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		Implicit VR Little Endian	1.2.840.10008.1.2
		Run Length Encoding, RLE	1.2.840.10008.1.2.5
		JPEG Baseline	1.2.840.10008.1.2.4.5 0

Note: As shown in the table Implicit VR Little Endian Transfer Syntax is supported in addition to Transfer Syntaxes defined in Application Profiles.

3.4 AUGMENTED AND PRIVATE APPLICATION PROFILES

Vivid and EchoPAC v206 creates Secondary Capture Image and SR Objects in addition to the objects defined in the application profiles.

3.5 EXTENSIONS, SPECIALIZATIONS, PRIVATIZATIONS OF SOP CLASSES AND TRANSFER SYNTAXES

Please see the definition of private modules in Table A.1.2.

DICOMDIR has also been extended with Standard Extended elements.

3.6 CONFIGURATION

The following parameters are configurable:

- Location of DICOMDIR
- Read or Read/Write
- Enable/disable raw data
- Frame rate reduction
- Enable/disable multi-frame
- Compression selections
- Enable/disable results (SR).
- Enable/disable private data elements in results (SR).
- Enable/disable “Signed Doppler Velocities” in results (SR).
- Enable/disable “Use older SR version”.
- Selection of SR version (when “Use older SR version” is enabled).

3.7 SUPPORT OF EXTENDED CHARACTER SETS

Vivid and EchoPAC v206 will support only the ISO_IR 100 (ISO 8859-1:1987 Latin alphabet N 1. supplementary set) as extended character sets. Any incoming SOP instance that is encoded using another extended character set will not be read.

4. ULTRASOUND (US) INFORMATION OBJECT IMPLEMENTATION

4.1 INTRODUCTION

This section specifies the use of the DICOM US Image IOD to represent the information included in US images produced by this implementation. Corresponding attributes are conveyed using the module construct. The contents of this section are:

4.2 - IOD Implementation

4.3 - IOD Entity-Relationship Model

4.4 - IOD Module Table

4.5 - IOD Module Definition

In this section, supported means that tag is sent with value.

4.2 US IOD IMPLEMENTATION

This section defines the implementation of US image information object.

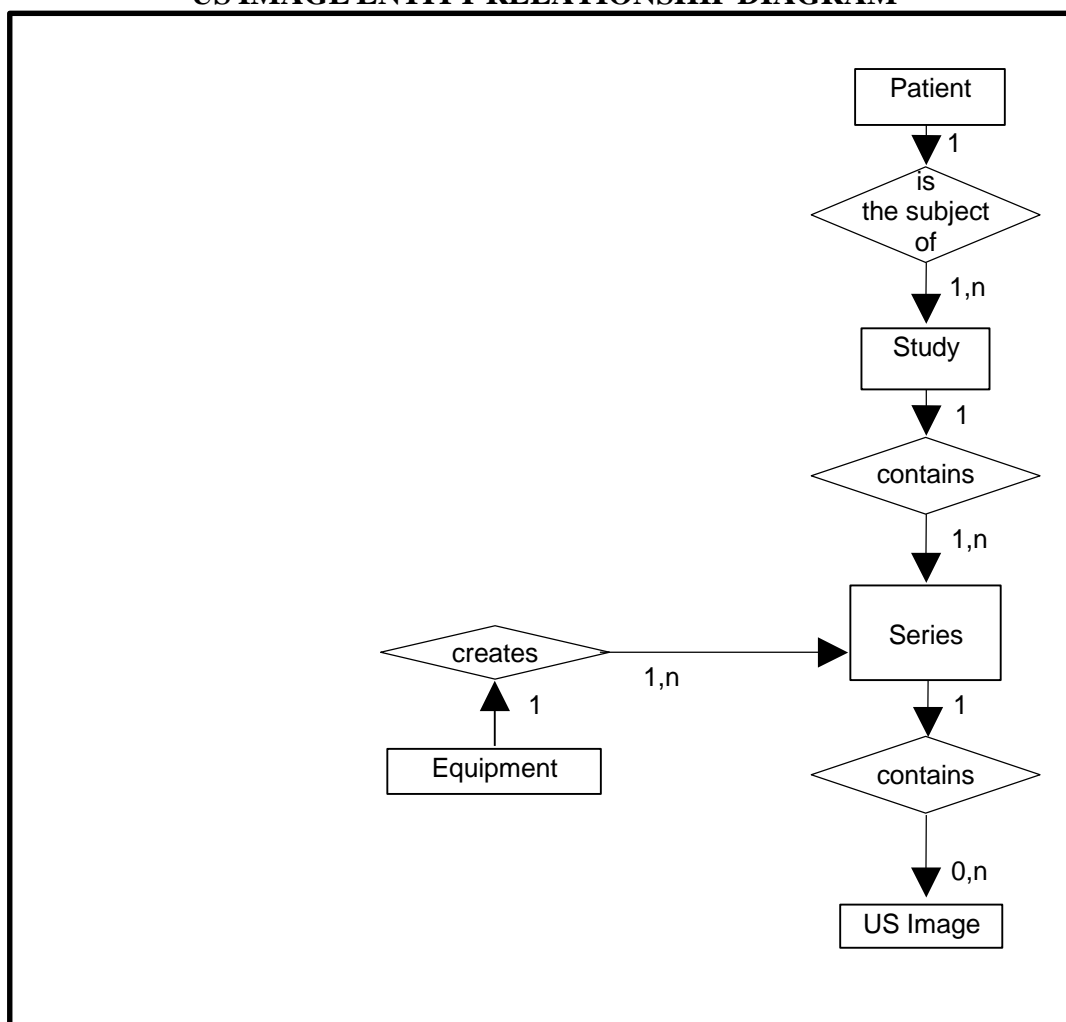
4.3 US ENTITY-RELATIONSHIP MODEL

The Entity-Relationship diagram for the US Image interoperability schema is shown in Illustration 4.3.1. In this figure, the following diagrammatic convention is established to represent the information organization:

- each entity is represented by a rectangular box
- each relationship is represented by a diamond shaped box.
- the fact that a relationship exists between two entities is depicted by lines connecting the corresponding entity boxes to the relationship boxes.

The relationships are fully defined with the maximum number of possible entities in the relationship shown. In other words, the relationship between Series and Image can have up to n Images per Series, but the Patient to Study relationship has 1 Patient for each Study (a Patient can have more than one Study on the system; however each Study will contain all of the information pertaining to that Patient).

ILLUSTRATION 4.3.1
US IMAGE ENTITY RELATIONSHIP DIAGRAM



4.3.1 Entity Descriptions

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities contained within the US Information Object.

4.3.2 Vivid and EchoPAC v206 Mapping of DICOM Entities

TABLE 4.3.1
MAPPING OF DICOM ENTITIES TO VIVID v206 ENTITIES

DICOM	Vivid and EchoPAC v206 Entity
Patient	Patient
Study	Exam
Series	Exam
Frame of Reference	Not used
Equipment	Equipment

Image	Image
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4.4 IOD MODULE TABLE

Within an entity of the DICOM US IOD, attributes are grouped into related set of attributes. A set of related attributes is termed a module. A module facilitates the understanding of the semantics concerning the attributes and how the attributes are related with each other. A module grouping does not infer any encoding of information into data sets.

Table A.2.1 identifies the defined modules within the entities, which comprise the DICOM US IOD. Modules are identified by Module Name.

See DICOM Part 3 for a complete definition of the entities, modules, and attributes. Only the single frame US Image IOD is described here.

4.5 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities and modules contained within the US Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions).

4.5.1 Common Patient Entity Modules

4.5.1.1 Patient Module

Section “Patient” in Table A.1.1 specifies the Attributes of the Patient that describe and identify the Patient who is the subject of a 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.

4.5.2 Common Study Entity Modules

The following Study IE Modules are common to all Composite Image IODs, which reference the Study IE. These modules contain Attributes of the patient and study that are needed for diagnostic interpretation of the image.

4.5.2.1 General Study Module

Section “General Study” in Table A.1.1 specifies the attributes that describe and identify the Study performed upon the Patient.

4.5.2.2 Patient Study Module

Section “Patient Study” in Table A.1.1 defines attributes that provide information about the Patient at the time that the Study was performed.

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4.5.3 Common Series Entity Modules

The following Series IE Modules are common to all Composite Image IODs, which reference the Series IE.

4.5.3.1 General Series Module

Section “General Series” in Table A.1.1 specifies the attributes that identify and describe general information about the Series within a Study.

4.5.4 Common Equipment Entity Modules

The following Equipment IE Module is common to all Composite Image IODs, which reference the Equipment IE.

4.5.4.1 General Equipment Module

Section “General Equipment” in Table A.1.1 specifies the attributes that identify and describe the piece of equipment, which produced a Series of Images.

4.5.5 Common Image Entity Modules

The following Image IE Modules are common to all Composite Image IODs, which reference the Image IE.

