Philips Medical Systems
DICOM Conformance Statement

PCR R5.2
and
EasyVision RAD R2.2

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Medical
Systems**

PHILIPS

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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 equipment of Philips Medical Systems. This document specifies the compliance to the DICOM standard (formally called the NEMA PS 3.X-1993 standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

The field of application is the integration of the Philips Medical Systems equipment into an environment of medical devices.
This Conformance Statement should be read in conjunction with the DICOM standard and its addenda. The conformance to the DICOM standard is a key element of the Inturis Program (see [INTURIS]).

1.2 Intended audience

This Conformance Statement is intended for:
- (potential) customers,
- system integrators of medical equipment,
- marketing staff interested in system functionality,
- software designers implementing DICOM interfaces.

It is assumed that the reader is familiar with the DICOM standard.

1.3 Contents and structure

The DICOM Conformance Statement is contained in chapter 2 through 7 and follows the contents and structuring requirements of DICOM PS 3.2-1993 and Supplement 2 (in case of Media specifications).
Additionally, the chapters following 7 specify the details of the applied IODs.

1.4 Used definitions, terms and abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3-1993 and PS 3.4-1994.
The word Philips in this document refers to Philips Medical Systems.

1.5 References

[DICOM]   The Digital Imaging and Communications in Medicine (DICOM) standard:
            NEMA PS 3.X (X refers to the part 1 - 13) and Supplements
            National Electrical Manufacturers Association (NEMA) Publication Sales
            1300 N. 17th Street, Suite 1847
            Rosslyn, Va. 22209, United States of America

[INTURIS]   Philips Inturis Program
            Integrated Clinical Solutions
            Philips Medical Systems Nederland B.V. (see address at page ii)

1.6 Important note to the reader

This Conformance Statement by itself does not guarantee successful interoperability of Philips
equipment with non-Philips equipment. The user (or user's agent) should be aware of the fol-
lowing issues:

- **Interoperability**
  Interoperability refers to the ability of application functions, distributed over two or more
  systems, to work successfully together. The integration of medical devices into a networked
  environment may require application functions that are not specified within the scope of
  DICOM. Consequently, using only the information provided by this Conformance State-
  ment does not guarantee interoperability of Philips equipment with non-Philips equipment.
  It is the user's responsibility to analyse thoroughly the application requirements and to
  specify a solution that integrates Philips equipment with non-Philips equipment.

- **Validation**
  Philips equipment has been carefully tested to assure that the actual implementation of the
  DICOM interface corresponds with this Conformance Statement.
  Where Philips equipment is linked to non-Philips equipment, the first step is to compare the
  relevant Conformance Statements. If the Conformance Statements indicate that successful
  information exchange should be possible, additional validation tests will be necessary to
  ensure the functionality, performance, accuracy and stability of image and image related
  data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite
  and to carry out the additional validation tests.

- **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. Philips is actively involved in this evolution and
  plans to adapt its equipment to future versions of the DICOM Standard. In order to do so,
  Philips reserves the right to make changes to its products or to discontinue its delivery.
  The user should ensure that any non-Philips provider linking to Philips equipment, also
  adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM
  enhancements into Philips equipment may lead to loss of connectivity (in case of network-
  ing) and incompatibility (in case of media).

2 Implementation model

This DICOM Conformance Statement specifies the DICOM behaviour of the PCR R5.2 system of Philips Medical Systems. The EasyVision RAD R2.2 system (short EasyVision or EV) is an essential part of PCR R5.2.

PCR R5.2 is able to generate Computed Radiography (CR) images. These images can be exported as DICOM CR images via EasyVision RAD R2.2. Therefore, this document will specify the DICOM behaviour of EasyVision RAD and is applicable for PCR R5.2.

EasyVision RAD R2.2 is a medical imaging workstation application. It provides the following features:
- The application receives images sent to it by remote applications (e.g. workstations or imaging modalities) and stores them in a local database.
- The application allows the operator to copy images from the local database to remote databases and vice versa. For this purpose the operator is allowed to query remote databases.
- The application allows a remote system to query the EasyVision local database and to retrieve images from it.
- The application allows the operator, among other things, to view, to analyse, to process and to print the images stored in the local database.

