



DTX Studio™ Clinic

Version 4.8

DICOM Conformance Statement

Overview

DTX Studio Clinic is a dental imaging software application providing viewing, processing, and export of dental imaging data. The product implements DICOM Media Interchange services only and does not implement DICOM network (DIMSE) services or DICOM Web services.

DTX Studio Clinic supports:

- Import of DICOM SOP Instances from removable media
- Export of DICOM SOP Instances to removable media
- Creation of DICOM Media File Sets compliant with standard DICOM Media Storage Application Profiles

DTX Studio Clinic does not support:

- DICOM network associations (DIMSE)
- DICOM Web services (WADO-RS, QIDO-RS, STOW-RS, UPS-RS)
- DICOM Security Profiles

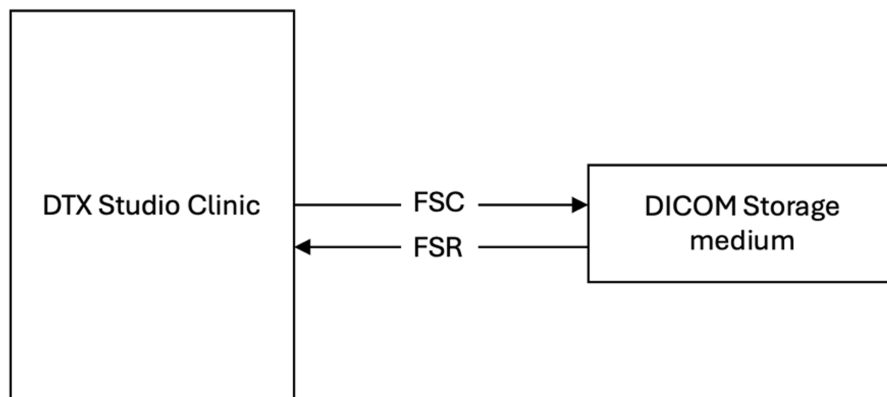


Fig. 1 – Overview of implemented services

Content and Transfer

Table 1 lists all Storage SOP classes, the supported transfer mechanisms, as well as the usage scenarios for those instances.

The ‘Transfer Syntax Set’ column lists the sets of transfer syntaxes defined in Table 2 that are applicable to each SOP class. The ‘DIMSE’, ‘DICOM Web’ and ‘Media Services’ columns indicate the roles supported for each SOP class.

The ‘Function’ columns indicate how the instances are used by the system:

- S Standard SOP class
- SE Standard Extended SOP class
- SP Specialized SOP class
- P Private SOP class
- Display The system displays the instances of the SOP class to the user, either by displaying the SOP instances natively or by applying instances of another suitable SOP class to the image instances (e.g., a Presentation State or CAD SR).
- Process The system processes the instances of the SOP class to derive some further information that is made available to the user (e.g., a CAD processing algorithm, or a 3D rendering).
- Archive The system stores the instances of the SOP class and makes them available again.

Table 1 – Storage SOP classes

SOP Classes	SOP Class UID	Transfer Syntax Set	DIMSE		Web		Media Services			Function				
			SCU	SCP	UA	OS	FSC	FSU	FSR	Create*	Display*	Process*	Archive*	
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	U; LL ; L	N	N	N	N	N	N	N	Y	N	Y	Y	Y
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	U; LL ; L	N	N	N	N	Y	N	Y	S	Y	Y	Y	Y
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	U; LL ; L	N	N	N	N	N	N	Y	N	Y	Y	Y	Y
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	U; LL ; L	N	N	N	N	Y	N	Y	S	Y	Y	Y	Y
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	U; LL ; L	N	N	N	N	N	N	Y	N	Y	Y	Y	Y

SOP Classes	SOP Class UID	Transfer Syntax Set	DIMSE		Web		Media Services			Function			
			SCU	SCP	UA	OS	FSC	FSU	FSR	Create*	Display*	Process*	Archive*
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	U; LL ; L	N	N	N	N	Y	N	Y	S	Y	Y	Y
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	U; LL ; L	N	N	N	N	Y	N	Y	S	Y	Y	Y
Legacy Converted Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.2	U; LL ; L	N	N	N	N	N	N	Y	N	Y	Y	Y
X-Ray 3D Craniofacial Image	1.2.840.10008.5.1.4.1.1.13.1.2	U; LL ; L	N	N	N	N	N	N	Y	N	Y	Y	Y
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	U; LL ; L	N	N	N	N	N	N	Y	N	Y	Y	Y

* DTX Studio Clinic displays, creates and processes the SOP classes. DTX Studio Core creates and archives the SOP classes

Table 2 – Supported transfer syntaxes

Transfer Syntax Set	Transfer Syntax Name	Transfer Syntax UID
Uncompressed Transfer Syntax Set (U)	Implicit VR Endian	1.2.840.10008.1.2
	Explicit VR Little Endian	1.2.840.10008.1.2.1
	Explicit VR Big Endian	1.2.840.10008.1.2.2
Lossless Compressed Transfer Syntax Set (LL)	JPEG Lossless, Non-Hierarchical	1.2.840.10008.1.2.4.57
	JPEG Lossless, Non-Hierarchical, First Order Prediction	1.2.840.10008.1.2.4.70
	JPEG 2000 Lossless	1.2.840.10008.1.2.4.90
	RLE Lossless	1.2.840.10008.1.2.5
Lossy Compressed Transfer Syntax Set (L)	JPEG 2000	1.2.840.10008.1.2.4.91

DIMSE Services

Verification

N/A – DTX Studio Clinic does not implement DIMSE services.

Storage

N/A – DTX Studio Clinic does not implement DIMSE services.

Workflow Management

N/A – DTX Studio Clinic does not implement DIMSE services.

Query/Retrieve

N/A – DTX Studio Clinic does not implement DIMSE services.

Printing

N/A – DTX Studio Clinic does not implement DIMSE services.

DICOM Web Services

URI Service (WADO-URI)

N/A – DTX Studio Clinic does not implement DICOM Web services.

Study Services

N/A – DTX Studio Clinic does not implement DICOM Web services.

Worklist Service

N/A – DTX Studio Clinic does not implement DICOM Web services.

Non-Patient Instance Service

N/A – DTX Studio Clinic does not implement DICOM Web services.

Storage Commitment Service

N/A – DTX Studio Clinic does not implement DICOM Web services.

Media Services

Table 3 lists all supported media application profiles.

Table 3 – Supported media application profiles

Media Application Profile	FSC	FSR	FSU
STD-GEN-CD	Y	Y	N
STD-GEN-DVD-JPEG	Y	Y	N
STD-GEN-BD	Y	Y	N
STD-GEN-USB-JPEG	Y	Y	N

Specific Character Sets

DTX Studio Clinic uses the DCMTK (DICOM ToolKit) library for all DICOM encoding, decoding, parsing, and validation functionality.

DTX Studio Clinic supports all DICOM defined character sets specified in DICOM PS 3.5, as implemented by DCMTK.

