102)	US or SS	1C	Green Palette Color Lookup Table Descriptor	Not used
(0028,1103)	US or SS	1C	Blue Palette Color Lookup Table Descriptor	Not used
(0028,1201)	OW	1C	Red Palette Color Lookup Table Data	Not used
(0028,1202)	OW	1C	Green Palette Color Lookup Table Data	Not used
(0028,1203)	OW	1C	Blue Palette Color Lookup Table Data	Not used

Table 18 – DX Anatomy Imaged Module Attributes – mandatory – ref. PS 3.3 – 2004 C.8.11.2

Group and Element	VR	Type	Description	Value
(0020,0062)	CS	1	Image Laterality	Laterality of (possibly paired) body part (as described in Anatomic Region Sequence (0008,2218)) examined. Enumerated Values: R = right L = left

(0008,2218)	SQ	2	Anatomic Region Sequence	Sequence that identifies the anatomic region of interest in this image (i.e. external anatomy, surface anatomy, or general region of the body). Defined Context ID for the Anatomic Region Sequence is 4009 on ref. PS 3.16. This is the anatomic region that is placed on the table or bucky for examination.
>(0008,0100)	SH	1C	Code Value	T-04000
>(0008,0102)	SH	1C	Coding Scheme Designator	SNM3
>(0008,0104)	LO	1C	Code Meaning	BREAST
>(0008,2220)	SQ	3	Anatomic Region Modifier Sequence	Not used
(0008,2228)	SQ	3	Primary Anatomic Structure Sequence	Not used

Table 19 – DX Image Module Attributes – mandatory – ref. PS 3.3 - 2004 C.8.11.3

Group and Element	VR	Type	Description	Value
(0008,0008)	CS	1	Image Type	Image identification characteristics.
(0028,0002)	US	1	Samples per Pixel	Number of samples in this image. Shall have an Enumerated Value of 1.
(0028,0004)	CS	1	Photometric Interpretation	Specifies the intended interpretation of the pixel data: MOMOCHROME1 / MOMOCHROME2
(0028,0100)	US	1	Bits Allocated	Number of bits allocated for each pixel sample. 8 / 16
(0028,0101)	US	1	Bits Stored	Number of bits stored for each pixel sample. 6 to 16.
(0028,0102)	US	1	High Bit	Most significant bit for pixel sample data. Value of Bits Stored - 1
(0028,0103)	US	1	Pixel Representation	Data representation of the pixel samples. Enumerated Value: 0000H = unsigned integer.
(0028,1040)	CS	1	Pixel Intensity Relationship	The relationship between the Pixel sample values and the X-Ray beam intensity. Enumerated Values: LIN, LOG
(0028,1041)	SS	1	Pixel Intensity Relationship Sign	The sign of the relationship between the Pixel sample values stored in Pixel Data (7FE0,0010) and the X-Ray beam intensity. Enumerated Values: 1, -1
(0028,1052)	DS	1	Rescale Intercept	The value b in the relationship between stored values (SV) in Pixel Data (7FE0,0010) and the output units specified in Rescale Type (0028,1054). Output units = m*SV + b. Enumerated Value: 0
(0028,1053)	DS	1	Rescale Slope	m in the equation specified by Rescale Intercept (0028,1052). Enumerated Value: 1
(0028,1054)	LO	1	Rescale Type	Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052). Enumerated Value: US = Unspecified
(2050,0020)	CS	1	Presentation LUT Shape	Specifies an identity transformation for the Presentation LUT, other than to account for the

				value of Photometric Interpretation (0028,0004), such that the output of all grayscale transformations defined in the IOD containing this Module are defined to be P-Values. Enumerated Values: IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2. INVERSE - output after inversion is in PValues- shall be used if Photometric Interpretation (0028,0004) is MONOCHROME1.
(0028,2110)	CS	1	Lossy Image Compression	Specifies whether an Image has undergone lossy compression. Enumerated Value: 00 = Image has NOT been subjected to lossy compression
(0028,2112)	DS	1	Lossy Image Compression Ratio	Not used
(0008,2111)	ST	3	Derivation Description	Not used
(0018,1400)	LO	3	Acquisition Device Processing Description	Not used
(0018,1401)	LO	3	Acquisition Device Processing Code	Not used
(0020,0020)	CS	1	Patient Orientation	Patient direction of the rows and columns of the image.
(0050,0004)	CS	3	Calibration Image	Not used
(0028,0301)	CS	1	Burned In Annotation	Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired. Enumerated Value: NO
(0028,3010)	SQ	1C	VOI LUT Sequence	Not used
(0028,1050)	DS	1C	Window Center	Defines a Window Center for display. Required if Presentation Intent Type (0008,0068) is FOR PRESENTATION and VOI LUT Sequence (0028,3010) is not present. May also be present if VOI LUT Sequence (0028,3010) is present.
(0028,1051)	DS	1C	Window Width	Window Width for display. Required if Window Center (0028,1050) is sent.
(0028,1055)	LO	3	Window Center & Width Explanation	Not used

Table 20 – DX Detector Module Attributes – mandatory – ref. PS 3.3 - 2004 C.8.11.4

Group and Element	VR	Type	Description	Value
(0018,7004)	CS	2	Detector Type	The type of detector used to acquire this image. Defined Terms: DIRECT = X-Ray photoconductor SCINTILLATOR = Phosphor used
(0018,7005)	CS	3	Detector Configuration	Not used

