

# Vitreia Read Technical File

## Vitreia Read RIS 8.4 - RIS DICOM Conformance Statement

### Vitreia Read RIS 8.4

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Canon Medical Informatics A/S

Krumtappen 4, Etage 3

DK-2500 Valby

Denmark

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Vitreia Read 8.4

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## 1 Document History

Version	Date	Description	Author
	2013-01-17	Initial draft of DICOM conformance statement for EasyViz 5.0 – RIS based on previous DICOM conformance statement Document ID [11035].	NHK
	2013-04-25	Document imported into new template	MWN & LJ
	2016-04-17	Document imported into new template	MWN
1.0	2017-09-06	Document imported into new template. Updated Implementation version name and class UID.	Alicia Newell
1.1	2017-09-11	Updated font and footer.	Alicia Newell
1.2	2018-11-27	Updated for EasyViz 7.6.	Alicia Newell
1.3	2019-06-11	Updated for EasyViz 7.7. Updated company name to Vital Images.	Karen Piech
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1.5	2020-01-20	Updated for EasyViz 8.0.	Karen Piech
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1.7	2021-03-23	Updated for EasyViz 8.2.	Karen Piech
1.8	2021-09-22	Updated for EasyViz 8.3.	Karen Piech
1.9	2022-03-08	Updated for Vitrea Read 8.4 to reflect name changes and Changed Doc id from 2016.04.049 to 2022.03.035	John Ljøterud

## 2 Conformance Statement Overview

The Vitrea Read RIS implements a Radiology Information System (RIS). The Vitrea Read RIS implements the necessary DICOM services to receive and process modality worklist queries from remote DICOM Application Entities. The DICOM Networking Services supported by Vitrea Read RIS are listed in Table 1. Vitrea Read RIS does not support any DICOM Media Interchange Services.

Networking SOP Classes	User of Service (SCU)	Provider of Service (SCP)
<i>Workflow Management</i>		
Modality Worklist Information Model – FIND	No	Yes
Modality Performed Procedure Step SOP Class	No	Yes
<i>Connectivity Verification</i>		
Verification	No	Yes

**Table 1: Network Services supported by Vitrea Read RIS.**

## 3 Introduction

### 3.1 Audience

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

### 3.2 Remarks

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Canon Medical Informatics A/S and other vendors' medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [1]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing interconnectivity between Canon Medical Informatics A/S and non-Canon Medical Informatics A/S equipment.
- Test procedures should be defined to validate the desired level of connectivity.
- The DICOM Standard will evolve to meet the users' future requirements. Canon Medical Informatics A/S is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

### 3.3 Terms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard. A list of abbreviations and terms can be seen in Table 2.

Term	Description
AE	DICOM Application Entity.
AET	Application Entity Title.
DICOM	Digital Imaging and Communications in Medicine.
MWL	Modality Worklist.
PPS	Performed Procedure Step.
SCP	DICOM Service Class Provider (DICOM Server).
SCU	DICOM Service Class User (DICOM Client).
SOP	DICOM Service-Object Pair.

---

Term	Description
SPS	Scheduled Procedure Step.

