TigerView DICOM and DICONDE Conformance Statement

For DICOM areas:
Digital X-ray Image Storage – For Presentation
Digital Intra-oral X-ray Image Storage – For Presentation
Secondary Capture Image Storage
Computed Radiography Image Storage
Visible Light Endoscopy Image Storage
Visible Light Photography Image Storage
Ultrasound Image Storage
Remote Storage
Non-Destructive Testing

Version 5

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Televere Systems, 16275 Monterey Road, Suite K, Morgan Hill, CA 95037
(800) 385-9593

Contents

Introduction

0.1 Purpose

This DICOM and DICONDE Conformance Statement refers to the DICOM and DICONDE functionality of the TigerView DICOM Interface. TigerView is a software imaging application owned and authored by Televere Systems.

0.2 Scope

This Conformance Statement refers to TigerView software version 7.0 or higher.
TigerView is available only in the English language version.

0.3 Abbreviations

DICOM	Digital Imaging and Communications in Medicine
DICONDE	Digital Imaging and Communications in Non-Destructive Testing
FSC	File-Set Creator
FSR	File-Set Reader
FSU	File-Set Updater
IOD	DICOM Information Object Definition
SCP	Service Class Provider
SCU	Service Class User
SOP	DICOM Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier, a string unique in the entire network

0.4 References

Digital Imaging and Communications in Medicine (DICOM) 3, NEMA PS 3.1-12, 2003
ADA SCDI WG 12.1 Report October 2003

1 Implementation Model

1.1 Application Data Flow Diagram

The TigerView DICOM/DICONDE Interface receives images and related patient data from the TigerView application. These images will be converted into DICOM images. The TigerView DICOM/DICONDE Interface uses an existing TCP/IP connection to send the DICOM images to DICOM/DICONDE removable media or to remote DICOM/DICONDE storage locations (DICOM servers).

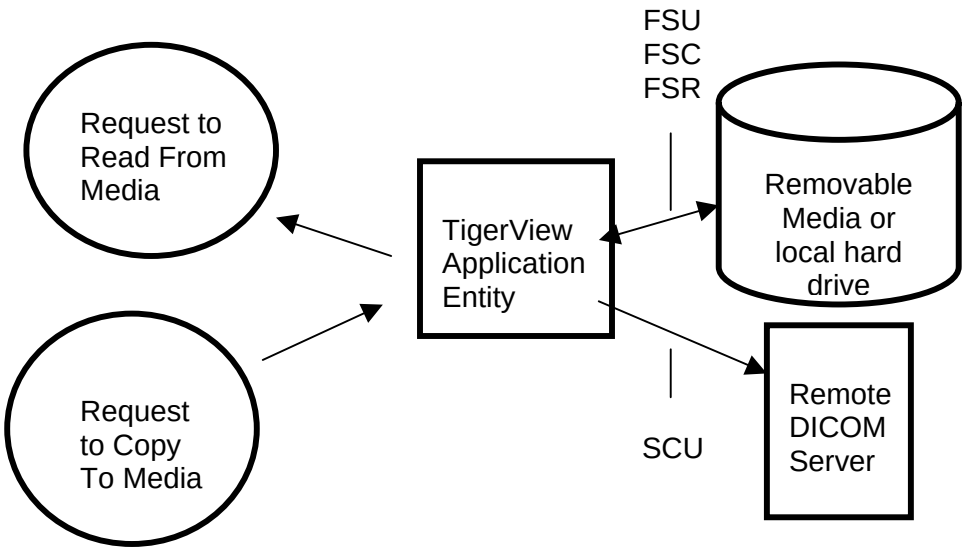

Figure 1-1 Real-World Relationships to Application Data Flow

The TigerView application, acting as an FSR, reads in SOP instances selected by the user from Removable Media or a local hard drive when the Import button in TigerView is clicked. The TigerView application will only display files that match the supported SOP Classes in the supported Application Profiles.

The TigerView application, acting as a FSC, creates a new DICOM file-set on Removable Media or a local hard drive when the Export button in TigerView is clicked.

The TigerView application, acting as an FSU, updates the DICOMDIR file on the Removable Media or local hard drive to reflect additions to, or deletions of, current SOP instances on the media. The DICOMDIR file will contain the Directory Records corresponding to the information Objects in the File-set.

The TigerView application, acting as an SCU, sends the DICOM File-set over a TCP/IP connection to a remote DICOM server along with a DICOM C-Store request.

1.2 Functional Definition of Application Entities

There is only one Application Entity: TigerView.

The TigerView Application can perform these functions:

- It can **initialize** a piece of removable media then write a new DICOM File-set onto the media;
- It can **update** a piece of removable media by adding new SOP instances to an already existing DICOM File-set;
- It can **copy** SOP instances from the removable media onto local storage
- It can **copy** SOP instances to a remote storage location (a DICOM server)

1.2.1 Media Roles and Operation Supported

The TigerView Application will act as **File-set Updater**, **File-set Creator**, **File-set Reader, and Service Class User**. The table below lists the operations supported by these roles. FSC and FSU functions are identical except that FSC will be used when no DICOMDIR exists.

1.3 Sequencing Requirements

The updating function can only be performed on a piece of media that has already had a DICOM File-set created. There are no other sequencing requirements.

2 Application Entity Specifications

TigerView's Export and Send functions provide standard conformance to the DICOM Interchange Option of the Media Storage Service Class. The Application Profiles and roles are listed in Tables 2.1-1 and 2.2-1.