The remote database access and image transfer functions are implemented using the DICOM Query/Retrieve and Store services.

The viewing, analysis, processing and printing functions are primarily designed for images generated by Philips equipment and that are sent to the EasyVision by means of PMSNet, the Philips Medical Systems proprietary communication protocol. Some of these functions may not perform optimally when applied to images that are sent to EasyVision by means of DICOM. For example, viewing and printing of overlays, curves and colour images are not supported.

2.1 Application Data Flow Diagram

The EasyVision system behaves as a single application entity. The related Implementation Model is shown in Figure 1 on page 4.

2.2 Functional definition of Application Entities

The EasyVision application entity acts as a service class user of Query/Retrieve and Store service classes. The application acts as a service class provider of Verification, Query/Retrieve and Store service classes.

2.3 Sequencing of Real World Activities

Not applicable.

Figure 1: EasyVision (EV) Implementation Model

local   remote

Query a remote Database See 3.1.2.1

Copy Images from EV See 3.1.2.2

Copy Images from Remote Database See 3.1.2.3

EasyVision Application Entity

find, store, move execution

Verify Association See 3.1.3.1

Query EV Database See 3.1.3.2

Store Images in EV See 3.1.3.3

Retrieve Images from EV See 3.1.3.4

echo, find, store, move request

DICOM Standard Interface
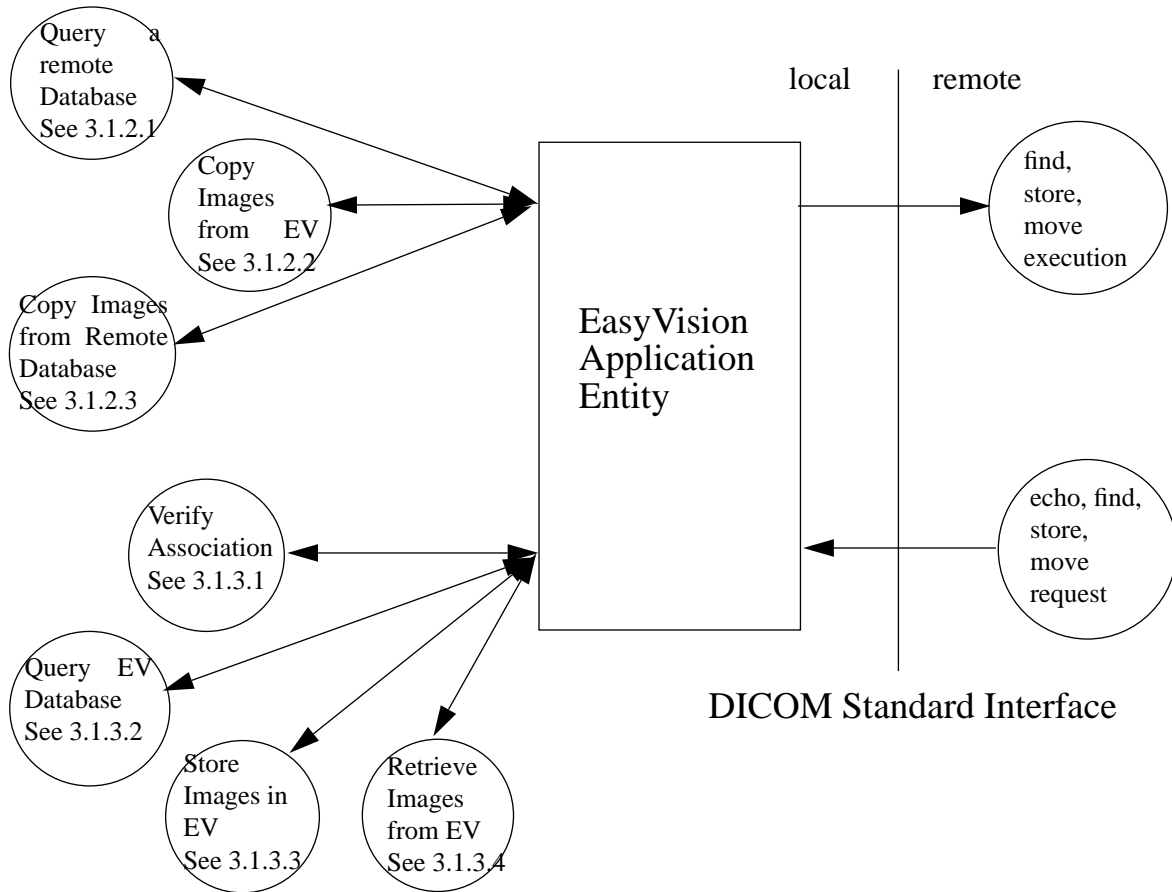
3 AE Specifications