**Table 2: Terms and abbreviations.**

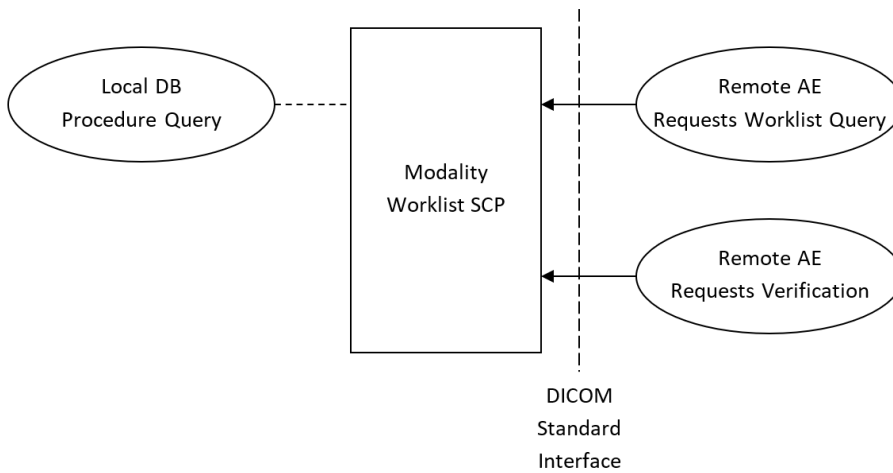
## 4 Networking

### 4.1 Implementation Model

The Vitrea Read RIS DICOM Services are implemented in a single daemon process launched at system startup.

#### 4.1.1 Application Data Flow

Application data flow diagram for the Vitrea Read RIS can be seen on Figure 1.



**Figure 1: Application Data Flow Diagram.**

#### 4.1.2 Functional Definitions of AE's

##### Functional Definition: Modality Worklist SCP

The Modality Worklist SCP Application Entity provides DICOM Services to receive and process modality worklist queries from remote DICOM Application Entities.

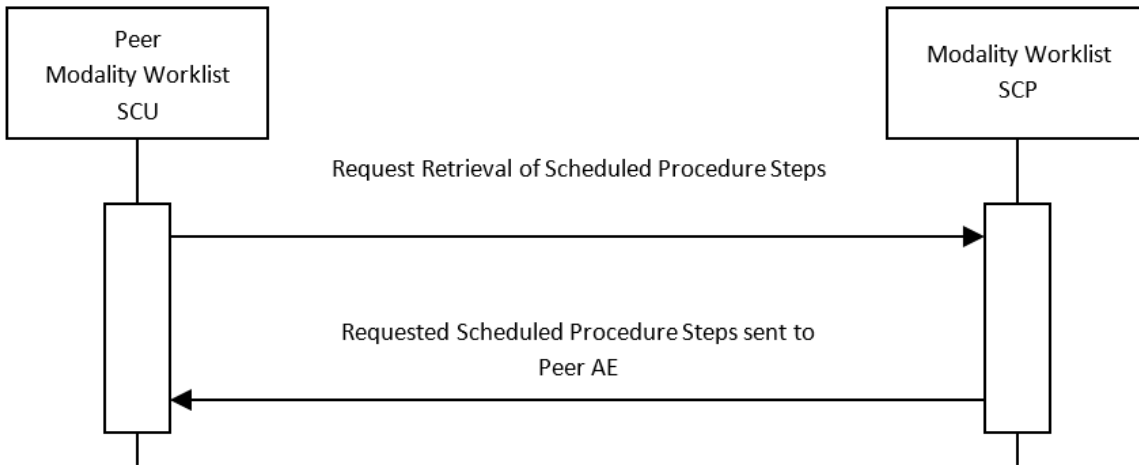
Moreover, the Modality Worklist SCP provides DICOM Verification Services for connectivity verification.

The Modality Worklist SCP Application Entity Provides DICOM Services to:

- Receive and process DICOM Modality Worklist queries using the DICOM Modality Worklist SOP (Acting as SCP).
- Verify the connection to DICOM peer Application Entities using the DICOM Verification SOP (Acting as SCP).

#### 4.1.3 Sequencing of Real World Activities

The sequencing constraints for the Vitrea Read RIS Application Entities can be seen on Figure 2.



**Figure 2: Modality Worklist SCP Sequencing Constraints.**

Request Modality Worklist

1. A peer Modality Worklist SCU queries the Vitrea Read RIS Modality Worklist SCP for Scheduled Procedure Steps.
2. The Modality Worklist SCP returns the requested Scheduled Procedure Steps.

## 4.2 AE Specifications

### 4.2.1 AE Specification: Modality Worklist SCP

SOP Classes

The Modality Worklist SCP provides Standard Conformance to the SOP Classes listed in Table 3.