2.1 Export Specifications

The Application Profiles and roles are listed in Table 2.1-1. This AE, TigerView, has the ability to support the DICOM Media Roles as listed in the previous section. TigerView is capable of being the **FS-Creator** when the media is un-Initialized, **FS-Updater** when the media already has a DICOMDIR file and is having file-sets added to or deleted from it, and **FS-Reader** when copying from removable media to system hard drive, or displaying media contents. The media may be of any format that the Microsoft Windows Operating System supports.

Table 2.1-1 Application Profiles, Activities, and Roles for Media Update

Application Profiles Supported	Real World Activity	Role	SC Option
9mm (3 ½") media STD-US-ID-MF-MOD540 130mm (5 ¼") media for 2.6GB and 5.2GB MOD media CD DVD Hard Drive/Memory Stick	Import Button	FSR	Interchange
	Export Button	FSC	Interchange
	Export Button	FSU	Interchange

The TigerView Application will query the user before initializing media when a File-set is found on the media and an initialize operation has been requested.

2.1.1 Real-World Activity: Import

The TigerView Application acts as an FSR using the interchange option when requested to copy data to the system hard drive and into the TigerView AE.

2.1.1.1 Application Profiles for FSR: Import

The list of Application Profiles supported by the TigerView Application Entity is in Table 2.1-1. Only the SOP Classes and Transfer syntaxes listed in Table 2.3-1, Abstract and Transfer Syntaxes will be supported for FS-Reader functions. The initial release will only guarantee successful reading of TigerView generated media on the supported media types.

2.1.2 Real-World Activity: Export

The TigerView application acts as an FSU/ FSC using the interchange option if the installed media has or has not been initialized and the following command is selected: Export.

The TigerView application acts as an FSC when it takes a user provided list of SOP instances (which may be empty), writes those SOP instances to the media and creates a corresponding DICOMDIR. If the list is empty, the FSC action will result in the creation of an empty File-set.

The TigerView application acts as an FSU when it copies new SOP Instances onto, or deletes images from, media that already has a DICOMDIR on it, based on user selection.

2.1.2.1 Application Profiles for FSC / FSU: Export

For the list of Application Profiles that invoke the TigerView Application Entity, see Table 2.1-1. Only the SOP Classes and Transfer syntaxes listed in Table 2.3-1, Abstract and Transfer Syntaxes will be supported.

2.2 Send Specifications / C-Store SCU

The Application Profiles and roles are listed in Table 2.2-1. This AE, TigerView, acting as a Service Class User, establishes an association with a remote AE (SCP) by issuing a DICOM C-Store request when a local image is to be transferred to a remote DICOM server. All communications and message transfer with the remote application is accomplished using the DICOM protocol over a network using the TCP/IP protocol stack. Unsuccessful transfers are reported.

Table 2.2-1 Application Profiles, Activities, and Roles for Remote Storage

Application Profiles Supported	Real World Activity	Role
Send to a remote DICOM server using a C-Store request	Export To DICOM Server or the Send button	SCU

2.2.1 Real-World Activity: Send or Export To DICOM Server

The TigerView application sends a C-Echo request to a remote DICOM server. If an association is established, TigerView will send a C-STORE request to the remote server followed by user-selected images. TigerView receives associated replies from the remote server indicating a successful or unsuccessful transfer.

2.2.2 Configurable Parameters

The following configurable parameters are held in tables within TigerView: SCU AE title, SCU IP address, SCP AE title, SCP IP address, SCP port number, SCP security, and a time out value.

2.3 Abstract and Transfer Syntaxes

The following table contains the standard DICOM IOD, SOP class UID, and Transfer Syntaxes supported by the TigerView application.

Table 2.3-1 Abstract and Transfer Syntaxes

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
Digital X-ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50
Digital Intra-oral X-ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50
Visible Light Endoscopy Image Storage	1.2.840.10008.5.1.4.1.1.77.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50
Visible Light Photography Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1
		Implicit VR Little Endian	1.2.840.10008.1.2
		JPEG Baseline	1.2.840.10008.1.2.4.50

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
DICOM Media Storage Directory (DICOMDIR)	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1
Remote Storage of all IOD's listed above	1.2.840.10008.1.2	Implicit VR Little Endian	1.2.840.10008.1.2

3 Standard SOP Specific Conformance to Digital X-ray, Digital X-ray Intra-Oral, Secondary Capture, Computed Radiography, Ultrasound, VL Endoscopy, VL Photography, and Remote Storage SOP Classes

IOD Modules

Digital X-ray Image

Module Name	Usage	Description
Patient	M	Describe and identify the patient
General Study	M	Describe and identify the study performed on the patient
General Series	M	General information about the series within a study
Digital X-ray Series	M	Describe and identify the x-ray series
General Equipment	M	Identify and describe the piece of equipment that produced a series of composite instances
General Image	M	Identify and describe an image within a particular series
Image Pixel	M	Describe the pixel data of the image
Digital X-ray Anatomy Imaged	M	Describe the anatomic region of interest
Digital X-ray Image	M	Specify an image that has been created by a digital projection radiography imaging device
Digital X-ray Detector	M	Describe the device that acquired the image
VOI LUT	U	Describe the linear transformation of the modality pixel values into pixel values that are meaningful for print, display, etc.
Acquisition Context	M	Describe the conditions present during the acquisition of the image
SOP Common	M	The attributes 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.