4.5.5.1 General Image Module

Section “General Image” in **Error! Reference source not found.** specifies the attributes that identify and describe an image within a particular series.

4.5.5.2 Image Pixel Module

Section “Image Pixel” in **Error! Reference source not found.** specified the attributes that describe the pixel data of the image.

4.5.5.3 Contrast/Bolus Module

Section “Contrast/Bolus” in **Error! Reference source not found.** specifies the attributes that describe the contrast /bolus used in the acquisition of the Image.

4.5.5.4 Palette Color Lookup Table Module

Section “Palette Color Lookup Table” in **Error! Reference source not found.** specifies the attributes that describe the Lookup table data for images with Palette Color photometric interpretation.

4.5.5.5 VOI LUT Module

Section “VOI LUT” in **Error! Reference source not found.** specifies the attributes that identify and describe the VOI LUT Module.

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4.5.6 General Modules

The SOP Common Module is mandatory for all DICOM IODs.

4.5.6.1 SOP Common Module

Section “SOP Common” in **Error! Reference source not found.** defines the attributes that are required for proper functioning and identification of the associated SOP Instances. They do not specify any semantics about the Real-World Object represented by the IOD.

4.5.7 US Modules

This section describes US Series, Equipment, and Image Modules. These Modules contain attributes that are specific to US Image IOD.

4.5.7.1 US Region Calibration Module

Section “US Region Calibration” in **Error! Reference source not found.** specifies the supported attributes. US Region Calibration Module is used to describe multiple regions. Note: if a multi-frame image has been acquired with different calibration, the US Region Calibration Module will not be used.

4.5.7.2 US Image Module

Section “US Image” in **Error! Reference source not found.** specifies the supported attributes.

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**5. ULTRASOUND MULTIFRAME (US MF) INFORMATION
OBJECT IMPLEMENTATION**

5.1 INTRODUCTION

This section specifies the use of the DICOM US Multi-frame Image IOD to represent the information included in US images produced by this implementation. Corresponding attributes are conveyed using the module construct. The contents of this section are:

5.2 - IOD Implementation

5.3 - IOD Entity-Relationship Model

5.4 - IOD Module Table

5.5 - IOD Module Definition

5.2 US MF IOD IMPLEMENTATION

This section defines the implementation of US Multi-Frame image information object.

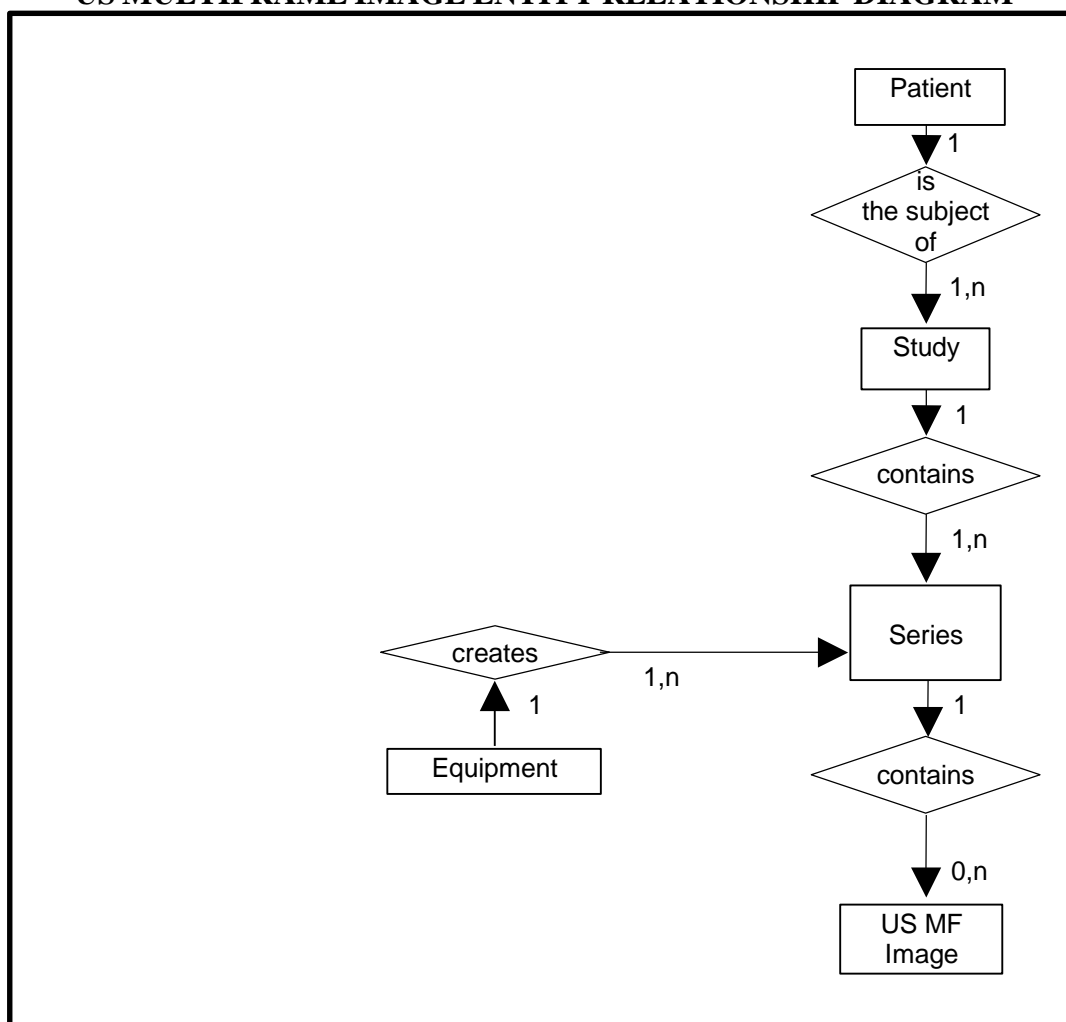
5.3 US MF ENTITY-RELATIONSHIP MODEL

The Entity-Relationship diagram for the US MF Image interoperability schema is shown in Illustration 5.3.1. In this figure, the following diagrammatic convention is established to represent the information organization:

- each entity is represented by a rectangular box
- each relationship is represented by a diamond shaped box.
- the fact that a relationship exists between two entities is depicted by lines connecting the corresponding entity boxes to the relationship boxes.

The relationships are fully defined with the maximum number of possible entities in the relationship shown. In other words, the relationship between Series and Image can have up to n Images per Series, but the Patient to Study relationship has 1 Study for each Patient (a Patient can have more than one Study on the system, however each Study will contain all of the information pertaining to that Patient).

ILLUSTRATION 5.3.1
US MULTIFRAME IMAGE ENTITY RELATIONSHIP DIAGRAM



5.3.1 Entity Descriptions

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities contained within the US Multi-Frame Information Object.

5.3.2 Vivid and EchoPAC v206 Mapping of DICOM entities

TABLE 5.3.1
MAPPING OF DICOM ENTITIES TO VIVID v206 ENTITIES

DICOM	Vivid and EchoPAC v206 Entity
Patient	Patient
Study	Exam
Series	Exam
Frame of Reference	Not used
Equipment	Equipment

Image	Image
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5.4 IOD MODULE TABLE

Within an entity of the DICOM US Multi-Frame IOD, attributes are grouped into related set of attributes. A set of related attributes is termed a module. A module facilitates the understanding of the semantics concerning the attributes and how the attributes are related with each other. A module grouping does not infer any encoding of information into datasets.

Table A.3.1 identifies the defined modules within the entities, which comprise the DICOM US Multi-Frame IOD. Modules are identified by Module Name.

See DICOM Part 3 for a complete definition of the entities, modules, and attributes.

5.5 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities and modules contained within the US Multi-Frame Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions).

5.5.1 Common Image Modules

The following Image IE Modules are common to all Composite Image IODs which reference the Image IE.

5.5.1.1 Cine Module

Section “Cine” in Table A.3.2 specifies the implemented attributes.

5.5.1.2 Multi-frame Module

Section “Multi-frame” in Table A.3.2 specifies the implemented attributes.

6. SC INFORMATION OBJECT IMPLEMENTATION

6.1 INTRODUCTION

This section specifies the use of the DICOM SC Image IOD to represent the information included in SC images produced by this implementation. Corresponding attributes are conveyed using the module construct. The contents of this section are:

6.2 - IOD Implementation

6.3 - IOD Entity-Relationship Model

6.4 - IOD Module Table

6.5 - IOD Module Definition

6.2 SC IOD IMPLEMENTATION

This section defines the implementation of SC image information object.