SOP Class Name	SOP Class UID	SCU	SCP
<i>Workflow Management</i>			
Modality Worklist Information – FIND	1.2.840.10008.5.1.4.31	No	Yes
<i>Connectivity Verification</i>			
Verification SOP Class	1.2.840.10008.1.1	No	Yes

**Table 3: Modality Worklist SCP: Supported SOP Classes.**



## Association Policies

### General

The Modality Worklist SCP will accept Association Requests for DICOM Workflow Management Services. The DICOM standard application context name for DICOM 3.0 is always accepted, see Table 4.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

**Table 4: Modality Worklist SCP: DICOM Application Context.**

### Number of Associations

The Modality Worklist SCP does not support multiple simultaneous associations, see Table 5.

Maximum number of simultaneous associations	1 – Not configurable.
---	-----------------------

**Table 5: Modality Worklist SCP: Number of simultaneous associations.**

### Asynchronous Nature

The Modality Worklist SCP does not support asynchronous communication. Multiple outstanding transactions are not supported, see Table 6.

Maximum number of outstanding asynchronous transactions	1 – Not configurable.
---	-----------------------

**Table 6: Modality Worklist SCP: Asynchronous nature.**

### Implementation Identifying Information

The identifying information for the Modality Worklist SCP can be seen in Table 7.

Implementation Class UID	1.3.6.1.4.1.16978.0.3.5.4.31
Implementation Version Name	EV-3.5.4-31

**Table 7: Modality Worklist SCP: DICOM Implementation Class and Version.**

### Association Initiation Policy

The Modality Worklist SCP does not initiate associations.

### Association Acceptance Policy

Activity: Modality Worklist Query

### Description and Sequencing of Activities

A remote DICOM Application Entity acting as a Modality Worklist SCU may establish an association with the Modality Worklist SCP. The Modality Worklist SCP will accept these associations for the purpose of returning matched scheduled procedure step.

Accepted Presentation Contexts

The Modality Worklist SCP accepts the Application Presentation Contexts listed in Table 8 for the Modality Worklist Query activity.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Modality Worklist Information – FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

**Table 8: Modality Worklist SCP, Modality Worklist Query: Accepted Presentation Contexts.**

SOP Specific Conformance for the Modality Worklist SOP Class

The Modality Worklist SCP does not support matching on any of the optional matching keys attributes – only matching on required matching key attributes are supported.

The Modality Worklist SCP supports case-insensitive matching on the Person Name VR elements listed in Table 9.

Description/Module	Tag
<b>Scheduled Procedure Step</b>	
Scheduled Performing Physician's Name	(0040, 0006)
<b>Patient Identification</b>	
Patient Name	(0010, 0010)

**Table 9: Modality Worklist SCP: Patient Name VR Elements with Case-Insensitive Matching.**

The Modality Worklist SCP support the return key attributes listed in Table 10. The list contains all supported return key attributes regarding of type. The Modality Worklist SCP does not support templates for the Protocol Context Sequence.

Description/Module	Tag	Remark
<b>SOP Common</b>		
Specific Character Set	(0008, 0005)	
<b>Scheduled Procedure Step</b>		
> Scheduled Station AE Title	(0040, 0001)	
> Scheduled Procedure Step Start Date	(0040, 0002)	

Description/Module	Tag	Remark
> Scheduled Procedure Step Start Time	(0040, 0003)	
> Modality	(0008, 0060)	
> Scheduled Performing Physician's Name	(0040, 0006)	Type 2 return key attribute. Always empty.
> Scheduled Procedure Step Description	(0040, 0007)	
> Scheduled Protocol Code Sequence	(0040, 0008)	
>> Code Value	(0008, 0100)	
>> Coding Scheme Designator	(0008, 0102)	
>> Code Meaning	(0008, 0104)	Optional return key attribute.
> Scheduled Procedure Step ID	(0040, 0009)	
<b>Requested Procedure</b>		
Requested Procedure ID	(0040, 1001)	
Requested Procedure Description	(0032, 1060)	
Requested Procedure Code Sequence	(0032, 1064)	
> Code Value	(0008, 0100)	
> Coding Scheme Designator	(0008, 0102)	
> Code Meaning	(0008, 0104)	Optional return key attribute.
Study Instance UID	(0020, 000D)	
Referenced Study Sequence	(0008, 1110)	Type 2 return key attribute. Always empty.
> Referenced SOP Class UID	(0008, 1150)	
> Referenced SOP Instance UID	(0008, 1155)	
Requested Procedure Priority	(0040, 1003)	