3.1 AE EasyVision Specification

The EasyVision Application Entity provides Standard Conformance to the following DICOM V3.0 SOP classes as an SCU:

Table 3-1: Supported SOP classes by the EasyVision AE as SCU[a]

SOP class Name	UID
Patient Root Query/Retrieve Info Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Study Root Query/Retrieve Info Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Patient/Study Only Query/Retrieve Info Model - FIND	1.2.840.10008.5.1.4.1.2.3.1
Patient Root Query/Retrieve Info Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Info Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Patient/Study Only Query/Retrieve Info Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2
CR Image Storage - STORE	1.2.840.10008.5.1.4.1.1.1
CT Image Storage - STORE	1.2.840.10008.5.1.4.1.1.2
MR Image Storage - STORE	1.2.840.10008.5.1.4.1.1.4
NM Image Storage - STORE	1.2.840.10008.5.1.4.1.1.5
US Image Storage - STORE (old)	1.2.840.10008.5.1.4.1.1.6
SC Image Storage - STORE	1.2.840.10008.5.1.4.1.1.7
XA Single-Plane Image Storage - STORE	1.2.840.10008.5.1.4.1.1.12.1
RF Image Storage - STORE	1.2.840.10008.5.1.4.1.1.12.2

a. In case the remote system does not support one of these Image SOP Classes but does support the SC Image Storage, EasyVision is able to convert these images and sends them via the SC Image SOP Class. This behaviour is configurable.

The EasyVision Application Entity provides Standard Conformance to the following DICOM V3.0 SOP classes as an SCP:

Table 3-2: Supported SOP classes by the EasyVision AE as SCP

SOP class Name	UID
Patient Root Query/Retrieve Info Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Study Root Query/Retrieve Info Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Patient/Study Only Query/Retrieve Info Model - FIND	1.2.840.10008.5.1.4.1.2.3.1

Table 3-2: Supported SOP classes by the EasyVision AE as SCP (Continued)

SOP class Name	UID
Patient Root Query/Retrieve Info Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Info Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Patient/Study Only Query/Retrieve Info Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2
CR Image Storage - STORE	1.2.840.10008.5.1.4.1.1.1
CT Image Storage - STORE	1.2.840.10008.5.1.4.1.1.2
US Multi Frame Image Storage - STORE (old)	1.2.840.10008.5.1.4.1.1.3
MR Image Storage - STORE	1.2.840.10008.5.1.4.1.1.4
NM Image Storage - STORE	1.2.840.10008.5.1.4.1.1.5
US Image Storage - STORE (old)	1.2.840.10008.5.1.4.1.1.6
SC Image Storage - STORE	1.2.840.10008.5.1.4.1.1.7
XA Single-Plane Image Storage - STORE	1.2.840.10008.5.1.4.1.1.12.1
RF Image Storage - STORE	1.2.840.10008.5.1.4.1.1.12.2
XA Bi-Plane Image Storage - STORE	1.2.840.10008.5.1.4.1.1.12.3
Verification	1.2.840.10008.1.1

3.1.1 Association Establishment Policies

3.1.1.1 General

EasyVision will offer an unrestricted PDU size (i.e. equal to 0) on associations initiated by EasyVision itself. The applied maximum PDU size for these associations is configurable per node. EasyVision will accept PDU sizes up to this configured maximum on associations initiated by remote applications.

3.1.1.2 Number of Associations

The number of simultaneous associations supported by EasyVision as a service class provider is in principle not limited. The practical maximum number of supported associations is determined by the amount of resources (CPU, memory, hard disk size).
As a result of local activities, EasyVision will initiate at most 2 simultaneous associations. One association is used to issue find requests. The other association is used to issue store and move requests.
EasyVision will further initiate an association for each remote move request executed by EasyVision as a move service class provider. These associations are used to issue the store suboperations implied by the move requests. The number of simultaneous store associations is in principle not limited.

