

Swearingen Software

DICOM Conformance Statement

RI Synergy DICOM Worklist Manager

Version 1.0

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RISynergy DICOM Worklist Manager Conformance Statement

Revision History

| Date | Author | Version | Notes |
|----------|---------------|---------|---------------|
| 09.06.07 | Louis Orlando | 1.0 | First version |

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1. Introduction

1.1. Purpose

This document is the DICOM Conformance Statement for the RISynergy DICOM Worklist Manager. The RISynergy DICOM Worklist Manager is the imaging device connectivity service of RISynergy, Swearingen Software’s Radiology Information System. This module acts as a Modality Worklist Management Service Class Provider and a Modality Performed Procedure Step Service Class Provider.

1.2. Intended Audience

This conformance statement is intended for existing or potential users of the RISynergy DICOM Worklist Manager, system administrators of institutions using RISynergy DICOM Worklist Manager, as well as developers of systems wishing to communicate with RISynergy DICOM Worklist Manager using the DICOM protocol.

It is assumed that the reader of this Conformance Statement is familiar with the DICOM standard.

1.3. References

Digital Imaging and Communications in Medicine (DICOM) standard (version 3.0) by the National Electrical Manufacturers Association (NEMA).

1.4. Definitions

| | |
|--------|---|
| AE | DICOM Application Entity |
| AET | Application Entity Title |
| DICOM | Digital Imaging and Communications in Medicine |
| PDU | Protocol Data Unit |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SOP | Service Object Pair |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| UID | Unique Identifier |

1.5. Important Note

The fact that equipment is compatible according to this Conformance Statement, does not in itself guarantee interoperability. Though compatibility with the DICOM standard has been thoroughly tested, interoperability conflicts may arise when trying to use RISynergy DICOM Worklist Manager with other devices. Although interoperability does not lie within the scope of the DICOM standard, Swearingen Software is committed to making every effort to enable interoperability with the widest range of devices.

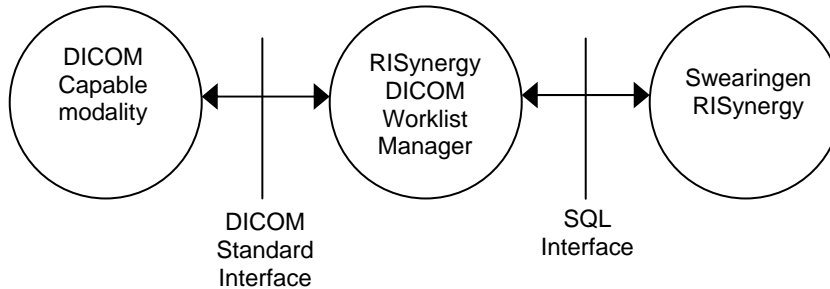
1.6. Implementation Model

RISynergy DICOM Worklist Manager acts as a service class provider for:

- Basic Worklist Management
- Modality Performed Procedure Step (MPPS).

Queries processed by the RISynergy DICOM Worklist Manager and data received from the modalities (devices) are serviced by an SQL interface to the RISynergy database.

1.7. Application Data Flow Diagram



1.7.1. C-FIND Modality Worklist

DICOM C-FIND requests from a device are processed by the RISynergy DICOM Worklist Manager subject to the description in section 2.1.3. The C-FIND request triggers a query of the RISynergy database (thru an SQL interface) and the results are returned to the device.

1.7.2. N-CREATE and N-SET Modality Performed Procedure Step

DICOM N-CREATE and N-SET updates sent by modalities which are capable of Modality Performed Procedure Step (MPPS) are processed by the RISynergy DICOM Worklist Manager. Information contained in these two updates, such as device start/stop times, are updated to the RISynergy database.

1.7.3. Functional Definitions of AE's

When the RISynergy DICOM Worklist Manager is started, it acts as a single application entity (AE) of type Service Class Provider (SCP). It will respond to DICOM C-FIND functions from a medical imaging device acting as a Modality Worklist SCU. Patient demographic and procedure related information is returned to a device in response to the C-FIND request.

If a device is configured to return information via the N-CREATE and N-SET Modality Performed Procedure Step (MPPS) functions, the RISynergy DICOM Worklist Manager will process the returned information into the RISynergy database, thereby causing updates to several of it's "worklists".

1.7.4. Sequencing of Real-World Activities

For proper operation, the RISynergy DICOM Worklist Manager must have access to the RISynergy database which may reside on the same or another physical computer. The facilities medical devices which are intended to be used with the RISynergy DICOM Worklist Manager must be able to communicate with it and be properly configured by knowledgeable personnel or the equipment vendor.

Most devices can be configured to "poll" the RISynergy DICOM Worklist Manager on a regular interval to obtain worklist information. The worklist which is returned to the device is presented to the user on it's attendant console, allowing the operator to select an individual patient/procedure.

When the device operator commands the device to begin operation, the N-CREATE message is sent to the RISynergy DICOM Worklist Manger if the device is so configured. Likewise, when the operator commands the device to end (or cancel) it's operation or the device itself signals the end of operation, the N-SET message is sent to the RISynergy DICOM Worklist Manager. In both cases, the RISynergy database is updated accordingly.

1.8. Invocation

RISynergy DICOM Worklist Manager runs as a Microsoft Windows application. Invocation is controlled by a desktop icon.

2. AE Specifications

Only one instance of RISynergy DICOM Worklist Manager may be active at any time.

