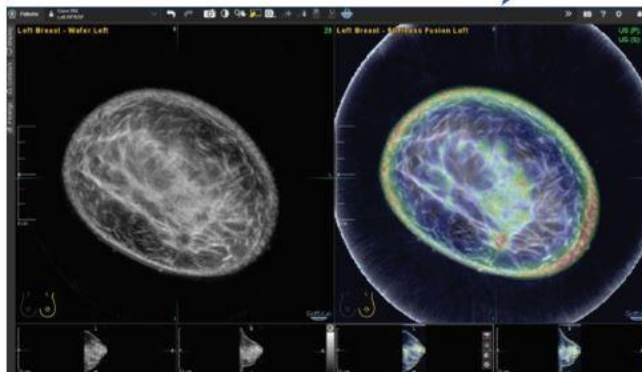
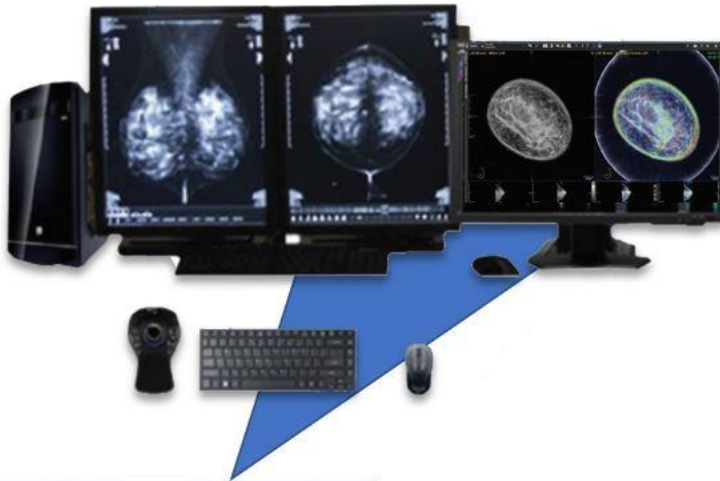


SoftVue™ DICOM Conformance Statement



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Conformance Statement Overview

The SoftVue system is an automated whole breast ultrasound tomography system. It implements the necessary DICOM services to download work lists from a radiology information system and save the acquired ultrasound images and associated presentation states to a picture archive and communication system.

Table 1 provides an overview of the network services provided by the SoftVue system.

Table 1: Network Services

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Magnetic Resonance Image Storage	Yes	No
Workflow management		
Modality Worklist Information Model FIND	Yes	No

Chapter 1 Introduction

1.1 Intended Audience

The reader of this document is concerned with the system integration issues of the SoftVue system's devices. It is assumed that the reader of this document is familiar with the DICOM Standard and with the terminology and concepts which are defined in that standard.

1.2 Scope and Field of Application

It is the intent of this document to provide the information necessary to ensure proper processing and interpretation of the SoftVue system's medical data exchanged using DICOM.

The reader of this DICOM Conformance Statement should be aware that difference devices are capable of using different Information Object Definitions. The SoftVue system only sends images using the MR Information Object.

Included in this DICOM Conformance Standard are the Module Definitions that define all data elements used by the SoftVue system. If the user encounters unspecified private data elements while parsing a SoftVue image set, the user is advised to ignore those data elements (per the DICOM Standard). Unspecified private data element information is subject to change without notice.

1.3 Important Remarks

The SoftVue system conforms to the DICOM standard. The scope of this DICOM conformance statement is to facilitate integration between the SoftVue system and other DICOM compliant products such as imaging workstations, PACS servers, and RIS servers. The conformance statement should be read and understood in conjunction with the DICOM standard. DICOM by itself does not guarantee interoperability. The Conformance statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

1.4 Conventions

The DICOM modules and attributes listed in this document are based on the 2022c Edition of the standard.

Each module contains a list of DICOM attributes. Related attributes may be grouped under a named set of Macro Attributes (e.g., General Anatomy Optional Macro Attributes). If at least one of the attributes within the set is used, the full list of attributes is listed. Otherwise, only the set name is documented as "Not used".

Some DICOM attributes (e.g., Referenced Patient Photo Sequence) contain (groups of) child attributes (e.g., Referenced Instances and Access Macro Attributes). Hierarchy of attributes are documented using the character '>'. The requirement type of a child attribute is to be interpreted within the scope of its parent. For example, if a child attribute is of Type 1 (Required), it is only required if the parent attribute is used. See Table 2 for the list of defined Data Element types.

Table 2: Data Element Types

Type	Description
1	Required to be in the SOP Instance and shall have a valid value.
2	Required to be in the SOP Instance but may contain the value of “unknown”, or a zero-length value.
3	Optional. May or may not be included and could be zero length.
1C	Conditional. If a condition is met, then it is a Type 1 (required, cannot be zero). If condition is not met, then the tag is not sent.
2C	Conditional. If condition is met, then it is a Type 2 (required, zero length OK). If condition is not met, then the tag is not sent.

1.5 Terms and Definitions

Table 3: Terms and Definitions

Term	Definition
Abstract Syntax	The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class.
Application Context	The specification of the type of communication used between Application Entities.
Application Entity (AE)	An end point of a DICOM information exchange, including the DICOM network or media interface software.
Application Entity Title (AET)	The externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network.
Association	A network communication channel set up between Application Entities.
Attribute	A unit of information in an object definition; a data element identified by a tag. The information may be a complex data structure such as a Sequence. An Attribute may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C).
C-ECHO	A service invoked by a DIMSE-service-user to verify end-to-end communications with a peer DIMSE-service-user

Term	Definition
C-FIND	A service invoked by a DIMSE-service-user to match a series of Attribute strings against the Attributes of the set of SOP Instances managed by a peer DIMSE-service-user. The C-FIND service returns for each match a list of requested Attributes and their values
C-STORE	A service invoked by a DIMSE-service-user to request the storage of Composite SOP Instance information by a peer DIMSE-service-user
Command	A request to operate on information across network.
Customer Service Engineer (CSE)	An Engineer who is specialized in servicing the company's equipment.
Data Dictionary	A registry of DICOM data elements which assign a unique tag, a name, value characteristics, and semantics to each data element.
Data Element	A unit of information as defined by a single entry in the data dictionary.
Digital Imaging and Communications in Medicine (DICOM)	An international standard for medical images and relation information (ISO 12052). It defines the formats for medical images that can be exchanged with the data and quality necessary for clinical use. It is one of the most widely deployed healthcare messaging standards in the world.
DICOM Message Service Elements (DIMSE)	A set of rules in the DICOM standard for exchanging service messages between the Application Entities. Each DIMSE service usually has a request (sent by the SCU AEs) and response (provided by the SCP AEs) message components
Domain Name System (DNS)	A hierarchical distributed naming system for computers, services or any resource connected to the Internet of private network.
Dynamic Host Configuration Protocol (DHCP)	Networking protocol used on Internet Protocol (IP) networks for dynamically distributing network configuration parameters, such as IP addresses, gateways, and subnet masks.
Hospital Information System (HIS)	An integrated system designed to manage all the aspects of a hospital operation, such as medical, clinical, administrative, financial, legal and the corresponding service processing.

Term	Definition
Information Entity (IE)	The portion of information defined by a Composite IOD which is related to one specific class of Real-World Object. There is a one-to-one correspondence between Information Entities and entities in the DICOM Application Model.
Information Object Definition (IOD)	The specified set of <i>Attributes</i> that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties.
Integrating the Healthcare Enterprise (IHE)	A non-profit organization focused to improving the way computer systems share information in a healthcare industry
International Organization for Standardization (ISO)	An international standard-setting body composed of representatives from various national standards organizations.
Internet Protocol version 4 (IPv4)	Fourth version of the Internet Protocol (IP) that provides an identification and location for computers on networks and routes traffic across the Internet. It uses 32-bits for addressing.
Internet Protocol version 6 (IPv6)	Latest version of the Internet Protocol (IP) that provides an identification and location for computers on networks and routes traffic across the Internet. It uses 128-bits for addressing.
Look-up Table (LUT)	A transformation applied to the images.
Magnetic Resonance Imaging (MR)	A non-invasive modality that uses a magnetic field and pulses of radio wave energy for diagnostic medical imaging.
Modality Worklist (MWL)	A DICOM information model which is used to organize data about the attributes of a number of managed worklist items. A worklist query is performed against a Modality worklist information model.
Module	A set of <i>Attributes</i> with an <i>Information Object Definition</i> that are logically related to each other.
Negotiation	First phase of <i>Association</i> establishment that allows <i>Application Entities</i> to agree on types of data exchanged and how the data will be encoded.
Network Time Protocol (NTP)	Networking protocol for synchronizing clocks between computer systems over Internet Protocol (IP) networks.

