



iCAD, Inc.

SecondLook® 300 DICOM Conformance Statement

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DICOM MergeCOM3 Advanced Integrator's Tool Kit
by Merge Technologies, Inc.



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Table of Contents

1 Introduction..... 6

 1.1 Scope and Field of Application..... 6

2 Terminology..... 6

 2.1 Acronyms..... 6

3 Related Documentation..... 7

4 Considerations..... 7

5 Implementation Model..... 7

 5.1 Application Data Flow Diagram..... 7

 5.2 Functional Definitions of Application Entities..... 9

 5.3 Sequencing of Real-World Activities..... 9

6 AE Specifications..... 9

 6.1 AE Specifications for the SecondLook® 300 DICOM service..... 9

 6.1.1 Association Establishment Policies..... 10

 6.1.1.1 General..... 10

 6.1.1.2 Number of Associations..... 10

 6.1.1.3 Asynchronous Nature..... 10

 6.1.1.4 Implementation Identifying Information..... 10

 6.1.2 Association Initiation Policy..... 10

 6.1.2.1 Verify Communication with a Remote System..... 10

 6.1.2.1.1 Associated Real World Activity..... 10

 6.1.2.1.2 Accepted Presentation Contexts..... 11

 6.1.2.1.3 SOP Specific Conformance Statement for SOP Class Verification..... 11

 6.1.2.2 Send Images and Reports to a Remote System..... 11

 6.1.2.2.1 Associated Real World Activity..... 11

 6.1.2.2.2 Accepted Presentation Contexts for the SecondLook® 300 – Storage SOP Classes..... 11

 6.1.2.2.3 SOP Specific Conformance Statement for SOP Class Storage..... 12

 6.1.2.3 Retrieve from a Remote System..... 13

 6.1.2.3.1 Associated Real World Activity..... 13

 6.1.2.3.2 Accepted Presentation Contexts..... 13

 6.1.2.3.3 SOP Specific Conformance Statement for SOP Class Storage..... 13

7 Communication Profiles..... 14

 7.1 Supported Communication Stacks..... 14

 7.2 OSI Stack..... 14

 7.3 TCP/IP Stack..... 14

 7.3.1 Physical Media Supported..... 14

 7.4 Point-to-Point Stack..... 14

8 Extensions/Specializations/Privatizations..... 15

 8.1 Standard Extended/Specialized/Private SOPs..... 15

 8.2 Private Transfer Syntaxes..... 15

9 Configuration..... 15

 9.1 AE Title/Presentation Address Mapping..... 15

 9.2 Configurable Parameters..... 15

10 Support of Extended Character Sets..... 15

A Secondary Capture..... 16

- A.1 Secondary Capture Image Object Definition (IOD) 16
 - A.1.1 Secondary Capture Patient Module 16
 - A.1.2 Secondary Capture General Study Module..... 16
 - A.1.3 Secondary Capture General Series Module 16
 - A.1.4 Secondary Capture General Equipment Module 17
 - A.1.5 Secondary Capture SC Equipment..... 17
 - A.1.6 Secondary Capture General Image Module 17
 - A.1.7 Secondary Capture Image Pixel Module 17
 - A.1.8 Secondary Capture SC Image 18
 - A.1.9 Secondary Capture Overlay Plane Module..... 18
 - A.1.10 Secondary Capture SOP Common Module 18
 - A.1.11 Secondary Capture Extended Attributes..... 19
- B Digital Mammography X-Ray 21
 - B.1 Digital Mammography X-Ray Image Object Definition (IOD) 21
 - B.1.1 Digital Mammography X-Ray – Patient Module..... 21
 - B.1.2 Digital Mammography X-Ray – General Study Module..... 21
 - B.1.3 Digital Mammography X-Ray – General Series Module 22
 - B.1.4 Digital Mammography X-Ray – DX Series Module 22
 - B.1.5 Digital Mammography X-Ray – Mammography Series Module 22
 - B.1.6 Digital Mammography X-Ray – General Equipment Module 22
 - B.1.7 Digital Mammography X-Ray – General Image Module 22
 - B.1.8 Digital Mammography X-Ray – Image Pixel Module 22
 - B.1.9 Digital Mammography X-Ray – DX Anatomy Imaged Module 23
 - B.1.10 Digital Mammography X-Ray – DX Image Module 23
 - B.1.11 Digital Mammography X-Ray – DX Detector Module 24
 - B.1.12 Digital Mammography X-Ray – DX Positioning Module..... 25
 - B.1.13 Digital Mammography X-Ray – Mammography Image Module 25
 - B.1.14 Digital Mammography X-Ray – Overlay Plane Module 27
 - B.1.15 Digital Mammography X-Ray – VOI LUT 27
 - B.1.16 Digital Mammography X-Ray – Acquisition Context..... 27
 - B.1.17 Digital Mammography X-Ray – SOP Common 28
- C Enhanced Structured Report 29
 - C.1 Enhanced Structured Report Image Object Definition 30
 - C.1.1 Enhanced Structured Report Patient Module..... 30
 - C.1.2 Enhanced Structured Report General Study Module..... 30
 - C.1.3 Enhanced Structured Report SR Document Series 31
 - C.1.4 Enhanced Structured Report General Equipment Module..... 31
 - C.1.5 Enhanced Structured Report SR Document General Module..... 31
 - C.1.6 Enhanced Structured Report SR Document Content Module..... 32
 - C.1.7 Enhanced Structured Report SOP Common Module..... 34
- D Mammography CAD Structured Report 35
 - D.1 Mammography CAD Structured Report Image Object Definition 37
 - D.1.1 Mammography CAD Structured Report Patient Module 37
 - D.1.2 Mammography CAD Structured Report General Study Module 37
 - D.1.3 Mammography CAD Structured Report SR Document Series..... 38
 - D.1.4 Mammography CAD Structured Report General Equipment Module 38

D.1.5 Mammography CAD Structured Report SR Document General Module 38

D.1.6 Mammography CAD Structured Report SR Document Content..... 39

D.1.7 Mammography CAD Structured Report Language of Content Item and
Descendants 40

D.1.8 Mammography CAD Structured Report Image Library 40

D.1.9 Mammography CAD Structured Report Mammography CAD Overall Impression
/ Recommendation 44

D.1.10 Mammography CAD Structured Report Summary of Detections 46

D.1.11 Mammography CAD Structured Report Summary of Analyses 47

E Radiotherapy Structure Set (RTSS) 48

F Grayscale Softcopy Presentation State (GSPS) 49

F.1 Grayscale Softcopy Presentation State Image Object Definition (IOD) 49

F.1.1 Grayscale Softcopy Presentation State Patient Module..... 50

F.1.2 Grayscale Softcopy Presentation State General Study Module 50

F.1.3 Grayscale Softcopy Presentation State General Series Module 50

F.1.4 Grayscale Softcopy Presentation State Presentation Series Module 50

F.1.5 Grayscale Softcopy Presentation State General Equipment Module..... 50

F.1.6 Grayscale Softcopy Presentation State Presentation State Module 51

F.1.7 Grayscale Softcopy Presentation State Displayed Area Module 51

F.1.8 Grayscale Softcopy Presentation State Graphic Annotation Module 52

F.1.9 Grayscale Softcopy Presentation State Graphic Layer Module..... 53

F.1.10 Grayscale Softcopy Presentation State Softcopy Presentation State LUT Module..
..... 53

F.1.11 Grayscale Softcopy Presentation State SOP Common Module..... 53

1 Introduction

1.1 Scope and Field of Application

This document is the DICOM Conformance Statement for the SecondLook® 300 developed by iCAD, Inc. Contained in this statement are detailed descriptions of how the SecondLook® 300 collaborates with other medical imaging devices and applications that conform to the DICOM 3.0 standard.

The intended user of this document is involved with software design and system integration. It is understood that this individual is familiar with the concepts and terms used throughout this document. Readers unfamiliar with the DICOM 3.0 standard should consult the actual documentation prior to examining this conformance statement.

2 Terminology

2.1 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 18 (NEMA PS 3.1-18).

3 Related Documentation

- All symbols and abbreviations used herein are described in the Digital Imaging and Communications in Medicine (DICOM) standard, parts 1 through 18 (NEMA PS 3.1-18).

4 Considerations

Readers should note the following points:

- This Conformance Statement by itself does not guarantee successful interoperability of the SecondLook® 300 with any equipment and/or applications offered by other vendors.
- Integration of the SecondLook® 300 with the equipment and/or applications of different vendors are outside the scope of the DICOM 3.0 standard and product conformance statements. Integration and interoperability of different equipment/applications are the sole responsibility of the user.
- In the case of any possible connectivity inferred by a user to exist between the SecondLook® 300 and another product, the user is responsible for testing and verifying the inferred connectivity.
- Future changes to the DICOM 3.0 standard may require alterations to be made to the SecondLook® 300. iCAD, Inc. reserves the right to modify the SecondLook® 300 architecture as needed, in order to meet changing standards.
- The user should ensure that any existing DICOM equipment also changes with the future developments of the DICOM standards. Failure to keep pace with any alterations in the DICOM standards may result in decreased or lost connectivity.

5 Implementation Model

5.1 Application Data Flow Diagram

The implementation Model for the SecondLook® 300 DICOM services is shown in Figure 5-1.

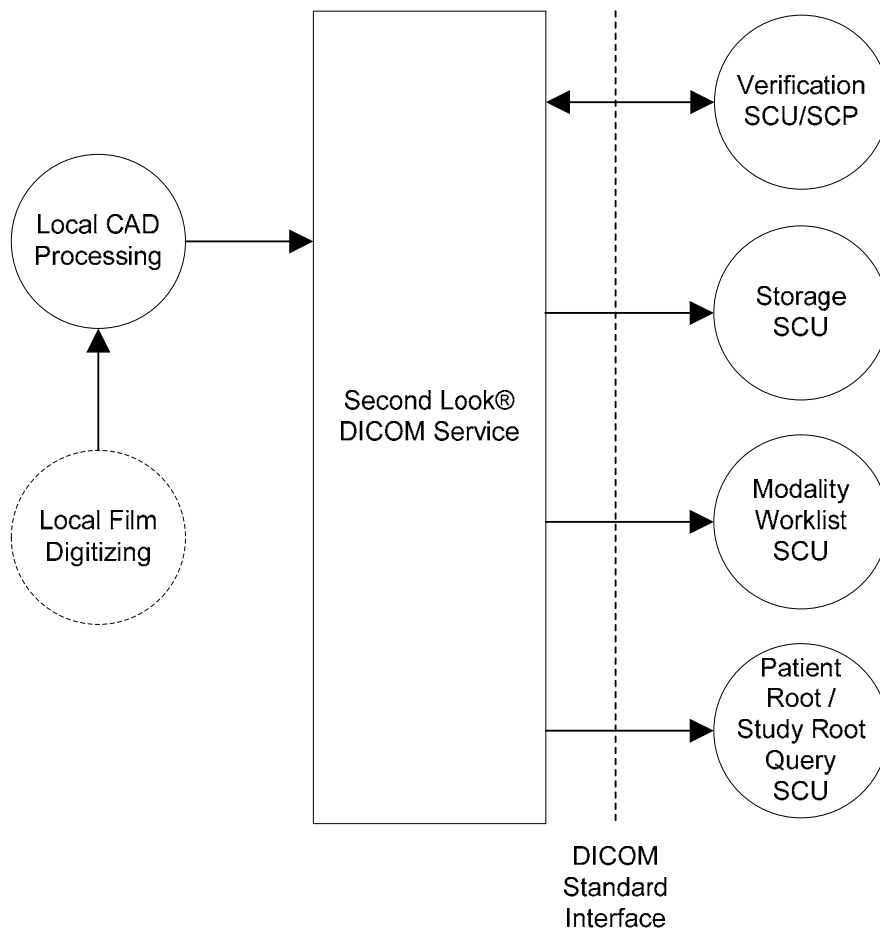


Figure 5-1 Application Data Flow

The SecondLook® 300 supports a number of DICOM services. The SecondLook® 300 will only perform these services when the DICOM service is started. If the DICOM service is not started, then the SecondLook® 300 will not perform these services. The SecondLook® 300 DICOM service can be configured to start automatically when the system is started and will remain active until the system is shutdown.

5.2 Functional Definitions of Application Entities

All communications and image transfer with the remote application is accomplished utilizing the DICOM protocol over a network using the TCP/IP protocol stack.

The SecondLook® 300 DICOM service acts as an SCU for the verification, storage, Modality Worklist Query, Patient Root Query, and Study Root Query SOP classes.

The SecondLook® 300 DICOM service acts as an SCP for the verification SOP class.

Table 1 list the functions supported by the SecondLook® 300 application entity.

Table 1 Supported SCU and SCP DICOM SOP Classes

| SCU | SCP |
|--|--|
| <ul style="list-style-type: none"> • Verification • Storage • Modality Worklist Query • Patient Root Query • Study Root Query | <ul style="list-style-type: none"> • Verification |

5.3 Sequencing of Real-World Activities

No sequencing of Real World activities is required. An association is opened at the beginning of each activity and the association is ended when the activity is completed.