In particular:

- If the attribute Specific Character Set (0008,0005) is absent or empty, character data is interpreted according to the default DICOM character repertoire (ISO_IR 6 / US ASCII).
- The application supports all explicitly defined DICOM character sets, including:
 - The ISO 8859 family (e.g. ISO_IR 100, ISO_IR 101, ISO_IR 109, ISO_IR 110, ISO_IR 126, ISO_IR 127, ISO_IR 138, ISO_IR 144, ISO_IR 148, ISO_IR 166)
 - UTF 8 (ISO_IR 192)
 - ISO 2022 based multi-byte character sets for Japanese, Korean, and Chinese scripts (e.g. ISO 2022 IR 87, IR 159, IR 149, IR 58)
- ISO 2022 code extension and escape sequence mechanisms are supported for attributes requiring character set switching within a single value (e.g., Person Name).

For DICOM output (export) DTX Studio Clinic uses UTF 8 (ISO_IR 192).

Table of Contents

Overview	2
Content and Transfer	3
DIMSE Services	4
Verification	4
Storage	4
Workflow Management	5
Query/Retrieve	5
Printing	5
DICOM Web Services	5
URI Service (WADO-URI)	5
Study Services	5
Worklist Service	5
Non-Patient Instance Service	5
Storage Commitment Service	5
Media Services	5
Specific Character Sets	6
Table of Contents	7
Introduction	9
Revision History	9
Audience	9
Remarks	10
Terms and Definitions	10
Abbreviations	13
Implementation Model	15
Application Entities and Data Flow	15
File-Set Creator (FSC) / File-Set Reader (FSR)	15
Service and Interoperability Description	16
Mapping of Services to Application Entities	16
DIMSE Services – N/A	16
DICOM Web Services – N/A	16
Media Services	17
File Set Creator (FSC)	17
File Set Reader (FSR)	17
Cross Service Considerations – N/A	17

Configuration	18
General Configuration Parameters – N/A	18
Configuration of DIMSE Services – N/A	18
Configuration of DICOM Web Services – N/A	18
Configuration of Media Storage Services	18
Network and Media Communication Details	21
General	21
General Association Parameters	21
Security	22
Annexes	23
Information Object Definitions (IODs)	23
Information Shared Across Multiple IODs	24
Common Modules	24
Enhanced CT Image IOD	30
Enhanced CT Image Specific Modules	32
Enhanced CT Image Functional Group Macros	33
Enhanced CT Image Private Modules - N/A	37
CT Image IOD	38
CT Image Specific Modules	38
CT Image Functional Group Macros - N/A	40
A.3.3 CT Image Private Modules - N/A	40
Digital X-ray Image IOD	40
Digital X-ray Image Specific Modules	41
Digital X-Ray Image Functional Group Macros - NA	43
Digital X-Ray Image Private Modules - N/A	43
Digital Intraoral X-ray Image IOD	44
Digital Intraoral X-ray Image Specific Modules	45
Digital Intraoral X-Ray Image Functional Group Macros - NA	45
Digital X-Ray Image Private Modules - N/A	45
Structured Report Encoding – N/A	46
Security Details – N/A	46
Mapping of Attributes	46
Modality Mapping	46

Introduction

Revision History

Revision	Date (yyyy-mm-dd)	Reason for Change
011	2026-03-17	Update for version 4.8. Application of the new template for DICOM Conformance Statements.
010	2025-10-01	Update for version 4.7
009	2025-07-01	Update for version 4.5
008	2025-06-03	Update for version 4.3
007	2024-03-29	Update for version 4.2
006	2020-08-17	Update for version 1.8
005	2019-11-08	Update for version 1.7
004	2019-09-04	Update for version 1.6
003	2018-08-20	Update for version 1.4
002	2018-04-13	Update for version 1.3
001	2017-09-22	First draft

Audience

This document is intended for the audience listed below. It is assumed that the reader has a working knowledge of the DICOM standard.

The document structure was designed for easier access to relevant information for different user groups:

- Clinical users, who want to get an overview of the implemented interoperability features of the system can refer to ‘Implementation Model’ on page 15.
- Personnel involved in sales can use the information in ‘Overview’ on page 2 to assess the compatibility between different systems involved in a sales situation.
- System integrators can use the information in ‘Configuration’ on page 18 during system installation, as well as information from ‘Service and Interoperability Description’ on page 16 for details regarding the implemented services.
- Field service engineers can use the details from ‘Service and Interoperability Description’ on page 16 and ‘Network and Media Communication Details’ on page 21 for troubleshooting.
- Hospital IT staff focusing on security can use the details provided in ‘Security’ on page 22 regarding implemented security features.

Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between DTX Studio Clinic and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability.

The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement should not replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, it is the user's responsibility to perform the following validation activities:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between DTX Studio Clinic and other DICOM-conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific DICOM-conformant equipment, as established by the healthcare facility.

Terms and Definitions

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

Term	Definition
Abstract Syntax	The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.
Application Entity (AE)	A representation of the external behavior of an application process in terms of DICOM Network Services, Web Services and/or media exchange capabilities implemented in one or more roles. A single device may have multiple Application Entities.
Application Entity Title (AET)	The externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network.
Application Context	The specification of the type of communication used between Application Entities. Example: DICOM network protocol.
Association	A network communication channel set up between Application Entities.
Attribute	A unit of information in an Information Object Definition; a Data Element identified by a tag. The information may be a complex data structure (Sequence), itself composed of lower-level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

Term	Definition
Data Element	A unit of information as defined by a single entry in the data dictionary. An encoded Information Object Definition (IOD) Attribute that is composed of, at a minimum, three fields: a Data Element Tag, a Value Length, and a Value Field. For some specific Transfer Syntaxes, a Data Element also contains a VR Field where the Value Representation of that Data Element is specified explicitly.
Information Object Definition (IOD)	The specified set of Attributes that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. Examples: MR Image IOD, CT Image IOD, Print Job IOD. The Attributes within an IOD may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C).
Media Application Profile	The specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs).
Module	A set of Attributes within an Information Object Definition that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.
Negotiation	First phase of Association establishment that allows Application Entities to agree on the types of data to be exchanged and how that data will be encoded.
Origin Server	Refers to the program that can originate authoritative responses to HTTP requests for a given Target Resource. The term 'server' refers to any implementation that receives a web service request message from a user agent.
Presentation Context	The set of DICOM network services used over an Association, as negotiated between Application Entities; includes Abstract Syntaxes and Transfer Syntaxes.
Private SOP Class	A SOP Class that is not defined in the DICOM Standard but is published in an implementation's Conformance Statement.
Protocol Data Unit (PDU)	A packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.
Security Profile	A set of mechanisms, such as encryption, user authentication, or digital signatures, used by an Application Entity to ensure confidentiality, integrity, and/or availability of exchanged DICOM data.
Service Class Provider (SCP)	Role of an Application Entity that provides a DICOM network service; typically, a server that performs operations requested by another Application Entity (Service Class User). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).
Service Class User (SCU)	Role of an Application Entity that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU).