Term	Definition
Picture Archiving and Communication System (PACS)	A system based on the universal DICOM standard, to store, retrieve, print high-quality medical images of multiple modalities across a communication network. It can be used to integrate images with patient databases and allows viewing images at workstations throughout the network.
Presentation Context	The set of DICOM network services used over an <i>Association</i> , as negotiated between Application Entities, includes <i>Abstract Syntaxes</i> and <i>Transfer Syntaxes</i> .
Protocol Data Unit (PDU)	A packet of a DICOM message sent across the network.
Radiology Information System (RIS)	Database used by radiologists to store, manipulate, and distribute patient radiological data and images.
Secondary Capture (SC)	A DICOM image object that is unrelated to any specific device or modality used for display and archival of images.
Security Profile	A set of mechanisms, such as encryption, user authentication, or digital signatures, used by an <i>Application Entity</i> to ensure confidentiality, integrity, and/or availability of exchanged DICOM data.
Service Class Provider (SCP)	Role of an <i>Application Entity</i> that provides a DICOM network service; typically, a server that performs operations requested by another <i>Application Entity</i> .
Service Class User (SCU)	Role of an <i>Application Entity</i> that uses a DICOM network service; typically, a client.
Service/Object Pair Class (SOP Class)	The specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification.
Service/Object Pair Instance (SOP Instance)	An information object; a specific occurrence of information exchanged in a <i>SOP Class</i> .
Tag	A 32-bit identifier for a data element, represented as a pair of four-digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private data element.
Transfer Syntax	The encoding used for exchange of DICOM information objects and messages.

Term	Definition
Transmission Control Protocol / Internet Protocol (TCP/IP)	A networking protocol suite used by the Internet and similar computer networks.
Ultrasound (US)	A non-invasive modality that uses Ultrasound waves for diagnostic medical imaging.
Unique Identifier (UID)	A globally unique “dotted decimal” string that identifies a specific object or class of objects.
Value Representation (VR)	The format type of individual DICOM data element, such as text an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with implicit VR, the receiving application must use a DICOM dictionary to look up the format of each data element.

1.6 References

NEMA PS3 / ISO 12052, Digital Imaging and Communications in Medicine (DICOM) Standard, Edition 2022c, National Electrical Manufacturers Association, Rosslyn, VA, USA (available free at <http://www.dicomstandard.org/>).

Chapter 2 Network Conformance Statement

This section of the DICOM Conformance statement specifies SoftVue system's compliance to DICOM requirements for networking features.

This section details the roles and the DICOM Service Classes that the system supports.

The SoftVue system's DICOM implementation allows:

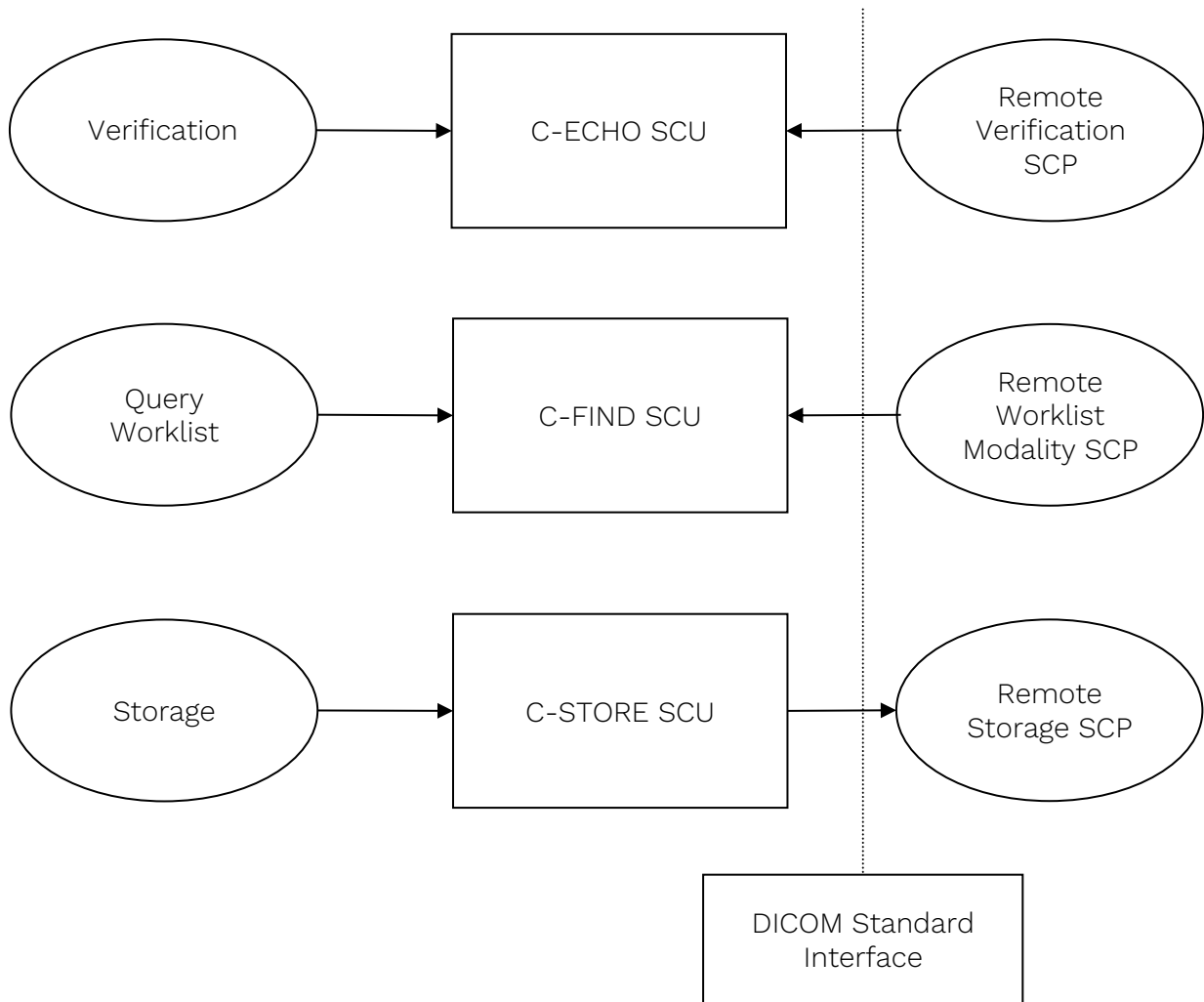
- The user to copy the DICOM images generated through the system to a remote DICOM Application Entity (AE), using the standard storage DICOM service as a Service Class User (SCU).
- The user to check the application-level communication from the system DICOM server to a remote DICOM AE. To this aim, the system uses the Verification DICOM service class as a SCU.
- The user to get the list of procedures to be performed from the RIS. This is done using the basic worklist management DICOM service as SCU.

2.1 Implementation Model

2.1.1 Application Data Flow

A diagram illustrating the application model is shown in Figure 1.

Figure 1: Application Data Flow Diagram



A DICOM Application Entity is an application that handles the DICOM protocol communication. These applications (represented in the figure by C-ECHO, C-FIND, and C-STORE) are available on the SoftVue system and are invoked by real world activities on the user interface.

The remote DICOM Application Entities (represented in the figure by Remote Verification, Remote Worklist Modality, and Remote Storage) are presumed to be available on the HIS system. The interface information about the remote AEs is configured on the SoftVue system through the User Interface.