6 AE Specifications

6.1 AE Specifications for the SecondLook® 300 DICOM service

The SecondLook® 300 DICOM service provides support for the DICOM 3.0 SOP Classes as an SCU as described in Table 2.

Table 2 Supported SCU SOP Classes

| SOP Classes as SCU | |
|-------------------------------|--|
| SOP Class UID | SOP Class Name |
| Verification | |
| 1.2.840.10008.1.1 | Verification |
| Storage | |
| 1.2.840.10008.5.1.4.1.1.7 | Secondary Capture |
| 1.2.840.10008.5.1.4.1.1.1.2.1 | Digital Mammography X-Ray – For Processing |
| 1.2.840.10008.5.1.4.1.1.1.2 | Digital Mammography X-Ray – For Presentation |
| 1.2.840.10008.5.1.4.1.1.88.22 | Enhanced Structured Report |
| 1.2.840.10008.5.1.4.1.1.88.50 | Mammography CAD Structured Report |
| 1.2.840.10008.5.1.4.1.1.481.3 | Radiotherapy Structure Set (RTSS) |
| 1.2.840.10008.5.1.4.1.1.11.1 | Grayscale Softcopy Presentation State |
| Query | |
| 1.2.840.10008.5.1.4.31 | Modality Worklist Information Model – FIND |
| 1.2.840.10008.5.1.4.1.2.1.1 | Patient Root Query - FIND |
| 1.2.840.10008.5.1.4.1.2.2.1 | Study Root Query - FIND |

The SecondLook® 300 DICOM service provides support for the DICOM 3.0 SOP Classes as an SCP as described in Table 3.

Table 3 Supported SCP SOP Classes

| SOP Classes as SCP | |
|---------------------|----------------|
| SOP Class UID | SOP Class Name |
| Verification | |
| 1.2.840.10008.1.1 | Verification |

6.1.1 Association Establishment Policies

6.1.1.1 General

The maximum PDU size accepted is 28672. If during association negotiation the maximum sized PDU of the system negotiating with the application is larger than this value, the PDU size will be limited to this value. This value is defined in the mergecom.pro file provided with the MergeCOM-3 Advanced Integrator's Tool Kit.

6.1.1.2 Number of Associations

The SecondLook® 300 DICOM service AE SCU will initiate only one DICOM association at a time to perform a storage, verification, or modality worklist query to a remote host.

The SecondLook® 300 DICOM service AE SCP can have a maximum of one DICOM association open to respond to an echo request.

6.1.1.3 Asynchronous Nature

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

6.1.1.4 Implementation Identifying Information

The Implementation Class UID is "1.2.840.114191.1", and the Implementation Version Name is "SL_500". These values are defined in the mergecom.pro file provided with the MergeCOM-3 Advanced Integrator's Tool Kit.

6.1.2 Association Initiation Policy

The SecondLook® 300 initiates associations for the following activities:

- DICOM communication verification between the SecondLook® 300 and a remote system.
- Sending images and reports from the SecondLook® 300 to a remote system.
- Retrieve a Modality Worklist from a Remote System.
- Perform and Patient Root or Study Root query from a remote system.

6.1.2.1 Verify Communication with a Remote System

6.1.2.1.1 Associated Real World Activity

The SecondLook® 300 sends out a request to test DICOM communications with a remote device via its user interface.

6.1.2.1.2 Accepted Presentation Contexts

Table 4 shows the proposed presentation contexts performed by the SecondLook® 300 as and SCP.

Table 4 SCP Proposed Presentation Contexts

| Presentation Context Table | | | | | |
|----------------------------|-------------------|----------------------------|---------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name | UID | | |
| Verification | 1.2.840.10008.1.1 | 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 |

6.1.2.1.3 SOP Specific Conformance Statement for SOP Class Verification

The SecondLook® 300 DICOM service provides standard conformance for DICOM communication verification.

6.1.2.2 Send Images and Reports to a Remote System

6.1.2.2.1 Associated Real World Activity

The SecondLook® 300 DICOM service can be configured to send images and reports to any number of remote systems. The SecondLook® 300 will digitize a patient case. The images can be configured to be pushed manually or automatically to any remote device. After the SecondLook® 300 has performed CAD on the patient case, a report can configured to be pushed manually or automatically to any remote device.

6.1.2.2.2 Accepted Presentation Contexts for the SecondLook® 300 – Storage SOP Classes

Table 5 shows the proposed presentation contexts for the Storage SOP Classes performed by the SecondLook® 300 as and SCU.

Table 5 Storage SOP Classes Proposed Presentation Contexts

| Presentation Context Table | | | | | |
|--|-----------------------------|--|------------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name | UID | | |
| Secondary Capture | 1.2.840.10008.5.1.4.1.1.7 | 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 |
| | | JPEG Extended (Process 2 & 4) | 1.2.840.10008.1.2.4.51 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical (Process 14) | 1.2.840.10008.1.2.4.57 | SCU | None |
| Digital Mammography X-Ray – For Processing | 1.2.840.10008.5.1.4.1.1.2.1 | 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 |
| | | JPEG Extended (Process 2 & 4) | 1.2.840.10008.1.2.4.51 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical (Process 14) | 1.2.840.10008.1.2.4.57 | SCU | None |
| Digital Mammography X-Ray – For Presentation | 1.2.840.10008.5.1.4.1.1.1.2 | 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 |
| | | JPEG Extended (Process 2 & 4) | 1.2.840.10008.1.2.4.51 | SCU | None |
| | | JPEG Lossless, Non-Hierarchical (Process 14) | 1.2.840.10008.1.2.4.57 | SCU | None |
| Enhanced Structured Report | 1.2.840.10008.5.1.4.1.1.88.22 | 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 |
| 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 |
| Radiotherapy Structure Set (RTSS) | 1.2.840.10008.5.1.4.1.1.481.3 | 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 |
| Grayscale Softcopy Presentation State | 1.2.840.10008.5.1.4.1.1.11.1 | 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 |

6.1.2.2.3 SOP Specific Conformance Statement for SOP Class Storage

If a C-STORE response indicates success, the CAD results and associated images shall be permitted to be deleted.

If a C-STORE response indicates failure, the failure will be logged, the association will be reattempted at a later time, and the CAD results and associated images shall not be deleted. After a specified time period of successive failed attempts, no more attempts will be made, and the CAD results and associated images shall be permitted to be deleted. The retry interval and retry duration are configurable per destination.

All the image and report SOP Classes have the Type 1 attributes populated with a valid value. All Type 2 attributes shall be present and may be of zero length.

Detailed information of the Secondary Capture object creation is shown in Appendix A.

Detailed information of the Digital Mammography X-Ray – For Processing object and the Digital Mammography X-Ray – For Presentation object creation is shown in Appendix B.

Detailed information of the Enhanced Structured Report object creation is shown in Appendix C.

Detailed information of the Mammography CAD Structured Report object creation is shown in Appendix D.

Detailed information of the Radiotherapy Structure Set (RTSS) object creation is shown in Appendix E.

Detailed information of the Grayscale Softcopy Presentation State (GSPS) object creation is shown in Appendix F.

6.1.2.3 Retrieve from a Remote System

6.1.2.3.1 Associated Real World Activity

The SecondLook® 300 DICOM service can query a remote device using a Modality Worklist query, Patient Root query, or Study Root query to aid in populating patient demographics into the SecondLook® 300 patient worklist. A user can configure the SecondLook® 300 to perform a primary search on Patient Name, Patient ID, or Accession. A user can barcode the desired field to perform the query and populate the demographics automatically or the user and type information into the primary search field and press the query button.

6.1.2.3.2 Accepted Presentation Contexts

Table 6 shows the proposed presentation contexts performed by the SecondLook® 300 for the SOP Class Query as an SCU.

Table 6 Proposed Presentation Contexts for SOP Class Query

| Presentation Context Table | | | | | |
|----------------------------|-----------------------------|----------------------------|---------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name | UID | | |
| Modality Worklist Query | 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 | SCU | None |
| | | Explicit VR, Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| Patient Root Query | 1.2.840.10008.5.1.4.1.2.1.1 | 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 |
| Study Root Query | 1.2.840.10008.5.1.4.1.2.2.1 | 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 |

6.1.2.3.3 SOP Specific Conformance Statement for SOP Class Storage

The SecondLook® 300 DICOM service shall populate the Patient Name, Patient ID, or Accession Number in the query request based on information entered from the user.

All fields listed in Table 7 are always included in the query request to ask the SCP to return them for each response.

Table 7 Modality Worklist Query Fields

| Modality Worklist Query: Supported Keys | | | |
|---|--|-------------|--------------------------------|
| Module | Description | Tag | Type |
| Scheduled Procedure Step | Schedule Procedure Step Sequence | (0040,0100) | |
| | > Scheduled Station AE Title | (0040,0001) | Single Value or Null |
| | > Scheduled Procedure Step Start Date | (0040,0002) | Range Matching |
| | > Scheduled Procedure Step Start Time | (0040,0003) | Null |
| | > Modality | (0008,0060) | Single Value or Null |
| | > Scheduled Performing Physicians Name | (0040,0006) | Null |
| | > Scheduled Procedure Step Description | (0040,0007) | Null |
| | > Scheduled Procedure Step ID | (0040,0009) | Null |
| Requested Procedure | Requested Procedure ID | (0040,1001) | Null |
| | Requested Procedure Description | (0032,1060) | Null |
| | Study Instance UID | (0020,000D) | Null |
| Imaging Service Request | Accession Number | (0008,0050) | Single Value, Wildcard or Null |
| | Referring Physician's Name | (0008,0090) | Null |
| Patient Identification | Patient's Name | (0010,0010) | Single Value, Wildcard or Null |

| | | | |
|----------------------------|----------------------|-------------|-----------------------------------|
| | Patient ID | (0010,0020) | Single Value, Wildcard or Null |
| Patient Demographic | Patient's Birth Date | (0010,0030) | Null |
| | Patient's Sex | (0010,0040) | Null |

Table 8 defines the supported keys for the Patient Root query as an SCU.

| Patient Root Query: Supported Keys | | |
|---|-------------|--------------------------|
| Description | Tag | Type |
| Patient's Name | (0010,0010) | Single Value or Wildcard |
| Patient ID | (0010,0020) | Single Value or Wildcard |
| Patient's Birth Date | (0010,0030) | Null Value |
| Patient's Sex | (0010,0040) | Null Value |

Table 9 defines the supported keys for the Study Root query as an SCU.

| Study Root Query: Supported Keys | | |
|---|-------------|--------------------------|
| Description | Tag | Type |
| Study Instance UID | (0020,000D) | Null Value |
| Accession Number | (0008,1030) | Single Value or Wildcard |
| Referring Physicians Name | (0008,0090) | Null Value |
| Referenced Study Sequence | (0008,1110) | Null Value |
| Modalities in Study | (0008,0061) | Single Value or Wildcard |
| Study Description | (0008,1030) | Null Value |
| Study Date | (0008,0020) | Range Matching |
| Study Time | (0008,0030) | Null Value |

7 Communication Profiles

7.1 Supported Communication Stacks

The SecondLook[®] 300 DICOM service provides DICOM V3.0 TCP/IP Network Communication support as defined in Part 8 of the DICOM Standard.

7.2 OSI Stack

Not Supported

7.3 TCP/IP Stack

The SecondLook[®] 300 DICOM service inherits its TCP/IP stack from the Microsoft[®] Windows[®] operating system of the computer upon which it executes.

7.3.1 Physical Media Supported

The physical media supported by the TCP/IP stack are 10BaseT, 100BaseT, and 1000BaseT with an RJ45 connector.

7.4 Point-to-Point Stack

The SecondLook[®] 300 DICOM service does not support the 50-poin ACR-NEMA connection.

8 Extensions/Specializations/Privatizations

8.1 Standard Extended/Specialized/Private SOPs

The use of the RT Structure Set Storage (RTSS) SOP Class is proprietary between iCAD, Inc. and General Electric (GE) Medical Systems. The Modality (0008,0060) attribute value is "MG", to avoid confusion with valid RT Structure Set (RTSS) instances, and it is not recommended that the proprietary instances be archived.

8.2 Private Transfer Syntaxes

Not applicable.

9 Configuration

The SecondLook® 300 DICOM service is configurable from files internal to the application.

9.1 AE Title/Presentation Address Mapping

The local AE title, local host name, and DICOM port number can be configured by authorized personnel.

Systems wanting to receive output from the SecondLook® 300 need to have their AE title, host name, DICOM port number, and desired output entered into the SecondLook® 300 configuration files by authorized personnel.

The presentation address mapping is configured in the mergecom.app file that is provided with the MergeCOM-3 Advanced Integrator's Took Kit.

9.2 Configurable Parameters

The following fields are configurable for the SecondLook® 300:

- AE Title
- Hostname
- IP Address
- Net Mask
- Default Gateway
- Port Number

The following fields are configurable for each output device:

- AE Title
- Hostname/IP Address
- Retry Interval (in seconds)
- Service List and Transfer Syntax
- Image Output(s) to receive
- CAD Report(s) to receive

10 Support of Extended Character Sets

The SecondLook® 300 supports the default character set (ISO-IR 6 Basic G0 Set). Extended Character Sets are not supported.

