

AGFA MEDICAL IMAGING DICOM Conformance Statement



GE Dataflash Rislink Server

Software Version 1.06

SCU Worklist Management

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Revision Record

Revision Number	Date	Author	Reason for Change
1.0	15/07/99	M. Claes	Create the Conformance Claim for the "Dataflash Rislink Server"
1.1	10/12/99	B. van Weeghel	Use outline of Willy Rosé, and comments of Mr. Hoehn (GE) incorporated
1.2	12/01/00	B. van Weeghel	Dataflash Rislink behaviour added
1.3	16/1/00	Amorris	New style implemented
1.4	15/2/00	Amorris	Released 9.2.00

1 INTRODUCTION

1.1 Intended Audience

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.

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 ADC imaging equipment, it is not sufficient to guarantee, by itself, the inter-operation of the connection. The following issues need to be considered:

1.1.1 Integration

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 equipment with other vendors' systems is the user's responsibility and should not be underestimated.

1.1.2 Validation

Testing the complete range of possibilities between the Agfa equipment and non-Agfa devices, before the connection is declared operational, is deemed to be a necessity. The user should ensure that any non-Agfa provider accepts full responsibility for all validation required for their connection with the Agfa equipment. The accuracy of image data once it has crossed the interface between the Agfa equipment and the non-Agfa device as well as the stability of the image data for the intended applications is the responsibility of the non-Agfa provider.

1.1.3 Future Evolution

As the DICOM 3.0 standard evolves to meet the user's growing requirements and to incorporate new features and technologies, Agfa 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 future evolution of the DICOM standard. A refusal to do so may reflect in the loss of functionality and/or connectivity between the different products.

1.2 Purpose of this Document

This document is the DICOM Conformance Statement for the HIS/RIS services of the General Electric ID station called Dataflash Rislink Server (V1.06.) In this document, it specifies the compliance of:

The Basic Worklist Management Service Class component

with the DICOM standard for the Dataflash Rislink Server implementation as an SCU.

The DICOM Worklist Management Service Class provides a way of connecting the GE Dataflash as a part of the GE Mammography System to the HIS/RIS in order to get hold of information on Patients who are to be exposed by the Mammography system.

1.3 Sources for this Document

ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) V3.0, 1998 publication.

2 IMPLEMENTATION MODEL

Dataflash Rislink Server is a PC Windows based software package to work with one or more Dataflash products. It is designed to allow users to identify the Mammography film, retrieving patient demographic information by means of a worklist or entered manually.