(0018,7006)	LT	3	Detector Description	Not used
(0018,7008)	LT	3	Detector Mode	Not used
(0018,700A)	SH	3	Detector ID	Not used
(0018,700C)	DA	3	Date of Last Detector Calibration	Not used
(0018,700E)	TM	3	Time of Last Detector Calibration	Not used
(0018,7010)	IS	3	Exposures on Detector Since Last Calibration	Not used
(0018,7011)	IS	3	Exposures on Detector Since Manufactured	Not used
(0018,7012)	DS	3	Detector Time Since Last Exposure	Not used
(0018,7014)	DS	3	Detector Active Time	Not used
(0018,7016)	DS	3	Detector Activation Offset From Exposure	Not used
(0018,701A)	DS	3	Detector Binning	Not used
(0018,7000)	CS	3	Detector Conditions Nominal Flag	Not used
(0018,7001)	DS	3	Detector Temperature	Not used
(0018,6000)	DS	3	Sensitivity	Not used
(0018,1147)	CS	3	Field of View Shape	Not used
(0018,1149)	IS	3	Field of View Dimension(s)	Not used
(0018,7030)	DS	1C	Field of View Origin	Not used
(0018,7032)	DS	1C	Field of View Rotation	Not used
(0018,7034)	CS	1C	Field of View Horizontal Flip	Not used
(0018,1164)	DS	1	Imager Pixel Spacing	Physical distance measured at the front plane of the detector housing between the center of each image pixel specified by a numeric pair - row spacing value (delimiter) column spacing value in mm.
(0018,7020)	DS	3	Detector Element Physical Size	Not used
(0018,7022)	DS	3	Detector Element Spacing	Not used
(0018,7024)	CS	3	Detector Active Shape	Not used
(0018,7026)	DS	3	Detector Active Dimension(s)	Not used
(0018,7028)	DS	3	Detector Active Origin	Not used

Table 21 – Mammography Image Module Attributes – mandatory – ref. PS 3.3 – 2004 C.8.11.7

Group and Element	VR	Type	Description	Value
(0018,1508)	CS	1	Positioner Type	MAMMOGRAPHIC
(0018,1110)	DS	3	Distance Source to Detector	Not used
(0018,1111)	DS	3	Distance Source to Patient	Not used
(0018,1510)	DS	3	Positioner Primary Angle	Not used
(0018,1511)	DS	3	Positioner Secondary Angle	Not used
(0020,0062)	CS	1	Image Laterality	Laterality of the region examined. Enumerated Values: R = right L = left
(0040,0318)	CS	1	Organ Exposed	BREAST
(0028,1300)	CS	3	Implant Present	Not used

(0028,1350)	CS	3	Partial View	Not used
(0028,1351)	ST	3	Partial View Description	Not used
(0008,2218)	SQ	1	Anatomic Region Sequence	Sequence that identifies the anatomic region of interest in this image. Defined Context ID for the Anatomic Region Sequence is 4013 on ref. PS 3.16
>(0008,0100)	SH	1C	Code Value	T-04000
>(0008,0102)	SH	1C	Coding Scheme Designator	SNM3
>(0008,0104)	LO	1C	Code Meaning	BREAST
(0054,0220)	SQ	1	View Code Sequence	Sequence that describes the projection of the anatomic region of interest on the image receptor. Only a single Item shall be permitted in this sequence.
>(0008,0100)	SH	1C	Code Value	See Table 22
>(0008,0102)	SH	1C	Coding Scheme Designator	See Table 22
>(0008,0104)	LO	1C	Code Meaning	See Table 22
>(0054,0222)	SQ	2	View Modifier Code Sequence	Zero items in this sequence

Table 22 - View for Mammography – ref. PS 3.16 –2004 CID 4014

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SNM3	R-10224	medio-lateral
SNM3	R-10226	medio-lateral oblique
SNM3	R-10228	latero-medial
SNM3	R-10230	latero-medial oblique
SNM3	R-10242	cranio-caudal
SNM3	R-10244	caudo-cranial (from below)
SNM3	R-102D0	superolateral to inferomedial oblique
SNM3	R-102CF	exaggerated cranio-caudal
SRT	R-1024A	cranio-caudal exaggerated laterally
SRT	R-1024B	cranio-caudal exaggerated medially

Table 23 – Acquisition Context Module Attributes – ref. PS 3.3 - 2004 C.7.6.14

Group and Element	VR	Type	Description	Value
(0040,0555)	SQ	2	Acquisition Context Sequence	Not used
(0040,0556)	ST	3	Acquisition Context Description	Not used

Table 24 - SOP Common Module Attributes – ref. PS 3.3 - 2004 C.12.1

Group and Element	VR	Type	Description	Value
(0008,0016)	UI	1	SOP Class UID	“1.2.840.10008.5.1.4.1.1.1.2.1”, which represents FOR PROCESSING or “1.2.840.10008.5.1.4.1.1.1.2”, which represents FOR PRESENTATION
(0008,0018)	UI	1	SOP Instance UID	Uniquely identifies the SOP Instance.
(0008,0005)	CS	1C	Specific Character Set	Not used
(0008,0012)	DA	3	Instance Creation Date	Not used

(0008,0013)	TM	3	Instance Creation Time	Not used
(0008,0014)	UI	3	Instance Creator UID	Not used
(0008,0110)	SQ	3	Coding Scheme Identification Sequence	Not used
(0008,0201)	SH	3	Timezone Offset From UTC	Not used
(0018,A001)	SQ	3	Contributing Equipment Sequence	Not used
(0020,0013)	IS	3	Instance Number	Not used
(0100,0410)	CS	3	SOP Instance Status	Not used
(0100,0420)	DT	3	SOP Authorization Date and Time	Not used
(0100,0424)	LT	3	SOP Authorization Comment	Not used
(0100,0426)	LO	3	Authorization Equipment Certification Number	Not used
(4FFE,0001)	SQ	3	MAC Parameters Sequence	Not used
(FFFA,FFFA)	SQ	1	Digital Signatures Sequence	Not used
(0400,0500)	SQ	1C	Encrypted Attributes Sequence	Not used

3.3.6.9 Output of CAD Results to a Remote System

3.3.6.10 Associated Real World Activity – CAD Output

Galileo CAD will issue a storage request (DICOM C-STORE) when it is done processing the images for the patient case. The CAD results will be sent over a single association to the configured remote device. Galileo CAD will send one DICOM structured report per image.