A Secondary Capture

A.1 Secondary Capture Image Object Definition (IOD)

| IE | Module | Usage |
|---------------------|-------------------|-------|
| Patient | Patient | M |
| Study | General Study | M |
| Series | General Series | M |
| Equipment | General Equipment | U |
| | SC Equipment | M |
| Image | General Image | M |
| | Image Pixel | M |
| | SC Image | M |
| | Overlay Plane | U |
| | SOP Common | M |
| Extended Attributes | | U |

A.1.1 Secondary Capture Patient Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------|-------------|------|----|--|
| Patient's Name | (0010,0010) | 2 | PN | Patient's name obtained from modality worklist or entered by technician. |
| Patient ID | (0010,0020) | 2 | LO | Patient ID obtained from modality worklist or entered by technician. |
| Patient's Birth Date | (0010,0030) | 2 | DA | Patient birth date obtained from modality worklist or entered by technician. |
| Patient's Sex | (0010,0040) | 2 | CS | F = Female |

A.1.2 Secondary Capture General Study Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|--|
| Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the study. |
| Study Date | (0008,0020) | 2 | DA | Date the image was scanned. |
| Study Time | (0008,0030) | 2 | TM | Time the image was scanned. |
| Referring Physician's Name | (0008,0090) | 2 | PN | Name of the patient's referring physician obtained from modality worklist. |
| Study Description | (0008,1030) | 3 | LO | Institution-generated description or classification of the Study (component) performed. |
| Study ID | (0020,0010) | 2 | SH | User or equipment generated study ID obtained from modality worklist. |
| Accession Number | (0008,0050) | 2 | SH | A number that identifies the order for the study obtained from the modality worklist or entered by the technician. |

A.1.3 Secondary Capture General Series Module

| Attribute Name | Tag | Type | VR | Description |
|--------------------|-------------|------|----|--|
| Modality | (0008,0060) | 1 | CS | RG |
| Series Date | (0008,0021) | 3 | DA | Date the image was scanned. |
| Series Time | (0008,0031) | 3 | TM | Time the image was scanned. |
| Series Description | (0008,103E) | 3 | LO | User provided description of the Series. |
| Body Part Examined | (0018,0015) | 3 | CS | Text description of the part of the body examined. Defined Terms: BREAST |

| | | | | |
|---------------------|-------------|----|----|---|
| Series Instance UID | (0020,000E) | 1 | UI | Unique identifier for the series. |
| Series Number | (0020,0011) | 2 | IS | A number that identifies the series: 1 |
| Laterality | (0020,0060) | 2C | CS | Laterality of body part examined. R = right L = left B = both |
| Operators' Name | (0008,1070) | 3 | PN | Technician's initials entered into worklist. |

A.1.4 Secondary Capture General Equipment Module

| Attribute Name | Tag | Type | VR | Description |
|-------------------|-------------|------|----|--|
| Manufacturer | (0008,0070) | 2 | LO | iCAD, Inc. |
| Station Name | (0008,1010) | 3 | SH | Name of computer |
| Software Versions | (0018,1020) | 3 | LO | Manufacturer's designation of software version of the equipment that produced the digitized films. |

A.1.5 Secondary Capture SC Equipment

| Attribute Name | Tag | Type | VR | Description |
|---|-------------|------|----|---|
| Conversion Type | (0008,0064) | 1 | CS | Describes the kind of image conversion: DF = Digitized Film |
| Secondary Capture Device ID | (0018,1010) | 3 | LO | User defined identification of the device that converted the image. |
| Secondary Capture Device Manufacturer | (0018,1016) | 3 | LO | Manufacturer of the Secondary Capture Device: HOWTEK |
| Secondary Capture Device Model Name | (0018,1018) | 3 | LO | Manufacturer's model number of the Secondary Capture Device: Fulcrum |
| Secondary Capture Device Software Version | (0018,1019) | 3 | LO | Manufacturer's designation of software version of the Secondary Capture Device: 1.0 |

A.1.6 Secondary Capture General Image Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------|-------------|------|----|---|
| Instance Number | (0020,0013) | 2 | IS | A number that identifies the image. 1-N based on the image order of digitization. |
| Patient Orientation | (0020,0020) | 2C | CS | Patient direction of the rows and columns of the image. |
| Acquisition Date | (0008,0022) | 3 | DA | The date image was digitized. |
| Content Date | (0008,0023) | 2C | DA | The date image was digitized. |
| Acquisition Time | (0008,0032) | 2C | TM | The time the image was digitized. |
| Content Time | (0008,0033) | 2C | TM | The time the image was digitized. |

A.1.7 Secondary Capture Image Pixel Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|--|
| Samples Per Pixel | (0028,0002) | 1 | US | Number of samples (planes) in this image: 1 |
| Photometric Interpretation | (0028,0004) | 1 | CS | Specifies the intended interpretation of the pixel data: MONOCHROME2 |
| Rows | (0028,0010) | 1 | US | Number of rows in the image. |

| | | | | |
|----------------------|-------------|---|-----------|--|
| Columns | (0028,0011) | 1 | US | Number of columns in the image. |
| Bits Allocated | (0028,0100) | 1 | US | Number of bits allocated for each pixel sample: 16 |
| Bits Stored | (0028,0101) | 1 | US | Number of bits stored for each pixel sample: 12 |
| High Bit | (0028,0102) | 1 | US | Most significant bit for pixel sample data: 11 |
| Pixel Representation | (0028,0103) | 1 | US | Data representation of the pixel samples: 0 = Unsigned Integer |
| Pixel Data | (7FE0,0010) | 1 | OW /OB | A data stream of the pixel samples that comprise the image. |

A.1.8 Secondary Capture SC Image

| Attribute Name | Tag | Type | VR | Description |
|---------------------------|-------------|------|----|-------------|
| Date of Secondary Capture | (0018,1012) | 3 | DA | Not Used. |
| Time of Secondary Capture | (0018,1014) | 3 | TM | Not Used. |

A.1.9 Secondary Capture Overlay Plane Module

NOTE: The Secondary Capture Overlay Plane can be enabled or disabled through a configuration file.

| Attribute Name | Tag | Type | VR | Description |
|------------------------|-------------|------|----|---|
| Overlay Rows | (6000,0010) | 1 | US | Number of rows in the overlay |
| Overlay Columns | (6000,0011) | 1 | US | Number of columns in the overlay |
| Overlay Type | (6000,0022) | 1 | CS | G = Graphics |
| Overlay Origin | (6000,0050) | 1 | SS | Location of first overlay point with respect to pixels in the image, given as row\column. The upper left pixel of the image has the coordinate 1\1. |
| Overlay Bits Allocated | (6000,0100) | 1 | US | The number of bits allocated in the overlay: 1 |
| Overlay Bit Position | (6000,0102) | 1 | US | Bit in which overlay is stored: 0 |
| Overlay Data | (6000,3000) | 1C | OW | Overlay pixel data. |
| Overlay Description | (6000,0022) | 3 | LO | User defined comments about the overlay: iCAD, Inc. |
| Overlay Subtype | (6000,0045) | 3 | LO | Defined term which identifies the intended purpose of the Overlay Type: AUTOMATED |
| Overlay Label | (6000,1500) | 3 | LO | A user defined text string which may be used to label or name this overlay: SecondLook |

A.1.10 Secondary Capture SOP Common Module

| Attribute Name | Tag | Type | VR | Description |
|------------------------|-------------|------|----|---|
| Specific Character Set | (0008,0005) | 1C | CS | Character Set that expands or replaces the Basic Graphic Set. Required if an expanded or replacement character set is used. |

| | | | | |
|------------------|-------------|---|----|--|
| | | | | Default: ISO_IR 100 |
| SOP Class UID | (0008,0016) | 1 | UI | Uniquely identifies the SOP Class: 1.2.840.10008.5.1.4.1.1.7 |
| SOP Instance UID | (0008,0018) | 1 | UI | Uniquely identifies the SOP instance. |

A.1.11 Secondary Capture Extended Attributes

Note: Through a configuration file, the following group of attributes can be added to the Secondary Capture object.

| Attribute Name | Tag | Type | VR | Description |
|------------------------------|-------------|------|----|--|
| Imager Pixel Spacing | (0018,1164) | 1 | DS | Physical distance measured at the front plane of the detector housing between the center of each image pixel specified by numeric pair – row spacing value (delimiter) column spacing value in mm. 0.0423\0.0423 or 0.0846\0.0846 |
| Image Laterality | (0020,0062) | 2 | CS | Laterality of body part examined: R = right L = left B = Both |
| Window Center | (0028,1050) | 3 | DS | 2200 , configurable |
| Window Width | (0028,1051) | 3 | DS | 3200 , configurable |
| View Code Sequence | (0054,0220) | 1 | SQ | Sequence that describes the projection of the anatomic region of interest on the image receptor. |
| >Code Value | (0008,0100) | 1C | SH | R-10224 = ML R-10226 = MLO R-10228 = LM R-10230 = LMO R-10242 = CC R-10244 = FB R-102D0 = SIO R-102CF = XCC R-1024A = XCCL R-1024B = XCCM |
| >Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >Code Meaning | (0008,0104) | 1C | LO | medio-lateral Medio-lateral oblique latero-medial latero-medial oblique cranio-caudal caudo-canal (from below) superolateral to inferomedial oblique exaggerated cranio-caudal cranio-caudal exaggerated laterally cranio-caudal exaggerated medially |
| >View Modifier Code Sequence | (0054,0222) | 2 | SQ | View modifier. Items are included in this list only if view modifier information was added by the user. |
| >>Code Value | (0008,0100) | 1C | SH | R-102D2 = CV R-102D1 = AT R-102D3 = RL R-102D4 = RM |

| | | | | |
|----------------------------|-------------|----|----|--|
| | | | | R-102CA = RI R-102C9 = RS R-102D5 = ID R-102D6 = M R-102D7 = S R-102C2 = TAN |
| >>Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 or SRT |
| >>Code Meaning | (0008,0104) | 1C | LO | Cleavage Axillary Tail Rolled Lateral Rolled Medial Rolled Inferior Rolled Superior Implant Displaced Magnification Spot Compression Tangential |

B Digital Mammography X-Ray

B.1 Digital Mammography X-Ray Image Object Definition (IOD)

| IE | Module | Usage |
|-----------|---------------------|-----------------------------|
| Patient | Patient | M |
| Study | General Study | M |
| Series | General Series | M |
| | DX Series | M |
| | Mammography Series | M |
| Equipment | General Equipment | M |
| Image | General Image | M |
| | Image Pixel | M |
| | DX Anatomy Imaged | M |
| | DX Image | M |
| | DX Detector | M |
| | Mammography Image | M |
| | Overlay Plane | U |
| | VOI LUT | C – “FOR PRESENTATION” only |
| | Acquisition Context | M |
| | SOP Common | M |

B.1.1 Digital Mammography X-Ray – Patient Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------|-------------|------|----|--|
| Patient's Name | (0010,0010) | 2 | PN | Patient's name obtained from modality worklist or entered by technician. |
| Patient ID | (0010,0020) | 2 | LO | Patient ID obtained from modality worklist or entered by technician. |
| Patient's Birth Date | (0010,0030) | 2 | DA | Patient birth date obtained from modality worklist or entered by technician. |
| Patient's Sex | (0010,0040) | 2 | CS | F = Female |

B.1.2 Digital Mammography X-Ray – General Study Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|--|
| Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the study. |
| Study Date | (0008,0020) | 2 | DA | Date the image was scanned. |
| Study Time | (0008,0030) | 2 | TM | Time the image was scanned. |
| Referring Physician's Name | (0008,0090) | 2 | PN | Name of the patient's referring physician obtained from modality worklist. |
| Study Description | (0008,1030) | 3 | LO | Institution-generated description or classification of the Study (component) performed. |
| Study ID | (0020,0010) | 2 | SH | User or equipment generated study ID obtained from modality worklist. |
| Accession Number | (0008,0050) | 2 | SH | A number that identifies the order for the study obtained from the modality worklist or entered by the technician. |

B.1.3 Digital Mammography X-Ray – General Series Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------|-------------|------|----|--|
| Modality | (0008,0060) | 1 | CS | MG |
| Series Date | (0008,0021) | 3 | DA | Date the image was scanned. |
| Series Time | (0008,0031) | 3 | TM | Time the image was scanned. |
| Series Description | (0008,103E) | 3 | LO | User provided description of the Series. |
| Body Part Examined | (0018,0015) | 3 | CS | Text description of the part of the body examined. Defined Terms: BREAST |
| Series Instance UID | (0020,000E) | 1 | UI | Unique identifier for the series. |
| Series Number | (0020,0011) | 2 | IS | A number that identifies the series: 1 |
| Laterality | (0020,0060) | 2C | CS | Not Used |
| Operators' Name | (0008,1070) | 3 | PN | Technician's initials entered into worklist. |