The following SoftVue system’s real-world activities cause a local DICOM AE to initiate a DICOM association:

- Verification (C-ECHO SCU)
- Query Worklist (C-FIND SCU)
- Storage (C-STORE SCU)

2.1.2 Functional Definitions of Application Entities

2.1.2.1 Verification

The verification service is the DICOM-equivalent of the “ping” network command. It verifies the DICOM connectivity with another node acting as a DICOM verification SCP. From the protocol point of view, the DICOM verification is implemented through the C-ECHO message and does the following sequence of steps:

- Initiates a DICOM Association
- Sends the C-ECHO request
- Waits for the C-ECHO response
- Closes the Association

2.1.2.2 Query Worklist

The Query Worklist activity queries the remote HIS/RIS system for a list of procedures that have been scheduled on the SoftVue system. The Remote system can be any DICOM modality worklist SCP. The worklist items returned are made available to the user. The user can select a worklist item from the worklist. The attributes settings that belong to the selected worklist item will be used to populate information about the procedure to be performed.

The Query Worklist SCU AE provides Standard Conformance to the DICOM SOP Classes listed in Table 4 as a Modality Worklist SCU.

Table 4: DICOM SOP Class

SOP Class	SOP Class UID
Find Modality Worklist Information Model	1.2.840.10008.5.1.4.31

2.1.2.2.1 Association Establishment Policies

2.1.2.2.1.1 General

The Modality Worklist SCU AE will initiate an association as a Service Class User, requesting data about object instances.

2.1.2.2.1.2 Number of Associations

The maximum number of simultaneous associations is one.

2.1.2.2.1.3 Asynchronous Nature

The Modality Worklist SCU AE does not support asynchronous communication (multiple outstanding transactions over a single association).

2.1.2.2.1.4 Proposed Presentation Contexts

The presentation contexts that are proposed by the Modality SCU AE for the Modality Worklist operation(s) are specified in Table 5.

Table 5: Modality SCU AE Presentation Contexts

Name List	UID List
Implicit VR Little Endian	1.2.840.10008.1.2
Explicit VR Little Endian	1.2.840.10008.1.2.1
Explicit VR Big Endian	1.2.840.10008.1.2.2

2.1.2.2.1.5 Matching Keys and Return Keys

The matching keys that will be used by the SCU in the modality worklist query are listed in Table 6. All other required matching keys will be left blank. It is assumed that the SoftVue procedure will be scheduled as the first (and only) item of the Scheduled Procedure Step Sequence, as required by the Modality Worklist Information Model defined in DICOM PS 3.4: Service Class Specifications.

Queries will be performed with a Modality type that can be specified through SoftVue system's graphical user interface or the service console, and a Scheduled Procedure Step Start Date that falls within the date range defined by the SoftVue system (current date +/- an offset). If no modality is provided, the Modality field will be left blank in the query.

Table 6: Matching Keys

Module/Attribute Name	Tag	Match Key Type	Match
Scheduled Procedure Step Sequence	(0040,0100)	Required	N/A
>Modality	(0008,0060)	Required	Single Value
>Scheduled Procedure Step Start Date	(0040,0002)	Required	Range

The SoftVue system will use the information provided by the return keys listed in Table 7. The defined Data Element types are listed in Table 2.

Table 7: Return Keys

Module/Attribute Name	Tag	Return Key Type
Study Instance UID	(0020,000D)	1
Accession Number	(0008,0050)	2
Patient Name	(0010,0010)	1
Patient ID	(0010,0020)	1
Patient Birth Date	(0010,0030)	2
Patient Sex	(0010,0040)	2
Referring Physician's Name	(0008,0090)	2

Module/Attribute Name	Tag	Return Key Type
Scheduled Procedure Step Sequence	(0040,0100)	1
>Scheduled Procedures Step Start Date	(0040,0002)	1
>Scheduled Procedures Step Start Time	(0040,0003)	1
>Modality	(0008.0060)	1

2.1.2.3 Storage

Copying of images consists of the SoftVue system automatically transferring the images at the end of an imaging procedure, or an operator manually initiating transfer through the User Interface. Upon initiating the transfer request, the image objects (in the DICOM MR Information Object Definition (IOD) Images) are copied from the local file system to the remote SCP and removed from the local file system upon successful transfer completion. The remote system can be any DICOM storage format supporting the MR.

The Storage SCU AE provides Standard Conformance to the DICOM SOP Classes shown in Table 8 as a Storage SCU.

Table 8: Standard Conformance SOP Classes

SOP Class	SOP Class UID
MR Image Storage	1.2.840.10008.5.1.4.1.1.4

2.1.2.3.1 Association Establishment Policies

2.1.2.3.1.1 General

The Storage SCU AE will initiate an association as an SCU of Storage Service when the SoftVue system automatically sends objects over the network to a remote Storage SCP or when the operator manually initiates a storage request. The association is closed when the object has been sent to the remote Storage SCP. The Storage SCU AE is able to abort the association when an error occurs.

2.1.2.3.1.2 Number of Associations

The maximum number of simultaneous associations is one.

2.1.2.3.1.3 Association Initiation by Real-World Activity

The Storage SCU AE initiates an association for the appropriate Storage Service Class that corresponds to the set of objects requested for transfer. The association is closed when all objects have been sent to the remote DICOM system or when an error occurs.

2.1.2.3.1.4 Proposed Presentation Contexts

The presentation contexts that are proposed by the Storage SCU AE for the transfer objects operation are specified in Table 9.

Table 9: Proposed Presentation Contexts

Abstract Syntax		Transfer Syntax		Role
Name	UID	Name List	UID List	
Magnetic Resonance Image Storage	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2	SCU

2.1.3 Sequencing of Real-World Activities

No stipulations are required on the real-world activities.

2.2 Communication Profiles

2.2.1 Supported Communication Stacks

DICOM Upper Layer is supported using TCP/IP.

2.2.2 OSI Stack

OSI Stack is not supported.

2.2.3 TCP/IP Stack

The TCP/IP stack is inherited from the Linux Operating System.

2.2.4 IPv4 and IPv6 Support

This product supports only IPv4.

2.2.5 DHCP Support

This product supports configuring the IPv4 settings (IP Address, Subnet Mask, Default Gateway, and DNS Server) either statically or dynamically from an IPv4 DHCP server.

2.2.6 NTP Support

The product also supports clock synchronization to occasionally reference with an NTP server.

2.2.7 DNS Support

This product supports configuring DNS for name resolution.

2.3 Extensions/Specializations/Privatizations

Refer to Chapter 3 for the MR Information Object Implementations.

2.4 Configuration

Administrators and service engineers have access to configure the system.

2.4.1 Local Server

The SoftVue system allows the user to edit basic local network configurations for communication with the SCPs. These options can be selected from the SoftVue system's graphical user interface and the service console.

2.4.1.1 Configurable Parameters

The following fields are configurable for the local AE.

- Network Type (Static/Dynamic)
- IP Address
- Netmask
- Gateway
- DNS Server IP Address
- AE Title

The parameters can be configured by a user with administrator privileges. If the network type is dynamic, all remaining fields are expected to be populated by a network DHCP server.

2.4.2 Storage SCU Configuration

The SoftVue system allows the user to edit configurations for communication with the remote storage SCP AE. These options can be selected from the SoftVue system's graphical user interface and the service console.

2.4.2.1 Configurable Parameters

The following fields are configurable for communication with the remote Storage SCP AE.

- AE Title
- IP Address / Hostname
- Port

The parameters can be configured by a user with administrator privileges. Proper address resolution of a hostname requires proper configuration of the local DNS server IP address. If the network configuration is static, the hostname must be a fully qualified domain name.

2.4.3 Query Worklist SCU Configuration

The SoftVue system allows the user to edit configurations for communication with the remote worklist SCP AE. These options can be selected from the SoftVue system's graphical user interface and the service console.

2.4.3.1 Configurable Parameters

The following fields are configurable for communication with the remote worklist SCP AE.

- AE Title
- IP Address / Hostname
- Port

The parameters can be configured by a user with administrator privileges. Proper address resolution of a hostname requires proper configuration of the local DNS server IP address. If the network configuration is static, the hostname must be a fully qualified domain name.