3.3.6.11 Presentation Context Table – CAD Output

When sending CAD output, Galileo CAD will propose the Presentation Contexts and support the transfer syntaxes listed in Table 25.

Table 25 – Presentation Contexts for CAD Output to Remote Device

Abstract Syntax		Transfer Syntax			Extended Negotiation
SOP Class	SOP Class UID	Name	UID	Role	
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

3.3.6.12 SOP Specific Conformance – CAD Output

Galileo CAD will process each image to determine the existence of any suspicious regions. The results of this processing will be encoded into a single DICOM Mammography CAD Structured Report that will be sent to the remote system.

Galileo CAD performs a C-STORE request of the DICOM Structured Report to the configured remote device(s) and processes the C-STORE response message according to Table 26. Note that failure to open an association to a remote device will cause the patient image to be marked as failed in the Galileo CAD list. The system retries to reconnect to the remote device every *n* seconds (where *n* is a *timeout* parameter), in order to send the CAD output.

Table 26 – Structured Report C-STORE Response Codes

Service Status	Further Meaning	Protocol Codes	Description
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Success	Success	0x0000	Operation performed properly. Patient image is marked as completed in the Galileo CAD list.
Non-Success	Any message that was not successful, such as a Refusal, Error, Failure, or Warning.	Non-Zero	Patient image is marked as failed to send Structured Report in the Galileo CAD list.

Table 27 shows the DICOM information object definition (IOD) modules that are necessary to create the DICOM Mammography CAD Structured Report.

Table 27 - Structured Report IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient	PS 3.3 – 2004 C.7.1.1	Table 28	M
Study	General Study	PS 3.3 – 2004 C.7.2.1	Table 29	M
	Patient Study	PS 3.3 – 2004 C.7.2.2	Table 30	U
Series	SR Document Series	PS 3.3 – 2004 C.17.1	Table 31	M
Equipment	General Equipment	PS 3.3 – 2004 C.7.5.1	Table 32	M
Document	SR Document General	PS 3.3 – 2004 C.17.2	Table 33	M
	SR Document Content	PS 3.3 – 2004 C.17.3	Table 35	M
	SOP Common	PS 3.3 – 2004 C.12.1	Table 34	M

3.3.6.12.1 Storage of CAD Results – Mammography CAD Structured Report

Galileo CAD will process each image to determine the existence of any suspicious regions. The results of this processing will be combined into a single DICOM Mammography CAD Structured Reporting message that will be sent to the remote system (that is if the remote device was configured to receive this output).

A high-level overview of the structure of the DICOM Mammography CAD Structured Report is shown in Figure 3.1. This figure shows that there are five nodes that exist from the root node: the Language of Content Item and Descendents, the Image Library, the Mammography CAD Overall Impressions / Recommendations, the Summary of Detections and the Summary of Analyses.

The Language of Content Item and Descendents indicates that the language of the report is English and the country of the language is the United States. The Image Library contains an entry for each image in the study. It contains the SOP Class UID and Instance UID and any of the following values if they are included in the image header: the Image Laterality, the Image View, the Image View Modifier, the Patient Orientation Row, the Patient Orientation Column, the Study Date, the Study Time, the Content Date, the Content Time, the Horizontal Imager Pixel Spacing, and the Vertical Imager Pixel Spacing. The node position of each image is significant, for it's the node position, not the Instance UID, which is used for reference by each CAD detection. The Mammography CAD Overall Impressions / Recommendations node contains an overall status summary of the CAD processing. The status values will be either "All algorithms succeeded; without findings" or "All algorithms succeeded; with findings". The Mammography CAD Overall Impressions / Recommendations node will also contain a Single Image Finding for each detection found in the image and determines if the detection is a density or a calcification cluster. The Single Image Finding contains the CAD algorithm name and version information as well as the coordinates of the center point and outline of each detection. Next, the Summary of Detections branch contains information on the algorithms that were run successfully on the images. Finally, The Summary of Analyses container is not populated.

