AGFA HEALTHCARE
DICOM Conformance Statement

IMPAX RIS Connectivity 6.4.x

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Document Information

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Conformance Statement Overview

IMPAX RIS DICOM server is the imaging device connectivity service of AGFA HealthCare's RIS system and acts as a Modality Performed Procedure Step Manager.

Modality performed procedure step information is only used to update procedure statuses and to store radiation dose information in the RIS.

Table 1.1-1: Network Services Supported

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Workflow Management		
Modality Performed Procedure Step	No	Yes

Table 1.1-2: Media Services Supported

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Compact Disk - Recordable	No	No
Magneto-Optical Disk	No	No
DVD	No	No

Table of Contents

1 INTRODUCTION

1.1 Revision Record

DICOM Conformance Statement Template node ID: 8818332		
Revision Number	**Date**	**Reason for Change**
1.0	January 2007	Final revision
1.1	June 2007	Add table with template node ID of DCS in Revision Record. Minor cosmetic changes
1.2	September 2009	Add Livelink NodeID on front page and in header Add column 'Display' in table 1.1-1: Network Services Supported General layout review
1.3 (16)	December 2009	Update chapter 6.2 Data Dictionary of private attributes Chapter 6.5 Standard Extended / Specialized / Private SOPs Following decision of HCSCT

DICOM Conformance Statement IMPAX RIS Connectivity 6.4.x		
Revision Number	**Date**	**Reason for Change**
2-3-4-5	November 18 to December 4, 2020	Initial Revision and corrections made in review cycle
6-7	October 29 to November 10, 2021	Document is also valid for version 6.4.1
8	January 2024	Document is also valid for RIS connectivity version 6.4.2 and 6.4.3
9	May 2025	Document is also valid for RIS connectivity version 6.4.4
10-11	November 2025	Document is also valid for RIS connectivity version 6.4.4SU2

1.2 Purpose and Intended Audience of this Document

This document is a DICOM Conformance Statement for the DICOM Services of the IMPAX RIS Connectivity 6.4.x product.

The user of this document is involved with system integration and/or software design. We assume that the reader is familiar with the terminology and concepts that are used in the DICOM 3.0 standard and the IHE Technical Framework.

Readers not familiar with DICOM 3.0 terminology should first read the appropriate parts of the DICOM standard itself, prior to reading this conformance statement.

Although the use of this conformance statement in conjunction with the DICOM 3.0 standard is intended to facilitate communication with AGFA HealthCare IMPAX RIS, it is not sufficient to guarantee, by itself, the inter-operation of the connection. The following issues need to be considered:

1.3 General Remarks

IMPAX RIS DICOMserver is part of the 6.4.x Connectivity Suite.

1.3.1 Integration and Validation Activities

The integration of any device into a system of interconnected devices goes beyond the scope of the DICOM 3.0 standard and this conformance statement when *interoperability* is desired. The responsibility for analyzing the applications requirements and developing a solution that integrates the AGFA HealthCare equipment with other vendors' systems is the user's responsibility and should not be underestimated.

In some circumstances it might be necessary to perform a validation to make sure that functional interoperability between the AGFA HealthCare equipment and non-AGFA devices works as expected. The user should ensure that any non-AGFA provider accepts responsibility for any validation required for their connection with the AGFA equipment.

1.3.2 Future Evolution

As the DICOM 3.0 standard evolves to meet the user's growing requirements and to incorporate new features and technologies, AGFA HealthCare will follow the evolution of the standard. This evolution of the standard may require changes to devices that have implemented DICOM 3.0. The user should ensure that any non-AGFA provider, who connects with AGFA devices, also plans for future evolution of the DICOM standard. A refusal to do so may result in the loss of functionality and/or connectivity between the different products.

1.4 Acronyms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard. Abbreviations and terms are as follows:

AE	DICOM Application Entity
AET	Application Entity Title
DICOM	Digital Imaging and Communications in Medicine
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
IAN	Instance Availability Notification
IE	Information Entity
IOD	(DICOM) Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
PDU	DICOM Protocol Data Unit
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
UID	Unique Identifier
VR	Value Representation

1.5 Related Documents

- ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) V3.0
- IHE Radiology Technical Framework