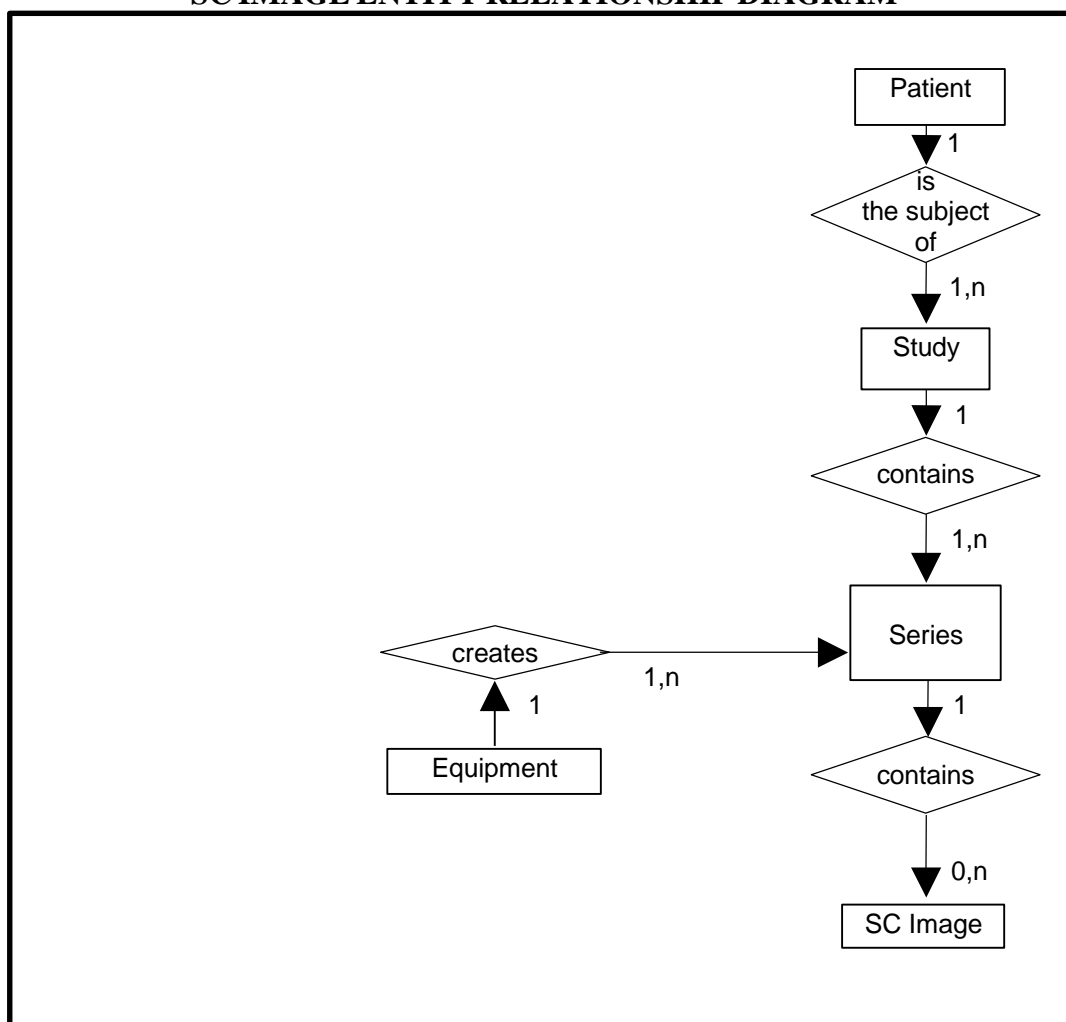
6.3 SC ENTITY-RELATIONSHIP MODEL

The Entity-Relationship diagram for the SC Image interoperability schema is shown in Illustration 6.3.1. In this figure, the following diagrammatic convention is established to represent the information organization:

- each entity is represented by a rectangular box
- each relationship is represented by a diamond shaped box.
- the fact that a relationship exists between two entities is depicted by lines connecting the corresponding entity boxes to the relationship boxes.

The relationships are fully defined with the maximum number of possible entities in the relationship shown. In other words, the relationship between Series and Image can have up to n Images per Series, but the Patient to Study relationship has 1 Patient for each Study (a Patient can have more than one Study on the system; however each Study will contain all of the information pertaining to that Patient).

ILLUSTRATION 6.3.1
SC IMAGE ENTITY RELATIONSHIP DIAGRAM



6.3.1 Entity Descriptions

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities contained within the SC Information Object.

6.3.2 Vivid and EchoPAC v206 Mapping of DICOM Entities

TABLE 6.3.1
MAPPING OF DICOM ENTITIES TO VIVID v206 ENTITIES

DICOM	Vivid and EchoPAC v206 Entity
Patient	Patient
Study	Exam
Series	Exam
Equipment	Equipment
Image	Image

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6.4 IOD MODULE TABLE

Within an entity of the DICOM SC IOD, attributes are grouped into related set of attributes. A set of related attributes is termed a module. A module facilitates the understanding of the semantics concerning the attributes and how the attributes are related with each other. A module grouping does not infer any encoding of information into datasets.

Table A.4.1 identifies the defined modules within the entities, which comprise the DICOM SC IOD. Modules are identified by Module Name.

See DICOM Part 3 for a complete definition of the entities, modules, and attributes.

6.5 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities and modules contained within the SC Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions).

6.5.1 SC Modules

This Section describes SC Equipment, and Image Modules. These Modules contain attributes that are specific to SC Image IOD.

6.5.1.1 SC Equipment Module

Section “SC Equipment” in Table A.4.2 describes the implemented attributes.

6.5.1.2 SC Image Module

Section “SC Image” in Table A.4.2 describes the implemented attributes.

7. SR INFORMATION OBJECT IMPLEMENTATION

Note: If “Use older SR version” is enabled (see 2.6 and 3.6) the corresponding DICOM Conformance Statement of the selected model and version should be referenced. The Conformance Statement can be found online through a link available in the references section of this document (section 1.6).

7.1 INTRODUCTION

This section specifies the use of the DICOM Comprehensive SR IOD to represent results produced by this implementation. Corresponding attributes are conveyed using the module construct. The contents of this section are:

7.2- IOD Implementation

7.3 - IOD Entity-Relationship Model

7.4 - IOD Module Table

7.5 - IOD Module Definition

In this section, supported means that tag is sent with value.

7.2 COMPREHENSIVE SR IOD IMPLEMENTATION

This section defines the implementation of Comprehensive SR information object.

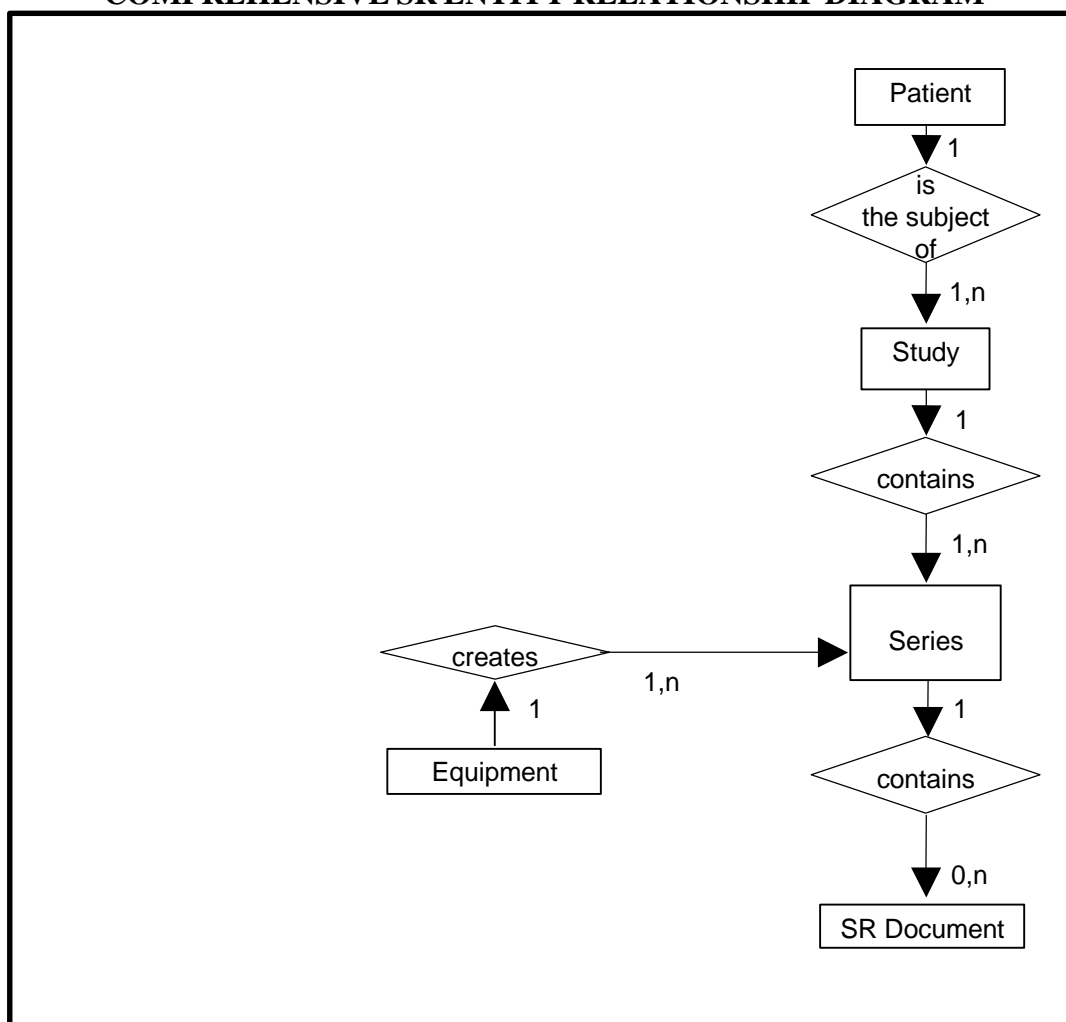
7.3 COMPREHENSIVE SR ENTITY-RELATIONSHIP MODEL

The Entity-Relationship diagram for the Comprehensive SR interoperability schema is shown in Illustration 7.3.1. In this figure, the following diagrammatic convention is established to represent the information organization:

- each entity is represented by a rectangular box
- each relationship is represented by a diamond shaped box.
- the fact that a relationship exists between two entities is depicted by lines connecting the corresponding entity boxes to the relationship boxes.

