



IMCO-Ortho DICOM Conformance Statement

Document 4033 Revision A



Version 1.0

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(800) 300 - 7734

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(262) 523-4445

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1 Introduction

This document is the DICOM Conformance Statement for the IMCO-Ortho software, which is a tool for orthopedic specialists who want to conduct measurements and preoperative planning in a digital environment, whether it is at their desktop computer or at a centralized workstation. The software uses DICOM for import and storage of DICOM images.

2 Implementation Model

The IMCO-Ortho software consists of a single Application Entity (AE).

2.1 Application Data Flow Diagram

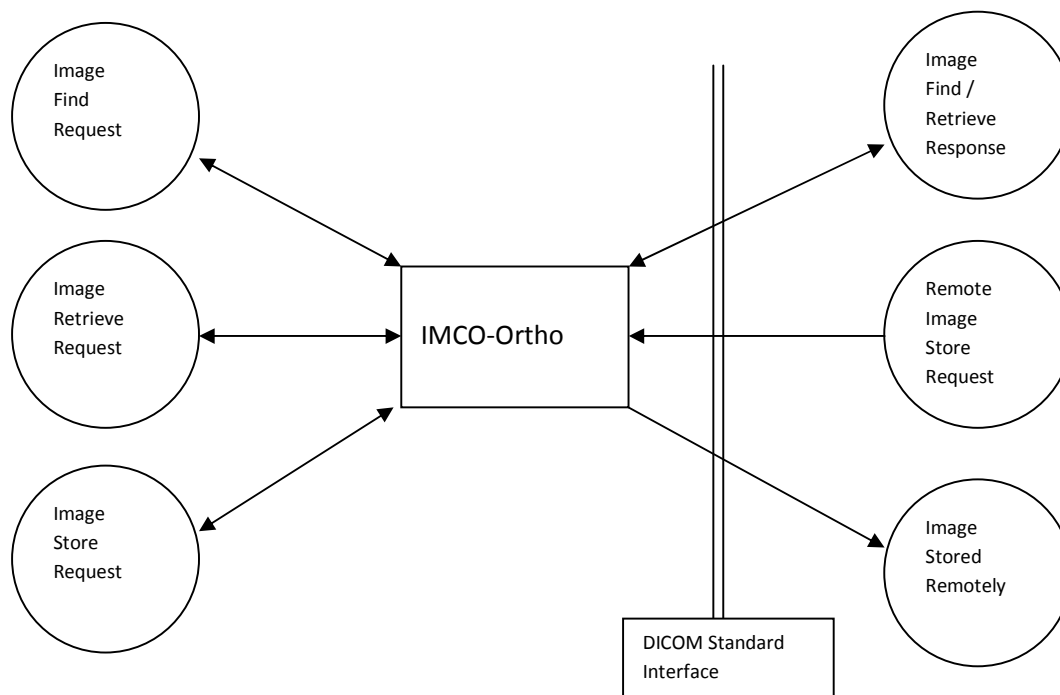


Figure 1 Implementation Model for IMCO-Ortho



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An “Image Find Request” is used when the user of IMCO-Ortho wants to find images according to a set search criteria. The search is performed at the responding image archive (“Image Find Response”), a result list is returned and displayed to the user. The user selects one or more hits in the result list and requires these to be retrieved by invoking an “Image Retrieve Request”. The request is treated by the responding image archive (“Image Find Response”), the images are sent to the AE and are shown for the user in an image list.

If IMCO-Ortho is not allowed to search and retrieve images, the images may be sent to the AE by invoking a “Remote Image Store Request”. This request sends the images to IMCO-Ortho, which will show a list of stored images for the user (as described in the “Image Retrieve Request”).

To store images with measurements and preoperative planning, IMCO-Ortho invokes an “Image Store Request”, which sends the selected image to the image archive.

2.2 Functional Definitions of Application Entities

When an “Image Find Request” is performed the AE opens an Association to the responding image archive. The C-FIND DIMSE-C Service in the Query/Retrieve Service Class is then used as a Service Class User (SCU) to perform the search and when all the responses are sent the Association is closed. If the user invokes the “Image Retrieve Request”, a new Association is used and the C-MOVE DIMSE-C Service in the Query/Retrieve Service Class is used again as a SCU to retrieve the images. If IMCO-Ortho is not allowed to directly import images, it acts like a Service Class Provider (SCP) of the Storage Service Class using the C-STORE DIMSE-C Service. If a user stores an image the Storage Service Class is used as a SCU. An Association is opened; the image is stored with the appropriate Service Object Pair (SOP) Instance and after verification the Association is closed.

2.3 Sequencing of Real-World Activities

The “Image Find Request” has to be performed before the “Image Retrieve Request”, because the request may only be performed on found images. Several “Image Retrieve Requests” may follow from the result of a single “Image Find Request”.



3 Application Entity Specification

The IMCO-Ortho software consists on a single Application Entity (AE).

3.1 The IMCO-Ortho Application Entity

This AE provides Standard Conformance to the following DICOM V3.0 SOP Classes as a SCP:

Table 1 SOP Classes with Standard Conformance as SCP

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7

This Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as a SCU:

Table 2 SOP Classes with Standard Conformance as SCU

SOP Class Name	SOP Class UID
Study Root Query/Retrieve Information Model – FIND SOP	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve Information Model – MOVE SOP	1.2.840.10008.5.1.4.1.2.2.2
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7



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3.1.1 Association Establishment Policies

3.1.1.1 General

Only Presentation Contexts containing the Implicit VR Little Endian Transfer Syntax are used when IMCO-Ortho acts as a SCU of the Storage Service Class. The maximum PDU size for IMCO-Ortho is 16384 bytes.