Term	Definition
Service/Object Pair Class (SOP Class)	The specification of the network or media transfer (service) of a particular type of data (object) ; the fundamental unit of a DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.
Service/Object Pair Instance (SOP instance)	An information object; a specific occurrence of information exchanged in a SOP Class. Examples: a specific X-ray image.
Specialized SOP Class	A SOP Class that is derived from the Standard that is specialized by additional type 1, 1C, 2, 2C, or 3 Attributes, by enumeration of specific permitted Values for Attributes, or by enumeration of specific permitted Templates. The additional Attributes may either be drawn from the Data Dictionary in PS3.6 or may be Private Attributes.
Standard SOP Class	A SOP Class defined in the Standard, and that is implemented and used without any modifications.
Standard Extended SOP Class	A SOP Class that is defined in the standard, and that is extended by additional type 3 Attributes. The additional Attributes may either be drawn from the DICOM Data Dictionary in PS3.6 or may be Private Attributes.
Tag	A 32-bit identifier for a Data Element, represented as a pair of four-digit hexadecimal numbers, the 'group' and the 'element'. If the 'group' number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element].
Transfer Syntax	The encoding used for exchange of DICOM information objects and messages. Examples: JPEG compressed (images), Little Endian Explicit Value Representation.
TLS-secured Port	TCP port on which an implementation accepts TLS connections to exchange DICOM information.
Unique Identifier (UID)	A globally unique 'dotted decimal' string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.
User Agent	A client in a network protocol used in communications within a client-server distributed computing system. In particular, the Hypertext Transfer Protocol (HTTP) identifies the client software originating the request, using a user-agent header, even when the client is not operated by a user.
Value Representation (VR)	The format type of an individual DICOM data element, such as text, an integer, a person's name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

Abbreviations

Abbreviations that are used in this DICOM Conformance Statement are listed here.

Abbreviation	Definition
AE	Application Entity
AET	Application Entity Title
CAD	Computer Aided Detection
CDA	Clinical Document Architecture
CID	Context Identifier
CR	Computed Radiography
CT	Computed Tomography
DCS	DICOM Conformance Statement
DICOM	Digital Imaging and Communications in Medicine
DX	Digital X-ray
ECT	Enhanced Computed Tomography
ELE	Explicit VR Little Endian
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
IANA	Internet Assigned Numbers Authority
ILE	Implicit VR Little Endian
IOD	Information Object Definition
IOS	International Organization for Standards
IO	Intraoral X-ray
ISO	International Organization for Standardization
JPEG	Joint Photographic Experts Group
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
OID	Object Identifier
OS	Origin Server

Abbreviation	Definition
OT	Other
PDU	Protocol Data Unit
PDV	Presentation Data Value
PHI	Protected Health Information
PPS	Performed Procedure Step
PX	Panoramic X-ray
QIDO-RS	Query based on ID for DICOM Objects by RESTful Services
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SDP	Service Description Protocol
SOP	Service-Object Pair
SPS	Scheduled Procedure Step
SR	Structured reporting
STOW-RS	STore Over the Web by RESTful Services
TCP/IP	Transmission Control Protocol/Internet Protocol
TID	Template Identifier
TLS	Transport Layer Security
UA	User Agent
UI	User Interface
UID	Unique Identifier
UL	Upper Layer
UPS	Unified Procedure Step
VL	Visible Light
VR	Value Representation
WADO-RS	Web Access to DICOM Objects by RESTful Services
WADO-URI	Web Access to DICOM Objects by URI
XC	External-camera Photography

Implementation Model

DTX Studio Clinic implements a single Media Application Entity responsible for all DICOM functionality. No network-based Application Entities exist.

DTX Studio Clinic allows the user to read stand-alone DICOM files or from DICOM media and to import them to the local database. It also allows the user to select patient images for export to a disk in DICOM Media-compatible format. It can process any instance of SOP classes listed in Table 1.

Application Entities and Data Flow

The network and media interchange application model for DTX Studio Clinic is shown in Fig. 2.

File-Set Creator (FSC) / File-Set Reader (FSR)

The DTX Studio Clinic application reads from Removable Media acting as an FSR to read in SOP instances as selected by the user when the 'Import DICOM' command is used. The DTX Studio Clinic application will only display files that match the supported SOP Classes in the supported Application Profiles.

The DTX Studio Clinic application can export DICOM file sets to removable media. It thus serves as a DICOM File Set Creator (FSC) using the 'Export DICOM' command. If the images are not internally stored in a DICOM file format, they are converted when exported. The SOP instances written or updated will be limited to instances that match the criteria of one of the supported Application Profiles listed in Table 3.

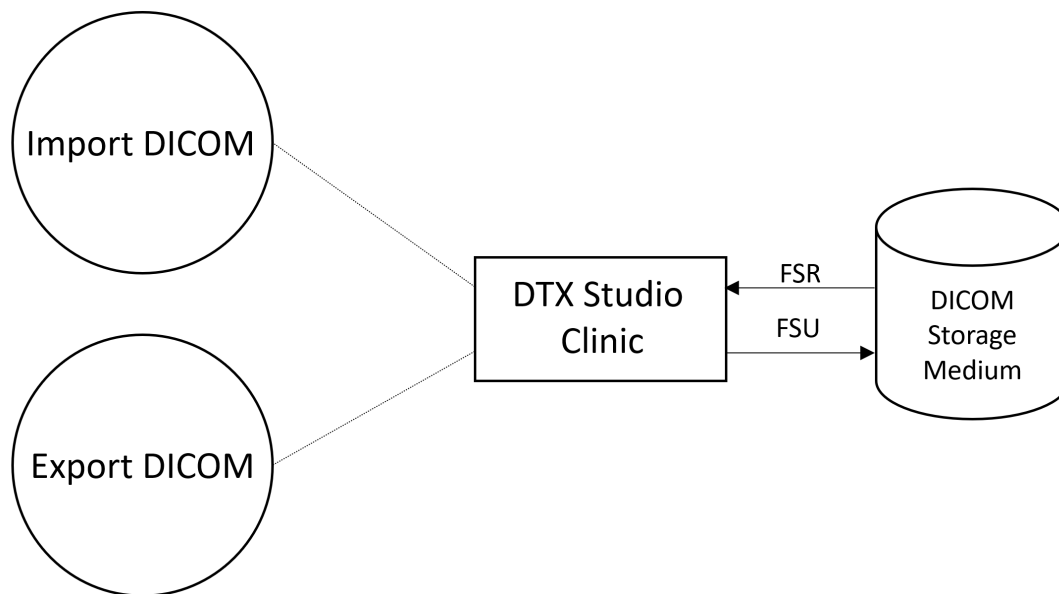


Fig. 2 – Media storage application data flow diagram

Service and Interoperability Description

Mapping of Services to Application Entities

Table 5 provides an overview of the Application Entities and the services supported by each AE.

Table 4 – Overview of the application entities and the services supported by each AE.

Application Entity	Services	DIMSE	Web	FSC	FSR	FSU
DTX Studio Clinic Media AE	Media Storage	N	N	Y	Y	N

DIMSE Services – N/A

DTX Studio Clinic does **not** implement any DIMSE services, including but not limited to:

- Verification
- Storage
- Modality Worklist
- MPPS
- Query/Retrieve
- Printing
- Storage Commitment

All DIMSE service sections are **Not Applicable**.

DICOM Web Services – N/A

DTX Studio Clinic does **not** implement any DICOM Web services.

The following services are **Not Applicable**:

- WADO-URI
- WADO-RS
- QIDO-RS
- STOW-RS
- UPS-RS

Media Services

File Set Creator (FSC)

DTX Studio Clinic supports creating the Basic Directory IOD as a File Set Creator as defined in “Information Shared Across Multiple IODs” on page 24.

For a list of supported Media Application Profiles, see “Media Services” on page 5.

For a list of supported SOP Classes, see Table 1 in “Content and Transfer” on page 3.

File Set Reader (FSR)

DTX Studio Clinic supports the Media Application Profiles listed in see “Media Services” on page 5.