Digital Intra-Oral X-ray Image

Module Name	Usage	Description
Patient	M	Describe and identify the patient
General Study	M	Describe and identify the study performed on the patient
General Series	M	General information about the series within a study
Digital X-ray Series	M	Describe and identify the x-ray series

Module Name	Usage	Description
Intra-oral Series	M	Specify the type of equipment that originally acquired the image data
General Equipment	M	Identify and describe the piece of equipment that produced a series of composite instances
General Image	M	Identify and describe an image within a particular series
Image Pixel	M	Describe the pixel data of the image
Digital X-ray Anatomy Imaged	M	Describe the anatomic region of interest
Digital X-ray Image	M	Specify an image that has been created by a digital projection radiography imaging device
Digital X-ray Detector	M	Describe the device that acquired the image
Digital X-ray Positioning	U	Describe the type of image (e.g. Mammographic, Panoramic, Cephalostat, etc
Intra-Oral Image	M	Describe a digital intra-oral x-ray image including its acquisition and positioning
VOI LUT	U	Describes the linear transformation of the modality pixel values into pixel values that are meaningful for print, display, etc.
Acquisition Context	M	Describe the conditions present during the acquisition of the image
SOP Common	M	The attributes 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.

Secondary Capture Image

Module Name	Usage	Description
Patient	M	Describe and identify the patient
General Study	M	Describe and identify the study performed on the patient
General Series	M	General information about the series within a study
General Equipment	U	Identify and describe the piece of equipment that produced a series of composite instances
SC Equipment	M	Identify and describe the piece of secondary capture equipment that produced a series of composite instances
General Image	M	Identify and describe an image within a particular series
Image Pixel	M	Describe the pixel data of the image
SC Image	M	Identify and describe a secondary capture image within a particular series
VOI LUT	U	Describes the linear transformation of the modality pixel values into pixel values that are meaningful for print, display, etc.

Module Name	Usage	Description
SOP Common	M	The attributes 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.

Computed Radiography Image

Module Name	Usage	Description
Patient	M	Describe and identify the patient
General Study	M	Describe and identify the study performed on the patient
General Series	M	General information about the series within a study
CR Series	M	Describe and identify the computed radiography series
General Equipment	M	Identify and describe the piece of equipment that produced a series of composite instances
General Image	M	Identify and describe an image within a particular series
Image Pixel	M	Describe the pixel data of the image
CR Image	M	Describe a computed radiography image including its acquisition and positioning
VOI LUT	U	Describes the linear transformation of the modality pixel values into pixel values that are meaningful for print, display, etc.
SOP Common	M	The attributes 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.

Ultrasound Image

Module Name	Usage	Description
Patient	M	Describe and identify the patient
General Study	M	Describe and identify the study performed on the patient
General Series	M	General information about the series within a study
Frame of Reference	U	Identifies the coordinate system that conveys spatial and/or temporal information about composite instances in a series.
General Equipment	M	Identify and describe the piece of equipment that produced a series of composite instances
General Image	M	Identify and describe an image within a particular series
Image Pixel	M	Describe the pixel data of the image

Module Name	Usage	Description
US Image	M	Describe an ultrasound image including its acquisition and positioning
VOI LUT	U	Describes the linear transformation of the modality pixel values into pixel values that are meaningful for print, display, etc.
SOP Common	M	The attributes 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.
Curve Identification	M	Used for independent curves
Curve	M	Specified as a series of connected points.

Visible Light Endoscopic or Photographic Image

Module Name	Usage	Description
Patient	M	Describe and identify the patient
General Study	M	Describe and identify the study performed on the patient
General Series	M	General information about the series within a study
General Equipment	M	Identify and describe the piece of equipment that produced a series of composite instances
General Image	M	Identify and describe an image within a particular series
Image Pixel	M	Describe the pixel data of the image
Acquisition Context	M	Describe the conditions present during the acquisition of an Image.
VL Image	M	Describe an visible light image including its acquisition and positioning
SOP Common	M	The attributes 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.

Module Elements Supported

Each module that is used by the TigerView Application Entity has a table below that lists the module elements that are supported.

Patient Module

Attribute Name	Tag	Type	Value	Description	Used By
Patient's Name	0010:0010	2	Name	Patient's full name LastName^FirstName	DX, DX-IO, SC, CR, ES, XC
Patient ID	0010:0020	2	String	Primary ID number or code for this patient	DX, DX-IO, SC, CR, ES, XC
Patient's Birth Date	0010:0030	2	Date String	Birth date of the patient MM/DD/YYYY	DX, DX-IO, SC, CR, ES, XC
Patient's Sex	0010:0040	2	M, F, O	Sex of the patient. MFO "O" for other.	DX, DX-IO, SC, CR, ES, XC

General Study Module

Attribute Name	Tag	Type	Value	Description	Used By
Study Instance UID	0020:000D	1	UID	Unique identifier for the study	DX, DX-IO, SC, CR, ES, XC
Study Date	0008:0020	2	Date	Date the study started MM/DD/YYYY	DX, DX-IO, SC, CR, ES, XC
Study Time	0008:0030	2	HHMMSS	Time the study started HH:MM:SS:HS	DX, DX-IO, SC, CR, ES, XC
Referring Physician's Name	0008:0090	2	String	Name of the patient's referring physician	DX, DX-IO, SC, CR, ES, XC
Study ID	0020:0010	2	String	Study identifier	DX, DX-IO, SC, CR, ES, XC
Accession Number	0008:0050	2	String	A RIS generated number that identifies the order for the study	DX, DX-IO,

