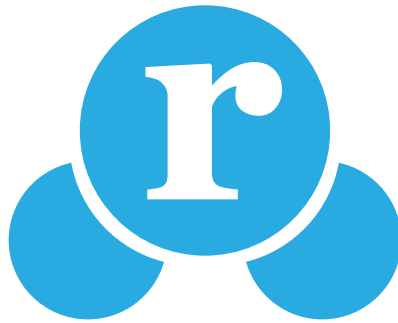


DICOM conformance statement



risaroo

DICOM broker

Note: risaroo is part of SRC Infonet healthcare software solutions, therefore this DICOM Conformance Statement also applies to products BIRPIS21 and ISOZ21, and any other product from SRC Infonet that requires DICOM worklist communication.

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1 Introduction

This chapter provides general information about the purpose, scope and contents of this Conformance Statement.

1.1 Scope and Field of Application

The scope of this DICOM Conformance Statement is to facilitate data exchange with *risaroo* DICOM broker. It contains a short description of the applications involved and provides technical information about the data exchange capabilities. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3 and PS 3.4.

The word *risaroo* in this document refers to *risaroo* DICOM broker.

1.2 References

[DICOM] The Digital Imaging and Communications in Medicine (DICOM) standard (NEMA PS 3.1 – 3.18),

National Electrical Manufacturers Association (NEMA) Publication Sales
1300 N. 17th Street, Suite 1847 Rosslyn, Va. 22209, United States of
America. Internet: <http://medical.nema.org/>

1.3 Important Note

This Conformance Statement by itself does not guarantee successful interoperability of *risaroo* with modalities. The user (or user's agent) should be aware of the following issues:

- Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into an IT environment may require application functions that are not specified within the scope of DICOM.
- New versions of the DICOM Standard The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. CodeMonkee plans to adapt *risaroo* to future versions of the DICOM Standard.

1.4 Used Definitions, Terms and Abbreviations

AE	Application Entity
DICOM	Digital Imaging and Communications in Medicine
IHE	Integrating the Healthcare Enterprise
MPPS	Modality Performed Procedure Step
RIS	Radiology Information System

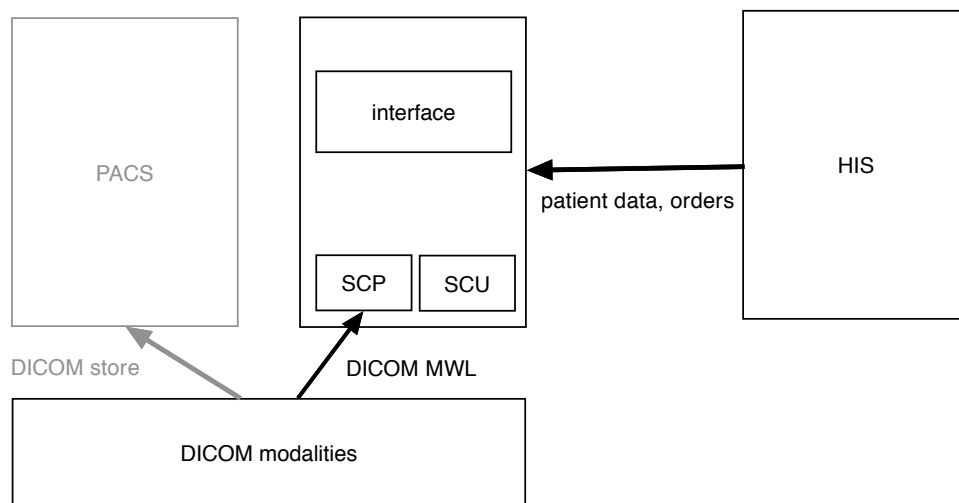
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
VR	Value Representation

2 Implementation model

risaroo is a highly programmable interface engine to connect DICOM competent (imaging) modalities to the Hospital Information Systems (HIS).

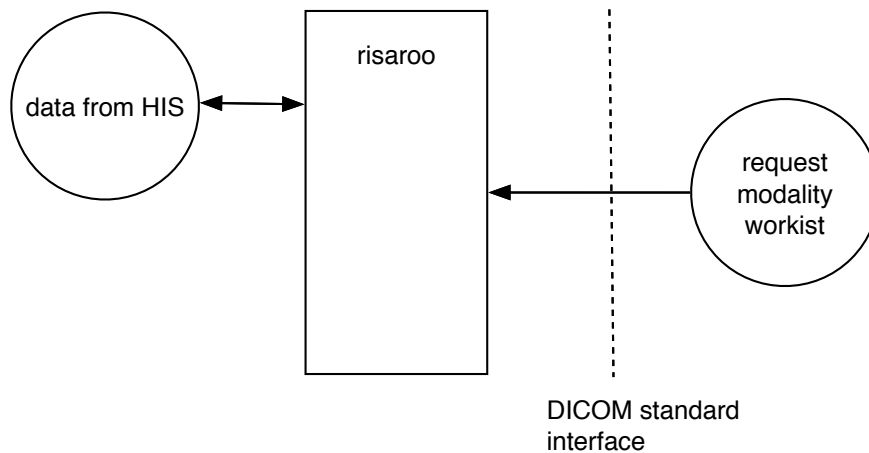
Primary objective of the risaroo DICOM broker is interface between Hospital Information System to DICOM domain of Imaging modalities. risaroo is not responsible for transferring imaging data to PACS system.

risaroo supports DICOM Modality Worklist Management (MWLM) as a Service Class provider (SCP) and DICOM Validation (echo) both as a Service Class Provider (SCP) and Service Class User (SCU).