2 NETWORKING

2.1 Implementation Model

2.1.1 Application Data Flow Diagram

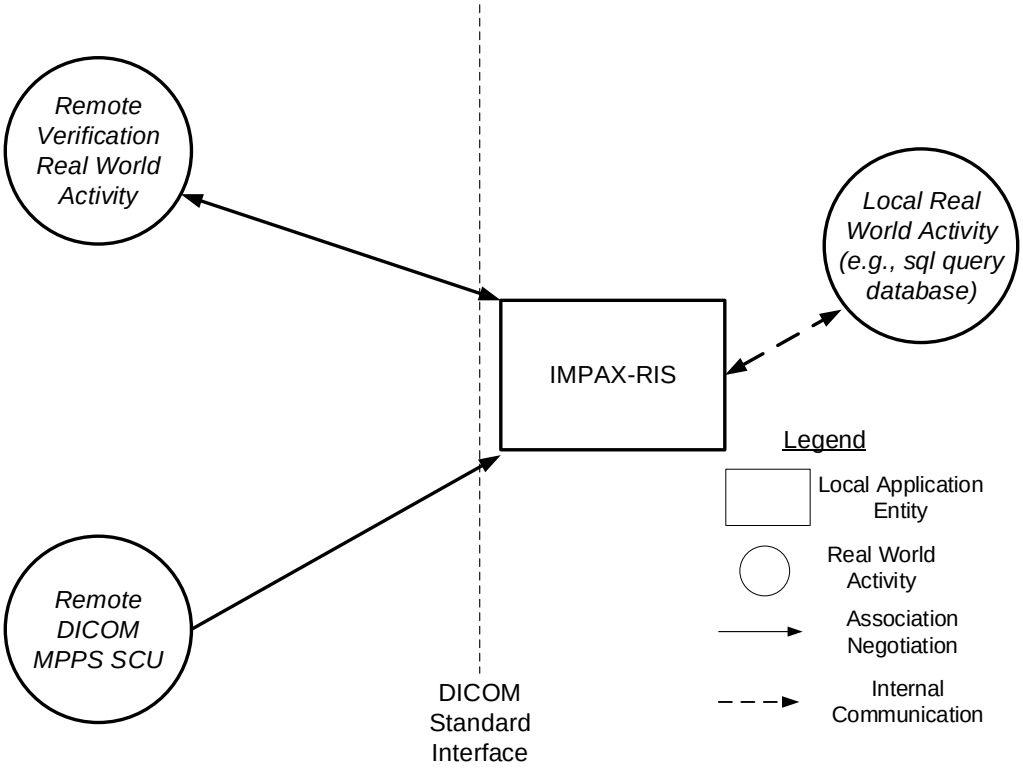

Figure 2.1-1: Functional Overview – Application Data Flow

2.1.2 Functional Definitions of AE's

2.1.2.1 Functional Capability of N-CREATE and N-SET Modality Performed Procedure Step.

IMPAX RIS DICOMserver accepts N-CREATE and N-SET Modality Performed Procedure Steps. The IMPAX RIS DICOMserver updates the procedure status in the IMPAX RIS database.

The DICOM MPPS is used to update radiation dose information for the performed procedure

2.1.2.2 Sequencing of Real World Activities

IMPAX RIS DICOMserver must have an installed/working connection with the IMPAX RIS database and with one or more suitable SCU.

The IMPAX RIS DICOMserver receives an N-CREATE, at the start of the imaging, or an N-SET, at the end of the imaging, it updates the procedure status in the RIS database.

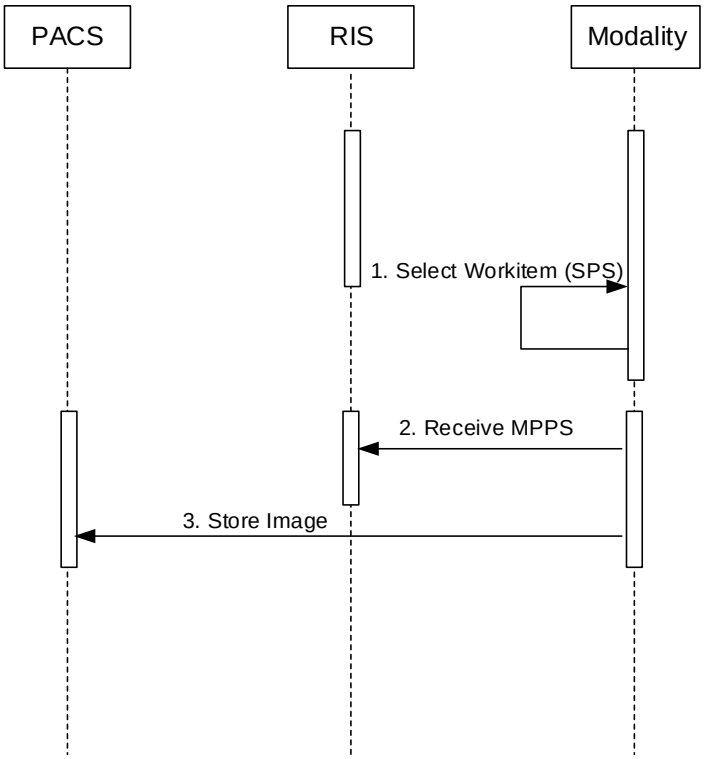

Figure 2.1-2: sequencing constraints

2.2 AE Specifications

2.2.1 IMPAX-RIS MPPS AE Specification

2.2.1.1 SOP Classes Supported

This Application Entity provides Standard Conformance to the following SOP Class:

Table 2.2-1: SOP Class

SOP Class Name	SOP Class UID	SCU	SCP
Workflow Management			
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	No	Yes

2.2.1.2 Association Establishment Policies

2.2.1.2.1 General

The DICOM standard Application context shall be specified.