3.1.1.3 Asynchronous Nature

EasyVision does not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.1.4 Implementation Identifying Information

The Implementation Class UID is: 1.3.46.670589.5.2.6
The implementation version name is: EVRAD22

3.1.2 Association Initiation Policy

EasyVision initiates associations as a result of the following events:
- The EasyVision operator queries a remote database.
- The EasyVision operator or a remote application copies images from the EasyVision database to another database.
- The EasyVision operator copies images from a remote database to another database.

3.1.2.1 Query a Remote Database

3.1.2.1.1   Associated Real-World Activity

The operator queries a remote database by means of the query tool in the EasyVision data handling facility. EasyVision initiates an association to the selected peer entity and uses it to send C-FIND requests (and receive the associated find replies). The association is released when the find execution completes.

3.1.2.1.2   Proposed Presentation Contexts

EasyVision will propose the following presentation contexts:

Table 3-1: Proposed Presentation Contexts for Remote Database Query

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See Note	See Note	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
See Note	See Note	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
See Note	See Note	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
See Note	See Note	JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None

Note: Any of the FIND SOP classes listed in Table 3-1, "Supported SOP classes by the EasyVision AE as SCU," on page 5.

3.1.2.1.3   C-FIND SCU Conformance

EasyVision will not generate queries containing optional keys. EasyVision will not generate relational queries.

3.1.2.2 Copy Images from the EasyVision Database to another Database

3.1.2.2.1   Associated Real-World Activity

The operator copies a (part of a) study from the local EasyVision database to a another data-

base by means of the copy tool in the EasyVision data handling facility. EasyVision initiates for each selected study an association to the selected peer entity and uses it to send C-STORE requests (and receive the associated store replies). The association is released when all selected images in the selected study have been transmitted. EasyVision handles operator copy requests one after another.

A remote application copies images from the local EasyVision database to a another database by sending a C-MOVE request to EasyVision. EasyVision initiates for each received move request an association to the requested move destination and uses it to send C-STORE requests (and receive the associated store replies). The association is released when all images selected by the move request identifier have been transmitted. EasyVision simultaneously handles C-MOVE requests.

3.1.2.2.2   Proposed Presentation Contexts

EasyVision will propose the following presentation contexts:

Table 3-1: Proposed Presentation Contexts for Copy EasyVision to Other

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See Note	See Note	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
See Note	See Note	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
See Note	See Note	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
See Note	See Note	JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None

Note: Any of the STORE SOP classes listed in Table 3-1, "Supported SOP classes by the EasyVision AE as SCU," on page 5.

3.1.2.2.3   C-STORE SCU Conformance

EasyVision will stop the transfer of the images and release the association as soon as it receives an unsuccessful or warning store response status. If the EasyVision operator requested the transfer, the store response status is displayed via the user interface of EasyVision. If a remote application requested the transfer (by means of a C-MOVE request), a move response with status unsuccessful is sent to the move requester.

Extended negotiation is not supported.

In case the remote system does not support images of the Image Storage SOP Classes of Table 3-1 on page 8, EasyVision will convert these images and sends them via the SC Image SOP Class (if this SOP Class is supported by the remote station). Information will be lost with this SOP Class conversion.

The transmitted Storage SOP instances may include all **optional data elements** specified in the standard and its supplements 4 and 6. The presence of optional data elements is dependent of the origin of images exported by EasyVision RAD. When CR images originates from the Philips PCR R5.2 system the existence of optional data elements is well defined and is specified in detail in section 8 on page 18.

The transmitted Storage SOP instances may contain (depending on the EasyVision configuration) **retired and private data elements** dependent of the source of the images. These Retired and Private elements are not described here except for the following elements that facilitate the correct interpretation of the pixel data of images exported by EasyVision:

- *Owner Data Elements: (odd group number, 00YY), VR=LO, VM=1*
  These are the private Creator data elements. The value of this text element is 'SPI-P Release 1' or 'SPI-P-PCR Release 2'. It declares that all elements YYxx in the shadow groups are private Philips elements.