Attribute Name	Tag	Type	Value	Description	Used By
					SC, CR, ES, XC
Study Description	0008:1030	3	String	Description or classification of the study	DX, DX-IO, SC, CR, ES, XC

General Series Module

Attribute Name	Tag	Type	Value	Description	Used By
Modality	0008:0060	1	String	Type of equipment that originally acquired the data used to create the images in this series. Ex: CR, PX	DX, DX-IO, SC, CR, ES, XC
Series Instance UID	0020:000E	1	UID	Unique identifier for this series	DX, DX-IO, SC, CR, ES, XC
Series Number	0020:0011	2	Number	A number that identifies this study	DX, DX-IO, SC, CR, ES, XC
Series Date	0008:0021	3	Date	Date the series started	DX, DX-IO, SC, CR, ES, XC
Series Time	0008:0031	3	HHMMSS	Time the series started	DX, DX-IO, SC, CR, ES, XC
Performing Physician's Name	0008:1050	3	String	Name of the physician(s) administering the series. Ex: LastName^FirstName	DX, DX-IO, SC, CR, ES, XC
Body Part Examined	0018:0015	3	Code String	Description of the part of the body examined. Ex: ANKLE, FOOT, JAW.	CR

CR Series Module

Attribute Name	Tag	Type	Value	Description	Used By
Body Part Examined	0018:0015	2	Code String	Test description of the part of the body examined. Ex: FOOT, ANKLE, JAW.	CR
View Position	0018:5101	2	Code String	View associated with the patient position. Ex: AP = Anterior/Posterior, LL = Left Lateral	CR

Digital X-ray Series Module

Attribute Name	Tag	Type	Value	Description	Used By
Modality	0008:0060	2	String	Type of equipment that originally acquired the data used to create the image in this series. Values: DX, PX, IO, MG	DX, DX-IO
Presentation Intent Type	0008:0068	2	String	Identifies the intent of the images that are contained within this Series. Values: FOR PRESENTATION, FOR PROCESSING	DX, DX-IO

Intra-Oral Series Module

Attribute Name	Tag	Type	Value	Description	Used By
Modality	0008:0060	2	String	Type of equipment that originally acquired the data used to create the images in this Series. Value: IO	DX-IO

General Equipment Module

Attribute Name	Tag	Type	Value	Description	Used By
Manufacturer	0008:0070	2	String	Manufacturer of the equipment that produced the composite images	DX, DX-IO, SC, CR, ES, XC
Institution Name	0008:0080	3	String	Institution where the equipment that produced the composite instances is located	DX, DX-IO, SC, CR, ES, XC
Institution Address	0008:0081	3	Short Text	Mailing address of the Institution where the equipment that produced the composite instances is located	DX, DX-IO, SC, CR, ES, XC
Manufacturer's Model Name	0008:1090	3	Long String	Manufacturer's model name of the equipment that produced the composite instances	DX, DX-IO, SC, CR, ES, XC
Device Serial Number	0018:1000	3	Long String	Manufacturer's serial number of the equipment that produced the composite instances	DX, DX-IO, SC, CR, ES, XC
Software Version	0018:1020	3	Long String	Manufacturer's designation of the software version of the	DX, DX-IO,

Attribute Name	Tag	Type	Value	Description	Used By
				equipment that produced the composite instances	SC, CR, ES, XC
Spatial Resolution	0018:1050	3	Decimal String	The inherent limiting resolution in mm of the acquisition equipment for high contrast objects for the data gathering and reconstruction technique chosen. If it is variable across the images of the series, the value at the image center	DX, DX-IO, SC, CR, ES, XC

SC Equipment Module

Attribute Name	Tag	Type	Value	Description	Used By
Conversion Type	0008:0064	1	Code String	Describes the type of image conversion. Ex: SI = Scanned Image, SD = Scanned Document, DF = Digitized Film	SC
Modality	0008:0060	3	Code String	Source equipment for the image	SC
Secondary Capture Device ID	0018:1010	3	Long String	User defined ID of the device that converted the image	SC
Secondary Capture Device Manufacturer	0018:1016	3	Long String	Manufacturer of the secondary capture device	SC
Secondary Capture Device Manufacturer's Model Name	0018:1018	3	Long String	Manufacturer's model number of the secondary capture device	SC
Secondary Capture Device Software Version(s)	0018:1019	3	Long String	Manufacturer's designation of the name and version of the software that captures the secondary capture image	SC

General Image Module

Attribute Name	Tag	Type	Value	Description	Used By
Instance Number	0020:0013	2	Integer String	A number that identifies this image	DX, DX-IO, SC, CR, ES, XC
Patient Orientation	0020:0020	2C	Code String	Patient direction of the rows and columns of the image.	DX, DX-IO, SC, CR, ES, XC
Image Type	0008:0008	3	Code String	Image identification characteristics	DX, DX-IO,

Attribute Name	Tag	Type	Value	Description	Used By
					SC, CR, ES, XC
Acquisition Date	0008:0022	3	Date	The date the acquisition of data that resulted in this image started. Format MM/DD/YYYY	DX, DX-IO, SC, CR, ES, XC
Acquisition Time	0008:0032	3	Time HHMMSS	The time the acquisition of data that resulted in this image started. Format HH:MM:SS:hS	DX, DX-IO, SC, CR, ES, XC
Burned in Annotation	0028:0301	3	Code String	YES or NO. Indicates whether or not annotations identify the patient and image date	DX, DX-IO
Image Comments	0020:4000	3	Long Text	User defined comments about the image	DX, DX-IO, SC, CR, ES, XC
Lossy Image Compression	0028:2110	3	Code String	Whether the image has undergone lossy compression. 00 = Yes, 01 = No compression	DX, DX-IO, ES, XC
Lossy Image Compression Ratio	0028:2112	3	Decimal String	Describes the approximate lossy compression ratio(s) that have been applied to this image. May be multivalued.	ES, XC
Presentation LUT Shape	2050:0020	3	Code String	Specifies an identity transformation for the Presentation LUT such that the output of all grayscale transformations, if any, are defined to be in P-Values	DX, DX-IO