2.1 Application Data Flow Diagram

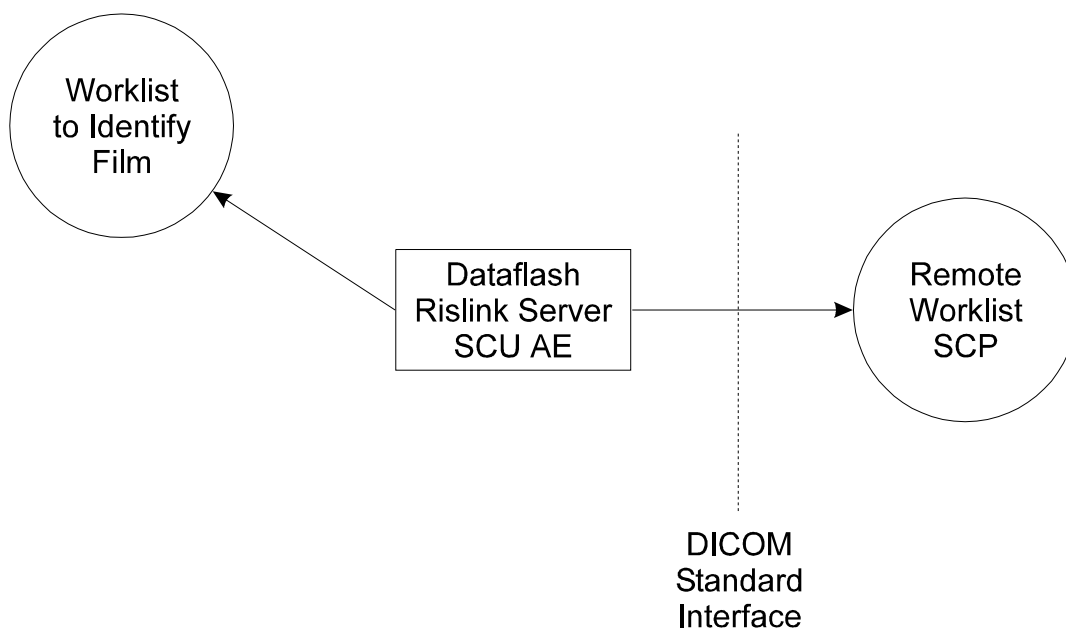


Figure 2.1 Implementation model.

2.2 Functional Definitions of AEs

Dataflash Rislink Server is implemented as a single application entity as a Service Class User for requesting demographic information. The DICOM C-Find Modality Worklist Service is used to retrieve demographic information.

Create a DICOM basic worklist management data request.

Initiate a DICOM association to send the request.

Issue a C-Find request.

Wait for the worklist responses.

Access the local database to update the patient demographic data.

Close the Association.

2.3 Sequencing of Real World Activities

Dataflash Rislink Server must have an installed/working connection with a suitable SCP. Query criterion is default configured into the appropriate fields and the query command is given.

3 AE SPECIFICATIONS

3.1 Services Used by Dataflash Rislink Server as SCU

Dataflash Rislink Server provides Standard Conformance to the following DICOM V3.0 **Management** SOP Class as an SCU:

SOP Class	SOP Class UID
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31

Table 3.1 SOP Classes.

3.2 Association Establishment Policies

3.2.1 General

The DICOM Application Context Name, which is always proposed, is:

DICOM 3.0 Application Context: **1.2.840.10008.3.1.1.1**

Dataflash Rislink Server AE supports a maximum PDU size of 65542 bytes.

The maximum length PDU is not configurable.

Dataflash Rislink Server will attempt to establish an association whenever it is invoked via the refresh button in the user interface, and/or after a time interval, as set in the configuration.

Only Dataflash Rislink Server shall release an Association. Dataflash Rislink Server or the SCP AE may abort the Association.

3.2.2 Number of Associations

Dataflash Rislink Server will attempt only one association establishment at a time.

3.2.3 Asynchronous Nature

Dataflash Rislink Server allows a single outstanding operation on any association. Therefore, Dataflash Rislink Server does not support asynchronous operations window negotiation.

However, the Dataflash Rislink Server Worklist Management Component may cancel the C-FIND service by issuing a C-CANCEL-FIND request at any time during processing of the C-FIND service by the SCP AE.

3.2.4 Implementation Identifying Information

Dataflash Rislink Server provides the following implementation identifying parameters:

Implementation Class UID: **1.3.51.0.1.3**

Implementation Version Name: **AGFA DTF1.0.43**

The Implementation Version Name is concatenation of the company name Agfa, abbreviation of DICOM task force (dtf) and the DICOM Library ID, being 1.0.43.

3.2.5 Association Initiation Policy

Dataflash Rislink Server attempts to initiate a new association for every query.

3.2.6 Called/Calling AE Titles

The calling AE title and the called AE title that Dataflash Rislink Server will use are configurable after application startup.

3.2.7 Association Initiation by Real World Activity

The Dataflash Rislink Server AE attempts to initiate a new association due to two Real-World activities:

Worklist oriented query manually initiated by the operator.

Worklist oriented query automatically initiated at a configured time interval.

Although there are two different real world activities that can begin a DICOM Worklist query, the DICOM association initiation and transfer process is identical.