2.5 Support of Character Sets

All SoftVue system's DICOM applications support the ISO-IR 6-character set (ISO 646, Default repertoire).

2.6 Security

The SoftVue system does not support any specific security measure. It is assumed that the SoftVue system is used within a secured environment. A secured environment includes at a minimum:

- Firewall or router protections to ensure that only approved external hosts have network access to the SoftVue system.
- Firewall or router protections to ensure that the SoftVue system only has network access to approved external hosts and services.
- Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (e.g., Virtual Private Network (VPN)).

Other network security procedures such as automated intrusion detection may be appropriate in some environments. Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

Chapter 3 Information Object Definitions

3.1 MRI Information Object Implementation

3.1.1 Module List

Table 10 shows the defined modules within the entities, which comprise the DICOM MR IOD. Each module is identified by its module name. The modules are described as either being used or not with cross-references to the section and the DICOM standard as defined in DICOM PS3.3: Information Object Definitions.

Table 10: MR Image IOD Entity Relationship Model

Entity Name	Module Name	Section Reference	DICOM Reference
Patient	Patient	3.2.1	C.7.1.1
	Clinical Trial Subject	Not used	C.7.1.3
Study	General Study	3.2.2	C.7.2.1
	Patient Study	3.2.3	C.7.2.2
	Clinical Trial Study	Not used	C.7.2.3
Series	General Series	3.2.4	C.7.3.1
	Clinical Trial Series	Not used	C.7.3.2
Frame Of Reference	Frame Of Reference	3.2.5	C.7.4.1
Equipment	General Equipment	3.2.6	C.7.5.1
Acquisition	General Acquisition	3.2.7	C.7.10.1
Image	General Image	3.2.8	C.7.6.1
	General Reference	3.2.9	C.12.4
	Image Plane	3.2.10	C.7.6.2
	Image Pixel	3.2.11	C.7.6.3
	Contrast/Bolus	Not used	C.7.6.4
	Device	Not used	C.7.6.12
	Specimen	Not used	C.7.6.22
	MR Image	3.1.2	C.8.3.1
	Overlay Plane	Not used	C.9.2
	VOI LUT	3.2.12	C.11.2
	SOP Common	3.2.13	C.12.1
	Common Instance Reference	Not used	C.12.2

3.1.2 MR Image Module

Table 11 specifies the attributes of the MR Image module. Refer to the DICOM Standard Part 3 (Information Object Definitions) for a description of entities and specializations.

Table 11: MR Image Module

Attribute Name	Tag	Type	Attribute Description
Image Type	(0008,0008)	1	Image identification characteristics. (Specialization).
Samples Per Pixel	(0028,0002)	1	Number of samples (planes) in this image. (Specialization).
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. (Specialization).
Bits Allocated	(0028,0100)	1	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. (Specialization).
Bits Stored	(0028,0101)	1	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored.
High Bit	(0028,0102)	1	Most significant bit for pixel sample data. Each sample shall have the same high bit.
Scanning Sequence	(0018,0020)	1	Description of the type of data taken. Set to 'RM' (Research Mode).
Sequence Variant	(0018,0021)	1	Variant of the Scanning Sequence. Set to 'NONE'.
Scan Options	(0018,0022)	2	Not used.
MR Acquisition Type	(0018,0023)	2	Not used.
Repetition Time	(0018,0080)	2C	Not used.
Echo Time	(0018,0081)	2	Not used.
Echo Train Length	(0018,0091)	2	Not used.
Inversion Time	(0018,0082)	2C	Not used.
Trigger Time	(0018,1060)	2C	Not used.
Sequence Name	(0018,0024)	3	Not used.
Angio Flag	(0018,0025)	3	Not used.
Number of Averages	(0018,0083)	3	Not used.
Imaging Frequency	(0018,0084)	3	Not used.
Imaged Nucleus	(0018,0085)	3	Not used.
Echo Number	(0018,0086)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
Magnetic Field Strength	(0018,0087)	3	Not used.
Number of Phase Encoding Steps	(0018,0089)	3	Not used.
Percent Sampling	(0018,0093)	3	Not used.
Percent Phase Field of View	(0018,0094)	3	Not used.
Pixel Bandwidth	(0018,0095)	3	Not used.
Nominal Interval	(0018,1062)	3	Not used.
Beat Rejection Flag	(0018,1080)	3	Not used.
Low R-R Value	(0018,1081)	3	Not used.
High R-R Value	(0018,1082)	3	Not used.
Intervals Acquired	(0018,1083)	3	Not used.
Intervals Rejected	(0018,1084)	3	Not used.
PVC Rejection	(0018,1085)	3	Not used.
Skip Beats	(0018,1086)	3	Not used.
Heart Rate	(0018,1088)	3	Not used.
Cardiac Number of Images	(0018,1090)	3	Not used.
Trigger Window	(0018,1094)	3	Not used.
Reconstruction Diameter	(0018,1100)	3	Not used.
Receive Coil Name	(0018,1250)	3	Not used.
Transmit Coil Name	(0018,1251)	3	Not used.
Acquisition Matrix	(0018,1310)	3	Not used.
In-plane Phase Encoding Direction	(0018,1312)	3	Not used.
Flip Angle	(0018,1314)	3	Not used.
SAR	(0018,1316)	3	Not used.
Variable Flip Angle Flag	(0018,1315)	3	Not used.
dB/dt	(0018,1318)	3	Not used.
Temporal Position Identifier	(0018,0100)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
Number of Temporal Positions	(0018,0105)	3	Not used.
Temporal Resolution	(0018,0110)	3	Not used.
General Anatomy Optional Macro Attributes			Not used
Optional View and Slice Progression Direction Macro Attributes			Not used.
Isocenter Position	(300A,012C)	3	Not used.
B1rms	(0018,1320)	3	Not used.

3.1.3 MR Extended Attributes

Table 12 specifies the additional attributes utilized beyond the MR Standard SOP Class. Refer to the DICOM Standard Part 6 (Data Dictionary) for additional information.

Table 12: MR Extended Attributes

Attribute Name	Tag	Type	Attribute Description
Pixel Spacing Calibration Type	(0028,0A02)	3	The type of correction for the effect of geometric magnification or calibration against an object of known size, if any.
Rescale Intercept	(0028,1052)	3	The value b in relationship between stored values (SV) and the output units.
Rescale Slope	(0028,1053)	3	The value m in the equation specified in Rescale Intercept (0028,1052).
Rescale Type	(0028,1054)	3	Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052).

3.2 Common Informative Module Definitions

3.2.1 Patient Module

Table 13 specifies the attributes of the DICOM Patient Module that describe and identify the patient that is the subject of the diagnostic study. This module contains attributes of the patient that are needed for diagnostic interpretation of the image and are common for all studies performed on the patient.

Table 13: Patient Module

Attribute Name	Tag	Type	Attribute Description
Patient's Name	(0010,0010)	2	Patient's full name.

Attribute Name	Tag	Type	Attribute Description
Patient ID	(0010,0020)	2	Primary hospital identification number or code for the patient.
Type of Patient ID	(0010,0022)	3	Not used.
Issuer of Patient ID Macro Attributes			Not used.
Patient's Birth Date	(0010,0030)	2	Birth date of the patient.
Patient's Birth Date in Alternative Calendar	(0010,0033)	3	Not used.
Patient's Death Date in Alternative Calendar	(0010,0034)	3	Not used.
Patient's Alternative Calendar	(0010,0035)	1C	Not used.
Patient's Sex	(0010,0040)	2	Sex of the named patient. Enumerated values: M = male, F = female, O = other
Referenced Patient Photo Sequence	(0010,1100)	3	Not used.
>Referenced Instances and Access Macro Attributes			Not used.
Quality Control Subject	(0010,0200)	3	Not used.
Referenced Patient Sequence	(0008,1120)	3	Not used.
>SOP Instance Reference Macro Attributes			Not used.
Patient's Birth Time	(0010,0032)	3	Not used.
Other Patient IDs Sequence	(0010,1002)	3	Not used.
>Patient ID	(0010,0020)	1	Not used
>Issuer of Patient ID Macro Attributes			Not used.
>Type of Patient ID	(0010,0022)	1	Not used
Other Patient Names	(0010,1001)	3	Not used.
Ethnic Group	(0010,2160)	3	Not used.
Patient Comments	(0010,4000)	3	Not used.
Patient Species Description	(0010,2201)	1C	Not used.
Patient Species Code Sequence	(0010,2202)	1C	Not used.
>Code Sequence Macro Attributes			Not used.