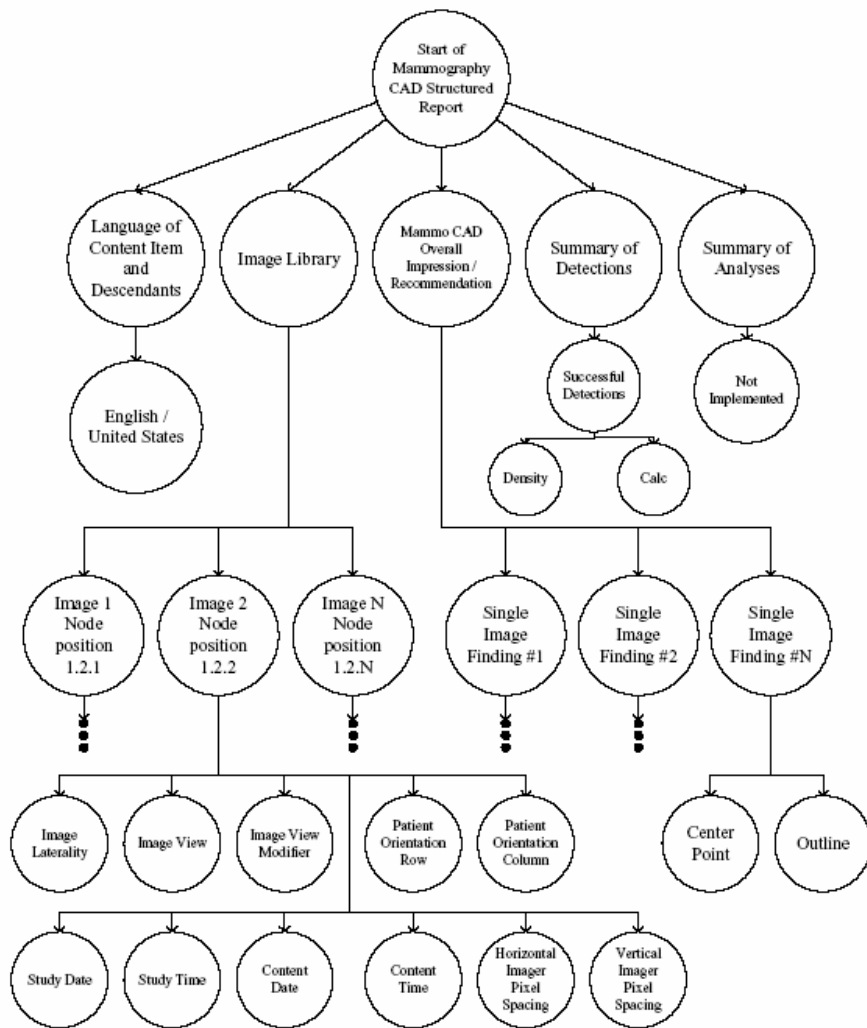


Figure 3.1 - Mammography CAD Structured Report Overview

Table 28 - Patient Module Attributes – mandatory – ref. PS 3.3 - 2004 C.7.1.1

Group and Element	VR	Type	Description	Value
(0010,0010)	PN	2	Patient's Name	Patient's full name obtained from the image header.
(0010,0020)	LO	2	Patient ID	Primary hospital identification number or code for the patient obtained from the image header.
(0010,0030)	DA	2	Patient's Birth Date	Birth date of the patient obtained from the image header.
(0010,0040)	CS	2	Patient's Sex	Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other
(0008,1120)	SQ	3	Referenced Patient Sequence	Not used
>(0008,1150)	UI	1C	Referenced SOP Class UID	Not used

>(0008,1155)	UI	1C	Referenced SOP Instance UID	Not used
(0010,0032)	TM	3	Patient Birth Time	Not used
(0010,1000)	LO	3	Other Patient ID	Not used
(0010,1001)	PN	3	Other Patient Names	Not used
(0010,2160)	SH	3	Ethnic Group	Not used
(0010,4000)	LT	3	Patient Comments	Not used

Table 29 - General Study Module Attributes – Mandatory - ref. PS 3.3 - 2004 C.7.2.1

Group and Element	VR	Type	Description	Value
(0020,000D)	UI	1	Study Instance UID	Unique identifier for the Study obtained from the image header.
(0008,0020)	DA	2	Study Date	The current date of the CAD processing.
(0008,0030)	TM	2	Study Time	The current time of the CAD processing.
(0008,0090)	PN	2	Referring Physician's Name	Not used
(0020,0010)	SH	2	Study ID	User or equipment generated Study identifier obtained from the image header.
(0008,0050)	SH	2	Accession Number	A RIS generated number, which identifies the order for the Study obtained from the image header.
(0008,1030)	LO	3	Study Description	Not used
(0008,1048)	PN	3	Physicians Of Record	Not used
(0008,1049)	SQ	3	Physician(s) of Record Identification Sequence	Not used
(0008,1060)	PN	3	Name Of Physicians Reading Study	Not used
(0008,1062)	SQ	3	Physician(s) Reading Study Identification Sequence	Not used
(0008,1110)	SQ	3	Referenced Study Sequence	Not used
(0008,1032)	SQ	3	Procedure Code Sequence	Not used

Table 30 - Patient Study Module Attributes – Optional - ref. PS 3.3 - 2004 C.7.2.2

Group and Element	VR	Type	Description	Value
(0008,1080)	LO	3	Admitting Diagnosis Description	Not used
(0010,1010)	AS	3	Patient's Age	Not used
(0010,1020)	DS	3	Patient Size	Not used
(0010,1030)	DS	3	Patient Weight	Not used
(0010,2180)	SH	3	Occupation	Not used
(0010,21B0)	LT	3	Additional Patient History	Not used

Table 31 - SR Document Series Module Attributes - Mandatory - ref. PS 3.3 - 2004 C.17.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality Type	"SR"
(0020,000E)	UI	1	Series Instance UID	1.3.6.1.4.1.25746.1.1.3.XXXX.YYY.ZZZZ.NN, where XXXX = host unique identifier, YYY = PID, ZZZZ = timestamp (time in elapsed seconds) and NN = progressive counter

(0020,0011)	IS	1	Series Number	1
(0008,1111)	SQ	2	Referenced Study Component Sequence	Not used

Table 32 - General Equipment Module Attributes - Mandatory - ref. PS 3.3 - 2004 C.7.5.1