For a list of supported SOP Classes, see Table 1 in “Content and Transfer” on page 3.

Cross Service Considerations – N/A

N/A

Configuration

General Configuration Parameters – N/A

N/A

Configuration of DIMSE Services – N/A

N/A

Configuration of DICOM Web Services – N/A

N/A

Configuration of Media Storage Services

Configuration can be done in the DTX Studio Clinic application. The following values can be used in the 'Configurable' column

- USER The parameter is configurable by the user.
- SERVICE The parameter is configurable by service personnel.
- FIXED The parameter is not configurable (it has a fixed Value). The Value is required for the configuration of the remote system.
- N/A The parameter is not applicable for the local or the remote system.

The 'Settings' dialog in the DTX Studio Clinic application includes a 'General' tab. On that tab, the DICOM compliance section contains a 'Use DIN 6862-2 standard' checkbox. The settings shown in Table 5 can be configured.

Table 5 – FSC configuration parameters (DIN 6862-2 standard)

Parameter	Configurable	Default Value	Comments
Institution name	USER		
Institution address	USER		
Institution department name	USER		

Configuration

When editing a patient record in DTX Studio Clinic, the settings shown in Table 6 can be configured.

Table 6 – FSC configuration parameters (edit patient)

Parameter	Configurable	Default Value	Comments
First Name	USER		Mandatory field
Last Name	USER		Mandatory field
Middle Name	USER		Mandatory field
Date of Birth	USER		Mandatory field
Gender	USER		Mandatory field
Patient ID	USER		Can be set to be a mandatory field or not.

When capturing, either via scan request or direct capture, a 'Pregnant' checkbox is available. In DTX Studio Clinic 'Pregnancy status' can be set per X-ray image in the 'Image details'.

Table 7 – FSC configuration parameters (pregnancy status)

Parameter	Configurable	Default Value	Comments
Pregnant	USER	1	1: not pregnant; 3: pregnant

Configuration

In the device tab of the DTX Studio Clinic tray app, 'Exposure settings' can be set per intraoral X-ray device (including TWAIN intraoral X-ray devices). In DTX Studio Clinic 'Exposure values' can be set per intraoral X-ray image by going to 'Image details'. The settings shown in Table 8 can be configured.

Table 8 – FSC configuration parameters (exposure values intraoral X-rays)

Parameter	Configurable	Default Value	Comments
Exposure values – Voltage (kV)	USER	57	Only configurable for Intraoral X-ray images (per Intraoral X-ray device or per Intraoral X-ray image)
Exposure values – Current (mA)	USER	6.3	Only configurable for Intraoral X-ray images (per Intraoral X-ray device or per Intraoral X-ray image)
Exposure values – Exposure time (ms)	USER	125	Only configurable for Intraoral X-ray images (per Intraoral X-ray device or per Intraoral X-ray image)
Radiation dose – DAP (mGy-cm2)	USER		Only configurable per Intraoral X-ray image

When exporting data in DTX Studio Clinic ('Export Data' action), the settings shown in Table 9 can be configured.

Table 9 – FSC configuration parameters (export data action)

Parameter	Configurable	Default Value	Comments
Export mode (2D image)	USER	Original	Original, Filtered
3D DICOM format (3D X-Ray)	USER	Single file	Single file, Folder
Slice orientation (3D X-RAY)	USER	Axial (default)	Axial (default); Sagittal; Coronal
Anonymize patient	USER	Checked	

Network and Media Communication Details

General

DTX Studio Clinic implements a single Media Application Entity, there is no cross interaction between AEs.

General Association Parameters

Table 10 lists Association parameters applicable to DTX Studio Clinic AEs on the system.

Table 10 – General associations parameters

	Name	Value
Media Services	Implementation Class UID	1.2.528.56.1005.1.2
	Implementation Version Name	DTXCLINICX_Y_Z ¹

¹ * Where X, Y, Z respectively are the first three version numbers of the software. E.g. For DTX Studio Clinic 4.8.2.1 this will be DTXCLINIC4_8_2.

Security

DTX Studio Clinic performs no DICOM network communication and therefore does not claim conformance to any DICOM security profiles.

Annexes

Information Object Definitions (IODs)

This section describes all the SOP instances natively created by DTX Studio Clinic, e.g., images created by an acquisition modality (i.e., all SOP classes that are marked in the 'Created' column in Table 1).

In the 'Source' column, the following values can be used:

FIXED	The value is pre-defined and cannot be modified.
GENERATED	The value is generated by the system.
CONFIGURATION	The value is copied from the system configuration.
MWL	The value is copied from a Modality Worklist entry.
QUERY	The value is determined by performing a query of any of the supported Query/Retrieve Services.
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 with a zero-length value.
SRC_INSTANCE	The value is copied from previously created/received SOP Instances.

The 'Presence' column reflects the usage of the Module, Functional Group Macro, Attributes, or value in the DTX Studio Clinic Implementation and is not necessarily the same as defined in the DICOM Standard. For the 'Presence' column the following values can be used:

ALWAYS	The module, functional group macro, attributes or value is always present.
CONDITIONAL	The presence of the module, functional group macro, attributes or value is dependent on a condition. The condition must be listed in the 'Comments' column.
SRC_COPY	The presence of the attributes and values depends on the availability of these in the source instances, which are used for copying this information.
EMPTY	The attribute is present but without a value (zero length).

Information Shared Across Multiple IODs

Common Modules

All SOP Instances generated by the system use the common modules listed in Table 11 to Table 21 or a subset of them, as defined in the IOD specific subsections below.

Table 11 – Patient module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Name	(0010,0010)	USER	ALWAYS	CONDITIONAL		Value <i>Anonymous^Patient</i> if unidentified Patient	See page 46
Patient ID	(0010,0020)	USER	ALWAYS	CONDITIONAL		Value is taken from DTX patient record, Value <i>empty</i> if unidentified Patient	
Patient's Birth Date	(0010,0030)	USER	ALWAYS	CONDITIONAL		Value is taken from DTX patient record, Value <i>1901-01-01</i> if unidentified Patient	
Patient's Sex	(0010,0040)	USER	ALWAYS	CONDITIONAL		Value is taken from DTX patient record, Value <i>empty</i> if unidentified Patient	
Patient Identity Removed	(0012,0062)	FIXED	ALWAYS	ALWAYS	NO, YES	Value <i>YES</i> if unidentified patient	

Table 12 – General study module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Study Date	(0008,0020)	SRC_INSTANCE, GENERATED	ALWAYS	ALWAYS			
Study Time	(0008,0030)	SRC_INSTANCE, GENERATED	ALWAYS	ALWAYS			
Accession Number	(0008,0050)	SRC_INSTANCE; EMPTY	ALWAYS	SRC_COPY, EMPTY		When unknown (empty) '1' will be used	
Referring Physician Name	(0008,0090)	SRC_INSTANCE; EMPTY	ALWAYS	SRC_COPY, EMPTY		When unknown empty value will be used	
Study description	(0008,1030)	SRC_INSTANCE; EMPTY	ALWAYS	SRC_COPY, EMPTY		When unknown empty value will be used	
Study Instance UID	(0020,000D)	GENERATED	ALWAYS	ALWAYS			
Study ID	(0020,0010)	SRC_INSTANCE; EMPTY	ALWAYS	SRC_COPY, EMPTY		When unknown empty value will be used	