3.1.1.2 Number of Associations

Only one parallel Association is accepted.

3.1.1.3 Asynchronous Nature

Only synchronous transactions are supported.

3.1.1.4 Implementation Identifying Information

The Implementation Class Unique Identifier is 1.2.826.0.1.3680043.2.688 and the Implementation Version Name is "IMCO-Ortho"

3.1.2 Association Initiation Policy

Associations are initiated when the user of IMCO-Ortho wants to find and retrieve images.

3.1.2.1 "Image Find Request"

An "Image Find Request" is invoked when the user wants to find images according to a set search criteria.

Table 3 Presentation Context Table for "Image Find Request"

Presentation Context Table					
Abstract Syntax	Transfer Syntax			Role	Extended Negotiation
Name	UID	Name List	UID List	SCU	None

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Study Root	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR	1.2.840.10008.1.2,		
Query/Retrieve Information Model – FIND		Little Endian, Explicit VR Little Endian, Explicit VR Big Endian	1.2.840.10008.1.2.1, 1.2.840.10008.1.2.2		

3.1.2.1.1 Query/Retrieve Service Class C-FIND SCU

The IMCO-Ortho implementation conforms to the SOP Classes of the Study Root SOP Class Group using the C-FIND DIMSE-C Service and supports queries against the Study Root Query/Retrieve Information Model. The implementation does not support Optional Keys and does not support Relational Queries.

3.1.2.2 “Image Retrieve Request”

An “Image Retrieve Request” is invoked when the user wants to retrieve one or more images from the result list of an “Image Find Request”

Table 4 Presentation Context Table for “Image Retrieve Request”

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List	SCU	None
Study Root Query/Retrieve Information	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little	1.2.840.10008.1.2, 1.2.840.10008.1.2.1,		

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Model – MOVE		Endian, Explicit VR Little Endian, Explicit VR Big Endian	1.2.840.10008.1.2.2		
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3.1.2.2.1 Query/Retrieve Service Class C-MOVE SCU

The IMCO-Ortho implementation conforms to the SOP Classes of the Study Root SOP Class Group using the C-MOVE DIMSE-C Service and supports transfers against the Study Root Query/Retrieve Information Model.

3.1.2.3 “Image Store Request”

An “Image Store Request” is invoked when the user wants to store an image with measurements and preoperative planning.

Table 5 Presentation Context Table for “Image Store Request”

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List	SCU	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian,	1.2.840.10008.1.2,		
Secondary	1.2.840.10008.5.1.4.1.1.7	Implicit VR	1.2.840.10008.1.2,	SCU	None

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Capture Image Storage		Little Endian,			
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3.1.2.3.1 Storage Service Class

The IMCO-Ortho implementation conforms to standard Storage Service Class using the C-STORE DIMSE-C Service.

3.1.3 Association Acceptance Policy

Associations are accepted when another AE wants to store images, i.e. when IMCO-Ortho is not allowed to use the Query/Retrieve Service Class.

3.1.3.1 Remote Image Store Request

A “Remote Image Store Request” is initiated when the user of IMCO-Ortho wants to retrieve an image without using the Query/Retrieve Service Class.

Table 6 Presentation Contexts table for “Remote Image Store Request”

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List	SCP	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian, Explicit VR Little Endian, Explicit VR Big	1.2.840.10008.1.2, 1.2.840.10008.1.2.1, 1.2.840.10008.1.2.2		

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		Endian			
Secondary Capture	1.2.840.10008.5.1.4.1.1.7	Implicit VR	1.2.840.10008.1.2,	SCP	None
Image Storage		Little Endian, Explicit VR Little Endian, Explicit VR Big Endian	1.2.840.10008.1.2.1, 1.2.840.10008.1.2.2		

The IMCO-Ortho implementation conforms to the SOP's of the Storage Service at level 2 (Full) and Signature Level 3 is used. No Elements are discarded or coerced by the server and the image is stored until a user removes it.

4 Supported Communication Profiles

4.1 Supported Communications Stacks

The IMCO-Ortho implementation provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8.

4.2 TCP/IP Stack

The IMCO-Ortho implementation inherits the TCP/IP stack from the Microsoft Windows operating system upon which it executes.

4.3 Physical Media Support

The IMCO-Ortho implementation is indifferent to the physical medium over which TCP/IP executes.

5 Extensions/Specializations/Privatizations

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Not applicable.

6 Configuration

Configurations for the IMCO-Ortho implementation are made in the “DICOM settings dialog”. The settings include Application Entity titles, addresses, ports and folders used for storage.

7 Support of Extended Character Sets

The IMCO-Ortho application is indifferent to Extended Character Sets, as it does not rely on the information contained within the Data Elements.

8 Codes and Controlled Terminology

Not used.

9 Security Profiles

No Security Profiles are used.

10 Contact Information

If you have any questions regarding this document or IMCO Technologies related products, feel free to contact us at:

IMCO Technologies

N27 W23957 Paul Road Suite 101
Pewaukee, WI 53072

Email: info@imco-tech.com

Phone: (262) 523-4445 - Office hours 9-5 (CST)

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