B.1.4 Digital Mammography X-Ray – DX Series Module

| Attribute Name | Tag | Type | VR | Description |
|--------------------------|-------------|------|----|---|
| Modality | (0008,0060) | 1 | CS | MG |
| Presentation Intent Type | (0008,0068) | 1 | CS | FOR PRESENTATION or FOR PROCESSING |

B.1.5 Digital Mammography X-Ray – Mammography Series Module

| Attribute Name | Tag | Type | VR | Description |
|----------------|-------------|------|----|-------------|
| Modality | (0008,0060) | 1 | CS | MG |

B.1.6 Digital Mammography X-Ray – General Equipment Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------|-------------|------|----|--|
| Manufacturer | (0008,0070) | 2 | LO | iCAD, Inc. |
| Institution Name | (0008,0080) | 3 | LO | Name of institution, user configurable |
| Institution Address | (0008,0081) | 3 | ST | Address of institution, user configurable |
| Station Name | (0008,1010) | 3 | SH | Name of computer |
| Software Versions | (0018,1020) | 3 | LO | Manufacturer's designation of software version of the equipment that produced the digitized films. |

B.1.7 Digital Mammography X-Ray – General Image Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------|-------------|------|----|---|
| Instance Number | (0020,0013) | 2 | IS | A number that identifies the image. 1-N based on the image order of digitization. |
| Patient Orientation | (0020,0020) | 2C | CS | Patient direction of the rows and columns of the image. |
| Acquisition Date | (0008,0022) | 3 | DA | The date image was digitized. |
| Content Date | (0008,0023) | 2C | DA | The date image was digitized. |
| Acquisition Time | (0008,0033) | 3 | TM | The time the image was digitized. |
| Content Time | (0008,0033) | 2C | TM | The time the image was digitized. |

B.1.8 Digital Mammography X-Ray – Image Pixel Module

| Attribute Name | Tag | Type | VR | Description |
|-------------------|-------------|------|----|---|
| Samples Per Pixel | (0028,0002) | 1 | US | Number of samples (planes) in this image: |

| | | | | |
|----------------------------|-------------|---|-------|--|
| | | | | 1 |
| Photometric Interpretation | (0028,0004) | 1 | CS | Specifies the intended interpretation of the pixel data: MONOCHROME2 |
| Rows | (0028,0010) | 1 | US | Number of rows in the image. |
| Columns | (0028,0011) | 1 | US | Number of columns in the image. |
| Bits Allocated | (0028,0100) | 1 | US | Number of bits allocated for each pixel sample: 16 |
| Bits Stored | (0028,0101) | 1 | US | Number of bits stored for each pixel sample: 12 |
| High Bit | (0028,0102) | 1 | US | Most significant bit for pixel sample data: 11 |
| Pixel Representation | (0028,0103) | 1 | US | Data representation of the pixel samples: 0 = Unsigned Integer |
| Pixel Data | (7FE0,0010) | 1 | OW/OB | A data stream of the pixel samples that comprise the image. |

B.1.9 Digital Mammography X-Ray – DX Anatomy Imaged Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------------|-------------|------|----|---|
| Image Laterality | (0020,0062) | 1 | CS | Laterality of body part examined: R = Right L = Left B = Both |
| Anatomic Region Sequence | (0008,2218) | 2 | SQ | Sequence that identifies the anatomic region of interest in this image. |
| >Code Value | (0008,0100) | 1C | SH | T-04000 |
| >Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >Code Meaning | (0008,0104) | 1C | LO | Breast |

B.1.10 Digital Mammography X-Ray – DX Image Module

| Attribute Name | Tag | Type | VR | Description |
|------------------------------|-------------|------|----|--|
| Image Type | (0008,0008) | 1 | CS | Configurable values. Default: ORIGINAL\PRIMARY\ |
| Samples Per Pixel | (0028,0002) | 1 | US | Number of samples (planes) in this image: 1 |
| Photometric Interpretation | (0028,0004) | 1 | CS | Specifies the intended interpretation of the pixel data: MONOCHROME2 |
| Bits Allocated | (0028,0100) | 1 | US | Number of bits allocated for each pixel sample: 16 |
| Bits Stored | (0028,0101) | 1 | US | Number of bits stored for each pixel sample: 12 |
| High Bit | (0028,0102) | 1 | US | Most significant bit for pixel sample data: 11 |
| Pixel Representation | (0028,0103) | 1 | US | Data representation of the pixel samples: 0 = Unsigned Integer |
| Pixel Intensity Relationship | (0028,1040) | 1 | CS | The relationship between the pixel sample |

| | | | | |
|-----------------------------------|-------------|----|----|--|
| | | | | values and the X-Ray beam intensity. LIN = Linearly proportional to X-Ray beam intensity. |
| Pixel Intensity Relationship Sign | (0028,1041) | 1 | SS | The sign of the relationship between the pixel sample values stored in pixel data (7FE0,0010) and the X-Ray beam intensity: -1 = Higher pixel values correspond to less X-Ray beam intensity. |
| Rescale Intercept | (0028,1052) | 1 | DS | 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. value = 0 |
| Rescale Slope | (0028,1053) | 1 | DS | m in the equation specified by Rescale Intercept (0028,1052). value = 1 |
| Rescale Type | (0028,1054) | 1 | LO | Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052). US = Unspecified |
| Presentation LUT Shape | (2050,0020) | 1 | CS | 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. IDENTITY – output is in P-Values |
| Lossy Image Compression | (0028,2110) | 1 | CS | Specifies whether an Image has undergone lossy compression. 00 = Image has NOT been subjected to lossy compression. 01 = Image has been subjected to lossy compression. |
| Patient Orientation | (0020,0020) | 1 | CS | Patient direction of the rows and columns of the image. |
| Burned In Annotation | (0028,0301) | 1 | CS | Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired. NO |
| Window Center | (0028,1050) | 1C | DS | Defines a Window Center for display. |
| Window Width | (0028,1055) | 1C | DS | Window Width for display. |

B.1.11 Digital Mammography X-Ray – DX Detector Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------|-------------|------|----|--|
| Detector Type | (0018,7004) | 2 | CS | The type of detector used to acquire this image: FILM = Scanned film/screen |
| Imager Pixel Spacing | (0018,1164) | 1 | DS | Physical distance measured at the front plane of the detector housing between the center of each image pixel specified by numeric pair – row spacing value (delimiter) column spacing value in mm. 0.0423\0.0423 or 0.0846\0.0846 |

B.1.12 Digital Mammography X-Ray – DX Positioning Module

| Attribute Name | Tag | Type | VR | Description |
|----------------|-------------|------|----|---|
| View Position | (0018,5101) | 3 | CS | Radiographic view of the image relative to the imaging subject's orientation. Shall be consistent with View Code Sequence (0054,0220). ML MLO LM LMO CC FB SIO XCC XCCL XCCM |

B.1.13 Digital Mammography X-Ray – Mammography Image Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------------|-------------|------|----|--|
| Positioner Type | (0018,1508) | 1 | CS | MAMMOGRAPHIC |
| Image Laterality | (0020,0062) | 1 | CS | Laterality of body part examined: R = Right L = Left B = Both |
| Organ Exposed | (0040,0318) | 1 | | Organ to which Organ Dose (0040,0316) applies. BREAST |
| Anatomic Region Sequence | (0008,2218) | 2 | SQ | Sequence that identifies the anatomic region of interest in this image. |
| >Code Value | (0008,0100) | 1C | SH | T-04000 |
| >Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >Code Meaning | (0008,0104) | 1C | LO | Breast |
| View Code Sequence | (0054,0220) | 1 | SQ | Sequence that describes the projection of the anatomic region of interest on the image receptor. |
| >Code Value | (0008,0100) | 1C | SH | R-10224 = ML R-10226 = MLO R-10228 = LM R-10230 = LMO R-10242 = CC R-10244 = FB R-102D0 = SIO R-102CF = XCC R-1024A = XCCL R-1024B = XCCM |
| >Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >Code Meaning | (0008,0104) | 1C | LO | medio-lateral Medio-lateral oblique latero-medial latero-medial oblique |

| | | | | |
|------------------------------|-------------|----|----|--|
| | | | | cranio-caudal caudo-canal (from below) superolateral to inferomedial oblique exaggerated cranio-caudal cranio-caudal exaggerated laterally cranio-caudal exaggerated medially |
| >View Modifier Code Sequence | (0054,0222) | 2 | SQ | View modifier. Items are included in this list only if view modifier information was added by the user. |
| >>Code Value | (0008,0100) | 1C | SH | R-102D2 = CV R-102D1 = AT R-102D3 = RL R-102D4 = RM R-102CA = RI R-102C9 = RS R-102D5 = ID R-102D6 = M R-102D7 = S R-102C2 = TAN |
| >>Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 or SRT |
| >>Code Meaning | (0008,0104) | 1C | LO | Cleavage Axillary Tail Rolled Lateral Rolled Medial Rolled Inferior Rolled Superior Implant Displaced Magnification Spot Compression Tangential |

B.1.14 Digital Mammography X-Ray – Overlay Plane Module

NOTE: The Digital Mammography X-Ray – Overlay Plane can be enabled or disabled through a configuration file.

| Attribute Name | Tag | Type | VR | Description |
|------------------------|-------------|------|----|---|
| Overlay Rows | (6000,0010) | 1 | US | Number of rows in the overlay |
| Overlay Columns | (6000,0011) | 1 | US | Number of columns in the overlay |
| Overlay Type | (6000,0022) | 1 | CS | G = Graphics |
| Overlay Origin | (6000,0050) | 1 | SS | Location of first overlay point with respect to pixels in the image, given as row\column. The upper left pixel of the image has the coordinate 1\1 . |
| Overlay Bits Allocated | (6000,0100) | 1 | US | The number of bits allocated in the overlay: 1 |
| Overlay Bit Position | (6000,0102) | 1 | US | Bit in which overlay is stored: 0 |
| Overlay Data | (6000,3000) | 1C | OW | Overlay pixel data. |
| Overlay Description | (6000,0022) | 3 | LO | User defined comments about the overlay: iCAD, Inc. |
| Overlay Subtype | (6000,0045) | 3 | LO | Defined term which identifies the intended purpose of the Overlay Type: AUTOMATED |
| Overlay Label | (6000,1500) | 3 | LO | A user defined text string which may be used to label or name this overlay: SecondLook |

B.1.15 Digital Mammography X-Ray – VOI LUT

NOTE: The Digital Mammography X-Ray – VOI LUT can be enabled or disabled on “FOR PRESENTATION” objects through a configuration file.

| Attribute Name | Tag | Type | VR | Description |
|------------------|-------------|------|----|--|
| VOI LUT Sequence | (0028,3010) | 3 | SQ | Defines a sequence of VOI LUTs |
| >LUT Descriptor | (0028,3002) | 1C | US | Specifies the format of the LUT Data in this Sequence: 4096/0/12 |
| >LUT Data | (0028,3006) | 1C | US | LUT Data in this Sequence |

B.1.16 Digital Mammography X-Ray – Acquisition Context

| Attribute Name | Tag | Type | VR | Description |
|------------------------------|-------------|------|----|--|
| Acquisition Context Sequence | (0040,0555) | 2 | SQ | A sequence of repeating items that describes the conditions present during the acquisition of an image. There are no items in this sequence. |

B.1.17 Digital Mammography X-Ray – SOP Common

| Attribute Name | Tag | Type | VR | Description |
|------------------------|-------------|------|----|--|
| Specific Character Set | (0008,0005) | 1C | CS | Character Set that expands or replaces the Basic Graphic Set. Required if an expanded or replacement character set is used. Default: ISO_IR 100 |
| SOP Class UID | (0008,0016) | 1 | UI | Uniquely identifies the SOP Class. For Processing: 1.2.840.10008.5.1.4.1.1.1.2.1 For Presentation: 1.2.840.10008.5.1.4.1.1.1.2 |
| SOP Instance UID | (0008,0018) | 1 | UI | Uniquely identifies the SOP instance. |

C Enhanced Structured Report

The SecondLook® 300 will process each image to determine the existence of any suspicious regions. The results of this processing will be combined into a single DICOM Enhanced Structured Reporting message that will be sent to the remote system (that is if the remote device was configured to receive this output). Section C.1 defines the DICOM modules that are used to create the Enhanced Structured Report. A high-level overview of the structure of the DICOM Enhanced Structured Report is shown in Figure C-1. This figure shows that there can be any number of images for the study existing under the root node. Underneath each image contains information from the CAD processing, whether a mass was found, a calcification cluster was found, or if CAD failed. If a detection was found, then the coordinates for the detection shall be provided. If no information exists after the image node, then the CAD processing found no detections.

