



**SICAT SUITE**

## ***DICOM CONFORMANCE STATEMENT***

***Valid from SICAT SUITE V2.0.40***

***2021-10-25***

# DICOM CONFORMANCE STATEMENT

## INTRODUCTION

### PURPOSE

This document refers to the DICOM functionality of the SICAT Suite Software.

This document is written according to part PS 3.2 of Digital Imaging and Communication in Medicine (DICOM) 3.0, NEMA PS 3.1 – 3.20 (2016).

The DICOM Import of SICAT Suite is an interface between DICOM media exchange functionality and the SICAT Suite application software and allows the software to read DICOM files containing dental volume data according to Part 10 of the DICOM standard. It partially supports the application profiles “CT and MR Image Application” and fully supports the “Dental Application Profiles” as described in Part 11.

The support of the physical media as described in Part 12 depends on the underlying operation system or additional software, and hardware support of the special media.

Media Service support:

MEDIA STORAGE APPLICATION PROFILE	CREATE FILES (FSC)	UPDATE FILES (FSU)	READ FILES (FSR)
STD-CTMR-CD	Yes*	No	Yes
STD-CTMR-DVD-RAM	Yes*	No	Yes
STD-CTMR-DVD	Yes*	No	Yes
STD-DEN-CD	Yes*	No	Yes
STD-GEN-USB	Yes	No	Yes
STD-GEN-USB-JPEG	No	No	Yes
STD-GEN-USB-J2K	No	No	Yes

\*) The SICAT Suite can't write directly on CD-R or DVDs, it can only write to a random access media like a hard disk. Writing direct on CD-R or DVD depends on additional software and hardware.

### SCOPE

This Conformance Statement refers to the SICAT Suite Software from Version 1.4 onwards.

### DEFINITIONS, ABBREVIATIONS

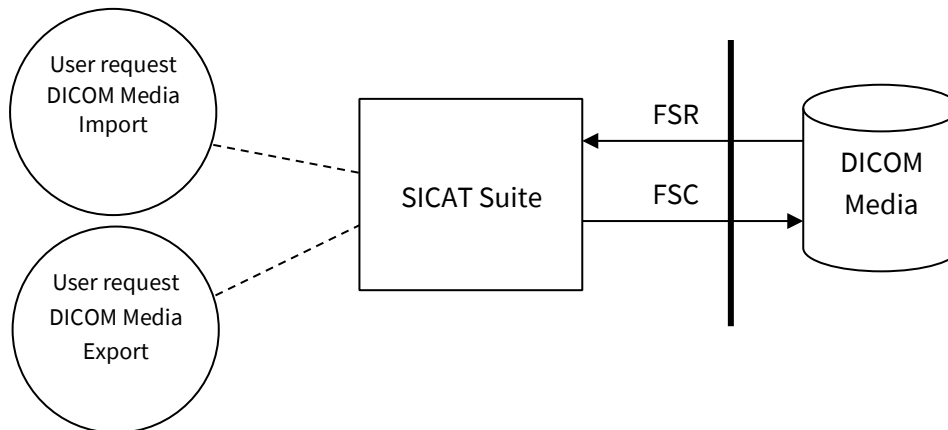
AE	DICOM Application Entity
DICOM	Digital Imaging and Communication in Medicine
FSC	File Set Creator
FSR	File Set Reader
FSU	File Set Updater
IOD	DICOM Information Object Definition
NEMA	National Electrical Manufacturers Association
SOP	DICOM Service-Object Pair
UI	Unique Identifier, string unique in the whole network

## IMPLEMENTATION MODEL

### MEDIA EXCHANGE

#### Application Data Flow Diagram

The SICAT Suite DICOM Import acts as FSR (File Set Reader) and the DICOM Export acts as FSC (File Set Creator).



#### Functional Definitions of AEs

The SICAT Suite software supports the following functions:

- Browsing for a DICOM image that contains volume data. Import the related volume into the software (FSR).
- Trigger the import of DICOM images containig volume data by starting SICAT Suite with a command line parameter pointing to the images. (FSR)
- Exporting volume data as set of DICOM images (FSC).

SICAT Endo as a part of the SICAT Suite software supports the following functions:

- Browsing for DICOM image that contains 2D intra-oral radiograph data.
- Import the related image into the software (FSR).

#### Sequencing of Real-World Activities

The data sets are imported or exported via the user interface sequentially.