Description/Module	Tag	Remark
Patient Transport Arrangements	(0040, 1004)	Type 2 return key attribute. Always empty.
<b>Imaging Service Request</b>		
Accession Number	(0008, 0050)	
Requesting Physician	(0032, 1032)	
Referring Physician's Name	(0008, 0090)	Type 2 return key attribute. Always empty.
<b>Visit Identification</b>		
Admission ID	(0038, 0010)	Type 2 return key attribute. Always empty.
<b>Visit Status</b>		
Current Patient Location	(0038, 0300)	Type 2 return key attribute. Always empty.
<b>Visit Relationship</b>		
Referenced Patient Sequence	(0008, 1120)	Type 2 return key attribute. Always empty.
> Referenced SOP Class UID	(0008, 1150)	
> Referenced SOP Instance UID	(0008, 1155)	
<b>Patient Identification</b>		
Patient's Name	(0010, 0010)	
Patient ID	(0010, 0020)	
<b>Patient Demographic</b>		
Patients Birth Date	(0010, 0030)	
Patient's Sex	(0010, 0040)	
Patient's Weight	(0010, 1030)	Type 2 return key attribute. Always empty.
Confidentiality Constraint on Patient Data	(0040, 3001)	Type 2 return key attribute. Always empty.

Description/Module	Tag	Remark
<b>Patient Medical</b>		
Patient State	(0038, 0500)	Type 2 return key attribute. Always empty.
Pregnancy Status	(0010, 21C0)	Type 2 return key attribute. Always empty.
Medical Alerts	(0010, 2000)	
Contrast Allergies	(0010, 2110)	Type 2 return key attribute. Always empty. OBS: Contrast allergies are specified in Medical Alerts.
Special Needs	(0038, 0050)	Type 2 return key attribute. Always empty.

**Table 10: Modality Worklist SCP. Support Return Key Attributes.**

Activity: Verification

Description and Sequencing of Activities

A remote DICOM Application Entity acting as a Verification SCU may establish an association with the Modality Worklist SCP. The Modality Worklist SCP will accept these associations for the purpose of verifying the network connection.

Accepted Presentation Contexts

The Modality Worklist SCP accepts the Application Presentation Contexts listed in Table 11 for the Verification activity.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

**Table 11: Modality Worklist SCP, Verification: Accepted Presentation Contexts.**

## 4.3 Network Interfaces

### 4.3.1 Physical Network Interface

The Vitrea Read RIS Application Entities are indifferent to the physical medium over which TCP/IP is executed. This is entirely dependent on the underlying operating system and hardware.

### 4.3.2 Additional Protocols

When hostnames rather than IP addresses are used to specify presentation addresses for remote Application Entities, the Vitrea Read RIS Application Entities depends on the name resolution mechanism of the underlying operating system for proper operation.

## 4.4 Configuration

### 4.4.1 AE Title/Presentation Address Mapping

#### Local AE Titles

The default Application Entity title and port number of the Vitrea Read RIS Application Entities are listed in Table 12.

Application Entity	Default AE Title	Default Port Number
Modality Worklist SCP	WL_SCP	30210

**Table 12: Local AE Titles.**

#### Remote AE Title/Presentation Address Mapping

##### Remote AE/Presentation Address Mapping

It is not possible to restrict access to the Modality Worklist SCP based on calling AET, it is therefore not required to setup remote AE for the Modality Worklist SCP.

### 4.4.2 Parameters

The configurable parameters of Vitrea Read RIS are listed in Table 13.