The relationships are fully defined with the maximum number of possible entities in the relationship shown. In other words, the relationship between Series and SR Documents can have up to n SR Documents per Series, but the Patient to Study relationship has 1 Patient for each Study (a Patient can have more than one Study on the system; however, each Study will contain all of the information pertaining to that Patient).

ILLUSTRATION 7.3.1
COMPREHENSIVE SR ENTITY RELATIONSHIP DIAGRAM



7.3.1 Entity Descriptions

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities contained within the Comprehensive SR Information Object.

7.3.2 Vivid and EchoPAC v206 Mapping of DICOM Entities

TABLE 7.3.1
MAPPING OF DICOM ENTITIES TO VIVID v206 ENTITIES

DICOM	Vivid and EchoPAC v206 Entity
Patient	Patient
Study	Exam
Series	Exam
Equipment	Equipment
SR Document	Results

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7.4 IOD MODULE TABLE

Within an entity of the DICOM Comprehensive SR IOD, attributes are grouped into related set of attributes. A set of related attributes is termed a module. A module facilitates the understanding of the semantics concerning the attributes and how the attributes are related with each other. A module grouping does not infer any encoding of information into data sets.

Table A.6.1 identifies the defined modules within the entities, which comprise the DICOM Comprehensive SR IOD. Modules are identified by Module Name. See DICOM Part 3 for a complete definition of the entities, modules, and attributes.

7.5 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities and modules contained within the Comprehensive SR Information Object.

The modules described in Table A.6.2 are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions).

7.5.1 SR Document Content Module

As previously mentioned, the SR Document Content Module is described in Table A.6.2. Content templates are created according to the following rules:

- Template “Pediatric Cardiac Ultrasound Report” is created if there are measurements in “Pediatric” M&A categories.
- Template “Adult Echocardiography Procedure Report” is created if there are measurements in “Cardiac” and no measurements in “Pediatric” M&A categories.
- Template “Vascular Ultrasound Procedure Report” is created if there are measurements in “Vascular” or “Abdomen” M&A categories.
- If there are measurements from both “Cardiac/Pediatric” and “Vascular” category groups, both SR Documents will be created.

7.5.1.1 SR Document Content Descriptions

7.5.1.1.1 Content Template

Vivid and EchoPAC v206 supports the following root Templates for SR SOP Instances created by Vivid and EchoPAC v206.

**TABLE 7.5.1
SR ROOT TEMPLATES**

SOP Class	Template ID	Template Name	Use
Comprehensive SR	5200	“Adult Echocardiography Procedure Report”	Create

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Comprehensive SR	5100	"Vascular Ultrasound Procedure Report"	Create
Comprehensive SR	5220	"Pediatric Cardiac Ultrasound Report"	Create

The mappings from the product's internal measurement names to DICOM SR encoding are in chapters 14 and 15.

7.6 STANDARD EXTENDED AND PRIVATE DATA ATTRIBUTES

Please see the definition of private modules in Table A.1.2.

7.7 STANDARD EXTENDED AND PRIVATE CONTEXT GROUPS

The product uses the standard extended context groups as described in chapters 14 and 15

7.8 STANDARD EXTENDED AND PRIVATE TEMPLATES

The product uses the standard extended templates as described in chapters 14 and 15

7.8.1 Standard Extended Templates

The product uses the standard extended templates as described in chapters 14 and 15

7.8.2 Private Templates

Not applicable.

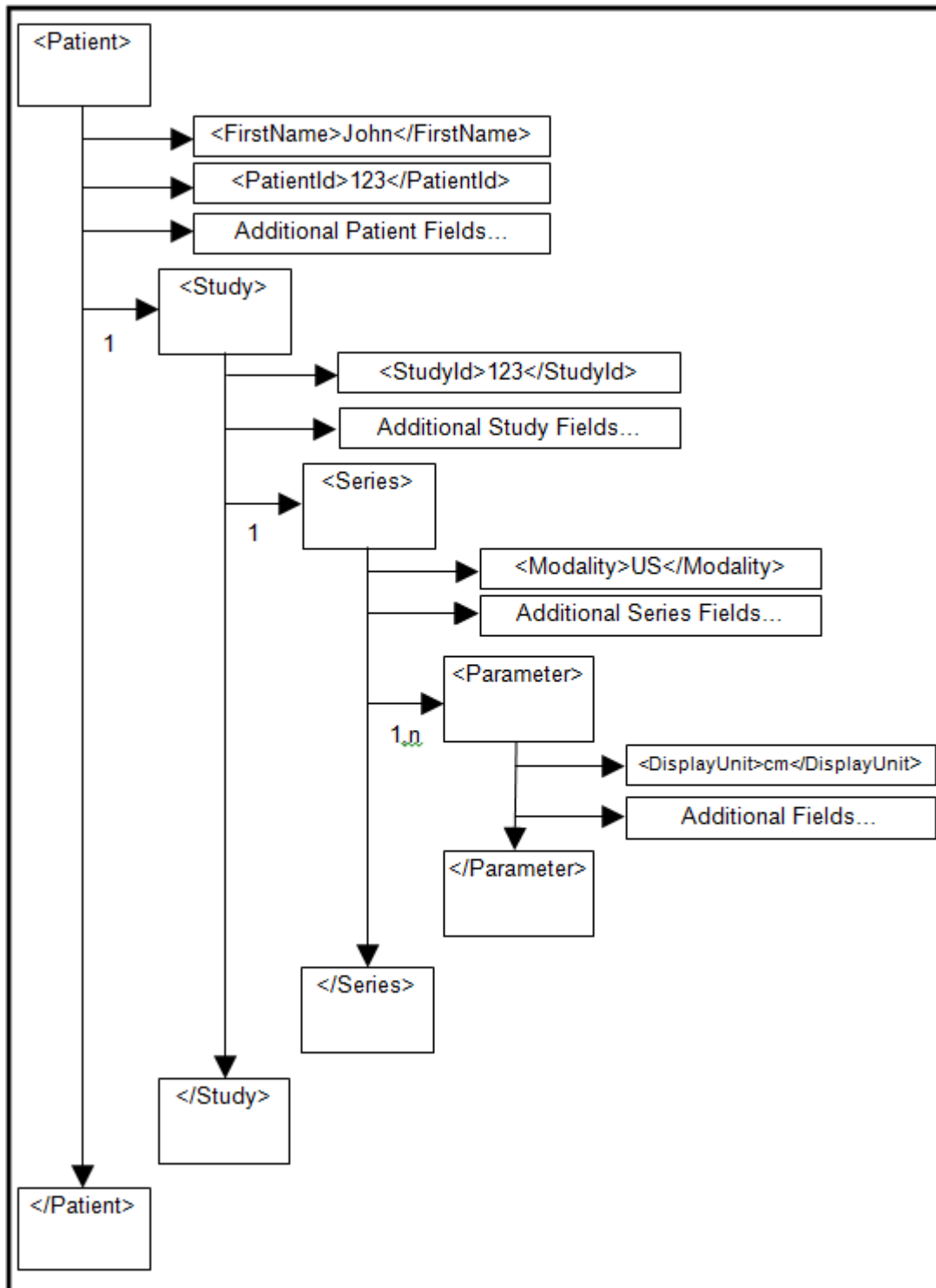
7.8.3 Additional Private Element information

The Vivid and EchoPAC Software can be configured to export recorded measurements within an XML formatted payload located within a Private Data Element. The XML may contain additional measurements not part of the Public DICOM payload. The element is located within group and element number (6005,1030).

The structure of the XML object is intended to maintain the DICOM hierarchy of Patient->Study->Series->Object where possible to remain readable.

A simplified example of the XML data hierarchy is provided within Illustration 7.8.1.