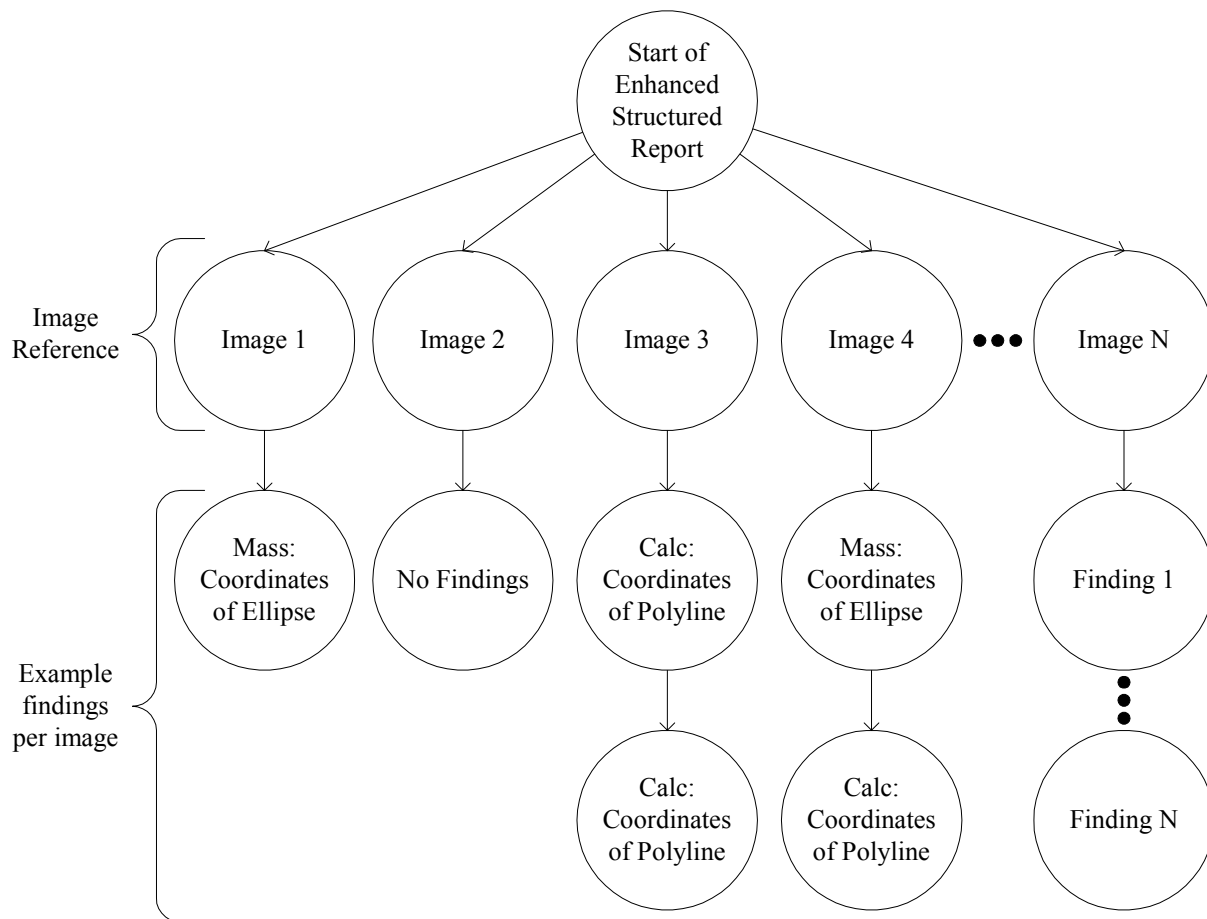


Figure C-1 – Enhanced Structured Report Overview

C.1 Enhanced Structured Report Image Object Definition

| IE | Module | Usage |
|-----------|---------------------|-------|
| Patient | Patient | M |
| Study | General Study | M |
| Series | SR Document Series | M |
| Equipment | General Equipment | M |
| Document | SR Document General | M |
| | SR Document Content | M |
| | SOP Common | M |

C.1.1 Enhanced Structured Report Patient Module

| Attribute Name | Tag | Type | VR | Description |
|------------------------------|-------------|------|----|---|
| Patient's Name | (0010,0010) | 2 | PN | Patient's full name obtained from the image header. |
| Patient ID | (0010,0020) | 2 | LO | Primary hospital identification number or code for the patient obtained from the image header. |
| Patient's Birth Date | (0010,0030) | 2 | DA | Birth date of the patient obtained from the image header. |
| Patient's Sex | (0010,0040) | 2 | CS | Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other |
| Referenced Patient Sequence | (0008,1120) | 3 | SQ | Not used |
| >Referenced SOP Class UID | (0008,1150) | 1C | UI | Not used |
| >Referenced SOP Instance UID | (0008,1155) | 1C | UI | Not used |
| Patient Birth Time | (0010,0032) | 3 | TM | Not used |
| Other Patient ID | (0010,1000) | 3 | LO | Not used |
| Other Patient Names | (0010,1001) | 3 | PN | Not used |
| Ethnic Group | (0010,2160) | 3 | SH | Not used |
| Patient Comments | (0010,4000) | 3 | LT | Not used |

C.1.2 Enhanced Structured Report General Study Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|--|
| Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the Study obtained from the image header. |
| Study Date | (0008,0020) | 2 | DA | The current date of the CAD processing |
| Study Time | (0008,0030) | 2 | TM | The current time of the CAD processing. |
| Referring Physician's Name | (0008,0090) | 2 | PN | Not used |
| Study ID | (0020,0010) | 2 | SH | User or equipment generated Study identifier obtained from the image header. |
| Accession Number | (0008,0050) | 2 | SH | A RIS generated number, which identifies the order for the Study obtained from the image header. |
| Study Description | (0008,1030) | 3 | LO | Institution-generated description or classification of the Study (component) |

| | | | | |
|--|-------------|---|----|------------|
| | | | | performed. |
| Physicians Of Record | (0008,1048) | 3 | PN | Not used |
| Physician(s) of Record Identification Sequence | (0008,1049) | 3 | SQ | Not used |
| Name Of Physicians Reading Study | (0008,1060) | 3 | PN | Not used |
| Physician(s) Reading Study Identification Sequence | (0008,1062) | 3 | SQ | Not used |
| Referenced Study Sequence | (0008,1110) | 3 | SQ | Not used |
| Procedure Code Sequence | (0008,1032) | 3 | SQ | Not used |

C.1.3 Enhanced Structured Report SR Document Series

| Attribute Name | Tag | Type | VR | Description |
|-------------------------------------|-------------|------|----|----------------------------------|
| Modality Type | (0008,0060) | 1 | CS | SR |
| Series Instance UID | (0020,000E) | 1 | UI | Unique identifier of the Series. |
| Series Number | (0020,0011) | 1 | IS | 1 |
| Referenced Study Component Sequence | (0008,1111) | 2 | SQ | Not Used |

C.1.4 Enhanced Structured Report General Equipment Module

| Attribute Name | Tag | Type | VR | Description |
|-------------------------------|-------------|------|----|-------------------------------------|
| Manufacturer | (0008,0070) | 2 | LO | iCAD, Inc. |
| Institution Name | (0008,0080) | 3 | LO | Not used |
| Institution Address | (0008,0081) | 3 | ST | Not used |
| Station Name Unit # | (0008,1010) | 3 | SH | Not used |
| Institutional Department Name | (0008,1040) | 3 | LO | Not used |
| Manufacturer's Model Name | (0008,1090) | 3 | LO | Not used |
| Device Serial Number | (0018,1000) | 3 | LO | Not used |
| Software Version | (0018,1020) | 3 | LO | Version of CAD performed on images. |
| Spatial Resolution mm | (0018,1050) | 3 | DS | Not used |
| Date of Last Calibration | (0018,1200) | 3 | DA | Not used |
| Time of Last Calibration | (0018,1201) | 3 | TM | Not used |
| Pixel Padding Value | (0028,0120) | 3 | US | Not used |

C.1.5 Enhanced Structured Report SR Document General Module

| Attribute Name | Tag | Type | VR | Description |
|-----------------------------|-------------|------|----|---|
| Instance Number | (0020,0013) | 1 | SH | 1 |
| Completion Flag | (0040,A491) | 1 | CS | COMPLETE |
| Completion Flag Description | (0040,A492) | 3 | LO | Not used |
| Verification Flag | (0040,A493) | 1 | CS | UNVERIFIED |
| Content Date | (0008,0023) | 1 | DA | The current date of the CAD processing. |
| Content Time | (0008,0033) | 1C | TM | The current time of the CAD processing. |
| Verifying Observer Sequence | (0040,A073) | 1 | SQ | 1 |
| >Verifying Observer Name | (0040,A075) | 1 | PN | SecondLook CAD |
| >Verifying Observer | (0040,A088) | 2 | SQ | Not used |

| | | | | |
|---|-------------|----|----|--|
| Identification Code Sequence | | | | |
| >Verifying Organization | (0040,A027) | 1 | LO | Not used |
| >Verification DateTime | (0040,A030) | 1 | DT | The current date and time of the CAD processing. |
| Predecessor Documents Sequence | (0040,A360) | 1C | SQ | Not used |
| Identical Documents Sequence | (0040,A525) | 1C | SQ | Not used |
| Referenced Request Sequence | (0040,A370) | 1C | SQ | Not used |
| Performed Procedure Code Sequence | (0040,A372) | 2 | SQ | Not used |
| Current Requested Procedure Evidence Sequence | (0040,A375) | 1C | SQ | A single sequence that contains the Study Instance UID, Series Instance UID, Referenced SOP Class UID, and Referenced SOP Instance UID for each image in the study. |
| >Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the Study obtained from the image header. |
| >Referenced Series Sequence | (0008,1115) | 1 | SQ | Sequence repeats for each image that exists in the study. The sequence contains the Attributes of a Series containing Composite Objects. |
| >>Series Instance UID | (0020,000E) | 1 | UI | Unique identifier of a Series obtained from the image header that is part of this Study and contains referenced Composite Objects. |
| >>Retrieve AE Title | (0008,0054) | 3 | AE | Not used |
| >>Storage Media File-Set ID | (0068,0130) | 3 | SH | Not used |
| >>Storage Media File-Set UID | (0068,0140) | 3 | UI | Not used |
| >>Referenced SOP Sequence | (0008,1199) | 1 | SQ | References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E) and are obtained from the image header. |
| >>>Referenced SOP Class UID | (0008,1150) | 1 | UI | Uniquely identifies the referenced SOP Class that is obtained from the image header. |
| >>>Referenced SOP Instance UID | (0008,1155) | 1 | UI | Uniquely identifies the referenced SOP instance that is obtained from the image header. |

C.1.6 Enhanced Structured Report SR Document Content Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|------------------|
| Observation Date Time | (0040,A032) | 1C | DT | Not used |
| Content Template Sequence | (0040,A504) | 1C | SQ | Not used |
| Value Type | (0040,A040) | 1 | CS | CONTAINER |
| Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >Code Value | (0008,0100) | 1C | SH | 111036 |
| >Coding Scheme | (0008,0102) | 1C | SH | DCM |

| | | | | |
|-------------------------------------|-------------|----|----|---|
| Designator | | | | |
| >Code Meaning | (0008,0104) | 1C | LO | Mammography CAD Report |
| Continuity of Content | (0040,A050) | 1 | CS | SEPARATE |
| Content Sequence | (0040,A730) | 1C | SQ | Repeat this sequence for number of films |
| >Relationship Type | (0040,A010) | 1 | CS | CONTAINS |
| >Referenced Content Item Identifier | (0040,DB73) | 1C | UL | Not used |
| >Value Type | (0040,A040) | 1 | CS | CONTAINER |
| >Continuity of Content | (0040,A050) | 1 | CS | SEPARATE |
| >Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | T-04000 |
| >>Coding Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >>Code Meaning | (0008,0104) | 1C | LO | Breast |
| >Referenced SOP Sequence | (0008,1199) | 2 | SQ | 1 |
| >Referenced SOP Class UID | (0008,1150) | 1C | UI | The referenced SOP class UID for the current image in this sequence. |
| >Referenced SOP Instance UID | (0008,1155) | 1C | UI | The referenced SOP Instance UID for the current image in this sequence. |
| >Content Sequence | (0040,A730) | 1C | SQ | This sequence is repeated for each detection that is found in for the current image in the sequence. |
| >Value Type | (0040,A040) | 1C | CS | SCOORD |
| >Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | F-01796 if the detection is a density. F-01775 if the detection is a calcification. 111224 if there was a CAD failure |
| >>Coding Scheme Designator | (0008,0102) | 1C | SH | SRT |
| >>Code Meaning | (0008,0104) | 1C | LO | “Mammographic breast density”, “Calcification Cluster”, or “Failed” |
| >Graphic Data | (0070,0022) | 1C | FL | 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. This will not exist if there is a CAD failure. |
| >Graphic Type | (0070,0023) | 1C | CS | “ELLIPSE” for a density. “POLYLINE” for a calcification. This will not exist if there is a CAD failure. |

C.1.7 Enhanced Structured Report SOP Common Module

| Attribute Name | Tag | Type | VR | Description |
|-----------------------|-------------|-------------|-----------|--|
| SOP Class UID | (0008,0016) | 1 | UI | Uniquely identifies the SOP Class: 1.2.840.10008.5.1.4.1.1.88.22 |
| SOP Instance UID | (0008,0018) | 1 | UI | Uniquely identifies the SOP instance. |

D Mammography CAD Structured Report

The SecondLook® 300 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 D-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", "All algorithms succeeded; with findings", or "no algorithms succeeded; without findings". The Mammography CAD Overall Impressions / Recommendations node will also contain a Single Image Finding for each detection found in the case 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. Finally, the Summary of Detections and the Summary of Analyses containers are both not populated.