Group and Element	VR	Type	Description	Value
(0008,0070)	LO	2	Manufacturer	"ARCADIA LAB Srl"
(0008,0080)	LO	3	Institution Name	Not used
(0008,0081)	ST	3	Institution Address	Not used
(0008,1010)	SH	3	Station Name Unit #	Not used
(0008,1040)	LO	3	Institutional Department Name	Not used
(0008,1090)	LO	3	Manufacturer's Model Name	Not used
(0018,1000)	LO	3	Device Serial Number	Not used
(0018,1020)	LO	3	Software Version	Not used
(0018,1050)	DS	3	Spatial Resolution mm	Not used
(0018,1200)	DA	3	Date of Last Calibration	Not used
(0018,1201)	TM	3	Time of Last Calibration	Not used
(0028,0120)	US	3	Pixel Padding Value	Not used

Table 33 - SR Document General Module Attributes – ref. PS 3.3 - 2004 C.17.2 – Table C.17-2

Group and Element	VR	Type	Description	Value
(0020,0013)	SH	1	Instance Number	"1"
(0040,A491)	CS	1	Completion Flag	"PARTIAL"
(0040,A492)	LO	3	Completion Flag Description	Not used
(0040,A493)	CS	1	Verification Flag	"UNVERIFIED"
(0008,0023)	DA	1	Content Date	The current date of the CAD processing.
(0008,0033)	TM	1	Content Time	The current time of the CAD processing.
(0040,A073)	SQ	1C	Verifying Observer Sequence	Not used
(0040,A360)	SQ	1C	Predecessor Documents Sequence	Not used
(0040,A525)	SQ	1C	Identical Documents Sequence	Not used
(0040,A370)	SQ	1C	Referenced Request Sequence	Not used
(0040,A372)	SQ	2	Performed Procedure Code Sequence	Not used, zero Items in this sequence.
(0040,A375)	SQ	1C	Current Requested Procedure Evidence Sequence	Not used
(0040,A385)	SQ	1C	Pertinent Other Evidence Sequence	Not used
(0040,A090)	SQ	1C	Equivalent CDA Document Sequence	Not used

Table 34 - SOP Common Module Attributes – Mandatory – ref. PS 3.3 - 2004 C.12.1 – Table C.12-1

Group and Element	VR	Type	Description	Value
(0008,0016)	UI	1	SOP Class UID	"1.2.840.10008.5.1.4.1.1.88.22", which

(0008,0018)	UI	1	SOP Instance UID	represents Enhanced Structured Report. Instance UID for the Structured Report. It will have the format of: 1.3.6.1.4.1.25746.1.1.4.XXXX.YYY.ZZZZ.NN, where XXXX = host unique identifier, YYY = PID, ZZZZ = timestamp (time in elapsed seconds) and NN = progressive counter.
(0008,0005)	CS	1C	Specific Character Set	Not used
(0008,0012)	DA	3	Instance Creation Date	Current date of the CAD processing.
(0008,0013)	TM	3	Instance Creation Time	Current time of the CAD processing.
(0008,0014)	UI	3	Instance Creator UID	Implementation UID of the GALILEO CAD in the format of 1.3.6.1.4.1.25746.1.0.1.05.
(0008,001A)	UI	3	Related General SOP Class ID	Not used
(0008,001B)	UI	3	Original Specialized SOP Class UID	Not used
(0008,0110)	SQ	3	Coding Scheme Identification Sequence	Sequence of items that map values of Coding Scheme Designator (0008,0102) to an external coding system registration, or to a private or local coding scheme. One or more items may be present in the sequence.
>(0008,0102)	SH	1	Coding Scheme Designator	“99_OFFIS_DCMTK”
>(0008,010C)	UI	1C	Coding Scheme UID	1.2.276.0.7230010.3.0.0.1
>(0008,0115)	ST	3	Coding Scheme Name	“OFFIS DCMTK Coding Scheme”
>(0008,0116)	ST	3	Responsible Organization	“Kuratorium OFFIS e.V., Escherweg 2, 26121 Oldenburg, Germany”
(0008,0201)	SH	3	Timezone Offset From UTC	Not used
(0018,A001)	SQ	3	Contributing Equipment Sequence	Not used
(0020,0013)	IS	3	Instance Number	“1”
(0100,0410)	CS	3	SOP Instance Status	Not used
(0100,0420)	DT	3	SOP Authorization Date and Time	Not used
(0100,0424)	LT	3	SOP Authorization Comment	Not used
(0100,0426)	LO	3	Authorization Equipment Certification Number	Not used
(0400,0500)	SQ	1C	Encrypted Attributes Sequence	Not used
(0040,A390)	SQ	1C	HL7 Structured Document Reference Sequence	Not used
(4FFE,0001)	SQ	3	MAC Parameters Sequence	Not used
(FFFA,FFFA)	SQ	3	Digital Signatures Sequence	Not used

Table 35 - SR Document Content – Ref. PS 3.3 - 2004 C.17-3 – Table C.17-4

Group and Element	VR	Type	Description	Value
(0040,A040)	CS	1	Value Type	“CONTAINER”
(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>(0008,0100)	SH	1C	Code Value	“111036”
>(0008,0102)	SH	1C	Coding Scheme Designator	DCM
>(0008,0104)	LO	1C	Code Meaning	“Mammography CAD Report”
(0040,A050)	CS	1	Continuity of Content	"SEPARATE"
(0040,A504)	SQ	1C	Content Template Sequence	Not used

(0040,A730)	SQ	1	Content Sequence	5
			<i>Content Sequence</i>	# 1: Include Sequence for “Language of Content Item and Descendants”. See Table 36a
			<i>Content Sequence</i>	# 2: Include “Image Library” container. See Table 36b.
			<i>Content Sequence</i>	# 3: Include “Mammography CAD Overall Impression / Recommendation” container. See Table 37.
			<i>Content Sequence</i>	# 4: Include “Summary of Detections”. See Table 38.
			<i>Content Sequence</i>	# 5: Include “Summary of Analyses”. See Table 39.