ILLUSTRATION 7.8.1
SIMPLIFIED EXAMPLE OF XML PRIVATE ELEMENT



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An example of a Measurement, or Parameter, formatted for XML is provided within Illustration 7.8.2.

**ILLUSTRATION 7.8.2
MEASUREMENT XML EXAMPLE**

```
<Parameter>
  <AverageType>A</AverageType>
  <Category>C</Category>
  <DisplayUnit>cm</DisplayUnit>
  <Edited>false</Edited>
  <ExcludedFromAvg>false</ExcludedFromAvg>
  <ExcludedFromCalc>false</ExcludedFromCalc>
  <MeasureId>Cardiac/2D/Ao/LA/LA/Ao</MeasureId>
  <ParameterId>2D/LA</ParameterId>
  <ParameterName>LA Diam</ParameterName>
  <ResultNo>-1</ResultNo>
  <ResultValue>1.001</ResultValue>
  <ScanMode>2D</ScanMode>
  <StudyId>Cardiac/2D/Ao/LA</StudyId>
  <ParameterType>M</ParameterType>
  <DisplayValue>100.1</DisplayValue>
</Parameter>
```

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**8. BASIC DIRECTORY INFORMATION OBJECT
IMPLEMENTATION**

8.1 INTRODUCTION

This section specifies the use of the DICOM Basic Directory IOD to represent the information included in directories produced by this implementation. Corresponding attributes are conveyed using the module construct. The contents of this section are:

8.2 - IOD Implementation

8.3 - IOD Entity-Relationship Model

8.4- IOD Module Table

8.5 - IOD Module Definition

8.2 BASIC DIRECTORY IOD IMPLEMENTATION

This section defines the implementation of Basic Directory information object.

8.3 BASIC DIRECTORY ENTITY-RELATIONSHIP MODEL

The Entity-Relationship diagram for the Basic Directory interoperability schema is shown in Illustration 8.3.1. In this figure, the following diagrammatic convention is established to represent the information organization:

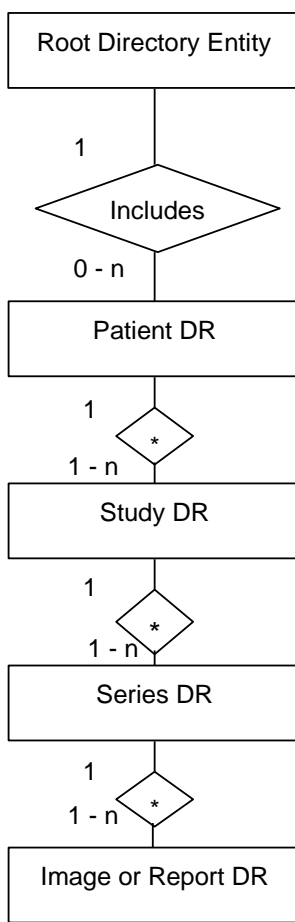
- each entity is represented by a rectangular box
- each relationship is represented by a diamond shaped box
- the fact that a relationship exists between two entities is depicted by lines connecting the corresponding entity boxes to the relationship boxes.

8.3.1 Vivid and EchoPAC v206 Mapping of DICOM entities

**TABLE 8.3.1
MAPPING OF DICOM ENTITIES TO VIVID v206 ENTITIES**

DICOM	Vivid and EchoPAC v206
Patient	Patient
Study	Exam
Series	Exam
Image or SR Document	Image or Results

ILLUSTRATION 8.3.1
BASIC DIRECTORY ENTITY RELATIONSHIP DIAGRAM



8.4 IOD MODULE TABLE

Within an entity of the Basic Directory IOD, attributes are grouped into related set of attributes. A set of related attributes is termed a module. A module facilitates the understanding of the semantics concerning the attributes and how the attributes are related with each other. A module grouping does not infer any encoding of information into datasets.

Table A.5.1 identifies the defined modules within the entities, which comprise the Basic Directory IOD. Modules are identified by Module Name.

See DICOM Part 3 for a complete definition of the entities, modules, and attributes.

The Directory Information Module is created when initializing the media. If it already exists, the existing information is not changed regarding patient, study, series or image/result data.

An existing Directory Information Module may have been obtained from application entities using removable media. These instances are external to this conformance claim and the origin of the SOP instances is outside the scope of this claim.

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8.5 INFORMATION MODULE DEFINITIONS

Please refer to DICOM Standard Part 3 (Information Object Definitions) for a description of each of the entities and modules contained within the Basic Directory Information Object.

The following modules are included to convey Enumerated Values, Defined Terms, and Optional Attributes supported. Type 1 & Type 2 Attributes are also included for completeness and to define what values they may take and where these values are obtained. It should be noted that they are the same ones as defined in the DICOM Standard Part 3 (Information Object Definitions).

8.5.1 Common File Set identification Modules

Table A.5.2 section “File Set Identification Module” describes the implemented attributes.

8.5.2 Common Directory Information Modules

Table A.5.2 section “Directory Information Module” describes the implemented attributes.

8.5.3 Definition of Specific Directory Records

Please see a description of the implemented attributes in the following tables:

Table A.5.3

Attributes specific to record type PATIENT

Table A.5.4

Attributes specific to record type STUDY

Table A.5.5

Attributes specific to record type SERIES

Table A.5.6

Attributes specific to record type IMAGE

Table A.5.7

Attributes specific to record type SR DOCUMENT

Note that “Private Directory Record” and “Multi-Referenced File Directory Record” are not implemented.

8.6 PRIVATE DATA DICTIONARY

Please see the definition of private modules in Table A.1.2.

9. MODALITY WORKLIST INFORMATION MODEL DEFINITION

9.1 INTRODUCTION

This section specifies the use of the DICOM Modality Worklist Information Model used to organize data and against which a Modality Worklist Query will be performed. The Vivid acquisition systems support Modality Worklist, however both the EchoPAC Software Only and EchoPAC Plug-in do not provide Worklist functionality.

The contents of this section are:

9.2- Information Model Description

9.3- Information Model Entity-Relationship Model

Error! Reference source not found.- Information Model Module Table

Error! Reference source not found.- Information Model Keys

9.2 MODALITY WORKLIST INFORMATION MODEL DESCRIPTION

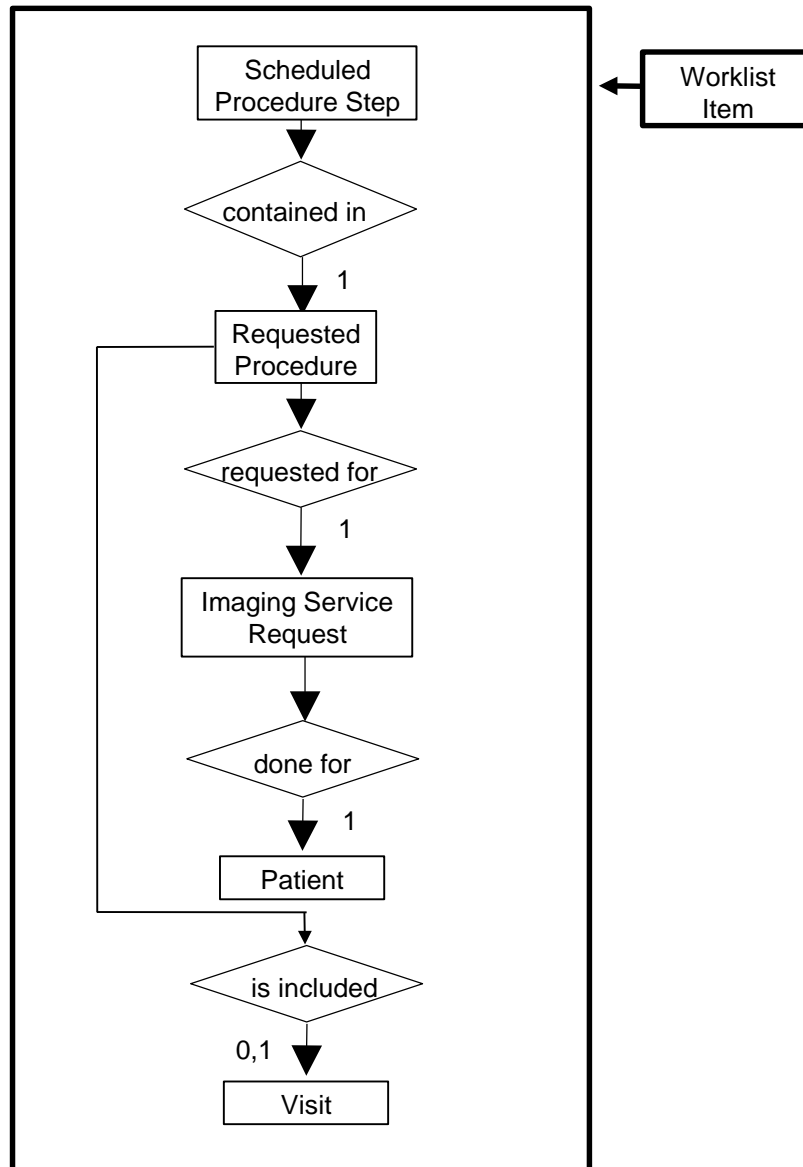
This section defines the implementation of Modality Worklist Information Model.