3.2.7.1 Associated Real World Activity - Modality Worklist Management

The Real World activity associated with the C-FIND operation is the response of the SCP and the creation of a worklist on the Dataflash Rislink Server, this worklist is send to the respective Dataflash ID-camera, wherefrom a patient can be selected to identify the film.

3.2.7.2 Proposed Presentation Contexts

Dataflash Rislink Server proposes the presentation context listed in Table 3.2.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
See Table 3.1	See Table 3.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

Table 3.2 Presentation contexts.

3.2.7.3 SOP Specific Conformance - Modality Worklist Management

3.2.7.3.1 Worklist Oriented Selection

Dataflash Rislink Server provides standard conformance to the DICOM Basic **Worklist Management** Service Class. Dataflash Rislink Server requests the following matching key types for the Worklist Oriented Selection:

Matching Key Types	
SV	Single valued match
SM	Sequence Matching

Dataflash Rislink Server requests the following elements for this SOP class:

Module	Attribute Name	Tag	Match
SOP Common	Specific Character Set	(0008,0005)	Zero-length
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	SM
	> Scheduled Station AE Title	(0040,0001)	SV (see Note)
	> Scheduled Procedure Step Start Date	(0040,0002)	TODAY
	> Scheduled Procedure Step Start Time	(0040,0003)	Zero length
	> Modality	(0008,0060)	Zero length
	> Scheduled Performing Phys. Name	(0040,0006)	Zero-length
	> Scheduled Procedure Step Description	(0040,0007)	Zero-length
	> Scheduled Station Name.	(0040,0010)	Zero-length
	> Scheduled Procedure Step Location.	(0040,0011)	Zero-length
	> Scheduled Action Item Code Sequence	(0040,0008)	SM with Zero length item
	>> Code Value	(0008,0100)	---
	>> Code Scheme Designator	(0008,0102)	---
	>> Code Meaning	(0008,0104)	---
	> Pre-Medication.	(0040,0012)	Zero-length
	> Scheduled Procedure Step ID.	(0040,0009)	Zero-length
	> Requested Contrast Agent	(0032,1070)	Zero-length
	> Scheduled Procedure Step Status	(0040,0020)	Zero-length
Requested Procedure	Requested Procedure ID	(0040,1001)	Zero-length
	Requested Procedure Description	(0032,1060)	Zero-length
	Requested Procedure Code Sequence	(0032,1064)	SM with Zero-length item
	> Code Value	(0008,0100)	--
	> Coding Scheme Designator	(0008,0102)	--
	> Code Meaning	(0008,0104)	--
	Study Instance UID	(0020,000D)	Zero-length
	Referenced Study Sequence	(0008,1110)	SM with Zero-length item
	> Referenced SOP Class UID	(0008,1150)	--
	> Referenced SOP Instance UID	(0008,1155)	--
	Requested Procedure Priority	(0040,1003)	Zero-length
Patient Transport Arrangements	(0040,1004)	Zero-length	
Reason for the Requested Procedure	(0040,1002)	Zero-length	
Imaging Service Request	Accession Number	(0008,0050)	Zero-length
	Requesting Physician	(0032,1032)	Zero-length
	Referring Physician's Name	(0008,0090)	Zero-length
Visit Identification	Admission ID	(0038,0010)	Zero-length
Visit Status	Current Patient Location	(0038,0300)	Zero-length
Visit Relationship	Referenced Patient Sequence	(0008,1120)	SM with Zero-
	> Referenced SOP Class UID	(0008,1150)	--
	> Referenced SOP Instance UID	(0008,1155)	--
	Referenced Study Sequence	(0008,1110)	SM with Zero-
	> Referenced SOP Class UID	(0008,1150)	--
> Referenced SOP Instance UID	(0008,1155)	--	
Visit Admission	Referring Physician's Name	(0008,0090)	Zero-length