Attribute Name	Tag	Type	Attribute Description
Patient Breed Description	(0010,2292)	2C	Not used.
Patient Breed Code Sequence	(0010,2293)	2C	Not used.
>Code Sequence Macro Attributes			Not used.
Breed Registration Sequence	(0010,2294)	2C	Not used.
>Breed Registration Number	(0010,2295)	1	Not used.
>Breed Registry Code Sequence	(0010,2296)	1	Not used.
>>Code Sequence Macro Attributes			Not used.
Strain Description	(0010,0212)	3	Not used.
Strain Nomenclature	(0010,0213)	3	Not used.
Strain Code Sequence	(0010,0219)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Strain Additional Information	(0010,0218)	3	Not used.
Strain Stock Sequence	(0010,0216)	3	Not used.
>Strain Stock Number	(0010,0214)	1	Not used.
>Strain Source	(0010,0217)	1	Not used.
>Strain Source Registry Code Sequence	(0010,0215)	1	Not used.
>>Code Sequence Macro Attributes			Not used.
Genetic Modifications Sequence	(0010,0221)	3	Not used.
>Genetic Modifications Description	(0010,0222)	1	Not used.
>Genetic Modifications Nomenclature	(0010,0223)	1	Not used.
>Genetic Modifications Code Sequence	(0010,0229)	3	Not used.
>>Code Sequence Macro Attributes			Not used.
Responsible Person	(0010,2297)	2C	Not used.
Responsible Person Role	(0010,2298)	1C	Not used.
Responsible Organization	(0010,2299)	2C	Not used.
Patient Identity Removed	(0012,0062)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
De-identification Method	(0012,0063)	1C	Not used.
De-identification Method Code Sequence	(0012,0064)	1C	Not used.
>Code Sequence Macro Attributes			Not used.
Patient Group Macro Attributes			Not used.

3.2.2 General Study Module

Table 14 specifies the attributes that describe and identify the study performed upon the patient.

Table 14: General Study Module

Attribute Name	Tag	Type	Attribute Description
Study Instance UID	(0002,000D)	1	Unique identifier for the Study.
Study Date	(0008,0020)	2	Date of the study.
Study Time	(0008,0030)	2	Time of the study.
Referring Physician's Name	(0008,0090)	2	Name of the patient's referring physician.
Referring Physician Identification Sequence	(0008,0096)	3	Not used.
>Person Identification Macro Attributes			Not used.
Consulting Physician's Name	(0008,009C)	3	Not used.
Consulting Physician Identification Sequence	(0008,009D)	3	Not used.
>Person Identification Macro Attributes			Not used.
Study ID	(0020,0010)	2	User or equipment generated study identifier.
Accession Number	(0008,0050)	2	A RIS generated number that identifies the order for the Study.
Issuer of Accession Number Sequence	(0008,0051)	3	Not used.
>HL7v2 Hierarchic Designator Macro Attributes			Not used.
Study Description	(0008,1030)	3	Institution-generated description or classification of the Study performed. Set to 'SoftVue Breast US Bilateral' (bilateral studies) or 'SoftVue Breast US Unilateral' (unilateral studies).

Attribute Name	Tag	Type	Attribute Description
Physician(s) of Record	(0008,1048)	3	Not used.
Physicians(s) of Record Identification Sequence	(0008,1049)	3	Not used.
>Person Identification Macro Attributes			Not used.
Name of Physician(s) Reading Study	(0008,1060)	3	Not used.
Physicians(s) Reading Study Identification Sequence	(0008,1062)	3	Not used.
>Person Identification Macro Attributes			Not used.
Requesting Service	(0032,1033)	3	Not used.
Requesting Service Code Sequence	(0032,1034)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Referenced Study Sequence	(0008,1110)	3	A sequence that provides reference to a Study SOP Class/Instance pair.
>Reference SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.
>Reference SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.
Procedure Code Sequence	(0008,1032)	3	A Sequence that conveys the type of procedure performed.
>Code Value	(0008,0100)	1C	The identifier of the Coded Entry.
>Coding Scheme Designator	(0008,0102)	1C	The identifier of the coding scheme in which the Coded Entry is defined.
>Coding Scheme Version	(0008,0103)	1C	An identifier of the version of the coding scheme if necessary to resolve ambiguity.
>Code Meaning	(0008,0104)	1	Text that conveys the meaning of the Coded Entry.
>Long Code Value	(0008,0119)	1C	Not used.
>URN Code Value	(0008,0120)	1C	Not used.
>Equivalent Code Sequence	(0008,0121)	3	Not used.
>>Basic Code Sequence Macro Attributes			Not used.
>>Enhanced Code Sequence Macro Attributes			Not used.
>Enhanced Code Sequence Macro Attributes			Not used.

Attribute Name	Tag	Type	Attribute Description
Reason For Performed Procedure Code Sequence	(0040,1012)	3	Not used.
>Code Sequence Macro Attributes			Not used.

3.2.3 Patient Study Module

Table 15 specifies the Attributes that provide information about the patient at the time the study started.

Table 15: Patient Study Module

Attribute Name	Tag	Type	Attribute Description
Admitting Diagnoses Description	(0008,1080)	3	Not used.
Admitting Diagnoses Code Sequence	(0008,1084)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Patient's Age	(0010,1010)	3	Age of the Patient.
Patient's Size	(0010,1020)	3	Not used.
Patient's Weight	(0010,1030)	3	Not used.
Patient's Body Mass Index	(0010,1022)	3	Not used.
Measured AP Dimension	(0010,1023)	3	Not used.
Measured Lateral Dimension	(0010,1024)	3	Not used.
Patient's Size Code Sequence	(0010,1021)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Medical Alerts	(0010,2000)	3	Not used.
Allergies	(0010,2110)	3	Not used.
Smoking Status	(0010,21A0)	3	Not used.
Pregnancy Status	(0010,21C0)	3	Not used.
Last Menstrual Date	(0010,21D0)	3	Not used.
Patient State	(0038,0500)	3	Not used.
Occupation	(0010,2180)	3	Not used.
Additional Patient History	(0010,21B0)	3	Not used.
Admission ID	(0038,0010)	3	Not used.
Issuer of Admission ID Sequence	(0038,0014)	3	Not used.
>HL7v2 Hierarchic Designator Macro Attributes			Not used.
Reason for Visit	(0032,1066)	3	Not used.
Reason for Visit Code Sequence	(0032,1067)	3	Not used.
>Code Sequence Macro Attributes			Not used.

Attribute Name	Tag	Type	Attribute Description
Service Episode ID	(0038,0060)	3	Not used.
Issuer of Service Episode ID Sequence	(0038,0064)	3	Not used.
>HL7v2 Hierarchic Designator Macro Attributes			Not used.
Service Episode Description	(0038,0062)	3	Not used.
Patients Sex Neutered	(0010,2203)	2C	Not used.

3.2.4 General Series Module

Table 16 specifies the attributes that identify and describe general information about the series within a study.

Table 16: General Series Module

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	Type of equipment that originally acquired the data used to create the images in this Series. Set to 'US'.
Series Instance UID	(0020,000E)	1	Unique identifier of the Series.
Series Number	(0020,0011)	2	A number that identifies this Series.
Laterality	(0020,0060)	2C	Laterality of body part examined.
Series Date	(0008,0021)	3	Date the Series started.
Series Time	(0008,0031)	3	Time the Series started.
Performing Physician's Name	(0008,1050)	3	Not used.
Performing Physician Identification Sequence	(0008,1052)	3	Not used.
>Person Identification Macro Attributes			Not used.
Protocol Name	(0018,1030)	3	User-defined description of the conditions under which the Series was performed.

Attribute Name	Tag	Type	Attribute Description
Series Description	(0008,103E)	3	Description of the Series. SoftVue outputs follow the format “ <i>series laterality</i> ”, where <i>laterality</i> is one of “Left” “Right” And <i>series</i> is one of “Soundspeed” “Attenuation” “ERF” “Reflection” “Wafer” “Stiffness”
Series Description Code Sequence	(0008,103F)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Operators Name	(0008,1070)	3	Name of the operator supporting the Series.
Operator Identification Sequence	(0008,1072)	3	Not used.
>Person Identification Macro Attributes			Not used.
Referenced Performed Procedure Step Sequence	(0008,1111)	3	Not used.
>SOP Instance Reference Macro Attributes			Not used.
Related Series Sequence	(0008,1250)	3	Not used.
>Study Instance UID	(0020,000D)	1	Not used.
>Series Instance UID	(0020,000E)	1	Not used.
>Purpose of Reference Code Sequence	(0040,A170)	2	Not used.
>>Code Sequence Macro Attributes			Not used.
Body Part Examined	(0018,0015)	3	Text description of the part of the body examined. Set to ‘BREAST’.
Patient Position	(0018,5100)	2C	Patient position description relative to the equipment. Set to ‘HFP’ (Head First-Prone).
Smallest Pixel Value in Series	(0028,0108)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
Largest Pixel Value in Series	(0028,0109)	3	Not used.
Request Attributes Sequence	(0040,0275)	3	Sequence that contains attributes from the Imaging Service Request.
>Requested Procedure ID	(0040,1001)	1C	Identifier that identifies the Requested Procedure in the Imaging Service Request.
>Accession Number	(0008,0050)	3	Not used.
>Issuer of Accession Number Sequence	(0008,0051)	3	Not used.
>>HL7v2 Hierarchic Designator Macro Attributes			Not used.
>Study Instance UID	(0020,000D)	3	Not used.
>Referenced Study Sequence	(0008,1110)	3	Not used.
>>SOP Instance Reference Macro Attributes			Not used.
>Requested Procedure Description	(0032,1060)	3	Institution-generated administrative description or classification of Requested Procedure.
>Requested Procedure Code Sequence	(0032,1064)	3	Not used.
>>Code Sequence Macro Attributes			Not used.
>Reason for the Requested Procedure	(0040,1002)	3	Not used.
>Reason for the Requested Procedure Code Sequence	(0040,100A)	3	Not used.
>>Code Sequence Macro Attributes			Not used.
>Scheduled Procedure Step ID	(0040,0009)	1C	Identifier that identifies the Scheduled Procedure Step.
>Scheduled Procedure Step Description	(0040,0007)	3	Institution-generated description or classification of the Scheduled Procedure Step to be performed.
>Scheduled Protocol Code Sequence	(0040,0008)	3	Sequence describing the Scheduled Protocol following a specific coding scheme. One or more Items are permitted in this Sequence.
>>Code Value	(0008,0100)	1C	The identifier of the Coded Entry.

Attribute Name	Tag	Type	Attribute Description
>>Coding Scheme Designator	(0008,0102)	1C	The identifier of the coding scheme in which the Coded Entry is defined.
>>Coding Scheme Version	(0008,0103)	1C	An identifier of the version of the coding scheme if necessary to resolve ambiguity.
>>Code Meaning	(0008,0104)	1	Text that conveys the meaning of the Coded Entry.
>>Long Code Value	(0008,0119)	1C	Not used.
>>URN Code Value	(0008,0120)	1C	Not used.
>>Equivalent Code Sequence	(0008,0121)	3	Not used.
>>>Basic Code Sequence Macro Attributes			Not used.
>>>Enhanced Code Sequence Macro Attributes			Not used.
>>Enhanced Code Sequence Macro Attributes			Not used.
>>Protocol Context Sequence	(0040,0440)	3	Not used.
>>>Content Item Macro Attributes			Not used.
>>>Context Item Modifier Sequence	(0040,0441)	3	Not used.
>>>>Content Item Macro Attributes			Not used.
Performed Procedure Step ID	(0040,0253)	3	User or equipment generated identifier of that part of a Procedure that has been carried out within this step.
Performed Procedure Step Start Date	(0040,0244)	3	Date on which the Performed Procedure Step started.
Performed Procedure Step Start Time	(0040,0245)	3	Time on which the Performed Procedure Step started.
Performed Procedure Step End Date	(0040,0250)	3	Not used.
Performed Procedure Step End Time	(0040,0251)	3	Not used.
Performed Procedure Step Description	(0040,0254)	3	Institution-generated description or classification of the Procedure Step that was performed.
Performed Protocol Code Sequence	(0040,0260)	3	Not used.
>Code Sequence Macro Attributes			Not used.

Attribute Name	Tag	Type	Attribute Description
>Protocol Context Sequence	(0040,0440)	3	Not used.
>>Content Item Macro Attributes			Not used.
>>Content Item Modifier Sequence	(0040,0441)	3	Not used.
>>>Content Item Macro Attributes			Not used.
Comments on the Performed Procedure Step	(0040,0280)	3	Not used.
Anatomical Orientation Type	(0010,2210)	1C	Not used.

3.2.5 Frame of Reference Module

Table 17 specifies the Attributes necessary to uniquely identify a frame of reference that ensures the spatial relationship of Images within a Series. It also allows Images across multiple Series to share the same Frame Of Reference. This Frame Of Reference (or coordinate system) shall be constant for all Images related to a specific Frame Of Reference.

Table 17: Frame of Reference Module

Attribute Name	Tag	Type	Attribute Description
Frame of Reference UID	(0020,0052)	1	Uniquely identifies the frame of reference for a Series.
Position Reference Indicator	(0020,1040)	2	Part of the imaging target used as a reference.

3.2.6 General Equipment Module

Table 18 specifies the Attributes that identify and describe the piece of equipment that produced a series of composite instances.

Table 18: General Equipment Module

Attribute Name	Tag	Type	Attribute Description
Manufacturer	(0008,0070)	2	Manufacturer of the equipment that produced the composite instances. Set to 'Delphinus Medical Technologies'.
Institution Name	(0008,0080)	3	Institution where the equipment that produced the composite instances is located.
Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment that produced the composite instances is located.

Attribute Name	Tag	Type	Attribute Description
Station Name	(0008,1010)	3	User defined name identifying the machine that produced the composite instances.
Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment that produced the composite instances are located.
Institutional Department Type Code Sequence	(0008,1041)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that produced the composite instances. Set to 'SoftVue'.
Manufacturer's Device Class UID	(0018,100B)	3	Not used.
Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that produced the composite instances.
Software Versions	(0018,1020)	3	Manufacturer's designation of software version of the equipment that produced the composite instances.
Gantry ID	(0018,1008)	3	Not used.
UDI Sequence	(0018,100A)	3	Not used.
UDI Macro Attributes			Not used.
Device UID	(0018,1002)	3	Not used.
Spatial Resolution	(0018,1050)	3	Not used.
Date of Last Calibration	(0018,1200)	3	Date when the image acquisition device calibration was last changed in any way. Multiple entries may be used for additional calibrations at other times.
Time of Last Calibration	(0018,1201)	3	Time when the image acquisition device calibration was last changed in any way.
Pixel Padding Value	(0028,0120)	1C	Not used.

3.2.7 General Acquisition Module

Table 19 specifies the Attributes that identify and describe general information about an Acquisition.

Table 19: General Acquisition Module

Attribute Name	Tag	Type	Attribute Description
Acquisition UID	(0008,0017)	3	Not used.
Acquisition Number	(0002,0012)	3	A number identifying the single contiguous gathering of data over a period of time that resulted in this image.
Acquisition Date	(0008,0022)	3	The date the acquisition of data that resulted in this image started.
Acquisition Time	(0008,0032)	3	The time the acquisition of data that resulted in this image started.
Acquisition DateTime	(0008,002A)	3	Not used.
Acquisition Duration	(0018,9073)	3	Not used.
Images in Acquisition	(0020,1002)	3	Not used.
Irradiation Event UID	(0008,3010)	3	Not used.

3.2.8 General Image Module

Table 20 specifies the attributes that identify and describe an image within a particular series.