- *Image Data Consistency: (0009, YY04), VR=LO, VM=n*
  This element indicates that the consistency of some data elements may be limited because of incorporated processing, windowing or burnt in graphics. A data element becomes inconsistent if its value incorporates a value (or reference to a value) which has been changed while the data element itself has not been changed or deleted. Updating or deleting such data elements cannot be done if the data element is a free formatted data element or other than a standard data element. The generic format of this text element is: <free text> | '$'<enumerated text>. The following enumerations are defined for the first value:
  - 'unknown'. This is the default value.
  - 'normal'. Normal consistency.
  - 'limited'. Possibly limited consistency.

- *Original Pixel Data Quality: (0019, YY25), VR=LO, VM=n*
  This element indicates that the quality of the original pixel data is limited because of one reason or another. The generic format of this text element is: <free text> | '$'<enumerated text>. The following enumerations are defined for the first value:
  - 'unknown'. This is the default value.
  - 'normal'. Normal quality, as usual for the modality.
  - 'limited'. Possibly limited quality.

- *Processed Pixel Data Quality: (0029, YY25), VR=LO, VM=n*
  This element indicates that the quality of the processed pixel data is limited because of incorporated processing, windowing or burnt in graphics. The first value summarizes the quality. Each subsequent value identifies one aspects which contributes to the quality, in order of occurrence. The generic format of this text element is: <free text> | '$'<enumerated text>. The following enumerations are defined for the first value:
  - 'unknown'. This is the default value.
  - 'normal'. Normal quality, as usual for the modality.
  - 'limited'. Possibly limited quality.

3.1.2.3 Copy Images from a Remote Database to another Database

3.1.2.3.1   Associated Real-World Activity

The operator copies a (part of a) study from a remote database to another, local or remote, database by means of the copy tool in the EasyVision data handling facility. EasyVision initiates for each selected study an association to the selected peer entity and uses it to send C-MOVE requests (and receive the associated move replies). The association is released when all selected images in the selected study have been transmitted.

3.1.2.3.2   Proposed Presentation Contexts

EasyVision will propose the following presentation contexts:

Table 3-1: Proposed Presentation Contexts for Copy Remote to Other

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See Note	See Note	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
See Note	See Note	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
See Note	See Note	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
See Note	See Note	JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None

Note: Any of the MOVE SOP classes listed in Table 3-1, "Supported SOP classes by the Easy-Vision AE as SCU," on page 5.

3.1.2.3.3   C-MOVE SCU Conformance

The AE provides standard conformance.

3.1.3 Association Acceptance Policy

The EasyVision Application Entity rejects association requests from unknown applications, i.e. applications that offer an unknown "calling AE title". An application is known if and only if it is defined during configuration of the EasyVision system.

The EasyVision Application Entity rejects association requests from applications that do not address the EasyVision AE, i.e. that offer a wrong "called AE title". The EasyVision AE title is defined during configuration of the EasyVision system.

EasyVision accepts associations for the following purposes:
- To allow remote applications to verify application level communication with EasyVision.
- To allow remote applications to query the EasyVision database.
- To allow remote applications to store images in the EasyVision database.
- To allow remote applications to retrieve images from the EasyVision database.

Any of the presentation contexts shown in the table below are acceptable:

Table 3-1: Acceptable Presentation Contexts

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See Note	See Note	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
See Note	See Note	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
See Note	See Note	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
See Note	See Note	JPEG Lossless, Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None

Note: Any of the SOP classes listed in Table 3-2, "Supported SOP classes by the EasyVision AE as SCP," on page 5.

3.1.3.1 Verify Application Level Communication

3.1.3.1.1   Associated Real-World Activity

EasyVision accepts associations from nodes that wish to verify application level communication using the C-ECHO command.

3.1.3.1.2   Presentation Context Table

Any of the presentation contexts shown in Table 3-1, "Acceptable Presentation Contexts," on page 12 are acceptable.

3.1.3.1.3   C-ECHO SCP Conformance

EasyVision provides standard conformance.

3.1.3.1.4   Presentation Context Acceptance Criterion

EasyVision accepts all contexts in the intersection of the proposed and acceptable presentation contexts. There is no check for duplicate contexts. Duplicate contexts are accepted.

3.1.3.1.5   Transfer Syntax Selection Policies

EasyVision prefers Explicit VR Big Endian above Explicit VR Little Endian above JPEG Lossless above Implicit VR transfer syntax.