Image Pixel Module

Attribute Name	Tag	Type	Value	Description	Used By
Pixel Data	7FE0:0010	1	Other Byte String	The image. A data stream of the pixel samples that comprise the image.	DX, DX-IO, SC, CR, ES, XC

SC Image Module

Attribute Name	Tag	Type	Value	Description	Used By
Date of Secondary Capture	0018:1012	3	Date	The date the Secondary Capture Image was captured. Format MM/DD/YYYY	SC
Time of Secondary Capture	0018:1014	3	Time	The time the Secondary Capture Image was captured.	SC

Attribute Name	Tag	Type	Value	Description	Used By
				Format HH:MM:SS:HS	

CR Image Module

Attribute Name	Tag	Type	Value	Description	Used By
KVP	0018:0060	3	Decimal String	Peak kilo voltage output of the x-ray generator used.	CR
Plate ID	0018:1004	3	Long String	The ID or serial number of the sensing plate upon which the image was acquired.	CR
Distance Source To Detector	0018:1110	3	Decimal String	Distance in mm from source to detector center.	CR
Distance Source To Patient	0018:1111	3	Decimal String	Distance in mm from source to isocenter (center of field of view).	CR
Exposure Time	0018:1150	3	Integer String	Time of x-ray exposure in msec.	CR
X-ray Tube Current	0018:1151	3	Integer String	X-ray Tube Current in mA.	CR
Exposure	0018:1152	3	Integer String	The exposure expressed in mAs, for example calculated from Exposure Time and X-ray Tube Current.	CR
Exposure in uAs	0018:1153	3	Integer String	The exposure expressed in µAs, for example calculated from Exposure Time and X-ray Tube Current.	CR
Imager Pixel Spacing	0018:1164	3	Decimal String	Physical distance measured at the external surface of the CR plate closest to the radiation source between the center of each pixel. Specified by a numeric pair	CR
Generator Power	0018:1170	3	Integer String	Power in kW to the x-ray generator.	CR
Acquisition Device Processing Description	0018:1400	3	Long String	Describes device-specific processing associated with the image.	CR
Acquisition Device Processing Code	0018:1401	3	Long String	Code representing the device-specific processing associated with the image.	CR
Cassette Orientation	0018:1402	3	Code String	Orientation of cassette, used to properly position the image for display. Either LANDSCAPE or PORTRAIT	CR
Cassette Size	0018:1403	3	Code String	Size of cassette. Ex: 18CMX24CM 8INX10IN 24CMX30CM	CR

Attribute Name	Tag	Type	Value	Description	Used By
				10INX12IN	
Exposures on Plate	0018:1404	3	Unsigned Short	Total number of x-ray exposures that have been made on the plate.	CR
Relative X-ray Exposure	0018:1405	3	Integer String	Relative x-ray exposure on the plate. Meaning of values is implementation specific. May be used to adjust the dynamic range of the plate digitizer (scanner).	CR
Sensitivity	0018:6000	3	Decimal String	Read out sensitivity.	CR

Digital X-ray Anatomy Imaged Module

Attribute Name	Tag	Type	Value	Description	Used By
Image Laterality	0020:0062	2	Code String	Laterality of (possibly paired) body part (as described in Anatomic Region Sequence (0008,2218)) examined. Enumerated Values: R = right, L = left, U = unpaired, B = both left and right Note: This Attribute is mandatory, in order to ensure that images may be positioned correctly relative to one another for display. Shall be consistent with any laterality information contained in Primary Anatomic Structure Modifier Sequence (0008,2230), if present. Note: Laterality (0020,0060) is a Series level Attribute and must be the same for all Images in the Series, hence it must be absent.	DX, DX-IO,
Anatomic Region Sequence (folder)	0008:2218	2		Sequence that identifies the anatomic region of interest in this image (i.e. external anatomy, surface anatomy, or general region of the body). This anatomic region is placed on the table or bucky for examination. Note: It is strongly recommended that this Attribute be sent with a value, in order to ensure that images may be positioned correctly	DX, DX-IO

Attribute Name	Tag	Type	Value	Description	Used By
				relative to one another for display. Only a single Item shall be permitted in this Sequence.	
Item (folder)	FFFE:E000		Other Byte String		DX, DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX, DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX, DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX, DX-IO
Anatomic Region Modifier Sequence	0008:2220	3	Sequence of Items	Sequence that modifies the anatomic region of interest in this image (i.e. prone, supine, decubitus right). May be present only if Anatomic Region Sequence is sent. One or more Items may be included in this Sequence.	DX-IO
Primary Anatomic Structure Sequence (folder)	0008:2228	3	Sequence of Items	Sequence that identifies the primary anatomic structures of interest in this image. One or more Items may be included.	DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO

Digital X-ray Image Module

Attribute Name	Tag	Type	Value	Description	Used By
Image Type	0008:0008	2	Code String	Image identification characteristics.	DX, DX-IO
Pixel Intensity Relationship Sign	0028:1041	2	Signed Short	The sign of the relationship between the Pixel sample values stored in Pixel Data (7FE0,0010) and the X-ray beam intensity. Enumerated Values: 1 = Lower pixel values correspond to less X-ray beam intensity, -1 = Higher pixel values correspond to less X-ray beam intensity	DX, DX-IO
Rescale Intercept	0028:1052	2	Decimal String	The value b in the relationship between stored values (SV) in Pixel Data (7FE0,0010) and the output units specified in Rescale Type (0028,1054). Output units = m*SV + b. Enumerated Value: 0	DX, DX-IO
Rescale Slope	0028:1053	2	Decimal String	m in the equation specified by Rescale Intercept (0028,1052). Enumerated Value: 1	DX, DX-IO
Rescale Type	0028:1054	2	Long String	Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052). Enumerated Value: US = Unspecified	DX, DX-IO
Presentation LUT Shape	2050:0020	2	Code String	Specifies an identity transformation for the Presentation LUT, other than to account for the value of Photometric Interpretation (0028,0004), such that the output of all grayscale transformations defined in the IOD containing this Module are defined to be P-Values. Enumerated Values: IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2. INVERSE - output after inversion is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME1.	DX, DX-IO
Lossy Image Compression	0028:2110	2	Code String	Specifies whether an Image has undergone lossy compression. Enumerated Values: 00 = Image	DX, DX-IO

Attribute Name	Tag	Type	Value	Description	Used By
				has NOT been subjected to lossy compression. 01 = Image has been subjected to lossy compression.	
Lossy Image Compression Ratio	0028:2112	2	Decimal String	Required if Lossy Compression has been performed on the Image.	SC
Patient Orientation	0020:0020	2	Code String	Patient direction of the rows and columns of the image.	DX, DX-IO, SC
Burned in Annotation	0028:0301	2	Code String	Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired. Enumerated Values: YES, NO	DX, DX-IO, SC
Window Center	0028:1050	2	Decimal String	Defines a Window Center for display.	DX, DX-IO, SC
Window Width	0028:1051	2	Decimal String	Window Width for display.	DX, DX-IO, SC

Digital X-ray Detector Module

Attribute Name	Tag	Type	Value	Description	Used By
Detector Type	0018:7004	2	Code String	The type of detector used to acquire this image. Defined Terms: DIRECT = X-ray photoconductor, SCINTILLATOR = Phosphor used, STORAGE = Storage phosphor, FILM = Scanned film/screen	DX, DX-IO
Detector ID	0018:700A	3	Short String	The ID or serial number of the detector used to acquire this image.	DX, DX-IO
Imager Pixel Spacing	0018:1164	2	Decimal String	Physical distance measured at the front plane of the detector housing between the center of each image pixel specified by a numeric pair - row spacing value(delimiter) column spacing value in mm.	DX, DX-IO

Digital X-ray Positioning Module

Attribute Name	Tag	Type	Value	Description	Used By

Attribute Name	Tag	Type	Value	Description	Used By
Positioner Type	0018:1508	2	Code String	Defined Terms: CARM, COLUMN, MAMMOGRAPHIC, PANORAMIC, CEPHALOSTAT, RIGID, NONE Notes: 1. The term CARM can apply to any positioner with 2 degrees of freedom of rotation of the X-ray beam about the Imaging Subject. 2. The term COLUMN can apply to any positioner with 1 degree of freedom of rotation of the X-ray beam about the Imaging Subject.	DX, DX-IO

Intra-Oral Image Module

Attribute Name	Tag	Type	Value	Description	Used By
Positioner Type	0018:1508	1	Code String	Enumerated values: None, Cephalostat, Rigid	DX, DX-IO
Image Laterality	0020:0062	1	Code String	Laterality of the region examined. Enumerated values: R=right, L=left, B=both	DX, DX-IO
Anatomic Region Sequence (folder)	0008:2218	1		Sequence that identifies the anatomic region of interest in this image. Only a single Item shall be permitted in this Sequence.	DX, DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO
Anatomic Region Modifier Sequence	0008:2220	3	Sequence of Items	Sequence that modifies the anatomic region of interest in this image (i.e. prone, supine, decubitus right). May be present only if Anatomic Region Sequence is sent. One or more Items may be included in this Sequence.	DX-IO
Primary Anatomic Structure Sequence (folder)	008-2228	3	Sequence of Items	Sequence that identifies the primary anatomic structures of interest in this image. One or more Items may be included.	DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO

Attribute Name	Tag	Type	Value	Description	Used By
			String		
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO
Item (folder)	FFFE:E000		Other Byte String		DX-IO
Code Value	0008:0100	1C	Short String	Required if a sequence item is present.	DX-IO
Coding Scheme Designator	0008:0102	1C	Short String	Required if a sequence item is present.	DX-IO
Code Meaning	0008:0104	1C	Long String	Required if a sequence item is present.	DX-IO

Ultrasound Image Module

Attribute Name	Tag	Type	Value	Description	Used By
Sample per Pixel	0028:0002	1		Number of samples (planes) in this image.	US
Photometric Interpretation	0028:0004	1		Specifies the intended interpretation of the pixel data.	US
Bits Allocated	0028:0100	1		Number of bits allocated for each pixel sample.	US
Bits Stored	0028:0101	1		Number of bits stored for each pixel sample.	US
High Bit	0028:0102	1		Most significant bit for pixel sample data.	US
Pixel Representation	0028:0103	1		Data representation of pixel samples.	US
Image Type	0008:0008	2		Image identification characteristics.	US
Ultrasound Color Data Present	0028:0014	3		00 = Ultrasound color data not present in image 01 = Ultrasound color data is present in image.	US
Transducer Type	0018:6031	3		Defined terms	US