Table 20: General Image Module

Attribute Name	Tag	Type	Attribute Description
Instance Number	(0020,0013)	2	A number that identifies that image.
Patient Orientation	(0020,0020)	2C	Patient direction of the rows and columns of the image.
Content Date	(0008,0023)	2C	The date the image pixel data creation started. Required if image is part of a series in which the images are temporally related.
Content Time	(0008,0033)	2C	The time the image pixel data creation started. Required if image is part of a series in which the images are temporally related.
Image Type	(0008,0008)	3	Image identification characteristics. Set to 'ORIGINAL\PRIMARY\OTHER\BREAST'
Image Comments	(0020,4000)	3	User-defined comments about the image. This field is used to describe the pixel value units in text.
Quality Control Image	(0028,0300)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
Burned In Annotation	(0028,0301)	3	Not used.
Recognizable Visual Features	(0028,0302)	3	Not used.
Lossy Image Compression	(0028,2110)	3	Not used.
Lossy Image Compression Ratio	(0028,2112)	3	Not used.
Lossy Image Compression Method	(0028,21140)	3	Not used.
Icon Image Sequence	(0088,0200)	3	Not used.
Image Pixel Macro Attributes			Not used.
Presentation LUT Shape	(2050,0020)	3	Not used.
Real World Value Mapping Sequence	(0040,9096)	3	Not used.
Real World Value Mapping Item Macro Attributes			Not used.
Image Laterality	(0020,0062)	3	Not used.
General Anatomy Optional Macro Attributes			Not used.

3.2.9 General Reference Module

Table 21 specifies the Attributes that reference source and other related Instances and describe the manner of derivation.

Table 21: General Reference Module

Attribute Name	Tag	Type	Attribute Description
Referenced Image Sequence	(0008,1140)	3	Not used.
>Image SOP Instance Reference Macro Attributes			Not used.
>Purpose of Reference Code Sequence	(0040,A170)	3	Not used.
>>Code Sequence Macro Attributes			Not used.

Attribute Name	Tag	Type	Attribute Description
Referenced Instance Sequence	(0008,114A)	3	Not used.
>SOP Instance Reference Macro Attributes			Not used.
>Purpose of Reference Code Sequence	(0040,A170)	3	Not used.
>>Code Sequence Macro Attributes			Not used.
Derivation Description	(0008,2111)	3	Not used.
Derivation Code Sequence	(0008,9215)	3	Not used.
>Code Sequence Macro Attributes			Not used.
Source Image Sequence	(0008,2112)	3	Not used.
>Image SOP Instance Reference Macro Attributes			Not used.
>Purpose of Reference Code Sequence	(0040,A170)	3	Not used.
>>Code Sequence Macro Attributes			Not used.
>Spatial Locations Preserved	(0028,135A)	3	Not used.
>Patient Orientation	(0020,0020)	1C	Not used.
Source Instance Sequence	(0042,0013)	3	Not used.
>SOP Instance Reference Macro Attributes			Not used.
>Purpose of Reference Code Sequence	(0040,A170)	3	Not used.
>>Code Sequence Macro Attributes			Not used.

3.2.10 Image Plane Module

Table 22 specifies the Attributes of the Image Plane Module.

Attribute Name	Tag	Type	Attribute Description
Planar Configuration	(0028,0006)	1C	Not used.
Pixel Aspect Ratio	(0028,0034)	1C	Ratio of the vertical size and horizontal size of the pixels in the image specified by a pair of integer values where the first value is the vertical pixel size, and the second value is the horizontal pixel size.
Smallest Image Pixel Value	(0028,0106)	3	Not used.
Largest Image Pixel Value	(0028,0107)	3	Not used.
Red Palette Color Lookup Table Descriptor	(0028,1101)	1C	Not used.
Green Palette Color Lookup Table Descriptor	(0028,1102)	1C	Not used.
Blue Palette Color Lookup Table Descriptor	(0028,1103)	1C	Not used.
Red Palette Color Lookup Table Data	(0028,1201)	1C	Not used.
Green Palette Color Lookup Table Data	(0028,1202)	1C	Not used.
Blue Palette Color Lookup Table Data	(0028,1203)	1C	Not used.
ICC Profile	(0028,2000)	3	Not used.
Color Space	(0028,2002)	3	Not used.
Pixel Data	(7FE0,0010)	1C	A data stream of the pixel samples that comprise the Image.
Pixel Data Provider URL	(0028,7FE0)	1C	Not used.
Pixel Padding Range Limit	(0028,0121)	1C	Not used.
Extended Offset Table	(7FE0,0001)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
Extended Offset Table Lengths	(7FE0,0002)	1C	Not used.

3.2.12 VOI LUT Module

Table 24 specifies the attributes that describe the VOI LUT.

Table 24: VOT LUT Module

Attribute Name	Tag	Type	Attribute Description
VOI LUT Sequence	(0028,3010)	1C	Not used.
>LUT Descriptor	(0028,3002)	1	Not used.
>LUT Explanation	(0028,3003)	3	Not used.
>LUT Data	(0028,3006)	1	Not used.
Window Center	(0028,1050)	1C	Window Center for display.
Window Width	(0028,1051)	1C	Window Width for display.
Window Center & Width Explanation	(0028,1055)	3	Not used.
VOI LUT Function	(0028,1056)	3	Not used.

3.2.13 SOP Common Module

Table 25 specifies the attributes that are required for proper functioning and identification of the associated SOP instances. The table does not specify any information regarding the Real-World Object represented by the IOD.

Table 25: SOP Common Module

Attribute Name	Tag	Type	Attribute Description
SOP Class UID	(0008,0016)	1	Uniquely identifies the SOP Class.
SOP Instance UID	(0008,0018)	1	Uniquely identifies the SOP Instance.
Specific Character Set	(0008,0005)	1C	Not used.
Instance Creation Date	(0008,0012)	3	Not used.
Instance Creation Time	(0008,0013)	3	Not used.
Instance Coercion DateTime	(0008,0015)	3	Not used.
Instance Creator UID	(0008,0014)	3	Not used.
Related General SOP Class UID	(0008,001A)	3	Not used.
Original Specialized SOP Class UID	(0008,001B)	3	Not used.
Coding Scheme Identification Sequence	(0008,0110)	3	Not used.
>Coding Scheme Designator	(0008,0102)	1	Not used.

Attribute Name	Tag	Type	Attribute Description
>Coding Scheme Registry	(0008,0112)	1C	Not used.
>Coding Scheme UID	(0008,010C)	1C	Not used.
>Coding Scheme External ID	(0008,0114)	2C	Not used.
>Coding Scheme Name	(0008,0115)	3	Not used.
>Coding Scheme Version	(0008,0103)	3	Not used.
>Coding Scheme Responsible Organization	(0008,0116)	3	Not used.
>Coding Scheme Resource Sequence	(0008,0109)	3	Not used.
>>Coding Scheme URL Type	(0008,010A)	1	Not used.
>>Coding Scheme URL	(0008,010E)	1	Not used.
Context Group Identification Sequence	(0008,0123)	3	Not used.
>Context Identifier	(0008,010F)	1	Not used.
>Context UID	(0008,0117)	3	Not used.
>Mapping Resource	(0008,0105)	1	Not used.
>Context Group Version	(0008,0106)	3	Not used.
Mapping Resource Identification Sequence	(0008,0124)	3	Not used.
>Mapping Resource	(0008,0105)	1	Not used.
>Mapping Resource UID	(0008,0118)	3	Not used.
>Mapping Resource Name	(0008,0122)	3	Not used.
Timezone Offset From UTC	(0008,0201)	3	Not used.
Contributing Equipment Sequence	(0018,A001)	3	Not used.
>Purpose of Reference Code Sequence	(0040,A170)	1	Not used.
>>Code Sequence Macro Attributes			Not used.
>Manufacturer	(0008,0070)	1	Manufacturer of the equipment that produced the composite instances. Set to 'Delphinus Medical Technologies'.
>Institution Name	(0008,0080)	3	Institution where the equipment that produced the composite instances is located.