Table 2.2-2: DICOM Application Context

Application Context Name	1.2.840.10008.3.1.1.1

2.2.1.2.2 Number of Associations

Table 2.2-3: Number of Associations as an Association Acceptor

Maximum number of simultaneous associations accepted	32

2.2.1.2.3 Asynchronous Nature

Table 2.2-4: Asynchronous Nature as an Association Initiator

Maximum number of outstanding asynchronous transactions	X

IMPAX RIS MPPS DICOMserver allows a single outstanding operation on any association. Therefore, IMPAX RIS MPPS DICOMserver does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

2.2.1.2.4 Implementation Identifying Information

Table 2.2-5: DICOM implementation Class and Version

Implementation Class UID	1.3.6.1.4.1.30071.8
Implementation Version Name	fo-dicom1.0.37

2.2.1.3 Association Acceptance Policies

2.2.1.3.1 Receive MPPS Request

2.2.1.3.1.1 Description and Sequencing of Activity

After a modality has started performing a Procedure Step it should inform the RIS by sending an N-CREATE service request to the RIS MPPS Application Entity.

An N-CREATE event with status “IN PROGRESS” will update the procedure status in IMPAX RIS to “PROCEDURE STARTED”.

At the end of the Performed Procedure Step the modality should send an N-SET command with all other mandatory attributes to RIS MPPS Application Entity. An N-SET event with status “COMPLETED” will update the procedure status in IMPAX RIS to “PROCEDURE COMPLETE”.

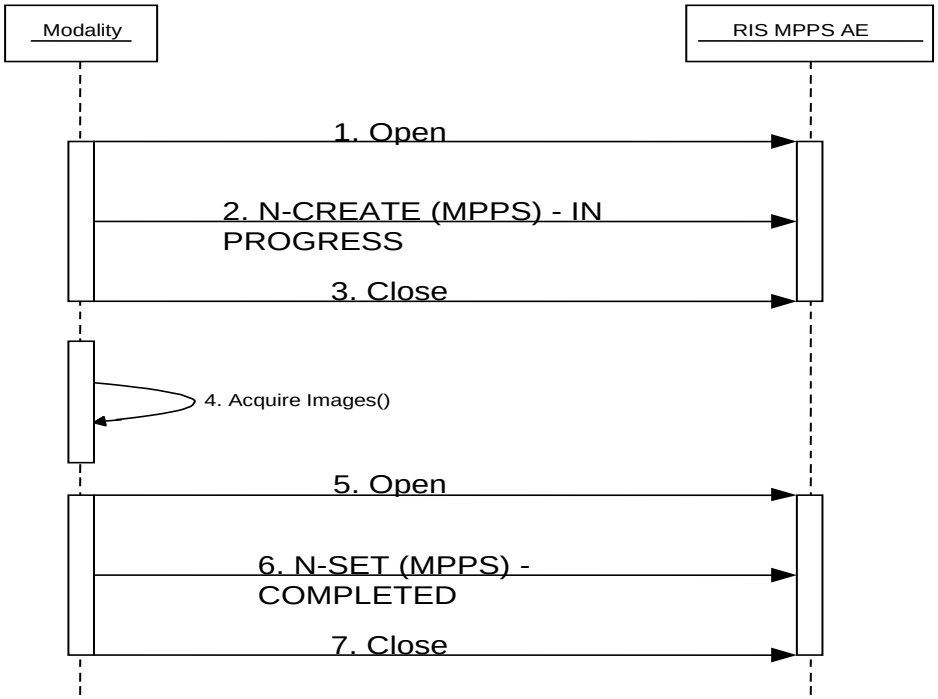

Figure 2.2-1: IMPAX-RIS MPPS Sequencing Diagram

2.2.1.3.1.2 Accepted Presentation Contexts

Table 2.2-6: Presentation Contexts

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	SCP	None

2.2.1.3.1.3 SOP Specific Conformance for MPPS SOP Class

IMPAX RIS MPPS DICOMserver supports all attributes as described in the DICOM Standard part 3.3 for MPPS, however IMPAX RIS MPPS DICOMserver only stores the attributes mentioned in the table below.