Table 13 – Patient study module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Pregnancy Status	(0010,21C0)	USER	ALWAYS	ALWAYS	1 (default), 3	1: not pregnant, 3: pregnant	

Table 14 – General series module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Series Date	(0008,0021)	SRC_INSTANCE, GENERATED	ALWAYS	ALWAYS			
Series Time	(0008,0031)	SRC_INSTANCE, GENERATED	ALWAYS	ALWAYS			
Modality	(0008,0060)	FIXED	ALWAYS	ALWAYS			See page 46
Operators' Name	(0008,1070)	FIXED	CONDITIONAL	ALWAYS		Only when value is known, attribute will be used	
Protocol Name	(0018,1030)	FIXED	CONDITIONAL	ALWAYS		Only when value is known, attribute will be used	
Patient Position	(0018,5100)	FIXED	ALWAYS	ALWAYS	HFS		
Series Instance UID	(0020,000E)	GENERATED	ALWAYS	ALWAYS			
Series Number	(0020,0011)	SRC_INSTANCE, EMPTY	ALWAYS	SRC_COPY, EMPTY		When unknown empty value will be used	

Table 15 – Frame of reference module for enhanced CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Frame of Reference UID	(0020,0052)	GENERATED	ALWAYS	ALWAYS			

Table 16 – General equipment module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Manufacturer	(0008,0070)	FIXED	ALWAYS	CONDITIONAL		When unknown empty value will be used	
Institution Name	(0008,0080)	USER	ALWAYS	CONDITIONAL		When unknown empty value will be used	
Institution Address	(0008,0081)	USER	ALWAYS	CONDITIONAL		When unknown empty value will be used	
Station Name	(0008,1010)	FIXED	CONDITIONAL	ALWAYS		When unknown attribute will not be used	
Institutional Department Name	(0008,1040)	USER	ALWAYS	CONDITIONAL		When unknown empty value will be used	
Manufacturer's Model Name	(0008,1090)	SRC_INSTANCE, FIXED	ALWAYS	SRC_COPY, CONDITIONAL		When unknown empty value will be used	
Device Serial Number	(0018,1000)	SRC_INSTANCE, FIXED	ALWAYS	SRC_COPY, CONDITIONAL		When unknown empty value will be used	
Software Versions	(0018,1020)	SRC_INSTANCE, FIXED	ALWAYS	ALWAYS			

Table 17 – General image module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Image Type	(0008,0008)	SRC_INSTANCE, FIXED	ALWAYS	ALWAYS			
Instance Number	(0020,0013)	SRC_INSTANCE, EMPTY	ALWAYS	SRC_COPY, EMPTY		When unknown, empty value will be used	
Patient Orientation	(0020,0020)	FIXED	ALWAYS	CONDITIONAL		When unknown, empty value will be used	
Image Laterality	(0020,0062)	FIXED	CONDITIONAL	ALWAYS		When unknown, attribute will not be used	
Presentation LUT Shape	(2050,0020)	FIXED	CONDITIONAL	ALWAYS	<i>IDENTITY</i>	When unknown, attribute will not be used	

Table 18 – General reference module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Source Image Sequence	(0008,2112)	GENERATED	CONDITIONAL	ALWAYS		Only used when DERIVED DICOM	e.g. 'Filtered DICOMs' or 'Reoriented 3D DICOM'
> Referenced SOP Class UID	(0008,1150)	SRC_INSTANCE	CONDITIONAL	SRC_COPY		Only used when DERIVED DICOM	e.g. 'Filtered DICOMs' or 'Reoriented 3D DICOM'
> Referenced SOP Instance UID	(0008,1155)	SRC_INSTANCE	CONDITIONAL	SRC_COPY		Only used when DERIVED DICOM	e.g. 'Filtered DICOMs' or 'Reoriented 3D DICOM'
Derivation Description	(0008,2111)	GENERATED	CONDITIONAL	ALWAYS		Only used when DERIVED DICOM	e.g. 'Filtered DICOMs' or 'Reoriented 3D DICOM'

Table 19 – Image pixel module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Samples per Pixel	(0028,0002)	FIXED	ALWAYS	ALWAYS	1		
Photometric Interpretation	(0028,0004)	FIXED	ALWAYS	ALWAYS	MONOCHROME2		DTX Studio Clinic does not export color images as DICOM.
Rows	(0028,0010)	GENERATED	ALWAYS	ALWAYS			
Columns	(0028,0011)	GENERATED	ALWAYS	ALWAYS			
Bits Allocated	(0028,0100)	GENERATED	ALWAYS	ALWAYS			
Bits Stored	(0028,0101)	GENERATED	ALWAYS	ALWAYS			
High Bit	(0028,0102)	GENERATED	ALWAYS	ALWAYS			
Pixel Representation	(0028,0103)	FIXED	ALWAYS	ALWAYS	0		
Pixel Data	(7FE0,0010)	GENERATED	ALWAYS	ALWAYS			

Table 20 – Multi-frame functional groups module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Number of Frames	(0028,0008)	GENERATED	ALWAYS	ALWAYS			
Shared Functional Groups Sequence	(5200,9229)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> CT Exposure Sequence	(0018,9321)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> CT X-ray Details Sequence	(0018,9325)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> CT Image Frame Type Details Sequence	(0018,9329)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> Frame Anatomy Sequence	(0020,9071)	GENERATED	CONDITIONAL	ALWAYS			See “Enhanced CT Image IOD”
> Pixel Measures Sequence	(0028,9110)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> Pixel Value Transformation Sequence	(0028,9145)	GENERATED	CONDITIONAL	ALWAYS			See “Enhanced CT Image IOD”
Per-frame Functional Groups Sequence	(5200,9230)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> Frame Content Sequence	(0020,9111)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> Plane Position Sequence	(0020,9113)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”
> Plane Orientation Sequence	(0020,9116)	GENERATED	ALWAYS	ALWAYS			See “Enhanced CT Image IOD”

Table 21 – SOP common module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
SOP Class UID	(0008,0016)	FIXED	ALWAYS	ALWAYS			Value matches SOP Class of generated object, see page 46.
SOP Instance UID	(0008,0018)	SRC_INSTANCE, GENERATED	ALWAYS	ALWAYS			Generated when image has been captured or imported from a non-DICOM source.
Specific Character Set	(0008,0005)	FIXED	ALWAYS	ALWAYS	ISO_IR 192		
Original Attributes Sequence	(0400,0561)	GENERATED	CONDITIONAL	ALWAYS	Sequence only present when IODs where changed by DTX Studio Clinic	Used if IODs have been changed by the system.	
> Attribute Modification DateTime	(0400,0562)	GENERATED	CONDITIONAL	ALWAYS		Used if IODs have been changed by the system.	
> Modifying System	(0400,0563)	FIXED	CONDITIONAL	ALWAYS	DTXCLINICX_Y_Z	Used if IODs have been changed by the system.	X_Y_Z is replaced by an actual version number.
> Source of previous values	(0400,0564)	FIXED	ALWAYS	EMPTY			
> Reason for the Attributes Modification	(0400,0565)	FIXED	CONDITIONAL	CONDITIONAL	COERCE, CORRECT	COERCE when replacing attributes, CORRECT when 'Patient name' is changed/ corrected in DTXStudioClinic.	

Enhanced CT Image IOD

Table 22 defines the structure of enhanced CT image.