Attribute Name	Tag	Type	Attribute Description
>Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment that produced the composite instances is located.
>Station Name	(0008,1010)	3	User defined name identifying the machine that produced the composite instances.
>Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment that produced the composite instances are located.
>Institutional Department Type Code Sequence	(0008,1041)	3	Not used.
>>Code Sequence Macro Attributes			Not used.
>Operators' Name	(0008,1070)	3	Name of the operator supporting the Series.
>Operator Identification Sequence	(0008,1072)	3	Not used.
>>Person Identification Macro Attributes			Not used.
>Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that produced the composite instances. Set to 'SoftVue'.
>Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that produced the composite instances.
>Software Versions	(0018,1020)	3	Manufacturer's designation of software version of the equipment that produced the composite instances.
>Device UID	(0018,1002)	3	Not used.
>UDI Sequence	(0018,100A)	3	Not used.
>>UDI Macro Attributes			Not used.
>Spatial Resolution	(0018,1050)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
>Date of Last Calibration	(0018,1200)	3	Date when the image acquisition device calibration was last changed in any way. Multiple entries may be used for additional calibrations at other times.
>Time of Last Calibration	(0018,1201)	3	Time when the image acquisition device calibration was last changed in any way.
>Contribution DateTime	(0018,A002)	3	Not used.
>Contribution Description	(0018,A003)	3	Not used.
Instance Number	(0020,0013)	3	A number that identifies that image.
SOP Instance Status	(0100,0410)	3	Not used.
SOP Authorization DateTime	(0100,0420)	3	Not used.
SOP Authorization Comment	(0100,0424)	3	Not used.
Authorization Equipment Certification Number	(0100,0426)	3	Not used.
Digital Signatures Macro Attributes			Not used.
Encrypted Attributes Sequence	(0400,0500)	1C	Not used.
>Encrypted Content Transfer Syntax UID	(0400,0510)	1	Not used.
>Encrypted Content	(0400,0520)	1	Not used.
Original Attributes Macro Attributes			Not used.
HL7 Structured Document Reference Sequence	(0040,A390)	1C	Not used.
>SOP Instance Reference Macro Attributes			Not used.
>HL7 Instance Identifier	(0040,E001)	1	Not used.
>Retrieve URI	(0040,E010)	3	Not used.
Longitudinal Temporal Information Modified	(0028,0303)	3	Not used.
Query/Retrieve View	(0008,0053)	1C	Not used.
Conversion Source Attributes Sequence	(0020,9172)	1C	Not used.
>Image SOP Instance Reference Macro Attributes			Not used.
Content Qualification	(0018,9004)	3	Not used.

Attribute Name	Tag	Type	Attribute Description
Private Data Element Characteristics Sequence	(0008,0300)	3	Not used.
>Private Group Reference	(0008,0301)	1	Not used.
>Private Creator Reference	(0008,0302)	1	Not used.
>Private Data Element Definition Sequence	(0008,0310)	3	Not used.
>>Private Data Element	(0008,0308)	1	Not used.
>>Private Data Element Value Multiplicity	(0008,0309)	1	Not used.
>>Private Data Element Value Representation	(0008,030A)	1	Not used.
>>Private Data Element Number of Items	(0008,030B)	1C	Not used.
>>Private Data Element Keyword	(0008,030D)	1	Not used.
>>Private Data Element Name	(0008,030C)	1	Not used.
>>Private Data Element Description	(0008,030E)	3	Not used.
>>Private Data Element Encoding	(0008,030F)	3	Not used.
>>Retrieve URI	(0040,E010)	3	Not used.
>Block Identifying Information Status	(0008,0303)	1	Not used.
>Nonidentifying Private Elements	(0008,0304)	1C	Not used.
>Deidentification Action Sequence	(0008,0305)	3	Not used.
>>Identifying Private Elements	(0008,0306)	1	Not used.
>>Deidentification Action	(0008,0307)	1	Not used.
Instance Origin Status	(0400,0600)	3	Not used.
Barcode Value	(2200,0005)	3	Not used.
General Procedure Protocol Reference Macro Attributes			Not used.

3.3 SoftVue Additional Attributes

3.3.1 Data Dictionary of Private Attributes

The private attributes added to create SOP Instances created by the SoftVue system are listed in Table 26. The SoftVue system reserves blocks of private attributes in group 0009. Because these tags are private, they must be explicitly defined. The VR and VM (value multiplier) for each attribute is included to allow for tag interpretation.

Table 26: Data Dictionary of Private Attributes

Attribute Name	Tag	Type	VR	VM	Attribute Description
Private Creator	(0009,0010)	1	LO	1	Identifies the implementer reserving elements (0009, 1000-10FF). Set to 'Delphinus Medical Technologies'.
Private Group Version Number	(0009,1000)	3	IS	3	Defines the version number of the private group. The version tag is of the form x.y.z, where x, y, and z, are encoded as the entries of an array of integer strings. The version documented below is 3.0.1. It is encoded as 3\0\1.
Pixel Value Units	(0009,1010)	3	LO	1	SoftVue system's defined units for the pixel data elements. Defined Terms: UNDEFINED, MILLIMETERS_PER_MICROSECOND, CENTIMETERS_PER_MICROSECOND, METERS_PER_MICROSECOND, KILOMETERS_PER_MICROSECOND, MILLIMETERS_PER_MILLISECOND, CENTIMETERS_PER_MILLISECOND, METERS_PER_MILLISECOND, KILOMETERS_PER_MILLISECOND, MILLIMETERS_PER_SECOND, CENTIMETERS_PER_SECOND, METERS_PER_SECOND, KILOMETERS_PER_SECOND, DECIBELS_PER_MILLIMETERS, DECIBELS_PER_CENTIMETERS, DECIBELS_PER_METERS, DECIBELS_PER_KILOMETERS, DECIBELS_PER_MILLIMETER_PER_MEGAHERTZ, DECIBELS_PER_CENTIMETER_PER_MEGAHERTZ, DECIBELS_PER_METER_PER_MEGAHERTZ, DECIBELS_PER_KILOMETER_PER_MEGAHERTZ, GRAMS_PER_CUBIC_CENTIMETER, KILOGRAMS_PER_CUBIC_METER, CENTIBELS, DECIBELS.

Attribute Name	Tag	Type	VR	VM	Attribute Description
Reference Amplitude	(0009,1040)	3	DS	1	Defines the reference amplitude used for ratio representation of pixel data. Applicable when pixel value units (0009,1010) are CENTIBELS or DECIBELS.
Water Temperature	(0009,1050)	3	DS	1	Temperature of the water at the time of data acquisition. Expressed in degrees Celsius.
Suction Voltage	(0009,1060)	3	DS	1	Voltage supplied to the Sequir Breast Interface suction pump. Expressed in Volts.
Transmit Voltages	(0009,1070)	3	DS	2	Transmit voltages expressed in Volts. The first entry corresponds to the positive voltage, and the second entry to the negative voltage.
Mean Masked Pixel Value	(0009,1080)	3	DS	1	Average pixel value within the masked region.
Standard Deviation of Masked Pixel Values	(0009,1090)	3	DS	1	Standard deviation of pixel values within the masked region.
Number of Pixels in Masked Region	(0009,10A0)	3	IS	1	Number of pixels within the masked region.
Number of Rows in Mask	(0009,10A1)	3	US	1	Number of rows in the mask.
Number of Columns in Mask	(0009,10A2)	3	US	1	Number of columns in the mask.
Mask Origin	(0009,10A3)	3	SS	2	Location of first mask point with respect to pixels in the image, given as row\column. The upper left pixel of the image has the coordinate 1\1.
Mask Data	(0009,10A4)	3	OW	1	Mask pixel data. This data is encoded the same way as the Overlay Data.

Chapter 4 Additional Information

4.1 Coded Terminology and Templates

The SoftVue system uses the standard DICOM Codes and Controlled Terminology. In particular, the tag “Modality” (0008, 0060) is set to Ultrasound (US) in all SOP Instances.

4.2 Grayscale Image Consistency

The SoftVue system does not support image display.

4.3 Standard Extended/Specialized/Private SOP Classes

The SoftVue system outputs are of a Standard Extended SOP Class format derived from the MR Standard SOP Class. See section 3.1. No Specialized or Private SOP Classes are supported.

4.4 Private Transfer Syntaxes

No Private Transfer Syntaxes are supported.