#### For Implementation Class and Version

Name	Value
File Meta Information Version	0
Implementation Class UID	1.2.276.0.7230010.3.0.3.6.1
Implementation Version Name	OFFIS_DCMTK_361
SICAT company root ID	1.2.826.0.1.3680043.9.2548

## AE SPECIFICATIONS

### Media FSR

Application profiles, activities, and roles for MEDIA-FSR:

APPLICATION PROFILES ACTIVITY	SUPPORTED REAL WORLD ACTIVITY	ROLE
STD-CTMR-CD, STD-CTMR-DVD-RAM, STD-CTMR-DVD, STD-DEN-CD, STD-GEN-USB, STD-GEN-USB-JPEG, STD-GEN-USB-J2K	Import files	FSR

NOTE: The application is media neutral and dependent on the underlying hardware.

### Media FSC

Application profiles, activities, and roles for MEDIA-FSC:

APPLICATION PROFILES ACTIVITY	SUPPORTED REAL WORLD ACTIVITY	ROLE
STD-CTMR-CD, STD-CTMR-DVD-RAM, STD-CTMR-DVD, STD-DEN-CD, STD-GEN-USB	Export files	FSC

NOTE: The application is media neutral and dependent on the underlying hardware.

### File Meta Information for the Application Entity

Source Application Entity Title: not set

## REAL WORLD ACTIVITIES

### Volume Data Import

Press the button “**Import new data**” on the SICAT Suite start page or the corresponding button in the SICAT Suite navigation bar to import a DICOM data set and to create a corresponding SICAT Suite patient record.

The “**New data**” window opens.

Click the “**Browse**” button. The “**Select file or directory**” window opens. Select the desired file or folder and click “**OK**”.

The window closes and SICAT Suite automatically starts scanning the file or folder for data that can be imported. If a folder was selected, the folder and all subfolders are searched. Compatible files are shown in the “**Data found at the given location**” list.

Select the desired file from the list and click the “**Import**” button. The “**Import**” dialog opens showing the content of the chosen file, including patient and study information.

For each study you can decide if you want to import it or not, depending on the data displayed in the list.

Based on the patient information, SICAT Suite automatically tries to find a matching patient record in the data base. If no matching patient is found, you can create a new patient record.

It is always possible to assign the studies to another patient record in the data base by clicking the “**Assign to existing patient record**” button. The “**Select patient record**” window opens. Choose a patient from the list and press “**OK**”.

In the **“Import”** window, click **“Proceed”** to start the import. If the patient attributes of the DICOM data do not match the attributes of the selected patient record, a warning message is displayed.

SICAT Suite imports the selected data. The **“Patient record browser”** window opens and the imported study is highlighted in the **“Patient record”** list.

### **Image Data Import**

To import 2D intraoral DICOM-Files, press the button **“Browse”** within the Radiograph Manager of the SICAT Endo Application. The **“Select file”** window opens in multiselect mode. Select the desired file(s) and click **“OK”**.

The window closes and the selected DICOM-files are imported, if

- they haven't been imported before and
- are single frame DICOM-files

The imported DICOM-files are displayed in a list view. On the right hand side of the dialog an enlarged preview of the selected intraoral image is shown, as well as patient and study information.

### **Supported DICOM Information Object Definitions**

The SICAT Suite software can read/import the IODs listed in the following tables.

SOP classes supported by SICAT Suite:

SOP Class Name	SOP Class UID	Remarks
Basic Directory	1.2.840.10008.1.3.10	
CT Image	1.2.840.10008.5.1.4.1.1.2	
Enhanced CT Image	1.2.840.10008.5.1.4.1.1.2.1	
Digital Intraoral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	
Digital Intraoral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	
X-Ray 3D Craniofacial Image Storage	1.2.840.10008.5.1.4.1.1.13.1.2	
Secondary Capture Image (grayscale)	1.2.840.10008.5.1.4.1.1.7	only for Modality "CT"
Multiframe Grayscale Word Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7.3	only for Modality "CT"

For each SOP class, the following Transfersyntax UIDs are accepted:

Transfersyntax Name	Transfersyntax UID
Uncompressed - Implicit VR Endian	1.2.840.10008.1.2
Uncompressed - Explicit VR Little Endian	1.2.840.10008.1.2.1
JPEG Lossless Compression	1.2.840.10008.1.2.4.70
JPEG 2000 Compression (Lossless Only)	1.2.840.10008.1.2.4.90
JPEG 2000 Compression	1.2.840.10008.1.2.4.91

Required Image Attributes:

Attribute Key	Tag
Image Position (Patient)	(0020,0032)
Rows	(0028,0010)
Columns	(0028,0011)
Pixel Spacing	(0028,0030)
Bits Stored	(0028,0101)

Supported Image Attributes:

Attribute Key	Tag
Patient's Name	(0010,0010)
Study Date	(0008,0020)
Study Time	(0008,0030)
Series Date	(0008,0021)
Series Time	(0008,0031)
Content Date	(0008,0023)
Content Time	(0008,0033)
Acquisition Date	(0020,0022)
Acquisition Time	(0020,0032)
Acquisition DateTime	(0020,002A)

**Data Export**

SICAT Suite can export patient records including 3D scans and image data in DICOM format. If required, patient records can be anonymized for the export.

To export data, either open the “**export data**” window from the navigation bar if a patient record is active or click “**Export**” in the “**Patient file browser**” for a selected patient record.

The “**Export data**” window opens. SICAT Suite displays patient attributes and all scans that are part of the active patient record.

If you check the “**Anonymize**” check box, SICAT Suite changes the attributes of the exported patient record to *Patient* for last name, *Anonymous* for First name, and *01.01.<year of birth>* for the date of birth.

Make sure to select the 3D studies you want to export.

If you check the “Zip result into one file” check box, SICAT Suite exports the selected studies into one Zip file.

Click the “**Browse**” button to select a target directory to export to.

Click the “**Export data**” button to start the export. Desired studies are exported to the selected folder.

The SICAT Suite software writes following IODs:

SOP classes written by SICAT Suite:

SOP Class Name	SOP Class UID	Remarks
Basic Directory	1.2.840.10008.1.3.10	
Secondary Capture Image (grayscale)	1.2.840.10008.5.1.4.1.1.7	Modality "CT"

Written Transfersyntax UIDs:

Transfersyntax Name	Transfersyntax UID
Uncompressed	1.2.840.10008.1.2.1

Written Image Attributes:

Attribute Key	Tag
Image Position (Patient)	(0020,0032)
Rows	(0028,0010)
Columns	(0028,0011)
Pixel Spacing	(0028,0030)
Bits Stored	(0028,0101)
Patient's Name	(0010,0010)
Study Date	(0008,0020)
Study Time	(0008,0030)
Series Date	(0008,0021)
Series Time	(0008,0031)
Acquisition Date	(0020,0022)
Acquisition Time	(0020,0032)
Acquisition DateTime	(0020,002A)

Some necessary information is stored in private tags in the DICOM files:

Attribute Key	Tag
SICAT Volume Identification	(0x0085, 0x5031)

### ***AUGMENTED AND PRIVATE PROFILES***

None.

## **SUPPORT OF EXTENDED CHARACTER SETS**

In addition to the default character repertoire, the Defined Terms for Specific Character Set in the following table are supported for importing image data:

<b>Character Set Description</b>	<b>Defined Term</b>
Latin alphabet No. 1	ISO_IR 100
Latin alphabet No. 2	ISO_IR 101
Latin alphabet No. 3	ISO_IR 109
Latin alphabet No. 4	ISO_IR 110
Cyrillic	ISO_IR 144
Arabic	ISO_IR 127
Greek	ISO_IR 126
Hebrew	ISO_IR 138
Latin alphabet No. 5	ISO_IR 148
Japanese	ISO_IR 13
Thai	ISO_IR 166
UTF-8	ISO_IR 192
Default repertoire	ISO 2022 IR 6
Latin alphabet No. 1	ISO 2022 IR 100
Latin alphabet No. 2	ISO 2022 IR 101
Latin alphabet No. 3	ISO 2022 IR 109
Latin alphabet No. 4	ISO 2022 IR 110
Cyrillic	ISO 2022 IR 144
Arabic	ISO 2022 IR 127
Greek	ISO 2022 IR 126
Hebrew	ISO 2022 IR 138
Latin alphabet No. 5	ISO 2022 IR 148
Japanese	ISO 2022 IR 13
Thai	ISO 2022 IR 166
Japanese	ISO 2022 IR 87

Importing files using other character sets might result in corrupted data.  
For exporting image data, the UTF-8 (ISO\_IR 192) character set is always used.

## **SECURITY**

### **SECURITY PROFILES**

None supported.

### **ASSOCIATION LEVEL SECURITY**

None supported.

### **APPLICATION LEVEL SECURITY**

None supported.



## **CONTACT INFORMATION**



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