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# MedicVOD

## DICOM Conformance Statement

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## 1 Introduction

### 1.1 Scope and field of application

To provide DICOM application to the MedicVOD system. The system uses the following applications:

- Selectively send an image or a video link into a pre-defined PACS machine as a medical case study.
- Query on a DICOM work list to retrieve patient demographic information in order to match the patient to the case study in the operating room.

### 1.2 Acronyms

The following acronyms and abbreviations are used in this document.

**AE** Application Entity

**ACR** American College of Radiology

**ANSI** American National Standards Institute

**DICOM** Digital Imaging and Communications in Medicine

**GUI** Graphical User Interface

**HIS** Hospital Information System

**IOD** Information Object Definition

**NEMA** National Electrical Manufacturers Association

**PACS** Picture Archiving and Communications System

**PDU** Protocol Data Unit

**RIS** Radiological Information System

**SCP** Service Class Provider

**SCU** Service Class User

**SOP** Service Object Pair

**TCP/IP** Transmission Control Protocol/Internet Protocol

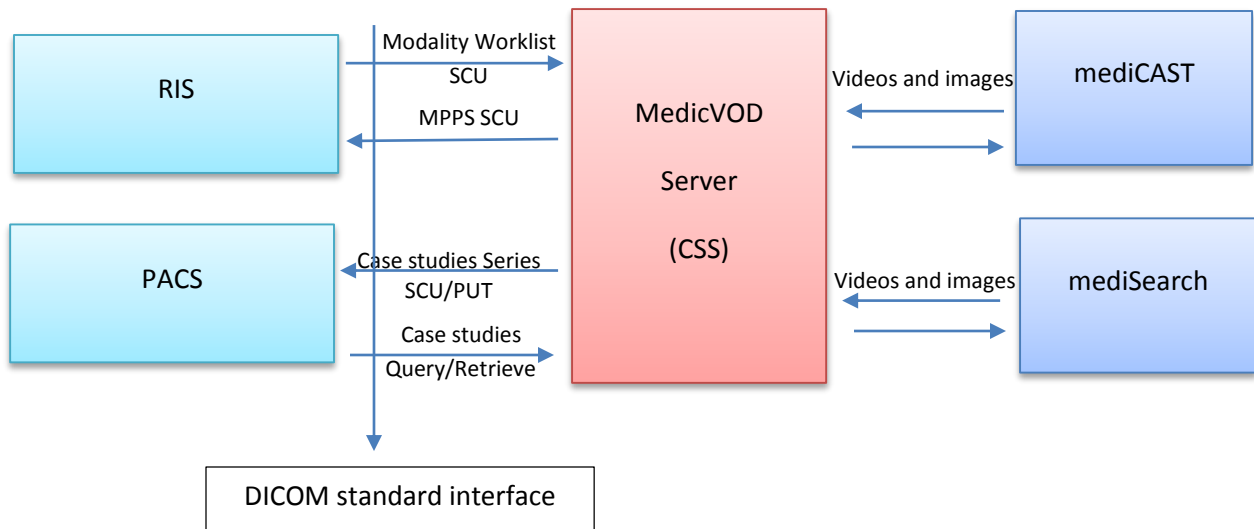
**UID** Unique Identifier

**VR** Value Representation

Furthermore, all symbols, abbreviations, and definitions used herein are described in the Digital Imaging and Communications in Medicine (DICOM) standard, parts 1 through 13 (NEMA PS3.1-13).

## 2 Implementation model

### 2.1 Application data flow diagram



### 2.2 Functional definition application entities

The MedicVOD server functions as an SCU class both for querying the MWL and also to send the case studies with SCU PUT class.

### 2.3 Sequencing of real world activities

No sequencing of Real World activities is required. An association is opened at the beginning of each activity and the association is ended when the activity is completed.