Table 36a - Language of Content Item and Descendants

Group and Element	VR	Type	Description	Value
>(0040,A010)	CS	1	Relationship Type	“HAS CONCEPT MOD”
>(0040,A040)	CS	1	Value Type	“CODE”
>(0040, A043)	SQ	1	Concept-name Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“121049”
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“Language of Content Item and Descendants”
>(0040,A168)	SQ	1	Concept Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“ISO639_2”
>>(0008,0102)	SH	1C	Code Scheme Designator	“eng”
>>(0008,0104)	LO	1C	Code Meaning	“English”

Table 36b - Image Library Container

Group and Element	VR	Type	Description	Value
>(0040,A010)	CS	1	Relationship Type	“CONTAINS”
>(0040,A040)	CS	1	Value Type	“CONTAINER”
>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“111028”
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“Image Library”
>(0040,A050)	CS	1	Continuity Of Content	“SEPARATE”
>(0040,A730)	SQ	1C	Content Sequence	“Mammography CAD Image Library Entry”. Repeat this sequence for each image in the study.
>>(0008,1199)	SQ	1	Referenced SOP Sequence	1
>>>(0008,1150)	UI	1	Referenced SOP Class UID	The SOP Class UID of the image being processed.
>>>(0008,1155)	UI	1	Referenced SOP Instance UID	The SOP Instance UID of the image being processed.
>>(0040,A010)	CS	1	Relationship Type	“CONTAINS”
>>(0040,A040)	CS	1	Value Type	“IMAGE”
>>(0040,A730)	SQ	1C	Content Sequence	0 to 10
>>		1C	<i>Content Sequence</i>	<i>The “Image Laterality” sequence shall be</i>

				<i>present only if tag (0020,0062) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“CODE”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111027”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Image Laterality”
>>>(0040,A168)	SQ	1	Concept Code Sequence	From Context ID 6023 in the DICOM Standard
>>>>(0008,0100)	SH	1C	Code Value	“T-04030” (Left breast), “T-04020” (Right breast), “T-04080” (Both breasts)
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“SNM3”
>>>>(0008,0104)	LO	1C	Code Meaning	“Left breast”, “Right breast”, or “Both breasts”
>>		1C	<i>Content Sequence</i>	<i>The “Image View” sequence shall be present only if tag (0054,0220) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“CODE”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111031”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Image View”
>>>(0040,A168)	SQ	1	Concept Code Sequence	From Context ID 4014 in the DICOM Standard
>>>>(0008,0100)	SH	1C	Code Value	See Table 22
>>>>(0008,0102)	SH	1C	Code Scheme Designator	See Table 22
>>>>(0008,0104)	LO	1C	Code Meaning	See Table 22
>>		1C	<i>Content Sequence</i>	<i>The “Patient Orientation Row” sequence shall be present only if tag (0054,0220) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“CODE”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111044”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Patient Orientation Row”
>>>(0040,A160)	UT	1	Text Value	First value from tag (0020,0020) in image.
>>		1C	<i>Content Sequence</i>	<i>The “Patient Orientation Column” sequence shall be present only if tag (0054,0220) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“CODE”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111043”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Patient Orientation Column”
>>>(0040,A160)	UT	1	Text Value	Second value from tag (0020,0020) in image.

>>		1C	<i>Content Sequence</i>	<i>The “Study Date” sequence shall be present only if tag (0008,0020) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“DATE”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111060”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Study Date”
>>>(0040,A121)	DA	1	Date Value	from tag (0008,0020) in image.
>>		1C	<i>Content Sequence</i>	<i>The “Study Time” sequence shall be present only if tag (0008,0030) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“TIME”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111061”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Study Time”
>>>(0040,A122)	TM	1	Time Value	from tag (0008,0030) in image.
>>		1C	<i>Content Sequence</i>	<i>The “Content Date” sequence shall be present only if tag (0008,0023) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“DATE”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111018”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Content Date”
>>>(0040,A121)	DA	1	Date Value	from tag (0008,0023) in image.
>>		1C	<i>Content Sequence</i>	<i>The “Content Time” sequence shall be present only if tag (0008,0023) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“TIME”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111019”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Content Time”
>>>(0040,A122)	TM	1	Time Value	from tag (0008,0033) in image.
>>		1C	<i>Content Sequence</i>	<i>The “Horizontal Imager Pixel Spacing” sequence shall be present only if tag (0018,1164) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“NUM”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111026”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Horizontal Imager Pixel Spacing”
>>>(0040,A300)	SQ	1	Measured Value Sequence	1

>>>>(0040,08EA)	SQ	1	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“um”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“UCUM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“micrometer”
>>>>(0040,A30A)	DS	1	Numeric Value	First value from tag (0018,1164) in image.
>>		1C	<i>Content Sequence</i>	<i>The “Vertical Imager Pixel Spacing” sequence shall be present only if tag (0018,1164) is present in the image.</i>
>>>(0040,A010)	CS	1	Relationship Type	“HAS ACQ CONTEXT”
>>>(0040,A040)	CS	1	Value Type	“NUM”
>>>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111066”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Vertical Imager Pixel Spacing”
>>>(0040,A300)	SQ	1	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	1C	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“um”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“UCUM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“micrometer”
>>>>(0040,A30A)	DS	1	Numeric Value	Second value from tag (0018,1164) in image.