9.3 MODALITY WORKLIST INFORMATION MODEL ENTITY- RELATIONSHIP MODEL

The Entity-Relationship diagram for the Modality Worklist Information Model schema is shown in Illustration 9.3.1. It represents the information that composes a Worklist Item. In this figure, the following diagrammatic convention is established to represent the information organization:

- Each entity is represented by a rectangular box.
- Each relationship is represented by a diamond shaped box.
- The fact that a relationship exists between two entities is depicted by lines connecting the corresponding entity boxes to the relationship boxes.

ILLUSTRATION 9.3.1
MODALITY WORKLIST INFORMATION MODEL E/R DIAGRAM



9.3.1 Entity Descriptions

Please refer to DICOM Standard PS 3.3. (Information Object Definitions) and PS 3.4 (Service Class Specifications) for a description of each of the Entities contained within the Modality Worklist Information Model.

9.3.2 Scheduled Procedure Step

Schedule Procedure Step is implemented in a basic form to allow for the user to retrieve a subset of attributes.

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9.3.2.1 Requested Procedure Entity Description

Requested Procedure Step is implemented in a basic form to allow for the user to retrieve a subset of attributes.

9.3.2.2 Imaging Service Request Entity Description

Image Service is implemented in a basic form to allow for the user to retrieve a subset of attributes.

9.3.2.3 Visit Entity Description

Visit Entity is implemented in a basic form to allow for the user to retrieve a subset of attributes.

9.3.2.4 Patient Entity Description

Patient Entity Description is implemented in a basic form to allow for the user to retrieve a subset of attributes.

9.3.3 Vivid v206 Mapping of DICOM entities

**TABLE 9.3.1
MAPPING OF DICOM ENTITIES TO VIVID v206 ENTITIES**

DICOM	Vivid v206 Entity
Scheduled Procedure Step	Worklist entry
Requested Procedure	Exam
Imaging Service Request	Exam
Visit	Not Applicable
Patient	Patient

**9.4 SCU OF THE MODALITY WORKLIST INFORMATION MODEL – FIND
SOP CLASS**

As a Service Class User of the Modality Worklist Information Model – FIND SOP Class, the Vivid scanner uses the C-FIND-RQ message to query the SCP. It supports the Query Keys listed in Table 9.4.1. The term “Instance” is used in some of the Comments to denote Images and Results in examinations that are based on Worklist entries. Please note that tags that are not defined for SR documents will not be mapped (see Section 7). The supported matching types listed in the Matching Type Column are:

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- SINGLE_VALUE: SCU can request Single Value matching.
- UID: SCU can request UID matching.
- WILDCARD: SCU can request Wildcard matching.
- RANGE: SCU can request Range matching.
- SEQUENCE: SCU can request Sequence matching.
- RETURN_KEY: SCU can request attribute as a return value (universal matching).

Tags can be configured to be omitted from the query, in the Config screen. Wild Card Matching is only used for Patient's Name (0010,0010).

For the Query Value Source column, the following values are supported:

- FIXED: The query value cannot be modified by the user or by configuration.
- GENERATED: The query value is generated by the system (e.g., current date as the study date).
- CONFIGURATION: The query value is dependent on system configuration.
- USER: The query value is entered by the user.
- SCANNED: The query value is read from a barcode scanner or similar device.
- EMPTY: The query value is left empty to indicate it is a return key only.

For the Display on UI the following values are supported:

- D: The return value is displayed on the main UI by default.
- C: The return value is displayed on the main UI if configured.
- N: The return value is never displayed.

**TABLE 9.4.1
SUPPORTED C-FIND QUERY PARAMETERS FOR MODALITY WORKLIST-SCU**

Attribute Name	Tag	Matching Type	Query Value Sources	Value	Display on UI	Comments
SOP Common						
Specific Character Set	(0008,0005)	SINGLE_VALUE, RETURN_KEY	EMPTY, GENERATED	Empty	N	If the query contains only pure ASCII characters
				ISO_IR 100	N	If the query contains matching keys in other than the default

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Attribute Name	Tag	Matching Type	Query Value Sources	Value	Display on UI	Comments
						character repertoire
Scheduled Procedure Step						
Schedule Procedure Step Sequence	(0040,0100)	RETURN_KEY	CONFIGURATION, USER, EMPTY		D	
>Modality	(0008,0060)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	Only "US" and "SR" are supported
>Scheduled Station AE Title	(0040,0001)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
>Scheduled Procedure Step Start Date	(0040,0002)	RANGE, RETURN_KEY	USER, EMPTY		D	
>Scheduled Procedure Step Start Time	(0040,0003)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
>Scheduled Performing Physician's Name	(0040,0006)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	Maps to the attribute "Performing Physician's Name" in the Instance
>Scheduled Procedure Step Description	(0040,0007)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
>Scheduled Protocol Code Sequence	(0040,0008)	RETURN_KEY	EMPTY		D	
>Scheduled Procedure Step ID	(0040,0009)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
>Scheduled Station Name	(0040,0010)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
>Scheduled Procedure Step Location	(0040,0011)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Requested Procedure						
Referenced Study Sequence	(0008,1110)	RETURN_KEY	EMPTY		D	
>Referenced SOP Class UID	(0008,1150)	RETURN_KEY	EMPTY		D	
>Referenced SOP Instance UID	(0008,1155)	RETURN_KEY	EMPTY		D	
Study Instance UID	(0020,000D)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Requested Procedure Description	(0032,1060)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	Maps to the attribute "Study Description" in the Instance
Requested Procedure Code Sequence	(0032,1064)	RETURN_KEY	EMPTY		N	
Requested Procedure ID	(0040,1001)	SINGLE_VALUE, RETURN_KEY	USER, EMPTY		D	Vivid calls it Exam ID

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Attribute Name	Tag	Matching Type	Query Value Sources	Value	Display on UI	Comments
Names of Intended Recipients of Results	(0040,1010)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	Maps to the attribute "Physician(s) of Record".
Requested Procedure Comments	(0040,1400)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Imaging Service Request						
Accession Number	(0008,0050)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, USER, EMPTY		D	
Referring Physician's Name	(0008,0090)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Requesting Physician	(0032,1032)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Requesting Service	(0032,1033)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Imaging Service Request Comments	(0040,2400)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Visit Identification						
Admission ID	(0038,0010)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Visit Status						
Current Patient Location	(0038,0300)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Visit Relationship						
Referenced Patient Sequence	(0008,1120)	RETURN_KEY	EMPTY			
>Referenced SOP Class UID	(0008,1150)	RETURN_KEY	EMPTY		N	
>Referenced SOP Instance UID	(0008,1155)	RETURN_KEY	EMPTY		N	
Patient Identification						
Patient's Name	(0010,0010)	SINGLE_VALUE, WILDCARD, RETURN_KEY	USER, EMPTY		D	
Patient ID	(0010,0020)	SINGLE_VALUE, RETURN_KEY	USER, EMPTY		D	
Issuer of Patient ID	(0010,0021)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Issuer of Patient ID Qualifiers Sequence	(0010,0024)	RETURN_KEY	EMPTY		N	
>Universal Entity ID	(0040,0032)	RETURN_KEY			N	
>Universal Entity ID Type	(0040,0033)	RETURN_KEY			N	
>Identifier Type Code	(0040,0035)	RETURN_KEY			N	

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Attribute Name	Tag	Matching Type	Query Value Sources	Value	Display on UI	Comments
Other Patient Ids	(0010,1000)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Other Patient Ids Sequence	(0010,1002)	RETURN_KEY	EMPTY		D	
>Patient ID	(0010,0020)	RETURN_KEY			D	
>Issuer of Patient ID	(0010,0021)	RETURN_KEY			D	
>Issuer of Patient ID Qualifiers Sequence	(0010,0024)	RETURN_KEY	EMPTY		D	
>>Universal Entity ID	(0040,0032)	RETURN_KEY			N	
>>Universal Entity ID Type	(0040,0033)	RETURN_KEY			N	
>>Identifier Type Code	(0040,0035)	RETURN_KEY			N	
Patient Demographics						
Patients Birth Date	(0010,0030)	SINGLE_VALUE, RETURN_KEY	USER, EMPTY		D	
Patients Birth Time	(0010,0032)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Patient's Sex	(0010,0040)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, USER, EMPTY		D	
Patient's Size	(0010,1020)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Patient's Weight	(0010,1030)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Patient's Address	(0010,1040)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Ethnic Group	(0010,2160)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Patient Comments	(0010,4000)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	
Patient Medical						
Medical Alerts	(0010,2000)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Allergies	(0010,2110)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	
Additional Patient History	(0010,21B0)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		D	Appears as Ref. Reason in the UI
Pregnancy Status	(0010,21C0)	SINGLE_VALUE, RETURN_KEY	CONFIGURATION, EMPTY		N	

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9.5 SCP OF THE MODALITY WORKLIST INFORMATION MODEL – FIND
SOP CLASS - N/A

Not supported.