Visible Light Image Module

Attribute Name	Tag	Type	Value	Description	Used By
Image Type	0008:0008	2	Code String	Image identification characteristics.	ES, XC
Lossy Image Compression	0028:2110	2	Code String	Specifies whether an Image has undergone lossy compression. Enumerated Values: 00 = Image has NOT been subjected to lossy compression. 01 = Image has been subjected to lossy compression.	ES, XC

VOI LUT Module

Attribute Name	Tag	Type	Value	Description	Used By
Window Center	0028:1050	3	Decimal String	Window center for display	DX, DX-IO, SC, CR
Window Width	0028:1051	1C	Decimal String	Window width for display	DX, DX-IO, SC, CR

Acquisition Context Module

Attribute Name	Tag	Type	Value	Description	Used By
Acquisition Context Sequence	0040:0555	2	Sequence of items	A sequence of repeating items that describes the conditions present during the acquisition of an Image. Zero or more items may be included in this sequence.	DX, DX-IO ES XC

SOP Common Module

Attribute Name	Tag	Type	Value	Description	Used By
Instance Number	0020:0013	3	Integer String	A number that identifies this composite object instance	DX, DX-IO, SC, CR, ES, XC
SOP Class UID	0008:0016		Unique Identifier	Uniquely identifies the SOP Class.	DX, DX-IO, SC, CR, ES, XC
SOP Instance UID	0008:0018	1C	Unique Identifier	SOP Instance UID of the contained Image	DX,

Attribute Name	Tag	Type	Value	Description	Used By
			Identifier	contained Image	DX-IO, SC, CR, ES, XC

DICOM Directory (DICOMDIR) Patient Record

Attribute Name	Tag	Type	Value	Description	Used By
Meta File Information Version	0002:0001	1	Other Byte String	This is a two byte field where each bit identifies a version of this File Meta Information header.	DICOMDIR
Media Storage SOP Class UID	0002:0002	1	Unique Identifier	Uniquely identifies the SOP Class associated with the Data Set.	DICOMDIR
Media Storage SOP Instance UID	0002:0003	1	Unique Identifier	Uniquely identifies the SOP Instance associated with the Data Set placed in the file and following the File Meta Information.	DICOMDIR
Implementation Class UID	0002:0012	1	Unique Identifier	Uniquely identifies the implementation which wrote this file and its content.	DICOMDIR
Implementation Version Name	0002:0013	3	Short String	Identifies a version for an Implementation Class UID (0002,0012) using up to 16 characters.	DICOMDIR
Source Application Entity Title	0002:0016	3	Application Entity	The DICOM Application Entity (AE) Title of the AE which wrote this file's content (or last updated it).	DICOMDIR
File Set ID	0004:1130	2	Code String	User or implementation specific Identifier (up to 16 characters). For definition, see PS 3.10. The File-set ID is intended to be a short human readable label to easily (but not necessarily uniquely) identify a specific File-set.	DICOMDIR
File Set Consistency Flag	0004:1212	1	Unsigned Short	When set, this Flag indicates that an inconsistency within the Directory or between the Directory and the Files of the File-set may exist.	DICOMDIR
Directory Record Sequence (folder)	0004:1220	2	Sequence of Items	Sequence of zero or more repeating Items where each Item contains a Directory Record by including the Directory Elements from	DICOMDIR

Attribute Name	Tag	Type	Value	Description	Used By
				(0004,1400) to (0004,1511) and Record selection Keys as defined below (marked with a >). A zero length Value indicates that no Directory Records are contained in the Root Directory Entity.	
Item (folder)	FFFE:E000		Other Byte String		DICOMDIR
Record In Use Flag	0004:1410	1C	Unsigned Short	This flag facilitates the deletion of referenced files. Enumerated Values: FFFFH = record is in use. 0000H = record is inactive. Required if the Directory Record Sequence (0004,1220) is not zero length.	DICOMDIR
Directory Record Type	0004:1430	1C	Code String	Defines a specialized type of Directory Record by reference to its position in the Media Storage Directory Information Model Required if the Directory Record Sequence (0004,1220) is not zero length. Ex: PATIENT, STUDY, SERIES, IMAGE	DICOMDIR
Patient's Name	0010:0010	2	Person Name	Patient's full name.	DICOMDIR
Patient ID	0010:0020	1	Long String	Primary ID number or code for this patient.	DICOMDIR
Item (folder)	FFFE:E000		Other Byte String		DICOMDIR
Record In Use Flag	0004:1410	1C	Unsigned Short	This flag facilitates the deletion of referenced files. Enumerated Values: FFFFH = record is in use. 0000H = record is inactive. Required if the Directory Record Sequence (0004,1220) is not zero length.	DICOMDIR
Directory Record Type	0004:1430	1C	Code String	Defines a specialized type of Directory Record by reference to its position in the Media Storage Directory Information Model Required if the Directory Record Sequence (0004,1220) is not zero length. Ex: PATIENT,	DICOMDIR