Parameter	Configurable	Default Value
<i>General Parameters</i>		
PDU Size	No	32Kb
Time-out waiting for acceptance or rejection Response of an Association Open Request (Application level timeout)	No	None
General DIMSE level time-out values	No	None
Time-out waiting for response to TCP/IP connect request (Low-level timeout)	Yes	180s [OS Specific]
Time-out waiting for acceptance of a TCP/IP message over the network (Low-level timeout)	Yes	180s [OS Specific]
Time-out waiting for data between TCP/IP packets (Low-level timeout)	Yes	Adaptive 0.2-120s [OS Specific]
Any changes to default TCP/IP setting such as configurable stack parameters	No	None

Parameter	Configurable	Default Value
<i>AE Specific Parameters</i>		
Size constraint in maximum object size	No	None
Maximum PDU Size that the AE can receive	No	32Kb
Maximum PDU Size that the AE can send	No	32Kb
AE specific DIMSE level time-out values	No	None
SOP Class Support	No	All supported SOP Classes always proposed and accepted
Transfer Syntax Support	No	All supported Transfer Syntaxes always proposed and accepted

**Table 13: Configurable Parameters.**

## 5 Media Interchange

Vitrea Read RIS does not support any DICOM Media Interchange Services.



## 6 Support of Character Sets

### 6.1 Overview

Vitre Read RIS supports the default character repertoire. Support extends to correctly decoding and displaying the correct symbol for all names and strings received over the network or found in the local database. No specific support for sorting of strings other than in the default character set is provided by the Vitrea Read RIS.

### 6.2 Character Sets

Vitre Read RIS supports the extended character sets listed in Table 14.

Defined Term	Character Set Description
ISO_IR 100	Latin alphabet No. 1

**Table 14: Supported specific character set defined terms.**

### 6.3 Character Set Configuration

Whether or not characters are displayed correctly depends on the presence of font support in the underlying operating system.

It may be necessary for the user to add one of the "all Unicode" fonts to their system configuration in order to correctly display characters that would not typically be used in the default locale.

## 7 Security

### 7.1 Security Profiles

The Vitrea Read RIS does not support any DICOM security profiles.

### 7.2 Association Level Security

The Vitrea Read RIS Modality Worklist SCP accepts all association requests, i.e. it is not possible to restrict associations based on Calling AET. The Modality Worklist SCP only verifies that it has been called with the correct AET.

### 7.3 Application Level Security

The Vitrea Read RIS applications can be configured to use either MIT Kerberos or the internal database for user authentication. It is not possible to configure the Vitrea Read RIS not to require user authentication. By default, the internal database is used.

When using MIT Kerberos for user authentication, it is possible to integrate the Vitrea Read RIS with Microsoft Active Directory. This allows Microsoft Windows users to use their regular username and password to access the Vitrea Read RIS.

## 8 Annexes

### 8.1 IOD Contents

#### 8.1.1 Created SOP Instance(s)

Vitreia Read RIS does not create SOP instances.

#### 8.1.2 Usage of Attributes of Received IOD's

The local database and remote query make use of conventional identification attributes to distinguish patients, studies, series and instances. In particular, if two patients have the same value for Patient ID, they will be treated as the same patient by the Vitrea Read RIS.

#### 8.1.3 Attribute Mapping

Not applicable.

#### 8.1.4 Coerced/Modified Fields

Vitreia Read RIS does not perform any coercion.

### 8.2 Data Dictionary of Private Attributes

Vitreia Read RIS does not define any private attributes.

### 8.3 Coded Terminology and Templates

The value for Coded Meaning will be displayed for all coded values. The Vitrea Read RIS does not provide a local lexicon to lookup alternative code meanings.

### 8.4 Grayscale Image Consistency

Not applicable.

### 8.5 Standard Extended/Specialized/Private SOP Classes

Vitreia Read RIS does not use Standard Extended/Specialized/Private SOP classes.

### 8.6 Private Transfer Syntaxes

Vitreia Read RIS does not use private transfer syntaxes.

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## 9 References

[1] National Electrical Manufacturers Association (NEMA), Digital Imaging and Communications in Medicine (DICOM), NEMA PS3.1-3.21, 2022a, 1300N 17th Street, Rosslyn, Virginia 22209.