Table 22 – Enhanced CT image

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient Module	ALWAYS		Table 11
Study	General Study Module	ALWAYS		Table 12
Series	General Series Module	ALWAYS		Table 14
	CT Series Module	ALWAYS		Table 24
Frame Of Reference	Frame of Reference	ALWAYS	Present for DEXIS Capture acquisition	Table 15
Equipment	General Equipment Module	ALWAYS		Table 16
	Enhanced General Equipment	ALWAYS		Table 26
Image	Image Pixel	ALWAYS		Table 19
	Multi-Frame Functional Groups	ALWAYS		Table 23
	Acquisition Context	EMPTY	Present for DEXIS Capture acquisition	Table 27
	Enhanced CT Image	ALWAYS		Table 25
	SOP Common Module	ALWAYS		Table 33

Table 23 lists the Functional group macros used in Enhanced CT Image. The 'Usage' column defines whether a macro is used as a shared macro, on a per-frame base or whether depending on the acquisition context it can be used in both contexts. The following values are supported:

- PER_FRAME** The macro is used on a per frame basis, the attributes are included in the per-frame Functional Groups Sequence (5200,9230)
- SHARED** The macro is shared across all frames, the attributes are included in the Shared Functional Groups Sequence (5200,9229)
- CONTEXT_DEPENDENT** Depending on the acquisition context the macro can either be used on a per-frame basis or be shared across all frames.

Table 23 – Functional group macros used in enhanced CT image

Functional Group Macro	Presence	Condition	Usage	Reference
Pixel Measures	ALWAYS		SHARED	Table 28
Frame Content	ALWAYS		PER_FRAME	Table 29
Plane Position (Patient)	ALWAYS		PER_FRAME	Table 30
Plane Orientation	ALWAYS		PER_FRAME	Table 31
Frame Anatomy	ALWAYS		SHARED	Table 32
Irradiation Event Identification	ALWAYS		SHARED	Table 33
CT Image Frame Type	ALWAYS		SHARED	Table 34
CT Acquisition Type	ALWAYS		SHARED	Table 35
CT Acquisition Details	ALWAYS		SHARED	Table 36
CT Position	ALWAYS		SHARED	Table 37
CT Reconstruction	ALWAYS		SHARED	Table 38
CT Exposure	ALWAYS		SHARED	Table 39
CT X-Ray Details	ALWAYS		SHARED	Table 40
Pixel Value Transformation	ALWAYS		SHARED	Table 41

Enhanced CT Image Specific Modules

The following tables list modules and attributes specific for Enhanced CT Image.

Table 24 – CT series module for enhanced CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	FIXED	ALWAYS	ALWAYS	CT		

Table 25 – Enhanced CT image module for enhanced CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Image Type	(0008,0008)	FIXED	ALWAYS	ALWAYS	ORIGINAL\PRIMARY\ VOLUME\NONE		
Pixel Presentation	(0008,9205)	FIXED	ALWAYS	ALWAYS	MONOCHROME		
Volumetric Properties	(0008,9206)	FIXED	ALWAYS	ALWAYS	VOLUME		
Volume Based Calculation Technique	(0008,9207)	FIXED	ALWAYS	ALWAYS	NONE		
Samples per Pixel	(0028,0002)	FIXED	ALWAYS	ALWAYS	1		
Photometric Interpretation	(0028,0004)	FIXED	ALWAYS	ALWAYS	MONOCHROME2		
Bits Allocated	(0028,0100)	GENERATED	ALWAYS	ALWAYS	16		
Bits Stored	(0028,0101)	GENERATED	ALWAYS	ALWAYS	13		
High Bit	(0028,0102)	GENERATED	ALWAYS	ALWAYS	12		
Burned In Annotation	(0028,0301)	FIXED	ALWAYS	ALWAYS	NO		
Lossy Image Compression	(0028,2110)	FIXED	ALWAYS	ALWAYS	00		
Lossy Image Compression Ratio	(0028,2112)	EMPTY	ALWAYS	EMPTY			
Presentation LUT Shape	(2050,0020)	FIXED	ALWAYS	ALWAYS	IDENTITY		

Table 26 – Enhanced general equipment module for enhanced CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Manufacturer	(0008,0070)	FIXED	ALWAYS	ALWAYS			
Manufacturer's Model Name	(0008,1090)	SRC_INSTANCE, FIXED	ALWAYS	ALWAYS			
Device Serial Number	(0018,1000)	SRC_INSTANCE, FIXED	ALWAYS	ALWAYS			
Software Versions	(0018,1020)	SRC_INSTANCE, FIXED	ALWAYS	ALWAYS			

Table 27 – Acquisition context module for enhanced CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Acquisition Context Sequence	(0040,0555)	EMPTY	ALWAYS	EMPTY			

Enhanced CT Image Functional Group Macros

The tables below list the Functional Group Macros that can either be used as part of the Shared Functional Groups Sequence (5200,9229) or as part of the per-frame Functional Groups Sequence (5200,9230) of enhanced CT Image.

Table 28 – Pixel measures functional group macro

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Pixel Measures Sequence	(0028,9110)	FIXED	ALWAYS	ALWAYS			
>Pixel Spacing	(0028,0030)	GENERATED	ALWAYS	ALWAYS			
>Slice Thickness	(0018,0050)	GENERATED	ALWAYS	ALWAYS			

Table 29 – Frame content functional group macro

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Frame Content Sequence	(0020,9111)	EMPTY	ALWAYS	EMPTY			

Table 30 – Plane position (patient) functional group macro

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Plane Position Sequence	(0020,9113)	FIXED	ALWAYS	ALWAYS			
> Image Position (Patient)	(0020,0032)	GENERATED	ALWAYS	ALWAYS			

Table 31 – Plane orientation (patient) functional group macro

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Plane Orientation Sequence	(0020,9116)	FIXED	ALWAYS	ALWAYS			
> Image Orientation (Patient)	(0020,0037)	FIXED	ALWAYS	ALWAYS	1\0\0\0\1\0		

Table 32 – Frame anatomy functional group macro

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Frame Anatomy Sequence	(0020,9071)	FIXED	ALWAYS				
> Anatomic Region Sequence	(0008,2218)	FIXED	ALWAYS	ALWAYS			
>> Code Value	(0008,0100)	FIXED	ALWAYS	ALWAYS	T-D1213		
>> Code Scheme Designator	(0008,0102)	FIXED	ALWAYS	ALWAYS	SNM3		
>> Code Meaning	(0008,0104)	FIXED	ALWAYS	ALWAYS	JAW REGION		

Table 33 – Irradiation event identification functional group macro

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Irradiation Event Identification Sequence	(0018,9477)	FIXED	ALWAYS	ALWAYS			
Irradiation Event UID	(0008,3010)	GENERATED	ALWAYS	ALWAYS			

Table 34 – CT frame type functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT Image Frame Type Sequence	(0018,9329)	FIXED	ALWAYS	ALWAYS			
> Frame Type	(0008,9007)	FIXED	ALWAYS	CONDITIONAL	ORIGINAL\PRIMARY\ VOLUME\NONE	ORIGINAL\ PRIMARY\ VOLUME\ NONE (default); DERIVED\ PRIMARY\ VOLUME\ RESAMPLED with Reoriented 3D	
> Pixel Presentation	(0008,9205)	FIXED	ALWAYS	ALWAYS	MONOCHROME		
> Volumetric Properties	(0008,9206)	FIXED	ALWAYS	ALWAYS	VOLUME		
> Volume Based Calculation Technique	(0008,9207)	FIXED	ALWAYS	ALWAYS	NONE		