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10. MODALITY PERFORMED PROCEDURE STEP SOP CLASS DEFINITION

10.1 INTRODUCTION

This section of the DICOM Conformance Statement specifies the Modality Performed Procedure Step SOP Class, the optional attributes and service elements supported, the valid range of values for mandatory and optional attributes, and the status code behavior.

10.2 SCU OF THE MODALITY PERFORMED PROCEDURE STEP SOP CLASS

10.2.1 IOD Description

As a Service Class User of the Modality Performed Procedure Step SOP Class, the Vivid scanner and EchoPAC Software Only supports the following attributes in the N-CREATE-RQ and N-SET-RQ messages, if it creates the message.

In the values Source Column, the following values are supported:

- FIXED: the value is pre-defined and cannot be modified.
- GENERATED: the value is generated by the system.
- CONFIGURATION: the value is copied from system configuration.
- MWL: the value is copied from modality worklist.
- USER: the value is entered by the user.
- SCANNED: the value is read from a barcode scanner or similar device.
- EMPTY: the attribute is sent without value.

Attribute Name	Tag	Source	Value N- CREATE	Value N-SET	Comments
Performed Procedure Step Relationship					
Scheduled Step Attribute Sequence	(0040,0270)	GENERATED			
>Study Instance UID	(0020,000D)	GENERATED, MWL			MWL from (0020,000D)
>Referenced Study Sequence	(0008,1110)	EMPTY, MWL			MWL from (0008,1110)
>>Referenced SOP Class UID	(0008,1150)	MWL			
>>Referenced SOP Instance UID	(0008,1155)	MWL			
>Accession Number	(0008,0050)	EMPTY, USER, MWL			MWL from (0008,0050)

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Attribute Name	Tag	Source	Value N- CREATE	Value N-SET	Comments
>Requested Procedure ID	(0040,1001)	EMPTY, MWL			MWL from (0040,1001)
>Requested Procedure Description	(0032,1060)	EMPTY, MWL			MWL from (0032,1060)
>Scheduled Procedure Step ID	(0040,0009)	EMPTY, MWL			MWL from (0040,0100) sub-attribute (0040,0009)
>Scheduled Procedure Step Description	(0040,0007)	EMPTY, MWL			MWL from (0040,0100) sub-attribute (0040,0007)
>Scheduled Protocol Code Sequence	(0040,0008)	EMPTY, MWL			MWL from (0040,0100) sub-attribute (0040,0008)
>>Code Value	(0008,0100)	MWL			
>>Coding Scheme Designator	(0008,0102)	MWL			
>>Code Meaning	(0008,0104)	MWL			
Patient's Name	(0010,0010)	USER, MWL			MWL from (0010,0010)
Patient ID	(0010,0020)	USER, MWL			MWL from (0010,0020)
Patient's Birth Date	(0010,0030)	USER, EMPTY, MWL			MWL from (0010,0030)
Patient's Sex	(0010,0040)	USER, MWL			MWL from (0010,0040)
Referenced Patient Sequence	(0008,1120)	EMPTY, MWL			MWL from (0008,1120)
>Referenced SOP Class UID	(0008,1150)	MWL			
>Referenced SOP Instance UID	(0008,1155)	MWL			
Admission Id	(0038,0010)	EMPTY, USER, MWL			MWL from (0038,0010)
Performed Procedure Step Information					
Performed Procedure Step ID	(0040,0253)	GENERATED	Integer value determined by the system		
Performed Station AE Title	(0040,0241)	CONFIGURATION			

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Attribute Name	Tag	Source	Value N- CREATE	Value N-SET	Comments
Performed Station Name	(0040,0242)	Host name, CONFIGURATION			
Performed Location	(0040,0243)	CONFIGURATION			
Performed Procedure Step Start Date	(0040,0244)	GENERATED	Date of first image acquisition		
Performed Procedure Step Start Time	(0040,0245)	GENERATED	Time of first image acquisition		
Performed Procedure Step Status	(0040,0252)	GENERATED	IN PROGRESS	DISCONTINUED, COMPLETED	
Performed Procedure Step Description	(0040,0254)	EMPTY, USER, MWL			MWL from (0032,1060)
Performed Procedure Type Description	(0040,0255)	FIXED	EMPTY	EMPTY	
Procedure Code Sequence	(0008,1032)	EMPTY, MWL			MWL from (0032,1064)
Performed Procedure Step End Date	(0040,0250)	GENERATED	EMPTY	The date when the exam ended	
Performed Procedure Step End Time	(0040,0251)	GENERATED	EMPTY	The time when the exam ended	
Image Acquisition Results					
Modality	(0008,0060)	GENERATED, MWL	US, SR		MWL from (0008,0060)
Study ID	(0020,0010)	EMPTY, USER, MWL			MWL from (0040,1001)
Performed Protocol Code Sequence	(0040,0260)	EMPTY, MWL			MWL from (0040,0100) sub-attribute (0040,0008)
>Code Value	(0008,0100)	MWL			
>Coding Scheme Designator	(0008,0102)	MWL			
>Code Meaning	(0008,0104)	MWL			
Performed Series Sequence	(0040,0340)	EMPTY, GENERATED	EMPTY	GENERATED	
>Performing Physician's Name	(0008,1050)	FIXED		EMPTY	
>Protocol Name	(0018,1030)	FIXED		If stress protocol performed, Stress Protocol name, otherwise EMPTY.	

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Attribute Name	Tag	Source	Value N- CREATE	Value N-SET	Comments
>Operator's Name	(0008,1070)	FIXED		EMPTY	
>Series Instance UID	(0020,000E)	GENERATED			
>Series Description	(0008,103E)	FIXED		EMPTY	
>Retrieve AE Title	(0008,0054)	FIXED		EMPTY	
>Referenced Image Sequence	(0008,1140)	EMPTY, GENERATED			List of files added to the Series, or Empty if no files.
>>Referenced SOP Class UID	(0008,1150)	GENERATED			
>>Referenced SOP Instance UID	(0008,1155)	GENERATED			
>Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)	FIXED		EMPTY	

10.2.2 Operations

10.2.2.1 Service Class User Behavior

The Vivid scanner and EchoPAC Software Only send N-CREATE when first image in examination is acquired or when the exam is ended (for the case where there are no images or results).

The N-SET message is sent after the exam is ended, and it will include all acquired image- and result UUIDs and the status of COMPLETED or DISCONTINUED.

10.2.2.2 Status Codes

No Service Class specific status values are defined for the N-ACTION Service. See PS 3.7 for general response status codes.

For this SOP class, all status codes with status Refused or Error are treated as failures and terminate the association and operation. All status codes with status Warning or Success are treated as successes.

10.3 SCP OF THE MODALITY PERFORMED PROCEDURE STEP SOP CLASS - N/A

Not supported.

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**11. STORAGE COMMITMENT PUSH MODEL SOP CLASS
DEFINITION**

11.1 INTRODUCTION

This section of the DICOM Conformance Statement specifies the Storage Commitment Push Model SOP Class, the optional attributes and service elements supported, the valid range of values for mandatory and optional attributes, and the status code behavior.

11.2 STORAGE COMMITMENT PUSH MODEL SOP CLASS DEFINITION

11.2.1 IOD Description

11.2.1.1 STORAGE COMMITMENT MODULE

**TABLE 11.2.1
STORAGE COMMITMENT MODULE**

Attribute Name	Tag	Attribute Description
Transaction UID	(0008,1195)	Uniquely generated by the equipment
Retrieve AE Title	(0008,0054)	Not used
Storage Media File-Set ID	(0088,0130)	Not used
Storage Media File-Set UID	(0088,0140)	Not used
Referenced SOP Sequence	(0008,1199)	Supported
>Referenced SOP Class UID	(0008,1150)	Supported
>Referenced SOP Instance UID	(0008,1155)	Supported
>Retrieve AE Title	(0008,0054)	Not used
>Storage Media File-Set ID	(0088,0130)	Not used
>Storage Media File-Set UID	(0088,0140)	Not used
Failed SOP Sequence	(0008,1198)	Supported
>Referenced SOP Class UID	(0008,1150)	Supported
>Referenced SOP Instance UID	(0008,1155)	Supported
>Failure Reason	(0008,1197)	Supported

11.2.2 DIMSE Service Group

DIMSE Service Element	Usage SCU/SCP
N-EVENT-REPORT	M/M
N-ACTION	M/M

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11.2.3 Operations

11.2.3.1 Action Information

**TABLE 11.2.2
STORAGE COMMITMENT REQUEST - ACTION INFORMATION**

Action Type Name	Action Type ID	Attribute	Tag	Requirement Type SCU/SCP
Request Storage Commitment	1	Transaction UID	(0008,1195)	1/1
		Storage Media File-Set ID	(0088,0130)	Not used
		Storage Media File-Set UID	(0088,0140)	Not used
		Referenced SOP Sequence	(0008,1199)	1/1
		>Referenced SOP Class UID	(0008,1150)	1/1
		>Referenced SOP Instance UID	(0008,1155)	1/1
		>Storage Media File-Set ID	(0088,0130)	Not used
		>Storage Media File-Set UID	(0088,0140)	Not used

11.2.3.2 Service Class User Behavior

Vivid and EchoPAC Software Only v206 sends the N-ACTION primitive (Storage Commitment Request) after successful exam save to a DICOM Storage SCP.

Vivid and EchoPAC Software Only v206 may request storage commitment for all generated SOP Class UIDs:

Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Comprehensive Structured Report	1.2.840.10008.5.1.4.1.1.88.33

The association for the N-ACTION is disconnected after processing the response. Thus, the N-EVENT-REPORT must be sent on a separate association.

The Referenced Study Component Sequence Attribute is not supported.

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The Transaction UID is valid for two days. If no answer is received, the request will be removed without warning the user.

The optional Storage Media File-Set ID & UID Attributes in the N-ACTION are not supported.

11.2.3.3 Status Codes

No Service Class specific status values are defined for the N-ACTION Service. See PS 3.7 for general response status codes.

For this SOP class, all status codes with status Refused or Error are treated as failures and terminate the association and operation. All status codes with status Warning or Success are treated as successes.

11.2.4 Notifications

Vivid and EchoPAC Software Only v206 will only listen for an N-EVENT-REPORT from the SCP in a new association on the listen port for Verification and Storage Commitment.

Role Negotiation is supported and expected in the new association requested.

11.2.4.1 Event Information

**TABLE 11.2.3
STORAGE COMMITMENT RESULT - EVENT INFORMATION**

Event Type Name	Event Type ID	Attribute	Tag	Requirement Type SCU/SCP
Storage Commitment Request Successful	1	Transaction UID	(0008,1195)	-/1
		Retrieve AE Title	(0008,0054)	Not used
		Storage Media File-Set ID	(0088,0130)	Not used
		Storage Media File-Set UID	(0088,0140)	Not used
		Referenced SOP Sequence	(0008,1199)	-/1
		>Referenced SOP Class UID	(0008,1150)	-/1
		>Referenced SOP Instance UID	(0008,1155)	-/1
		>Retrieve AE Title	(0008,0054)	Not used
		>Storage Media File-Set ID	(0088,0130)	Not used
		>Storage Media File-Set UID	(0088,0140)	Not used
Storage Commitment Request Complete - Failures Exist	2	Transaction UID	(0008,1195)	-/1
		Retrieve AE Title	(0008,0054)	Not used
		Storage Media File-Set ID	(0088,0130)	Not used
		Storage Media File-Set UID	(0088,0140)	Not used

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		Referenced SOP Sequence	(0008,1199)	-/1C
		>Referenced SOP Class UID	(0008,1150)	-/1
		>Referenced SOP Instance UID	(0008,1155)	-/1
		>Retrieve AE Title	(0008,0054)	Not used
		>Storage Media File-Set ID	(0088,0130)	Not used
		>Storage Media File-Set UID	(0088,0140)	Not used
		Failed SOP Sequence	(0008,1198)	-/1
		>Referenced SOP Class UID	(0008,1150)	-/1
		>Referenced SOP Instance UID	(0008,1155)	-/1
		>Failure Reason	(0008,1197)	-/1

11.2.4.2 Service Class User Behavior

If a successful answer is received, the request will be removed without warning the user.

If a non-successful answer is received, the request will be left in the holding queue.

If no answer is received, the request will be removed without warning the user after two days.

11.2.4.3 Status Codes

No Service Class specific status values are defined for the N-EVENT-REPORT Service. See PS 3.7 for general response status code.

For this SOP class, all status codes with status Refused or Error are treated as failures and terminate the association and operation. All status codes with status Warning or Success are treated as successes.

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12. PRINT MANAGEMENT SOP CLASS DEFINITION

12.1 INTRODUCTION

This section of the DICOM Conformance Statement specifies the supported Print Management SOP and Meta SOP Classes, the optional attributes and service elements supported, the valid range of values for mandatory and optional attributes, and the status code behavior.

12.2 - Basic Print Management Meta SOP Classes

12.3 - Print Management SOP Class Definitions

12.4 - Print Management IODs

12.5 - IOD Module Definition

12.2 BASIC PRINT MANAGEMENT META SOP CLASSES

The Basic Print Management Meta SOP Classes correspond with the minimum functionality that an implementation of the Print Management Service Class shall support.

Vivid and EchoPAC Software Only v206 supports the Basic Grayscale Print Management Meta SOP Class and the Basic Color Print Management Meta SOP Class. These are defined in Table 12.2.1 and Table 12.2.2.

12.2.1 Basic Grayscale Print Management Meta SOP Class

The Basic Grayscale Print Management Meta SOP Class is defined by the following set of supported SOP Classes.

**TABLE 12.2.1
BASIC GRAYSCALE PRINT MANAGEMENT META SOP CLASS**

SOP Class Name	Usage SCU	Reference
Basic Film Session SOP Class	M	see 12.3.1
Basic Film Box SOP Class	M	see 12.3.2
Basic Grayscale Image Box SOP Class	M	see 12.3.3.1
Printer SOP Class	M	see 12.3.4

12.2.2 Basic Color Print Management Meta SOP Class

The Basic Color Print Management Meta SOP Class is defined by the following set of supported SOP Classes

**TABLE 12.2.2
BASIC COLOR PRINT MANAGEMENT META SOP CLASS**

SOP Class Name	Usage SCU	Reference
Basic Film Session SOP Class	M	see 12.3.1

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Basic Film Box SOP Class	M	see 12.3.2
Basic Color Image Box SOP Class	M	see 12.3.3.2
Printer SOP Class	M	see 12.3.4

12.3 PRINT MANAGEMENT SOP CLASS DEFINITIONS

12.3.1 Basic Film Session SOP Class

The Basic Film Session IOD describes the presentation parameters, which are common for all the films of a film session. The DIMSE services that are applicable to the IOD are shown in Table 12.3.1.

**TABLE 12.3.1
DIMSE SERVICE GROUP**

DIMSE Service Element	Usage SCU	Reference
N-CREATE	M	see 12.3.1.1.1
N-SET	U	see 12.3.1.1.2
N-DELETE	U	see 12.3.1.1.3
N-ACTION	U	see 12.3.1.1.4

12.3.1.1 DIMSE Service Group

12.3.1.1.1 N-CREATE

The N-CREATE DIMSE Service is used by Vivid and EchoPAC v206 to request that the SCP (printer) create a Film Session SOP Instance. Table 12.4.2 defines the Basic Film Session Presentation Module attributes used in this request.

12.3.1.1.2 N-SET

Not used in this implementation.

12.3.1.1.3 N-DELETE

Not used in this implementation.

12.3.1.1.4 N-ACTION

Not used in this implementation

12.3.2 Basic Film Box SOP Class

The Basic Film Box IOD is an abstraction of the presentation of one film of the film session. The DIMSE services that are applicable to the IOD are shown in Table 12.3.2.

**TABLE 12.3.2
DIMSE SERVICE GROUP**

DIMSE Service Element	Usage SCU	Reference
N-CREATE	M	see 12.3.2.1.1
N-ACTION	M	see 12.3.2.1.2
N-DELETE	U	see 12.3.2.1.3
N-SET	U	see 12.3.2.1.4

12.3.2.1 DIMSE Service Group

12.3.2.1.1 N-CREATE

The N-CREATE DIMSE Service is used by Vivid and EchoPAC Software Only v206 to request that the SCP create a Film Box SOP Instance. Table 12.4.2 defines the Basic Film Box Presentation Module attributes used in this request.

12.3.2.1.2 N-ACTION

The N-ACTION DIMSE Service is used by Vivid v206 and EchoPAC Software Only to request the SCP (printer) to print the number of copies configured by the user to a film of the film session.

12.3.2.1.3 N-DELETE

The N-DELETE DIMSE Service is used by Vivid and EchoPAC Software Only v206 to request the SCP (printer) to delete the complete Film Box. The root Film Box Instance UID is sent to the SCP to accomplish this.

12.3.2.1.4 N-SET

Not used in this implementation.

12.3.3 Image Box SOP Class

12.3.3.1 Basic Grayscale Image Box SOP Class

The Basic Grayscale Image Box IOD is an abstraction of the presentation of an image and image related data in the image area of a film. The DIMSE services that are applicable to the IOD are shown in Table 12.3.3.

**TABLE 12.3.3
DIMSE SERVICE GROUP**

DIMSE Service Element	Usage SCU	Reference
N-SET	M	see 12.3.3.1.1