Module	Attribute Name	Tag	Match
Patient Relationship	Referenced Study Sequence	(0008,1110)	SM with Zero-length item
	> Referenced SOP Class UID	(0008,1150)	--
	> Referenced SOP Instance UID	(0008,1155)	--
Patient Identification	Patient's Name	(0010,0010)	Zero-length
	Patient ID	(0010,0020)	Zero-length
	Other Patient Ids	(0010,1000)	Zero-length
Patient Demographic	Patient's Birth Date	(0010,0030)	Zero-length
	Patient's Sex	(0010,0040)	Zero-length
	Patient's Weight	(0010,1030)	Zero-length
	Confidentiality Constraint on Patient Data	(0040,3001)	Zero-length
	Patient's Size	(0010,1020)	Zero-length
	Ethnic Group	(0010,2160)	Zero-length
	Occupation	(0010,2180)	Zero-length
Patient Medical	Patient State	(0038,0500)	Zero-length
	Pregnancy Status	(0010,21C0)	Zero-length
	Medical Alerts	(0010,2000)	Zero-length
	Contrast Allergies	(0010,2110)	Zero-length
	Special Needs	(0038,0050)	Zero-length
	Additional Patient History	(0010,21B0)	Zero-length

Table 3.3 Modality Worklist Information Model attributes.

Note:

AE-Title of the Dataflash ID-camera (note that this is different than the AE-title of the Dataflash Rislink Server).

3.2.7.4 Information on Film

The Dataflash ID-camera is equipped with an exposure window that can be loaded with information. This information is obtained from the worklist.

The layout of the exposure window and the type of information to be exposed are completely configurable via the user interface.

3.2.7.5 Status Codes Processed when Receiving Messages from a Modality Worklist SCP

Service Status	Further Meaning	Status Codes	Dataflash Rislink Server Behavior
Refused	Out of Resources	A700	Note 1
Failed	Identifier Does Not Match SOP Class	A900	Note 1
	Unable to Process	C000	Note 1
	Unable to Process	Cxxx	Note 2
Cancel	Matching terminated due to Cancel request	FE00	None
Success	Matching is complete – No final Identifier is supplied	0000	None

Service Status	Further Meaning	Status Codes	Dataflash Rislink Server Behavior
Pending	Matches are continuing – Current Match is supplied and any optional Keys were supported in the same manner as Required keys	FF00	None
	Matches are continuing – Warning that one or more Optional Keys were not supported for existence for this Identifier	FF01	None

Table 3.4 C Find Response status.

Notes:

1. No warning or error message on the user interface of the Dataflash Rislink Server or ID camera. In the Report Viewer, the Status Code and Further Meaning will be logged.
2. Same as Note 1, but only Status Code will be logged in decimal notation.

4 COMMUNICATION PROFILES

4.1 Supported Communications Stacks.

Dataflash Rislink Server provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the DICOM Standard.

4.2 TCP/IP Stack

Dataflash Rislink Server inherits its TCP/IP stack from the computer system upon which it executes.

4.3 Physical Medium Support

Dataflash Rislink Server is indifferent to the physical medium over which TCP/IP operates.

5 EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS

Because of IHE constraints, two additional tags are added to the Worklist request:

Module	Attribute Name	Tag	Match
Imaging Service Request	Placer Order Number / Imaging Service Request	(0040,2016)	Zero length
	Filler Order Number / Imaging Service Request	(0040,2017)	Zero length

6 CONFIGURATION

6.1 Configurable Parameters

The following parameters are configurable for this AE:

6.1.1 Via the Windows control panel

Local IP Address, Netmask and Gateway

6.2 AE Title/Presentation Address Mapping

7 SUPPORT FOR EXTENDED CHARACTER SETS

Dataflash Rislink Server is known to support the following character sets:

- ISO-IR 100 Latin Alphabet No. 1

8 ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations are used in this document:

ACR	American College of Radiology
AE	Application Entity
DICOM	Digital Imaging and Communications in Medicine
IHE	Integrating the Healthcare Enterprise
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SCP	Service Class Provider
SOP	Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier