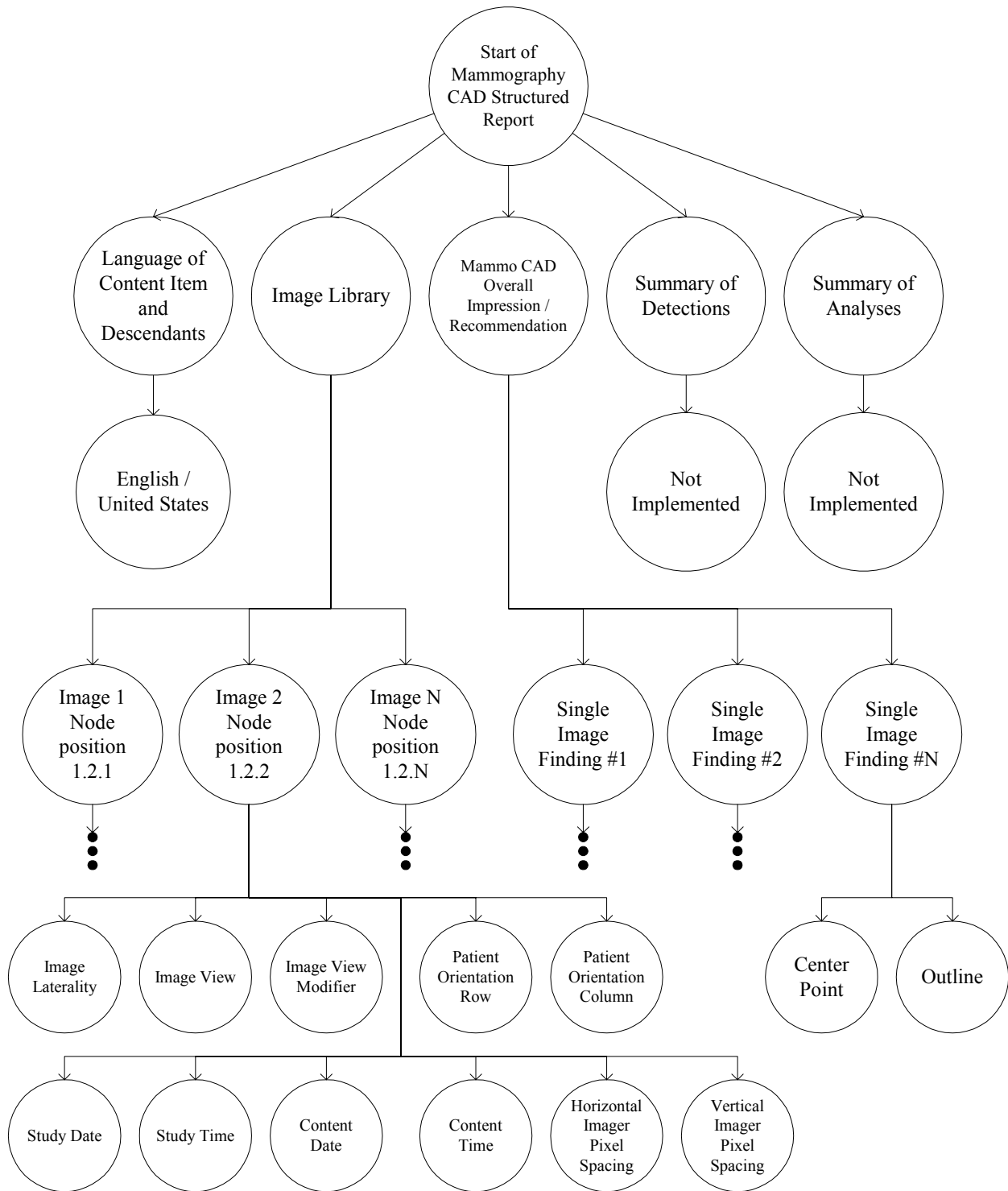


Figure D-1 - Mammography CAD Structured Report Overview

D.1 Mammography CAD Structured Report Image Object Definition

| IE | Module | Usage |
|-----------|---------------------|-------|
| Patient | Patient | M |
| Study | General Study | M |
| Series | SR Document Series | M |
| Equipment | General Equipment | M |
| Document | SR Document General | M |
| | SR Document Content | M |
| | SOP Common | M |

D.1.1 Mammography CAD Structured Report Patient Module

| Attribute Name | Tag | Type | VR | Description |
|------------------------------|-------------|------|----|---|
| Patient's Name | (0010,0010) | 2 | PN | Patient's full name obtained from the image header. |
| Patient ID | (0010,0020) | 2 | LO | Primary hospital identification number or code for the patient obtained from the image header. |
| Patient's Birth Date | (0010,0030) | 2 | DA | Birth date of the patient obtained from the image header. |
| Patient's Sex | (0010,0040) | 2 | CS | Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other |
| Referenced Patient Sequence | (0008,1120) | 3 | SQ | Not used |
| >Referenced SOP Class UID | (0008,1150) | 1C | UI | Not used |
| >Referenced SOP Instance UID | (0008,1155) | 1C | UI | Not used |
| Patient Birth Time | (0010,0032) | 3 | TM | Not used |
| Other Patient ID | (0010,1000) | 3 | LO | Not used |
| Other Patient Names | (0010,1001) | 3 | PN | Not used |
| Ethnic Group | (0010,2160) | 3 | SH | Not used |
| Patient Comments | (0010,4000) | 3 | LT | Not used |

D.1.2 Mammography CAD Structured Report General Study Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|---|
| Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the Study obtained from the image header. |
| Study Date | (0008,0020) | 2 | DA | The current date of the CAD processing |
| Study Time | (0008,0030) | 2 | TM | The current time of the CAD processing. |
| Referring Physician's Name | (0008,0090) | 2 | PN | Not used |
| Study ID | (0020,0010) | 2 | SH | User or equipment generated Study identifier obtained from the image header. |
| Accession Number | (0008,0050) | 2 | SH | A number, which identifies the order for the Study obtained from the image header. |
| Study Description | (0008,1030) | 3 | LO | Institution-generated description or classification of the Study (component) performed. |

| | | | | |
|--|-------------|---|----|----------|
| Physicians Of Record | (0008,1048) | 3 | PN | Not used |
| Physician(s) of Record Identification Sequence | (0008,1049) | 3 | SQ | Not used |
| Name Of Physicians Reading Study | (0008,1060) | 3 | PN | Not used |
| Physician(s) Reading Study Identification Sequence | (0008,1062) | 3 | SQ | Not used |
| Referenced Study Sequence | (0008,1110) | 3 | SQ | Not used |
| Procedure Code Sequence | (0008,1032) | 3 | SQ | Not used |

D.1.3 Mammography CAD Structured Report SR Document Series

| Attribute Name | Tag | Type | VR | Description |
|-------------------------------------|-------------|------|----|----------------------------------|
| Modality Type | (0008,0060) | 1 | CS | SR |
| Series Instance UID | (0020,000E) | 1 | UI | Unique identifier of the Series. |
| Series Number | (0020,0011) | 1 | IS | 1 |
| Referenced Study Component Sequence | (0008,1111) | 2 | SQ | Not Used |

D.1.4 Mammography CAD Structured Report General Equipment Module

| Attribute Name | Tag | Type | VR | Description |
|-------------------------------|-------------|------|----|-------------------------------------|
| Manufacturer | (0008,0070) | 2 | LO | iCAD, Inc. |
| Institution Name | (0008,0080) | 3 | LO | Not used |
| Institution Address | (0008,0081) | 3 | ST | Not used |
| Station Name Unit # | (0008,1010) | 3 | SH | Not used |
| Institutional Department Name | (0008,1040) | 3 | LO | Not used |
| Manufacturer's Model Name | (0008,1090) | 3 | LO | Not used |
| Device Serial Number | (0018,1000) | 3 | LO | Not used |
| Software Version | (0018,1020) | 3 | LO | Version of CAD performed on images. |
| Spatial Resolution mm | (0018,1050) | 3 | DS | Not used |
| Date of Last Calibration | (0018,1200) | 3 | DA | Not used |
| Time of Last Calibration | (0018,1201) | 3 | TM | Not used |
| Pixel Padding Value | (0028,0120) | 3 | US | Not used |

D.1.5 Mammography CAD Structured Report SR Document General Module

| Attribute Name | Tag | Type | VR | Description |
|--------------------------------|-------------|------|----|---|
| Instance Number | (0020,0013) | 1 | SH | 1 |
| Completion Flag | (0040,A491) | 1 | CS | COMPLETE |
| Completion Flag Description | (0040,A492) | 3 | LO | Not used |
| Verification Flag | (0040,A493) | 1 | CS | UNVERIFIED |
| Content Date | (0008,0023) | 1 | DA | The current date of the CAD processing. |
| Content Time | (0008,0033) | 1C | TM | The current time of the CAD processing. |
| Predecessor Documents Sequence | (0040,A360) | 1C | SQ | Not used |
| Identical Documents Sequence | (0040,A525) | 1C | SQ | Not used |
| Referenced Request | (0040,A370) | 1C | SQ | Not used |

| | | | | |
|---|-------------|----|----|--|
| Sequence | | | | |
| Performed Procedure Code Sequence | (0040,A372) | 2 | SQ | Not used |
| Current Requested Procedure Evidence Sequence | (0040,A375) | 1C | SQ | A single sequence that contains the Study Instance UID, Series Instance UID, Referenced SOP Class UID, and Referenced SOP Instance UID for each image in the study. |
| >Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the Study obtained from the image header. |
| >Referenced Series Sequence | (0008,1115) | 1 | SQ | Sequence repeats for each image that exists in the study. The sequence contains the Attributes of a Series containing Composite Objects. |
| >>Series Instance UID | (0020,000E) | 1 | UI | Unique identifier of a Series obtained from the image header that is part of this Study and contains referenced Composite Objects. |
| >>Retrieve AE Title | (0008,0054) | 3 | AE | Not used |
| >>Storage Media File-Set ID | (0068,0130) | 3 | SH | Not used |
| >>Storage Media File-Set UID | (0068,0140) | 3 | UI | Not used |
| >>Referenced SOP Sequence | (0008,1199) | 1 | SQ | References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E) and are obtained from the image header. |
| >>>Referenced SOP Class UID | (0008,1150) | 1 | UI | Uniquely identifies the referenced SOP Class that is obtained from the image header. |
| >>>Referenced SOP Instance UID | (0008,1155) | 1 | UI | Uniquely identifies the referenced SOP instance that is obtained from the image header. |

D.1.6 Mammography CAD Structured Report SR Document Content

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|---|
| Value Type | (0040,A040) | 1 | CS | CONTAINER |
| Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >Code Value | (0008,0100) | 1C | SH | 111036 |
| >Coding Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >Code Meaning | (0008,0104) | 1C | LO | Mammography CAD Report |
| Continuity of Content | (0040,A050) | 1 | CS | SEPARATE |
| Content Template Sequence | (0040,A504) | 1C | SQ | 1 |
| >Mapping Resource | (0008,0105) | 1 | CS | DCMR |
| >Template Identifier | (0040,DB00) | 1 | CS | TID 4000 |
| Content Sequence | (0040,A730) | 1 | SQ | Include sequence for "Language of Content Item and Descendants". See Section D.1.7. |
| Content Sequence | (0040,A730) | 1 | SQ | Include "Image Library" container. See Section D.1.8. |
| Content Sequence | (0040,A730) | 1 | SQ | Include "Mammography CAD Overall Impression / Recommendation" container. |

| | | | | |
|------------------|-------------|---|----|--|
| | | | | See Section D.1.9. |
| Content Sequence | (0040,A730) | 1 | SQ | Include "Summary of Detections". See Section D.1.10. |
| Content Sequence | (0040,A730) | 1 | SQ | Include "Summary of Analyses". See Section D.1.11. |

D.1.7 Mammography CAD Structured Report Language of Content Item and Descendants

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|----------------------------|
| >Relationship Type | (0040,A010) | 1 | CS | HAS CONCEPT MOD |
| >Value Type | (0040,A040) | 1 | CS | CODE |
| >Concept Code Sequence | (0040,A168) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | ISO639_2 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | eng |
| >>Code Meaning | (0008,0104) | 1C | LO | English |
| >>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>Relationship Type | (0040,A010) | 1 | CS | HAS CONCEPT MOD |
| >>>Value Type | (0040,A040) | 1 | CS | CODE |
| >>>>Code Value | (0008,0100) | 1C | SH | 121046 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Country of Language |
| >>>Concept Code Sequence | (0040,A168) | 1 | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | ISO3166_1 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | US |
| >>>>Code Meaning | (0008,0104) | 1C | LO | UNITED STATES |