2.1. RISynergy DICOM Worklist Manager Specification

RISynergy DICOM Worklist Manager provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCP.

| SOP Class Name | SOP Class UID |
|-----------------------------------|-------------------------|
| Verification SOP class | 1.2.840.10008.1.1 |
| Modality Worklist Management | 1.2.840.10008.5.1.4.31 |
| Modality Performed Procedure Step | 1.2.840.10008.3.1.2.3.3 |

2.1.1. Association Establishment Policies

2.1.1.1. General

RISynergy DICOM Worklist Manager will listen for incoming associations on one or more ports and responds as described elsewhere in this document.

RISynergy DICOM Worklist Manager will support variable PDU length with a default of 64K.

2.1.1.2. Number of Associations

There are no inherent limitations on the total number of simultaneous associations which the Application Entity represented by RISynergy DICOM Worklist Manager can maintain.

2.1.1.3. Asynchronous Nature

RISynergy DICOM Worklist Manager will not perform asynchronous operations window negotiation.

2.1.1.4. Implementation Identifying Information

RISynergy DICOM Worklist Manager will provide an Implementation Class UID of **1.2.826.0.1.3680043.2.1370.4.3.53.2** – note that the last 4 digits may change with future versions. The Implementation Name is provided as: **RISynergyWLM**.

2.1.2. Association Initiation Policy

RISynergy DICOM Worklist Manager never attempts to initiate a new association.

2.1.3. Association Acceptance Policy

RISynergy DICOM Worklist Manager accepts associations which are directed to it by those devices whose IP addresses are listed in its configuration file. Associations are accepted for those SOP classes listed in 2.1.

3. SOP Specific Conformance

RISynergy DICOM Modality Worklist Manager supports matching on the following elements for worklist query:

| Attribute Name | Tag |
|--------------------------------------|-------------|
| Scheduled Procedure Step Start Date | (0040,0002) |
| Scheduled Procedure Step Start Time | (0040,0003) |
| Modality | (0008,0060) |
| Scheduled Performing Physician Name | (0040,0006) |
| Scheduled Procedure Step Description | (0040,0007) |
| Scheduled Procedure Station Name | (0040,0010) |
| Patient ID | (0010,0020) |
| Patient Name | (0010,0010) |

NOTES:

- a) wildcards are supported for patient name
- b) current date will be used if device does not provide one
- c) Modality may be obtained using an external look-up table of IP addresses

RISynergy DICOM Modality Worklist Manager returns the following elements:

| Attribute Name | Tag | Value |
|--------------------------------------|-----------------------------|----------------|
| Accession Number | (0008,0050) | |
| Institution Name | (0008,0080) | |
| Referring Physician Name | (0008,0090) and (0032,1032) | |
| Patient's Name | (0010,0010) | |
| Patient's ID | (0010,0020) | |
| Patient's Birth Date | (0010,0030) | |
| Patient's Sex | (0010,0040) | |
| Patient's Weight | (0010,1030) | (in kilograms) |
| Study Instance UID | (0020,000d) | |
| Requested Procedure Description | (0032,1060) | |
| Requested Procedure ID | (0040,1001) | |
| Scheduled Procedure Step Seq | (0040,0100) | |
| >Modality | (0008,0060) | |
| >Scheduled Station AE Title | (0040,0001) | |
| >Scheduled Procedure Step Start Date | (0040,0002) | |
| >Scheduled Procedure Step Start Time | (0040,0003) | |
| >Scheduled Performing Physician | (0040,0006) | |
| >Scheduled Procedure Step | (0040,0007) | |

| | | |
|---------------------------------------|-------------|----------------------|
| Desc | | |
| >Scheduled Procedure Step ID | (0040,0009) | * configurable |
| >Scheduled Station Name | (0040,0010) | |
| Empty values are returned for: | | |
| Referenced Study Sequence | (0008,1110) | |
| Requested Procedure Priority | (0040,1003) | * future enhancement |
| Patient Transport Arrangements | (0040,1004) | |
| Admission ID | (0038,0010) | |
| Current Patient Location | (0038,0300) | |
| Referenced Patient Sequence | (0008,1120) | |
| Confidentiality Constraint | (0040,3001) | * future enhancement |

NOTE: All elements return a single value where data is available (except as noted) otherwise, a zero length string is returned. Some currently empty fields will be filled in a future product version.

4. Communication Profiles

4.1. Supported Communications Stacks (Part 8)

RISynergy DICOM Worklist Manager provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8.

4.2. TCP/IP Stack

RISynergy DICOM Worklist Manager inherits its TCP/IP stack from the Windows system upon which it executes.

4.3. Physical Media Support

RISynergy DICOM Worklist Manager is indifferent to the physical medium over which TCP/IP executes; it inherits this from the Windows system upon which it executes.

5. Extensions/Specializations/Privatizations

Not Applicable.

6. Configuration

RISynergy DICOM Worklist Manager obtains its configuration information from an external INI file. If any configuration items are changed, the RISynergy DICOM Worklist Manager must be stopped and restarted. A button on the "Configuration" tab of the application's screen is provided for this purpose. Most configuration information is displayed to the user on the "Configuration" tab.

6.1. Configuration Items

- Multiple listen ports
- List of valid device IP addresses with default names
- Optional: An additional modality code can be assigned to each IP address
- Optional: Results returned to a device may be filtered by visit type, such as inpatient, outpatient, or ER.
- Optional: Results returned to a device may be filtered by a branch location code.

- Optional: The default level of detail for DICOM operations logging.

6.2. Network Address

All parameters related to IP addresses are inherited from the Microsoft Windows operating system on the computer where the RISynergy DICOM Worklist Manager resides.

7. Support Of Extended Character Sets

RISynergy DICOM Worklist Manager does not generate or use extended character sets.

8. Codes And Controlled Terminology

No codes or controlled terminology are used by RISynergy DICOM Worklist Manager.