Table 37 - Mammography CAD Overall Impression / Recommendation

Group and Element	VR	Type	Description	Value
>(0040,A010)	CS	1	Relationship Type	“CONTAINS”
>(0040,A040)	CS	1	Value Type	“CODE”
>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“111017”
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“CAD Processing and Findings Summary”
>(0040,A168)	SQ	1	Concept Code Sequence	From Context ID 4015 in the DICOM Standard
>>(0008,0100)	SH	1C	Code Value	“111241” (All algorithms succeeded; without findings), “111242” (All algorithms succeeded; with findings).
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“All algorithms succeeded; without findings” or “All algorithms succeeded; with findings”.
>(0040,A730)	SQ	1C	Content Sequence	Shall be present for each detection found.
			<i>Content Sequence</i>	<i># 1 to n - “Individual Impression/Recommendation”</i>
>>(0040,A010)	CS	1C	Relationship Type	“INFERRED FROM”
>>(0040,A040)	CS	1C	Value Type	“CONTAINER”
>>(0040,A050)	CS	1C	Continuity of Content	“SEPARATE”

>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>(0008,0100)	SH	1C	Code Value	“111034”
>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>(0008,0104)	LO	1C	Code Meaning	“Individual Impression/Recommendation”
>>(0040,A730)	SQ	1C	Content Sequence	2
			<i>Content Sequence</i>	# 1 - “Rendering Intent”
>>>(0040,A010)	CS	1C	Relationship Type	“HAS CONCEPT MOD”
>>>(0040,A040)	CS	1C	Value Type	“CODE”
>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111056”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Rendering Intent”
>>>(0040,A168)	SQ	1C	Concept Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111150”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Presentation Required: Rendering device is expected to present”
			<i>Content Sequence</i>	# 2 - “Single Image Finding”
>>>(0040,A010)	CS	1C	Relationship Type	“CONTAINS”
>>>(0040,A040)	CS	1C	Value Type	“CODE”
>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111059”
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Single Image Finding”
>>>(0040,A168)	SQ	1C	Concept Code Sequence	From Context ID 6014
>>>>(0008,0100)	SH	1C	Code Value	“F-01796” (Mammography breast density) or “F-01775” (Calcification Cluster).
>>>>(0008,0102)	SH	1C	Code Scheme Designator	“SRT”
>>>>(0008,0103)	SH	1C	Code Scheme Version	“1.1”
>>>>(0008,0104)	LO	1C	Code Meaning	“Mammography breast density” or “Calcification Cluster”.
>>>(0040,A730)	SQ	1C	Content Sequence	5
			<i>Content Sequence</i>	# 1 - “Rendering Intent”
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS CONCEPT MOD”
>>>>(0040,A040)	CS	1C	Value Type	“CODE”
>>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111056”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Rendering Intent”
>>>>(0040,A168)	SQ	1C	Concept Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111150”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Presentation Required: Rendering device is expected to present”
			<i>Content Sequence</i>	# 2 - “Algorithm Name”
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,A040)	CS	1C	Value Type	“TEXT”
>>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1

>>>>>(0008,0100)	SH	1C	Code Value	“111001”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Algorithm Name”
>>>>>(0040,a160)	UT	1C	Text Value	“Galileo CAD”
			<i>Content Sequence</i>	# 3 - “Algorithm Version”
>>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>>(0040,A040)	CS	1C	Value Type	“TEXT”
>>>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111003”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Algorithm Version”
>>>>>(0040,A160)	UT	1C	Text Value	“X.Y”, where X.Y equals the current CAD version (“v1.05”).
			<i>Content Sequence</i>	# 4 - “Center”
>>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>>(0040,A040)	CS	1C	Value Type	“SCOORD”
>>>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111010”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Center”
>>>>>(0040,A730)	SQ	1C	Content Sequence	1
>>>>>(0040,A010)	CS	1C	Relationship Type	“SELECTED FROM”
>>>>>(0040,DB73)	UL	1C	Referenced Content Item Identifier	Reference to image based on node position in the image library. See DICOM PS 3.3 –2004 Figure C.17.3-3 for an example.
>>>>>(0070,0022)	FL	1C	Graphic Data	The coordinates (Column, Row) of the center point of the detection.
>>>>>(0070,0023)	CS	1C	Graphic Type	“POINT”
			<i>Content Sequence</i>	# 5 - “Outline”
>>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>>(0040,A040)	CS	1C	Value Type	“SCOORD”
>>>>>(0040,A043)	SQ	1C	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111041”
>>>>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Outline”
>>>>>(0040,A730)	SQ	1C	Content Sequence	1
>>>>>(0040,A010)	CS	1C	Relationship Type	“SELECTED FROM”
>>>>>(0040,DB73)	UL	1C	Referenced Content Item Identifier	Reference to image based on node position in the image library. See DICOM PS 3.3 – 2004 Figure C.17.3-3 for an example.
>>>>>(0070,0022)	FL	1C	Graphic Data	The coordinates that define the outline of the detection. If Graphic Type (0070,0023) is “ELLIPSE” then there shall exist four pixel (column,row) pairs, the first two points specifying the endpoints of the major axis and the second two points specifying the endpoints of the minor axis. If Graphic Type (0070,0023) is “POLYLINE”, then

				a list of five points (column, row pairs) will be given where straight lines are to be drawn from each point and the first and last vertices are equal to enclose the rectangle.
>>>>(0070,0023)	CS	1C	Graphic Type	“ELLIPSE” or “POLYLINE”