### 3 AE specification

#### 3.1 AE specifications for the MedicVOD system

The MedicVOD system Application Entity provides Standard Conformance to the following DICOM v3.0 SOP Class as a SCU:

SOP Classes as SCU	
SOP Class UID	SOP Class name
STORE	
1.2.840.10008.5.1.4.1.2.2.2	STORE case study
QUERY	
1.2.840.10008.5.1.4.1.2.1.1	Modality worklist query Case Studies
RETRIEVE	
	Case Studies

#### 3.1.1 Association establishment policies

##### 3.1.1.1 General

Application context name: 1.2.840.10008.3.1.1.1

Maximum PDU size offered: No Limit

Maximum PDU size accepted: No Limit

##### 3.1.1.2 Number of associations

Not configured

##### 3.1.1.3 Implementation Identifying Information

Implementation UID: TBD

Implementation Name: MEDICVOD

#### 3.1.2 Association Initiation Policy

##### 3.1.2.1 Retrieve Modality Worklist from remote systems

##### 3.1.2.1.1 Associated real world activity

The MedicVOD system will query a remote device(s) for a Modality Worklist to determine which patients is undergo a procedure in the operating room. The MedicVOD system has two uses for the worklist. First, will populate the patient demographic information onto the case studies. The other is looking for current studies added during the day in order to match them in the procedure whilst in the operating room.

### 3.1.2.1.2 Accepted Presentation Context

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID	Class	
Modality worklist query	1.2.840.10008.5.1.4.31	Implicit VR little endian	1.2.840.10008.1.2	SCU	None

### 3.1.2.1.3 SOP Specific Conformance for SOP class Storage

The fields below are always included in the query request to ask the SCP to return them for each response.

Modality Worklist Query		
Module	Description	TAG
Scheduled Procedure Step	Schedule Procedure Step Sequence	(0040,0100)
	> Schedule Procedure Step Start Time	(0040,0002)
	> Schedule Procedure Step Stop Time	(0040,0003)
	> Modality	(0008,0060)
	> ScheduledStationAETitle	(0040,0001)
Patient Identification	Patient Name	(0010,0010)
	Patient ID	(0010,0020)
	Patient Address	(0010,1040)
	Patient Phone	(0010,2154)
	Patient Age	(0010,1010)
Patient Demographic	Patient Birth Date	(0010,0030)
	Patient SEX	(0010,0040)
Study Reference	Accession Number	(0008,0050)
	ScheduledStationAETitle	(0040,0001)
	Modality	(0008,0060)
	StudyInstanceUID	(0020,000D)

3.1.2.2 C-STORE Case Study to remote system

3.1.2.2.1 Associated Real World Activity

MedicVOD system will selectively send (C-STORE) case studies to a remote system in which will consist of the image or video in the study content (series). The image is a JPEG LOSSY image and is a presentation of a snapshot taken in the operating room. The video is sent over as of the following options:

1. A link of the video to the MedicVOD streamer is sent over the “Results Comments” TAG (4008,4000).
2. The video is sent as an embedded (encapsulated) MP4 video

3.1.2.2.2 Accepted Presentation Context

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID	Class	
Study case PUT	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR little endian	1.2.840.10008.1.2	SCU	None
Patient Identification		Patient Name			(0010,0010)
		Patient ID			(0010,0020)
		Patient Address			(0010,1040)
		Patient Phone			(0010,2154)
		Patient Age			(0010,1010)
Patient Demographic		Patient Birth Date			(0010,0030)
		Patient SEX			(0010,0040)
Study Reference		Accession Number			(0008,0050)
		ScheduledStationAETitle			(0040,0001)
		Modality			(0008,0060)
		StudyInstanceUID			(0020,000D)
		StudyDescription			(0008,1030)
Series Reference		Results Comments			(4008,4000)
		SeriesInstanceUID			(0020,000E)
		SeriesNumber			(0020,0011)
Data Reference		MimeTypeOfEncasulatedDocument			(0012,0042)
		ConversionType			(0064,0008)
Manufacturer Information		ManufacturerModelName			(1090,0008)

Notes:

1. ConversionType will be:
  - a. “DV” – for video
  - b. “DRW” – for image



- c. "WSD" – for PDF document
2. ManufacturerModelName will be:
- a. "MedicVOD-VIDEO" – for video
  - b. "MedicVOD-IMAGE" – for image
  - c. "MedicVOD-PDF" – for PDF

3.1.2.3 C-STORE Modality Performed Procedure Step (MPPS) to remote system

3.1.2.3.1 Associated Real World Activity

MedicVOD system will send (PUT) Modality Performed Procedure Step (MPPS) at the beginning of a procedure and at the end. The MPPS record is either created to hold a new Study Case UID or will include the existing Study Case UID from the requested procedure, requested previously by the DICOM worklist retrieve.

3.1.2.3.2 Accepted Presentation Context

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID	Class	
Study case PUT	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR little endian	1.2.840.10008.1.2	SCU	None
Patient Identification	Patient Name				(0010,0010)
	Patient ID				(0010,0020)
	Patient Address				(0010,1040)
	Patient Phone				(0010,2154)
	Patient Age				(0010,1010)
Patient Demographic	Patient Birth Date				(0010,0030)
	Patient SEX				(0010,0040)
Study Reference	Accession Number				(0008,0050)
	ScheduledStationAETitle				(0040,0001)
	Modality				(0008,0060)
	StudyInstanceUID				(0020,000D)
Scheduled Procedure Step	Schedule Procedure Step Sequence				(0040,0100)
	➤ Schedule Procedure Step Start Time				(0040,0002)
	➤ Schedule Procedure Step Stop Time				(0040,0003)
	➤ Modality				(0008,0060)
	➤ ScheduledStationAETitle				(0040,0001)
Series Reference	SeriesInstanceUID				(0020,000E)
	SeriesNumber				(0020,0011)
Data Reference	Mime Type Of Encapsulated Document				(0012,0042)
	Conversion Type				(0064,0008)
Manufacturer Information	Manufacturer Model Name				(1090,0008)

3.1.2.4 C-FIND Case Study from remote system

3.1.2.4.1 Associated Real World Activity

MedicVOD system will send a query command (C-FIND) in order to facilitate a later of a MOVE command from a remote system into the MedicVOD CSS. The results are on the “STUDY” level and will contain all study information in order to retrieve these studies within a C-MOVE command.

3.1.2.4.2 Accepted Presentation Context

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID	Class	Negotiation
Study case MOVE	x.y.z.w	Implicit VR little endian	1.2.840.10008.5.1.4.1.2.1.1	FIND	None

3.1.2.4.3 SOP Specific Conformance for SOP class Storage

FIND Query		
Module	Description	TAG
Query	Query Retrieve Level = “STUDY”	(0052,0008)
Patient Identification	Patient Name = “*”	(0010,0010)
	Patient ID = “*”	(0010,0020)
Study Reference	Study Date	(0020,0008)
	Modality	(0008,0060)
	StudyInstanceUID	(0020,000D)

3.1.2.5 C-MOVE Case Study from remote system

3.1.2.5.1 Associated Real World Activity

MedicVOD system will send a query/retrieve command (C-MOVE) in order to facilitate a MOVE command from a remote system into the MedicVOD CSS. The study cases are only images in which are part of the patient being under a procedure in an operative mediCAST unit. The study images, then, will be included in the patient documentation information in the MedicVOD system and on parallel, will be sent over to the active mediCAST in order to be shown in the operating room.

3.1.2.5.2 Accepted Presentation Context

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID	Class	
Study case MOVE	x.y.z.w	Implicit VR little endian	1.2.840.10008.1.2	MOVE	None

3.1.2.5.3 SOP Specific Conformance for SOP class Storage

MOVE Query		
Module	Description	TAG
Query	Query Retrieve Level = "STUDY"	(0052,0008)
Patient Identification	Patient Name	(0010,0010)
Study Reference	StudyInstanceUID	(0020,000D)

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## 4 Communication Profiles

### 4.1 Supported Communication Stacks

The MedicVOD system provides DICOM v3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

### 4.2 TCP/IP Stack

The MedicVOD system utilizes the TCP/IP stack from the Microsoft Windows platform.

#### 4.2.1 Physical Medium Supported

The MedicVOD system is independent of the physical medium over which TCP/IP executes. Any device listed in the Microsoft Windows Hardware compatibility list may be used.

## 5 Extension/Specializations/Privatizations

NA

## 6 Configuration

The MedicVOD system utilizes XML configuration files for the setting of all configurable settings.