D.1.8 Mammography CAD Structured Report Image Library

| Attribute Name | Tag | Type | VR | Description |
|--------------------------------|-------------|------|----|---|
| >Relationship Type | (0040,A010) | 1 | CS | CONTAINS |
| >Value Type | (0040,A040) | 1 | CS | CONTAINER |
| >Concept Code Sequence | (0040,A168) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111028 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | Image Library |
| >Continuity Of Content | (0040,A050) | 1 | CS | SEPARATE |
| >Content Sequence | (0040,A730) | 1C | SQ | Repeat this sequence for each image in the study. |
| >>Referenced SOP Sequence | (0008,1199) | 1 | SQ | 1 |
| >>>Referenced SOP Class UID | (0008,1150) | 1 | UI | The SOP Class UID of the image being processed. |
| >>>Referenced SOP Instance UID | (0008,1155) | 1 | UI | The SOP Instance UID of the image being processed. |
| >>Relationship Type | (0040,A010) | 1 | CS | CONTAINS |
| >>Value Type | (0040,A040) | 1 | CS | IMAGE |
| >>Content Sequence | (0040,A730) | 1C | SQ | The "Image Laterality" sequence shall be present only if tag (0020,0062) is present in the image. |

| | | | | |
|-------------------------------|-------------|----|----|--|
| >>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>Value Type | (0040,A040) | 1C | CS | CODE |
| >>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111027 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Image Laterality |
| >>>Concept Code Sequence | (0040,A168) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | T-04030 = Left breast T-04020 = Right breast |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Left breast or Right breast |
| >>Content Sequence | (0040,A730) | 1C | SQ | The "Image View" sequence shall be present only if tag (0054,0220) is present in the image. |
| >>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>Value Type | (0040,A040) | 1C | CS | CODE |
| >>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111031 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Image View |
| >>>Concept Code Sequence | (0040,A168) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | R-10224 = ML R-10226 = MLO R-10228 = LM R-10230 = LMO R-10242 = CC R-10244 = FB R-102D0 = SIO R-102CF = XCC R-1024A = XCCL R-1024B = XCCM |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | SNM3 |
| >>>>Code Meaning | (0008,0104) | 1C | LO | medio-lateral Medio-lateral oblique latero-medial latero-medial oblique cranio-caudal caudo-canal (from below) superolateral to inferomedial oblique exaggerated cranio-caudal cranio-caudal exaggerated laterally cranio-caudal exaggerated medially |
| >>Content Sequence | (0040,A730) | 1C | SQ | The "Patient Orientation Row" sequence shall be present only if tag (0054,0220) is present in the image. |
| >>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>Value Type | (0040,A040) | 1C | CS | CODE |

| | | | | |
|--------------------------------|-------------|----|----|---|
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111044 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Patient Orientation Row |
| >>>>Text Value | (0040,A160) | 1C | UT | First value from tag (0020,0020) in image. |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | The "Patient Orientation Column" sequence shall be present only if tag (0054,0220) is present in the image. |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>Value Type | (0040,A040) | 1C | CS | CODE |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111043 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Patient Orientation Column |
| >>>>Text Value | (0040,A160) | 1C | UT | Second value from tag (0020,0020) in image. |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | The "Study Date" sequence shall be present only if tag (0008,0020) is present in the image. |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>Value Type | (0040,A040) | 1C | CS | DATE |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111060 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Study Date |
| >>>>Date | (0040,A121) | 1C | DA | Value from tag (0008,0020) in image. |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | The "Study Time" sequence shall be present only if tag (0008,0030) is present in the image. |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>Value Type | (0040,A040) | 1C | CS | TIME |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111061 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Study Time |
| >>>>Time | (0040,A122) | 1C | TM | Value from tag (0008,0030) in image. |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | The "Content Date" sequence shall be present only if tag (0008,0023) is present in the image. |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>Value Type | (0040,A040) | 1C | CS | DATE |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111018 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Content Date |

| | | | | |
|---------------------------------------|-------------|----|----|--|
| >>>>Date | (0040,A121) | 1C | DA | Value from tag (0008,0023) in image. |
| >>>Content Sequence | (0040,A730) | 1C | SQ | The "Content Time" sequence shall be present only if tag (0008,0023) is present in the image. |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>Value Type | (0040,A040) | 1C | CS | TIME |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>Code Value | (0008,0100) | 1C | SH | 111019 |
| >>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>Code Meaning | (0008,0104) | 1C | LO | Content Time |
| >>>>Time | (0040,A122) | 1C | TM | Value from tag (0008,0033) in image. |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | The "Horizontal Imager Pixel Spacing" sequence shall be present only if tag (0018,1164) is present in the image. |
| >>>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>>Value Type | (0040,A040) | 1C | CS | NUM |
| >>>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>>Code Value | (0008,0100) | 1C | SH | 111026 |
| >>>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>>Code Meaning | (0008,0104) | 1C | LO | Horizontal Imager Pixel Spacing |
| >>>>>Measured Value Sequence | (0040,A300) | 1C | SQ | 1 |
| >>>>>>Measured Units Code Sequence | (0040,08EA) | 1C | SQ | 1 |
| >>>>>>>Code Value | (0008,0100) | 1C | SH | um |
| >>>>>>>Code Scheme Designator | (0008,0102) | 1C | SH | UCUM |
| >>>>>>>Code Meaning | (0008,0104) | 1C | LO | micrometer |
| >>>>>>>Numeric Value | (0040,A30A) | 1C | DS | First value from tag (0018,1164) in image. |
| >>>>>>Content Sequence | (0040,A730) | 1C | SQ | The "Vertical Imager Pixel Spacing" sequence shall be present only if tag (0018,1164) is present in the image. |
| >>>>>>>Relationship Type | (0040,A010) | 1C | CS | HAS ACQ CONTEXT |
| >>>>>>>Value Type | (0040,A040) | 1C | CS | NUM |
| >>>>>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>>>>Code Value | (0008,0100) | 1C | SH | 111066 |
| >>>>>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>>>>Code Meaning | (0008,0104) | 1C | LO | Vertical Imager Pixel Spacing |
| >>>>>>>>Measured Value Sequence | (0040,A300) | 1C | SQ | 1 |
| >>>>>>>>>Measured Units Code Sequence | (0040,08EA) | 1C | SQ | 1 |
| >>>>>>>>>>Code Value | (0008,0100) | 1C | SH | um |
| >>>>>>>>>>Code Scheme Designator | (0008,0102) | 1C | SH | UCUM |
| >>>>>>>>>>Code Meaning | (0008,0104) | 1C | LO | micrometer |
| >>>>>>>>>>Numeric Value | (0040,A30A) | 1C | DS | Second value from tag (0018,1164) in image. |

D.1.9 Mammography CAD Structured Report Mammography CAD Overall Impression / Recommendation

| Attribute Name | Tag | Type | VR | Description |
|--------------------------------|-------------|------|----|---|
| >Relationship Type | (0040,A010) | 1 | CS | CONTAINS |
| >Value Type | (0040,A040) | 1 | CS | CODE |
| >Concept-name Code Sequence | (0040,A043) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111017 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | CAD Processing and Findings Summary |
| >Concept Code Sequence | (0040,A168) | 1 | SQ | From Context ID 4015 in the DICOM Standard |
| >>Code Value | (0008,0100) | 1C | SH | 111241 = All algorithms succeeded without findings 111242 = All algorithms succeeded; with findings 111245 = no algorithms succeeded; without findings |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | All algorithms succeeded; without findings, All algorithms succeeded; with findings, or No algorithms succeeded; without findings. |
| >>Content Sequence | (0040,A730) | 1C | SQ | Shall be present for each detection found. |
| >>>Relationship Type | (0040,A010) | 1C | CS | INFERRED FROM |
| >>>Value Type | (0040,A040) | 1C | CS | CONTAINER |
| >>>Continuity of Content | (0040,A050) | 1C | CS | SEPARATE |
| >>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111034 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Individual Impression/Recommendation |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS CONCEPT MOD |
| >>>>Value Type | (0040,A040) | 1C | CS | CODE |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>Code Value | (0008,0100) | 1C | SH | 111056 |
| >>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>Code Meaning | (0008,0104) | 1C | LO | Rendering Intent |
| >Concept Code Sequence | (0040,A168) | 1C | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111150 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | Presentation Required: Rendering device is expected to present |
| >>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>Relationship Type | (0040,A010) | 1C | CS | CONTAINS |
| >>>>Value Type | (0040,A040) | 1C | CS | CODE |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |

| | | | | |
|---------------------------------------|-------------|----|----|--|
| >>>>>Code Value | (0008,0100) | 1C | SH | 111059 |
| >>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>Code Meaning | (0008,0104) | 1C | LO | Single Image Finding |
| >>>>>Concept Code Sequence | (0040,A168) | 1C | SQ | 1 |
| >>>>>Code Value | (0008,0100) | 1C | SH | F-01796 = Mammography breast density or F-01775 = Calcification Cluster |
| >>>>>Code Scheme Designator | (0008,0102) | 1C | SH | SRT |
| >>>>>Code Meaning | (0008,0104) | 1C | LO | Mammography breast density or Calcification Cluster. |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>>Relationship Type | (0040,A010) | 1C | CS | HAS CONCEPT MOD |
| >>>>>Value Type | (0040,A040) | 1C | CS | CODE |
| >>>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>Code Value | (0008,0100) | 1C | SH | 111056 |
| >>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>Code Meaning | (0008,0104) | 1C | LO | Rendering Intent |
| >>>>>Concept Code Sequence | (0040,A168) | 1C | SQ | 1 |
| >>>>>Code Value | (0008,0100) | 1C | SH | 111150 |
| >>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>Code Meaning | (0008,0104) | 1C | LO | Presentation Required: Rendering device is expected to present |
| >>>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>>>Relationship Type | (0040,A010) | 1C | CS | HAS PROPERTIES |
| >>>>>>Value Type | (0040,A040) | 1C | CS | TEXT |
| >>>>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>>Code Value | (0008,0100) | 1C | SH | 111001 |
| >>>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>>Code Meaning | (0008,0104) | 1C | LO | Algorithm Name |
| >>>>>>>Text Value | (0040,a160) | 1C | UT | SecondLook CAD |
| >>>>>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>>>>>Relationship Type | (0040,A010) | 1C | CS | HAS PROPERTIES |
| >>>>>>>>Value Type | (0040,A040) | 1C | CS | TEXT |
| >>>>>>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>>>>Code Value | (0008,0100) | 1C | SH | 111003 |
| >>>>>>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>>>>>Code Meaning | (0008,0104) | 1C | LO | Algorithm Version |
| >>>>>>>>>Text Value | (0040,A160) | 1C | UT | X.Y, where X.Y equals the current CAD version. |
| >>>>>>>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>>>>>>>Relationship Type | (0040,A010) | 1C | CS | HAS PROPERTIES |
| >>>>>>>>>>Value Type | (0040,A040) | 1C | CS | SCOORD |
| >>>>>>>>>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>>>>>>>>>Code Value | (0008,0100) | 1C | SH | 111010 |

| | | | | |
|--|-------------|----|----|---|
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Center |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>Relationship Type | (0040,A010) | 1C | CS | SELECTED FROM |
| >>>>Referenced Content Item Identifier | (0040,DB73) | 1C | UL | Reference to image based on node position in the image library. |
| >>>>Graphic Data | (0070,0022) | 1C | FL | The coordinates (Column, Row) of the center point of the detection. |
| >>>>Graphic Type | (0070,0023) | 1C | CS | POINT |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>Relationship Type | (0040,A010) | 1C | CS | HAS PROPERTIES |
| >>>>Value Type | (0040,A040) | 1C | CS | SCOORD |
| >>>>Concept-name Code Sequence | (0040,A043) | 1C | SQ | 1 |
| >>>>Code Value | (0008,0100) | 1C | SH | 111041 |
| >>>>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>>>Code Meaning | (0008,0104) | 1C | LO | Outline |
| >>>>Content Sequence | (0040,A730) | 1C | SQ | 1 |
| >>>>Relationship Type | (0040,A010) | 1C | CS | SELECTED FROM |
| >>>>Referenced Content Item Identifier | (0040,DB73) | 1C | UL | Reference to image based on node position in the image library. |
| >>>>Graphic Data | (0070,0022) | 1C | FL | 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. |
| >>>>Graphic Type | (0070,0023) | 1C | CS | "ELLIPSE" if detection is a density. "POLYLINE" if detection is a calcification cluster. |

D.1.10 Mammography CAD Structured Report Summary of Detections

| Attribute Name | Tag | Type | VR | Description |
|-----------------------------|-------------|------|----|------------------------------|
| >Relationship Type | (0040,A010) | 1 | CS | CONTAINS |
| >Value Type | (0040,A040) | 1 | CS | CODE |
| >Concept-name Code Sequence | (0040,A043) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111064 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | Summary of Detections |
| >Concept Code Sequence | (0040,A168) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111225 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | Not Attempted |

D.1.11 Mammography CAD Structured Report Summary of Analyses

| Attribute Name | Tag | Type | VR | Description |
|-----------------------------|-------------|-------------|-----------|----------------------------|
| >Relationship Type | (0040,A010) | 1 | CS | CONTAINS |
| >Value Type | (0040,A040) | 1 | CS | CODE |
| >Concept-name Code Sequence | (0040,A043) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111065 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | Summary of Analyses |
| >Concept Code Sequence | (0040,A168) | 1 | SQ | 1 |
| >>Code Value | (0008,0100) | 1C | SH | 111225 |
| >>Code Scheme Designator | (0008,0102) | 1C | SH | DCM |
| >>Code Meaning | (0008,0104) | 1C | LO | Not Attempted |

E Radiotherapy Structure Set (RTSS)

The SecondLook® 300 will process each image to determine the existence of any suspicious regions. A RT Structure Set Storage (RTSS) object is created per image. The RTSS object gives locations of the suspicious findings where ellipses are used to identify densities and rectangles are used to identify calcification clusters. The RTSS object can be sent to any remote system that is configured to receive this output. The use of the RT Structure Set Storage (RTSS) SOP Class is proprietary between iCAD, Inc. and General Electric (GE) Medical Systems and will not be defined in this document. The Modality (0008,0060) attribute value is "MG", to avoid confusion with valid RT Structure Set (RTSS) instances, and it is not recommended that the proprietary instances be archived.