Table 38 - Summary of Detections

Group and Element	VR	Type	Description	Value
>(0040,A010)	CS	1	Relationship Type	“CONTAINS”
>(0040,A040)	CS	1	Value Type	“CODE”
>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“111064”
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“Summary of Detections”
>(0040,A168)	SQ	1	Concept Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“111222” if successful. “111225” if failed.
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“Succeeded” or “Not Attempted”
>(0040,A730)	SQ	1C	Content Sequence	1
>>(0040,A010)	CS	1C	Relationship Type	“INFERRED FROM”
>>(0040,A040)	CS	1C	Value Type	“CONTAINER”
>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>(0008,0100)	SH	1C	Code Value	“111063”
>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>(0008,0104)	LO	1C	Code Meaning	“Successful Detections”
>>(0040,A050)	CS	1C	Continuity of Content	“SEPARATE”
>>(0040,A730)	SQ	1C	Content Sequence	2
			<i>Content Sequence</i>	<i># 1 - “Mammography breast density”</i>
>>>(0040,A010)	CS	1C	Relationship Type	“CONTAINS”
>>>(0040,A040)	CS	1C	Value Type	“CODE”
>>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111022”
>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Detection Performed”
>>>(0040,A168)	SQ	1C	Concept Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“F-01796”
>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“SRT”
>>>>(0008,0103)	SH	1C	Coding Scheme Version	“1.1”
>>>>(0008,0104)	LO	1C	Code Meaning	“Mammography breast density”
>>>(0040,A730)	SQ	1C	Content Sequence	1
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,A040)	CS	1C	Value Type	“TEXT”
>>>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111001”
>>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Algorithm Name”
>>>>(0040,A160)	UT	1C	Text Value	“Galileo CAD”

>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,A040)	CS	1C	Value Type	“TEXT”
>>>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111003”
>>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Algorithm Version”
>>>>(0040,A160)	UT	1C	Text Value	“X.Y”, where X.Y equals the current CAD version (e.g. “v1.05”).
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,DB73)	UL	1C	Referenced Content Item Identifier	X\Y\Z, which represents the reference node position of the image processed.
			<i>Content Sequence</i>	# 2 - “Calcification Cluster”
>>>(0040,A010)	CS	1C	Relationship Type	“CONTAINS”
>>>(0040,A040)	CS	1C	Value Type	“CODE”
>>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“111022”
>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>>(0008,0104)	LO	1C	Code Meaning	“Detection Performed”
>>>(0040,A168)	SQ	1C	Concept Code Sequence	1
>>>>(0008,0100)	SH	1C	Code Value	“F-01775”
>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“SRT”
>>>>(0008,0103)	SH	1C	Coding Scheme Version	“1.1”
>>>>(0008,0104)	LO	1C	Code Meaning	“Calcification Cluster”
>>>(0040,A730)	SQ	1C	Content Sequence	1
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,A040)	CS	1C	Value Type	“TEXT”
>>>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111001”
>>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Algorithm Name”
>>>>(0040,A160)	UT	1C	Text Value	“Galileo CAD”
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,A040)	CS	1C	Value Type	“TEXT”
>>>>(0040,A043)	SQ	1C	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	1C	Code Value	“111003”
>>>>>(0008,0102)	SH	1C	Coding Scheme Designator	“DCM”
>>>>>(0008,0104)	LO	1C	Code Meaning	“Algorithm Version”
>>>>(0040,A160)	UT	1C	Text Value	“X.Y”, where X.Y equals the current CAD version (e.g. “v1.05”).
>>>>(0040,A010)	CS	1C	Relationship Type	“HAS PROPERTIES”
>>>>(0040,DB73)	UL	1C	Referenced Content Item Identifier	X\Y\Z, which represents the reference node position of the image processed.

Table 39 - Summary of Analyses

Group and Element	VR	Type	Description	Value
>(0040,A010)	CS	1	Relationship Type	“CONTAINS”
>(0040,A040)	CS	1	Value Type	“CODE”
>(0040,A043)	SQ	1	Concept-name Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“111065”

>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“Summary of Analyses”
>(0040,A168)	SQ	1	Concept Code Sequence	1
>>(0008,0100)	SH	1C	Code Value	“111225”
>>(0008,0102)	SH	1C	Code Scheme Designator	“DCM”
>>(0008,0104)	LO	1C	Code Meaning	“Not Attempted”

4 Communication Profiles

Galileo CAD provides DICOM V3.0 TCP/IP Network Communication support as defined in Part 8 of the DICOM Standard.

4.1 OSI Stack

Not Supported.

4.2 TCP/IP Stack

Galileo CAD inherits its TCP/IP stack from the underlying operating system of the computer upon which it executes. Galileo CAD (SCP) listens by default to port number 5195, unless this is configured differently.

4.2.1 API

The application makes use of the Berkeley Sockets interface on Unix and of the WinSock interface on Win32 platforms.

4.2.2 Physical Media Support

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

5 Extensions/Specializations/Privatizations

Galileo CAD does not use any private group or element codes.

6 Configuration

Galileo CAD configures the application entity, host name, and listen port for itself and remote devices through the “CAD Configure” graphical user interface. The Galileo CAD service must be restarted to have the new values take effect.

7 Support for Extended Character Sets

Galileo CAD supports the default character set (ISO-IR 6 Basic G0 Set).

8 End of Document