Attribute Name	Tag	Type	Value	Description	Used By
				STUDY, SERIES, IMAGE	
Study Date	0008:0020	1	Date	The date the study started. Format MM/DD/YYYY	DICOMDIR
Study Time	0008:0030	1	Time	The time the study started. Format: HH:MM:SS:hS	DICOMDIR
Accession Number	0008:0050	2	Short String	A RIS generated number that identifies the order for the study.	DICOMDIR
Study Description	0008:1030	2	Long String	Description or classification of the study.	DICOMDIR
Study Instance UID	0020:000D	1C	Unique Identifier	Unique identifier for the study.	DICOMDIR
Study ID	0020:0010	1	Short String	Study identifier.	DX, DX-IO, SC, CR
Item (folder)	FFFE:E000		Other Byte String		DX, DX-IO, SC, CR
Record In Use Flag	0004:1410	1C	Unsigned Short	This flag facilitates the deletion of referenced files. Enumerated Values: FFFFH = record is in use. 0000H = record is inactive. Required if the Directory Record Sequence (0004,1220) is not zero length.	DX, DX-IO, SC, CR
Directory Record Type	0004:1430	1C	Code String	Defines a specialized type of Directory Record by reference to its position in the Media Storage Directory Information Model Required if the Directory Record Sequence (0004,1220) is not zero length. Ex: PATIENT, STUDY, SERIES, IMAGE	DX, DX-IO, SC, CR
Modality	0008:0060	1	Code String	Type of equipment that originally acquired the data used to create the images in this series.	DX, DX-IO, SC, CR
Series Instance UID	0020:000E	1	Unique Identifier	Unique identifier for this series.	
Series Number	0020:0011	2	Integer String	A number that identifies this series.	
Item (folder)	FFFE:E000		Other Byte String		DX, DX-IO, SC, CR
Record In Use Flag	0004:1410	1C	Unsigned Short	This flag facilitates the deletion of referenced files. Enumerated Values: FFFFH = record is in use.	DX, DX-IO, SC, CR

Attribute Name	Tag	Type	Value	Description	Used By
				0000H = record is inactive. Required if the Directory Record Sequence (0004,1220) is not zero length.	
Directory Record Type	0004:1430	1C	Code String	Defines a specialized type of Directory Record by reference to its position in the Media Storage Directory Information Model Required if the Directory Record Sequence (0004,1220) is not zero length. Ex: PATIENT, STUDY, SERIES, IMAGE	DX, DX-IO, SC, CR
Study Date	0008:0020	1	Date	The date the study started. Format MM/DD/YYYY	DICOMDIR
Study Time	0008:0030	1	Time	The time the study started. Format: HH:MM:SS:hS	DICOMDIR
Accession Number	0008:0050	2	Short String	A RIS generated number that identifies the order for the study.	DICOMDIR
Study Description	0008:1030	2	Long String	Description or classification of the study.	DICOMDIR
Study Instance UID	0020:000D	1C	Unique Identifier	Unique identifier for the study.	DICOMDIR
Study ID	0020:0010	1	Short String	Study identifier.	DICOMDIR
Item (folder)	FFFE:E000		Other Byte String		DICOMDIR
Record In Use Flag	0004:1410	1C	Unsigned Short	This flag facilitates the deletion of referenced files. Enumerated Values: FFFFH = record is in use. 0000H = record is inactive. Required if the Directory Record Sequence (0004,1220) is not zero length.	DICOMDIR
Directory Record Type	0004:1430	1C	Code String	Defines a specialized type of Directory Record by reference to its position in the Media Storage Directory Information Model Required if the Directory Record Sequence (0004,1220) is not zero length. Ex: PATIENT, STUDY, SERIES, IMAGE	DICOMDIR
Modality	0008:0060	1	Code String	Type of equipment that originally acquired the data used to create the images in this series.	DICOMDIR

Attribute Name	Tag	Type	Value	Description	Used By
Series Instance UID	0020:000E	1	Unique Identifier	Unique identifier for this series.	DICOMDIR
Series Number	0020:0011	2	Integer String	A number that identifies this series.	DICOMDIR
Item (folder)	FFFE:E000	1C	Other Byte String		DICOMDIR
Record In Use Flag	0004:1410	1C	Unsigned Short	This flag facilitates the deletion of referenced files. Enumerated Values: FFFFH = record is in use. 0000H = record is inactive. Required if the Directory Record Sequence (0004,1220) is not zero length.	DICOMDIR
Directory Record Type	0004:1430	1C	Code String	Defines a specialized type of Directory Record by reference to its position in the Media Storage Directory Information Model Required if the Directory Record Sequence (0004,1220) is not zero length. Ex: PATIENT, STUDY, SERIES, IMAGE	DICOMDIR
Modality	0008:0060	1	Code String	Type of equipment that originally acquired the data used to create the images in this series.	DICOMDIR
Series Instance UID	0020:000E	1	Unique Identifier	Unique identifier for this series.	DICOMDIR
Series Number	0020:0011	2	Integer String	A number that identifies this series.	DICOMDIR

3 Communication Profiles

3.1 Supported Communication Stacks

The TCP/IP Network Communication protocol as defined in part 8 of the DICOM standard is supported.

3.2 TCP/IP Stack

TCP/IP + Ethernet

3.3 Point-to-Point Stack

Not supported

4 Extensions, Specializations, Privatizations of SOP Classes and Transfer Syntaxes

None

5 Configuration

The ADA requests that CD-R and DVD-RAM formats be used as outlined in PS 3.12 Annex F and Annex J of the DICOM Conformance Statement.

6 Character Sets

Only SOP Instances containing the DICOM default character set as defined in PS 3.5 will be supported by the TigerView DICOM Interface.