2.1 Application data flow

As part of the implementation model, an application data flow diagram is included. This diagram represents all of the Application Entities present in an implementation and graphically depicts the relationship of the AE's use of DICOM to Real-World Activities (RWA) as well as any applicable user interaction.



risaroo is able to communicate with modalities according to DICOM standard. risaroo accepts associations in order to receive requests from modalities for Worklist. The Worklist management in risaroo will accept request, transform it and send request to HIS. When HIS response with patient list, risaroo transforms data to DICOM and sends it back to modality.

Filtering of data is performed at two entities:

- risaroo sends request to HIS with filter given by modality
- risaroo performs additional filtering of data received from HIS

2.2 Functional definition of Application Entities

risaroo implements a DICOM Service Class Provider (SCP) for the Basic Worklist Management. Worklist is contained within a single Application Entity. This Application Entity will accept associations from other (Modality type) Application Entities acting as DICOM Service Class Users (SCU). It will then deploy these MWLM requests from the SCU's.

risaroo supports multiple Application Entities. Each risaroo Connect Application Entity will support MWLM for the modality Application Entities that are configured. The number of Application Entities that can be supported depends on the system resources of the risaroo platform.

2.3 Sequences of Real World Activities

risaroo does not require any specific sequence of activities. Modalities are setup in such a way that the requests for MWLM updates are issued at regular intervals. Moreover, the user may press a button on the modality console to refresh the modality worklist instantaneously.

3 AE specifications

3.1 AE specifications summary

SOP class name	SOP class UID	SCU	SCP
Verification SOP class	1.2.840.10008.1.1	Yes	Yes
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	No	Yes

3.2 Association establishment policies

3.2.1 General

risaroo connects with Application Context Name (CAN): 1.2.840.10008.3.1.1.1

Maximum number of bytes on accepted association is 32768.

3.2.2 Number of Associations

Number of Associations is not limited. There can be physical limitations depending on operating system, it's hardware limitations and limitations of HIS connectivity system.

3.2.3 Asynchronous Nature

risaroo allows a single outstanding operation on any association. Therefore, risaroo does not support asynchronous operations and related negotiation.

3.2.4 Implementation Identifying Information

The implementation class UID	1.2.826.0.1.3680043.9.1371
The implementation version name	CodeMonkee-1.0.0

3.2.5 Communication Failure Handling

Artime timeout is set to 15 seconds.

3.3 Association Acceptance Policy

3.3.1 Real World Activity – Request Verification

3.3.1.1 Associated Real-World Activity

risaroo accepts associations from systems to verify application level communication using the C-ECHO Service Element.

3.3.1.2 Presentation Context Table

risaroo will accept the presentation contexts as given in the table below.

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role
Verification SOP Class	1.2.840.10008.1.1	ILE	1.2.840.10008.1.2	SCP
		ELE	1.2.840.10008.1.2.1	
		EBE	1.2.840.10008.1.2.2	

3.3.1.3 SOP Specific Conformance

risaroo provides standard conformance to the DICOM Verification Service Class.

3.3.2 Real World Activity – Request for Modality Worklist

3.3.2.1 Associated Real-World Activity

risaroo accepts associations from systems to verify application level communication using the C-FIND Service Element.

3.3.2.2 Presentation Context Table

risaroo will accept the presentation contexts as given in the table below.

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role
Modality Worklist Information Model C-FIND SOP Class	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCP
		ELE	1.2.840.10008.1.2.1	
		EBE	1.2.840.10008.1.2.2	

3.3.2.3 SOP Specific Conformance

risaroo provides standard conformance to the DICOM Modality Worklist C-FIND SOP Class. The following restrictions are applicable for Modality Worklist functionality:

- no support for wildcards on (any part of) patient name
- no support for wildcards on Scheduled Performer Physician Name
- data filtering is done only on AE Title and Modality Name

3.3.2.5 Specific Conformance for Modality Worklist C-FIND SCP

risaroo supports and fills only DICOM tags specified in table below. The values for unsupported tags will be accepted and returned to modality as empty values.

Attribute	Tag	VR	Remark
Accession Number	0008,0050	SH	provided from HIS system*
Modality	0008,0060	CS	can be used as filter to provide data from HIS*
Request Physician	0008,0090	PN	
Scheduled Protocol Code	0008,0100	SH	
Requested Procedure Description	0008,1030	LO	
Patient Name	0010,0010	PN	
Patient ID	0010,0020	LO	
Patient Birth Date	0010,0030	DA	
Patient Sex	0010,0040	CS	
Study Instance UID	0020,000D	UI	
Referring Physician Name	0032,1032	PN	
Requested Procedure Description	0032,1060	LO	
Scheduled Station AE Title	0004,0001	AE	can be used as filter to provide data from HIS*
Requested Procedure Description	0040,0007	LO	
Requested Procedure ID	0040,1001	SH	

* - when tag is part of request from modality

4 Communication Profiles

4.1 Supported Communications Stacks

risaroo provides DICOM 3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 TCP/IP Stack

All the Application Entities in OSM inherit their TCP/IP stack from the operating system upon which they operate.

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All the Application Entities in OSM inherit their TCP/IP stack from the operating system upon which they operate.

4.3 Physical Media Support

Supported physical media include:

- IEEE 802.3-1995 (Fast Ethernet) 100
- BASE-TX. IEEE 802.3-1995 10BASE-TX

5 Configuration

5.1 AE Title/Presentation Address mapping

Application title is configurable. Receiving port is set to 105 and can be configured. Sending port for DICOM Verification is set to 1500 and can be configured.

5.2 Modalities

risaroo can answer only to modalities configured in configuration file. Modality is known to system as AE Title or Modality Name.

6 Support of extended character set

6.1 Character sets

risaroo supports character sets:

- ASCII (8-bit)
- Windows 1250

Character sets can be configured for each modality separately.