Table 35 – CT acquisition type functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT Acquisition Type Sequence	(0018,9301)	FIXED	ALWAYS	ALWAYS			
> Tube Angle	(0018,9303)	FIXED	ALWAYS	EMPTY			

Table 36 – CT acquisition details functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT Acquisition Details Sequence	(0018,9304)	FIXED	ALWAYS	ALWAYS			
> Gantry/Detector Tilt	(0018,1120)	FIXED	ALWAYS	EMPTY			
> Revolution Time	(0018,1140)	FIXED	ALWAYS	EMPTY			

Table 37 – CT position functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT Position Sequence	(0018,9326)	FIXED	ALWAYS	ALWAYS			
> Reconstruction Target Center (Patient)	(0018,9318)	FIXED	ALWAYS	EMPTY			
> Table Position	(0018,9327)	FIXED	ALWAYS	EMPTY			

Table 38 – CT reconstruction fFunctional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT Reconstruction Sequence	(0018,9314)	FIXED	ALWAYS	ALWAYS			
> Convolution Kernel	(0018,1210)	FIXED	ALWAYS	EMPTY			

Table 39 – CT exposure functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT Exposure Sequence	(0018,9321)	FIXED	ALWAYS	ALWAYS			
> Image and Fluoroscopy Area Dose Product	(0018,115E)	GENERATED	ALWAYS	ALWAYS			
> Exposure Time in ms	(0018,9328)	GENERATED	ALWAYS	ALWAYS			
> Exposure in mAs	(0018,9330)	GENERATED	ALWAYS	ALWAYS			

Table 40 – CT X-ray details functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
CT X-Ray Details Sequence	(0018,9325)	FIXED	ALWAYS	ALWAYS			
> KVP	(0018,0060)	GENERATED	ALWAYS	ALWAYS			

Table 41 – Pixel value transformation functional group macro for enhanced image CT

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Pixel Value Transformation Sequence	(0028,9145)	FIXED	ALWAYS	ALWAYS			
> Rescale Intercept	(0028,1052)	FIXED	ALWAYS	ALWAYS	-1000		
> Rescale Slope	(0028,1053)	FIXED	ALWAYS	ALWAYS	1		
> Rescale Type	(0028,1054)	FIXED	ALWAYS	ALWAYS	HU		

Enhanced CT Image Private Modules - N/A

N/A

CT Image IOD

Table 42 defines the structure of CT Image.

Table 42 – CT image

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient Module	ALWAYS		Table 11
Study	General Study Module	ALWAYS		Table 12
Series	General Series Module	ALWAYS		Table 13
Frame Of Reference	Frame of Reference	ALWAYS	Present for DEXIS Capture acquisition	Table 14
Equipment	General Equipment Module	ALWAYS		Table 15
Image	General Image Module	ALWAYS		Table 16
	Image Plane Module	ALWAYS		Table 43
	CT Image Module	ALWAYS		Table 44
	SOP Common Module	ALWAYS		Table 21

CT Image Specific Modules

The following tables list modules and attributes specific to CT Image.

Table 43 – Image plane module for CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Slice Thickness	(0018,0050)	GENERATED	ALWAYS	ALWAYS			
Image Position (Patient)	(0020,0032)	GENERATED	ALWAYS	ALWAYS			
Image Orientation (Patient)	(0020,0037)	GENERATED	ALWAYS	ALWAYS			
Pixel Spacing	(0028,0030)	GENERATED	ALWAYS	ALWAYS			

Table 44 – CT image module for CT image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comm.
Image Type	(0008,0008)	GENERATED	ALWAYS	ALWAYS	ORIGINAL\ PRIMARY\AXIAL	ORIGINAL\PRIMARY\ AXIAL (default); DERIVED\PRIMARY\ VOLUME\RESAMPLED with Reoriented 3D; DERIVED\PRIMARY\ AXIAL with Derived Cross-sections	
Samples per Pixel	(0028,0002)	GENERATED	ALWAYS	ALWAYS	1		
Photometric Interpretation	(0028,0004)	GENERATED	ALWAYS	ALWAYS	MONOCHROME2		
Bits Allocated	(0028,0100)	GENERATED	ALWAYS	ALWAYS	16		
Bits Stored	(0028,0101)	GENERATED	ALWAYS	ALWAYS	13		
High Bit	(0028,0102)	GENERATED	ALWAYS	ALWAYS	12		
Rescale Intercept	(0028,1052)	GENERATED	ALWAYS	ALWAYS	-1000		
Rescale Slope	(0028,1053)	GENERATED	ALWAYS	ALWAYS	1		
Rescale Type	(0028,1054)	GENERATED	ALWAYS	ALWAYS	HU		
KVP	(0018,0060)	GENERATED	ALWAYS	ALWAYS			
Gantry/ Detector Tilt	(0018,1120)	FIXED	ALWAYS	EMPTY			
Acquisition Number	(0020,0012)	GENERATED	ALWAYS	ALWAYS	1		
Exposure Time	(0018,1150)	GENERATED	ALWAYS	ALWAYS			
X-Ray Tube Current	(0018,1151)	GENERATED	ALWAYS	ALWAYS			
Exposure	(0018,1152)	GENERATED	ALWAYS	ALWAYS			
Image and Fluoroscopy Area Dose Product	(0018,115E)	GENERATED	ALWAYS	ALWAYS			

Annexes

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comm.
Convolution Kernel	(0018,1210)	ALWAYS	ALWAYS	EMPTY			
Revolution Time	(0018,9305)	ALWAYS	ALWAYS	EMPTY			
Reconstruction Target Center (Patient)	(0018,9318)	ALWAYS	ALWAYS	EMPTY			

CT Image Functional Group Macros - N/A

N/A

A.3.3 CT Image Private Modules - N/A

N/A

Digital X-ray Image IOD

Table 45 defines the structure of Digital X-ray Image.

Table 45 – Digital X-ray image

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient Module	ALWAYS		Table 11
Study	General Study Module	ALWAYS		Table 12
Series	General Series Module	ALWAYS		Table 14
	DX Series	ALWAYS		Table 46
Frame Of Reference	Frame of Reference	ALWAYS	Present for DEXIS Capture acquisition	Table 15
Equipment	General Equipment Module	ALWAYS		Table 16
Image	General Image Module	ALWAYS		Table 17
	Image Pixel Module	ALWAYS		Table 19
	DX Image Module	ALWAYS		Table 47
	DX Anatomy Imaged Module	ALWAYS		Table 48
	DX Detector	ALWAYS		Table 49
	SOP Common Module	ALWAYS		Table 21

Digital X-ray Image Specific Modules

The following tables list modules and attributes specific to Digital X-ray Image.