F Grayscale Softcopy Presentation State (GSPS)

The SecondLook® 300 will process each image to determine the existence of any suspicious regions. A single grayscale softcopy presentation state object is created per image. The presentation state gives locations of the suspicious findings where ellipses are used to identify densities and rectangles are used to identify calcification clusters. The presentation state object can be sent to any remote system that is configured to receive this output.

F.1 Grayscale Softcopy Presentation State Image Object Definition (IOD)

| IE | Module | Usage |
|--------------------|---------------------------|-------|
| Patient | Patient | M |
| Study | General Study | M |
| Series | General Series | M |
| | Presentation Series | M |
| Equipment | General Equipment | M |
| Presentation State | Presentation State | M |
| | Displayed Area | M |
| | Graphic Annotation | C |
| | Graphic Layer | C |
| | Softcopy Presentation LUT | M |
| | SOP Common | M |

F.1.1 Grayscale Softcopy Presentation State Patient Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------|-------------|------|----|--|
| Patient's Name | (0010,0010) | 2 | PN | Patient's name obtained from modality worklist or entered by technician. |
| Patient ID | (0010,0020) | 2 | LO | Patient ID obtained from modality worklist or entered by technician. |
| Patient's Birth Date | (0010,0030) | 2 | DA | Patient birth date obtained from modality worklist or entered by technician. |
| Patient's Sex | (0010,0040) | 2 | CS | F = Female |

F.1.2 Grayscale Softcopy Presentation State General Study Module

| Attribute Name | Tag | Type | VR | Description |
|----------------------------|-------------|------|----|--|
| Study Instance UID | (0020,000D) | 1 | UI | Unique identifier for the study. |
| Study Date | (0008,0020) | 2 | DA | Date the image was scanned. |
| Study Time | (0008,0030) | 2 | TM | Time the image was scanned. |
| Referring Physician's Name | (0008,0090) | 2 | PN | Name of the patient's referring physician obtained from modality worklist. |
| Study ID | (0020,0010) | 2 | SH | User or equipment generated study ID obtained from modality worklist. |
| Accession Number | (0008,0050) | 2 | SH | A number that identifies the order for the study obtained from the modality worklist or entered by the technician. |

F.1.3 Grayscale Softcopy Presentation State General Series Module

| Attribute Name | Tag | Type | VR | Description |
|---------------------|-------------|------|----|--|
| Modality | (0008,0060) | 1 | CS | PR |
| Series Instance UID | (0020,000E) | 1 | UI | Unique identifier for the series. |
| Series Number | (0020,0011) | 2 | IS | A number that identifies the series: 1 |
| Laterality | (0020,0060) | 2C | CS | Laterality of body part examined: R = right L = left |
| Operators' Name | (0008,1070) | 3 | PN | Technician's initials entered into worklist. |

F.1.4 Grayscale Softcopy Presentation State Presentation Series Module

| Attribute Name | Tag | Type | VR | Description |
|----------------|-------------|------|----|-------------|
| Modality | (0008,0060) | 1 | CS | PR |

F.1.5 Grayscale Softcopy Presentation State General Equipment Module

| Attribute Name | Tag | Type | VR | Description |
|-------------------|-------------|------|----|--|
| Manufacturer | (0008,0070) | 2 | LO | iCAD, Inc. |
| Software Versions | (0018,1020) | 3 | LO | Manufacturer's designation of software version of the equipment that produced the digitized films. |

F.1.6 Grayscale Softcopy Presentation State Presentation State Module

| Attribute Name | Tag | Type | VR | Description |
|-------------------------------|-------------|------|----|---|
| Instance Number | (0020,0013) | 1 | IS | A number that identifies this presentation (SOP Instance). This number corresponds to the film number/instance number processed. |
| Presentation Label | (0070,0080) | 1 | CS | A label that is used to identify this presentation. Combination of laterality and view. Possible items are RCC, LCC, RMLO, LMLO . |
| Presentation Description | (0070,0081) | 2 | LO | A description of this presentation: SecondLook CAD results |
| Presentation Creation Date | (0070,0082) | 1 | DA | Date on which this presentation was created. |
| Presentation Creation Time | (0070,0083) | 1 | TM | Time at which this presentation was created. |
| Presentation Creator's Name | (0070,0084) | 2 | PN | Name of operator saving the presentation state SecondLook CAD |
| Referenced Series Sequence | (0008,1115) | 1 | SQ | Sequence of Repeating Items where each Item includes the Attributes of one or more Series. |
| >Series Instance UID | (0020,000E) | 1C | UI | Unique identifier of a Series that is part of this Study. |
| >Referenced Image Sequence | (0008,1140) | 1C | SQ | Sequence of Repeating Items where each Item provides reference to a selected set of Image SOP Class/SOP Instance pairs that are part of this Study and the Series defined by Series Instance UID (0020,000E). |
| >>Referenced SOP Class UID | (0008,1150) | 1C | UI | Uniquely identifies the referenced SOP Class. |
| >>Referenced SOP Instance UID | (0008,1155) | 1C | UI | Uniquely identifies the referenced SOP Instance. |

F.1.7 Grayscale Softcopy Presentation State Displayed Area Module

| Attribute Name | Tag | Type | VR | Description |
|--|-------------|------|----|---|
| Displayed Area Selection Sequence | (0070,005A) | 1 | SQ | A sequence of Items each of which describes the displayed area selection for a group of images or frames. |
| >Referenced Image Sequence | (0008,1140) | 1C | SQ | Sequence of Repeating Items where each Item provides reference to a selected set of Image SOP Class/SOP Instance pairs that are defined in the Presentation State Module. |
| >>Referenced SOP Class UID | (0008,1150) | 1C | UI | Uniquely identifies the referenced SOP Class. |
| >>Referenced SOP Instance UID | (0008,1155) | 1C | UI | Uniquely identifies the referenced SOP Instance. |
| >Displayed Area Top Left Hand Corner | (0070,0052) | 1 | SL | The top left pixel in the referenced image to be displayed, given as column/row. Column is the horizontal offset (X) and row is the vertical offset (Y) relative to the origin of the pixel data before spatial transformation, which is 1\1. |
| >Displayed Area Bottom Right Hand Corner | (0070,0053) | 1 | SL | The bottom right pixel in the referenced image to be displayed, given as column/row. Column |

| | | | | |
|-----------------------------|-------------|----|----|---|
| | | | | is the horizontal offset (X) and row is the vertical offset (Y) relative to the origin of the pixel data before spatial transformation, where X is the number of columns obtained from the image and Y is the number of rows obtained from the image. |
| >Presentation Size Mode | (0070,0100) | 1 | CS | Manner of selection of display size: SCALE TO FIT |
| >Presentation Pixel Spacing | (0070,0101) | 1C | DS | Physical distance between the center of each pixel in the referenced image, specified by a numeric pair – adjacent row spacing adjacent column spacing in mm. 0.0423\0.0423 or 0.0846\0.0846 |

F.1.8 Grayscale Softcopy Presentation State Graphic Annotation Module

| Attribute Name | Tag | Type | VR | Description |
|--|-------------|------|----|--|
| Graphic Annotation Sequence | (0070,0001) | 1 | SQ | A sequence of Items of which represents a group of annotations composed of graphics and text. |
| >Referenced Image Sequence | (0008,1140) | 1C | SQ | Sequence of Repeating Items where each Item provides reference to a selected set of Image SOP Class/SOP Instance pairs that are defined in the Presentation State Module. |
| >>Referenced SOP Class UID | (0008,1150) | 1C | UI | Uniquely identifies the referenced SOP Class. |
| >>Referenced SOP Instance UID | (0008,1155) | 1C | UI | Uniquely identifies the referenced SOP Instance. |
| >Graphic Layer | (0070,0002) | 1 | CS | The layer defined in the Graphic Layer Module in which the graphics or text is to be rendered. SECONDLOOK CAD |
| >Text Object Sequence | (0070,0008) | 1C | SQ | Sequence that describes a text annotation. |
| >>Bounding Box Annotation Units | (0070,0003) | 1C | CS | Units of measure for the axes of the text bounding box. PIXEL |
| >>Unformatted Text Value | (0070,0006) | 1 | ST | A string of text containing the software version and the number of calcification clusters and densities found. |
| >>Bounding Box Top Left Hand Corner | (0070,0010) | 1C | FL | Location of the Top Left Hand Corner (TLHC) of the bounding box in which Unformatted Text Value (0070,0006) is to be displayed, in Bounding Box Annotation Units (0070,0003), given as column\row. Column is the horizontal offset and row is the vertical offset. 10.0\10.0 |
| >>Bounding Box Bottom Right Hand Corner | (0070,0011) | 1C | FL | Location of the Bottom Right Hand Corner (BRHC) of the bounding box in which Unformatted Text Value (0070,0006) is to be displayed, in Bounding Box Annotation Units (0070,0003), given as column\row. Column is the horizontal offset and row is the vertical offset. 100.0\100.0 |
| >>Bounding Box Text Horizontal Justification | (0070,0012) | 1C | CS | Location of the text relative to the vertical edges of the bounding box: LEFT |
| >Graphic Object Sequence | (0070,0009) | 1C | SQ | Sequence that describes a graphic |

| | | | | |
|----------------------------|-------------|----|----|---|
| | | | | annotation. |
| >>Graphic Annotation Units | (0070,0005) | 1 | CS | Units of measure for the axes of the graphic annotation: PIXEL |
| >>Graphic Dimensions | (0070,0020) | 1 | US | 2 |
| >>Number of Graphic Points | (0070,0021) | 1 | US | Number of data points in this graphic. 4 for ELLIPSE and 5 for POLYLINE. |
| >>Graphic Data | (0070,0022) | 1 | FL | Coordinates that specify this graphic annotation. |
| >>Graphic Type | (0070,0023) | 1 | CS | The shape of graphic that is to be drawn. ELLIPSE = Density POLYLINE = Calcification Cluster. |
| >>Graphic Filled | (0070,0024) | 1C | CS | Whether or not the closed graphics element is displayed as filled or as an outline. N = No |

F.1.9 Grayscale Softcopy Presentation State Graphic Layer Module

| Attribute Name | Tag | Type | VR | Description |
|--|-------------|------|----|---|
| Graphic Layer Sequence | (0070,0060) | 1 | SQ | A sequence of Items each of which represents a single layer in which graphics are rendered. |
| >Graphic Layer | (0070,0002) | 1 | CS | A string which identifies the layer. SECONDLOOK CAD |
| >Graphic Layer Order | (0070,0062) | 1 | IS | An integer indicating the order in which it is recommended that the layer be rendered, if the display is capable of distinguishing. Lower numbered layers are to be rendered first. 1 |
| >Graphic Layer Recommended Display Grayscale Value | (0070,0066) | 3 | US | A default single gray unsigned value in which it is recommended that the layer be rendered on a monochrome display. The units are specified in P-Values from minimum of 0000H (black) up to a maximum of FFFFH (white). 32767 |

F.1.10 Grayscale Softcopy Presentation State Softcopy Presentation State LUT Module

| Attribute Name | Tag | Type | VR | Description |
|------------------------|-------------|------|----|--|
| Presentation LUT Shape | (2050,0020) | 1C | CS | Specifies predefined Presentation LUT transformation. IDENTITY – no further transformation necessary, input values are P-Values. |

F.1.11 Grayscale Softcopy Presentation State SOP Common Module

| Attribute Name | Tag | Type | VR | Description |
|------------------|-------------|------|----|---|
| SOP Class UID | (0008,0016) | 1 | UI | Uniquely identifies the SOP Class: 1.2.840.10008.5.1.4.1.1.11.1 |
| SOP Instance UID | (0008,0018) | 1 | UI | Uniquely identifies the SOP instance. |