Table 2.2-7: Attributes supported

Attribute Name	Tag	N-Create	N-Set	Comments
PERFORMED PROCEDURE STEP INFORMATION MODULE ATTRIBUTES				
Schedule Step Attribute Sequence	(0040,0270)	X		
>Study Instance UID	(0020,000D)	X		
>Accession Number	(0008,0050)	X		
>Scheduled Protocol Code Sequence	(0040,0008)	X		

Attribute Name	Tag	N-Create	N-Set	Comments
>>Code Value	(0008,0100)	X		
>>Code Meaning	(0008,0104)	X		
Patient ID	(0010,0020)	X		
Patient Name	(0010,0010)	X		
Patient Birth Date	(0010,0030)	X		
Patient Sex	(0010,0040)	X		
Performed Procedure Step ID	(0040,0253)	X		
Performed Procedure Step Start Date	(0040,0244)	X		
Performed Procedure Step Start Time	(0040,0245)	X		
Performed Procedure Step Status	(0040,0252)	X	X	
Procedure Code Sequence	(0008,1032)	X	X	
>Code Value	(0008,0100)	X	X	
>Code Meaning	(0008,0104)	X	X	
Modality	(0008,0060)	X		
Performed Protocol Code Sequence	(0040,0260)	X	X	
>Code Value	(0008,0100)	X	X	
>Code Meaning	(0008,0104)	X	X	
RADIATION DOSE MODULE ATTRIBUTES				
Total Number of Exposures	(0040,0301)	X	X	
Distance Source To Detector	(0018,1110)	X	X	
Entrance Dose dGy	(0040,0302)	X	X	Only used if (0040,8302) is empty
Entrance Dose in mGy	(0040,8302)	X	X	
Exposed Area	(0040,0303)	X	X	
Image and Fluoroscopy Area Dose Product	(0018,115E)	X	X	
Comments on Radiation Dose	(0040,0310)	X	X	Used by certain modalities
Exposure Dose Sequence	(0040,030E)	X	X	
>KVp	(0018,0060)	X	X	
>X-Ray Tube Current in µA	(0018,8151)	X	X	
>Exposure Time	(0018,1150)	X	X	Only used if (0018,8150) is empty
>Filter Material	(0018,7050)	X	X	

Table 2.2-8: IMPAX RIS MPPS DICOMserver Response Status

Service Status	Further Meaning	Error Code	Reason
Success	Success	0000	Operation performed properly, all matches were returned
Error	Processing Failure	C000	No access to RIS database

2.3 Network Interfaces

IMPAX RIS MPPS DICOMserver provide DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the DICOM Standard. IMPAX RIS inherits its TCP/IP stack from the computer system upon which it resides.

2.3.1 Physical Medium Support

IMPAX RIS MPPS DICOMserver are indifferent to the physical medium over which TCP/IP executes; they inherit the medium from the computer system upon which they are being executed.

2.4 Configuration

2.4.1 MPPS DICOMserver AE Title/ Presentation Mapping

2.4.1.1 Local AE Titles

Table 2.4-1: AE Title Configuration Table

Application Entity	Default AE Title	Default TCP/IP Port
IMPAX RIS MPPS DICOMserver	No default AE title. The AE title has to be configured.	No default Port number. It has to be configured.

2.4.1.2 Remote AE Titles

Remote AE titles are stored in the database and are entered via the GUI.

2.4.1.2.1 Remote SCP

Remote AET port number, host-names and IP addresses are stored in the database. Either the IP address or host-name is needed.

2.4.1.3 Configuration Parameters

Table 2.4-2: Configuration Parameter Table

Parameter	Configurable (Yes/No)	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	No	100 seconds
General DIMSE level time-out values	No	100 seconds
Time-out waiting for response to TCP/IP connect request. (Low-level timeout)	No	100 seconds
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	No	100 seconds
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)	No	100 seconds
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	100 seconds
Other configurable parameters	Logging on/off	off
AE Specific Parameters		
Size constraint in maximum object size	No	
Maximum PDU size the AE can receive	No	65542
Maximum PDU size the AE can send	No	65542
AE specific DIMSE level time-out values	No	
Calling AE specific parameters can be configured using custom scripts	Yes	
Number of simultaneous Associations by Service and/or SOP Class	No	
<Transfer Syntax support>, e.g. JPEG, Explicit VR, when configurable	No	Implicit VR Little Endian
Other parameters that are configurable		

3 MEDIA INTERCHANGE – N/A

Not supported.

4 SUPPORT FOR EXTENDED CHARACTER SETS

IMPAX RIS MPPS DICOMserver support the following character sets:

ISO-IR 6 (default)	Basic G0 Set
ISO-IR 100	Latin Alphabet No. 1

5 SECURITY

5.1 Security Profiles

5.2 Association Level Security

IMPAX RIS MPPS DICOMserver keep a list of allowed AE-titles. When the list is empty, all AE-titles are accepted.

5.3 Application Level Security

The RIS database is password protected.

6 ANNEXES – N/A