Table 46 – DX series module for digital X-ray image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	GENERATED	ALWAYS	CONDITIONAL	PX; DX	PX for Panoramic Images; DX for Cephalometric Images	
Presentation Intent Type	(0008,0068)	FIXED	ALWAYS	ALWAYS	FOR PRESENTATION		
Anatomic Region Sequence	(0008,2218)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
> Code Value	(0008,0100)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
> Code Scheme Designator	(0008,0102)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
> Code Meaning	(0008,0104)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
Primary Anatomic Structure Sequence	(0008,2228)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	

Table 47 – DX image module for digital X-ray image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comm.
Image Type	(0008,0008)	GENERATED	ALWAYS	ALWAYS	ORIGINAL\ PRIMARY	ORIGINAL\ PRIMARY (default); DERIVED\ SECONDARY for Derived (filtered) images	
Patient Orientation	(0020,0020)	FIXED	ALWAYS	CONDITIONAL	LF; AF	LF: for Panoramic images and frontal Cephalograms; AF for lateral Cephalograms	
Samples per Pixel	(0028,0002)	GENERATED	ALWAYS	ALWAYS	1		
Photometric Interpretation	(0028,0004)	GENERATED	ALWAYS	ALWAYS	MONOCHROME2		
Bits Allocated	(0028,0100)	GENERATED	ALWAYS	ALWAYS			
Bits Stored	(0028,0101)	GENERATED	ALWAYS	ALWAYS			
High Bit	(0028,0102)	GENERATED	ALWAYS	ALWAYS			
Pixel Intensity Relationship	(0028,1040)	FIXED	ALWAYS	ALWAYS	LIN		
Pixel Intensity Relationship sign	(0028,1041)	FIXED	ALWAYS	ALWAYS	-1		
Window Center	(0028,1050)	GENERATED	ALWAYS	ALWAYS			
Window Width	(0028,1051)	GENERATED	ALWAYS	ALWAYS			
Rescale Intercept	(0028,1052)	GENERATED	ALWAYS	ALWAYS			
Rescale Slope	(0028,1053)	GENERATED	ALWAYS	ALWAYS			
Rescale Type	(0028,1054)	GENERATED	ALWAYS	ALWAYS			
Lossy Image Compression	(0028,2110)	FIXED	ALWAYS	ALWAYS	00		
Lossy Image Compression Ratio	(0028,2112)	EMPTY	ALWAYS	EMPTY			

Table 48 – DX anatomy imaged module for digital X-ray image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Anatomic Region Sequence	(0008,2218)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
> Code Value	(0008,0100)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
> Code Scheme Designator	(0008,0102)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
> Code Meaning	(0008,0104)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
Primary Anatomic Structure Sequence	(0008,2228)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS		Attribute will be present and filled in based on the available tooth information.	
Image Laterality	(0020,0062)	FIXED	ALWAYS	ALWAYS	B		

Table 49 – DX detector module for digital X-ray image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Imager Pixel Spacing	(0018,1164)	GENERATED	ALWAYS	ALWAYS			
Detector Type	(0018,7004)	FIXED	ALWAYS	ALWAYS	DIRECT		
Detector ID	(0018,700A)	EMPTY	ALWAYS	EMPTY			

Digital X-Ray Image Functional Group Macros - NA

N/A

Digital X-Ray Image Private Modules - N/A

N/A

Digital Intraoral X-ray Image IOD

Table 50 defines the structure of Digital Intraoral X-ray Image.

Table 50 – Digital intraoral X-ray image

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient Module	ALWAYS		Table 11
Study	General Study Module	ALWAYS		Table 12
Series	General Series Module	ALWAYS		Table 14
	DX Series Module	ALWAYS		Table 46
	Intraoral Series Module	ALWAYS		Table 51
Frame Of Reference	Frame of Reference	ALWAYS	Present for DEXIS Capture acquisition	Table 15
Equipment	General Equipment Module	ALWAYS		Table 16
Image	General Image Module	ALWAYS		Table 17
	Image Pixel Module	ALWAYS		Table 19
	DX Anatomy Imaged Module	ALWAYS		Table 48
	DX Image Module	ALWAYS		Table 47
	DX Detector	ALWAYS		Table 49
	Intraoral Image Module	ALWAYS		Table 52
	SOP Common Module	ALWAYS		Table 21

Digital Intraoral X-ray Image Specific Modules

The following tables list modules and attributes specific for Digital X-ray Image

Table 51 – Intraoral series module for digital intraoral X-ray image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	FIXED	ALWAYS	ALWAYS	IO		

Table 52 – Intraoral image module for digital intraoral X-ray image

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Anatomic Region Sequence	(0008,2218)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS			Attribute will be present and filled in based on the available tooth information.
> Code Value	(0008,0100)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS			Attribute will be present and filled in based on the available tooth information.
> Code Scheme Designator	(0008,0102)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS			Attribute will be present and filled in based on the available tooth information.
> Code Meaning	(0008,0104)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS			Attribute will be present and filled in based on the available tooth information.
Primary Anatomic Structure Sequence	(0008,2228)	SRC_INSTANCE, FIXED	CONDITIONAL	ALWAYS			Attribute will be present and filled in based on the available tooth information.
Positioner Type	(0018,1508)	FIXED	ALWAYS	ALWAYS	NONE		
Image Laterality	(0020,0062)	FIXED	ALWAYS	CONDITIONAL			

Digital Intraoral X-Ray Image Functional Group Macros - NA

N/A

Digital X-Ray Image Private Modules - N/A

N/A

Structured Report Encoding – N/A

N/A

Security Details – N/A

N/A

Mapping of Attributes

Modality Mapping

Media types handled by DTX Studio Clinic are mapped to DICOM equipment modalities and SOP class UIDs according to the following table:

Media Description	DICOM Modality	SOP Class Name	SOP Class UID
Intraoral X-ray (2D)	IO	Digital Intraoral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Orthopantomograph X-ray (2D)	PX	Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Cephalogram X-ray (2D)	DX	Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
X-ray preview to position device (2D)	DX	Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
X-ray device calibration image (2D)	DX	Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Artificial OPG generated from a CT image volume (2D)	PX	Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Artificial cephalogram generated from a CT image volume (2D)	DX	Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Clinical photo/picture (2D)	XC	VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Intraoral camera picture (2D, regular lighting)	OT	VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Intraoral infrared camera picture (2D, grayscale)	OT	VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Intraoral camera picture (2D, fluorescent lighting)	OT	VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Screen capture taken within the software (2D)	OT	Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
(CB)CT image volume (3D)	CT	(Enhanced) CT Image Storage or X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.2.1
X-ray volume calibration image (3D)	CT	(Enhanced) CT Image Storage or X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.2.1



Nobel Biocare AB
Dimbovägen 2
69151 Karlskoga
Sweden

www.nobelbiocare.com

Distributed in New Zealand by:

Nobel Biocare New Zealand Ltd
33 Spartan Road
Takanini, Auckland, 2105
New Zealand

Phone: +64 0800 441 657

Distributed in Australia by:

Nobel Biocare Australia Pty Ltd
Suite 4.02, Level 4, Building A,
1 Eden park drive Macquarie Park NSW 2113
Australia

Phone: +61 1800 804 597

Distributed in Turkey by:

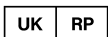
EOT Dental
Sağlık Ürünleri ve Dış Ticaret A.Ş
Nispetiye Mah. Aytar Cad.
Metro İş Merkezi No: 10/7
Beşiktaş İSTANBUL
Turkey

Phone: +90 2123614901



CH importer/representative:

Nobel Biocare Services AG
Balz Zimmermann-Strasse 7
8302 Kloten
Switzerland



UK responsible person:

Nobel Biocare UK Ltd.
4 Longwalk Road
Stockley Park
Uxbridge UB11 1FE
United Kingdom



ifu.dtxstudio.com/symbolglossary
ifu.dtxstudio.com