3.1.3.2 Query the EasyVision Database

3.1.3.2.1   Associated Real-World Activity

EasyVision accepts associations from nodes that wish to query the EasyVision database using the C-FIND command.

3.1.3.2.2   Presentation Context Table

Any of the presentation contexts shown in Table 3-1, "Acceptable Presentation Contexts," on page 12 are acceptable.

3.1.3.2.3   C-FIND SCP Conformance

EasyVision provides standard conformance. Optional keys are not supported. Relational queries are not supported. EasyVision simultaneously handles simultaneous C-FIND requests.

3.1.3.2.4   Presentation Context Acceptance Criterion

See section 3.1.3.1.4 on page 13.

3.1.3.2.5   Transfer Syntax Selection Policies

See section 3.1.3.1.5 on page 13.

3.1.3.3 Store Images in the EasyVision Database

3.1.3.3.1   Associated Real-World Activity

EasyVision accepts associations from nodes that wish to store images in the EasyVision database using the C-STORE command.

3.1.3.3.2   Presentation Context Table

Any of the presentation contexts shown in Table 3-1, "Acceptable Presentation Contexts," on page 12 are acceptable.

3.1.3.3.3   C-STORE SCP Conformance

EasyVision provides level 2 (Full) conformance for the Storage Service Class. In the event of a successful C-STORE operation, the image has been stored in the EasyVision database. The duration of the storage of the image is determined by the operator of the EasyVision system.

The EasyVision storage implementation has the following restrictions:
- Although EasyVision accepts colour images, it does not properly support storage and retrieval of such images.
- EasyVision stores XA Bi-Plane as two Single Plane images.
- EasyVision stores multi-frame images as a series of single frame images.
- EasyVision rejects images with High Bit not equal to Bits Stored - 1.

EasyVision does not modify the pixel values of the stored images but it allows the operator to modify attributes of the received and stored images. Modified images retain their original study, series and image UID. Remote applications may access the stored (and possibly modified) images using C-FIND and/or C-MOVE operations.

The received and stored images can be input for a number of EasyVision applications. The viewing of stored images is possible when all Mandatory DICOM attributes are present in the images of the supported SOP Classes as SCP (see table Table 3-2 on page 5). Advanced applications mostly rely on the existence of Philips Private attributes which is not specified in this Statement.

EasyVision stores all private data elements it receives. These elements can only be retrieved (by means of a C-MOVE request) if the following condition is satisfied:
- The image was encoded (when EasyVision was C-STORE SCP) using one of the explicit value representations or
- The image was encoded (when EasyVision was C-STORE SCP) using implicit value representation and the move destination (i.e. a C-STORE SCP) has accepted implicit value representation as the only transfer syntax applicable to the storage SOP class of the image (when EasyVision is C-STORE SCU).

The C-STORE is unsuccessful if EasyVision returns one of the following status codes:
- A700 - Indicates the database is full. Recovery from this condition is left to the service class user.
- A900 - Indicates that the SOP class of the image does not match the abstract syntax negotiated for the presentation context.
- C000 - Indicates that the image cannot be parsed.

3.1.3.3.4   Presentation Context Acceptance Criterion

See section 3.1.3.1.4 on page 13.

3.1.3.3.5   Transfer Syntax Selection Policies

See section 3.1.3.1.5 on page 13.

3.1.3.4 Retrieve Images from the EasyVision Database

3.1.3.4.1   Associated Real-World Activity

EasyVision accepts associations from nodes that wish to retrieve images from the EasyVision

database using the C-MOVE command.

3.1.3.4.2   Presentation Context Table

Any of the presentation contexts shown in Table 3-1, "Acceptable Presentation Contexts," on page 12 are acceptable.

3.1.3.4.3   C-MOVE SCP Conformance

EasyVision supports all the Storage SOP classes listed in Table 3-2, "Supported SOP classes by the EasyVision AE as SCP," on page 5.

3.1.3.4.4   Presentation Context Acceptance Criterion

See section 3.1.3.1.4 on page 13.

3.1.3.4.5   Transfer Syntax Selection Policies

See section 3.1.3.1.5 on page 13.

4 Communication Profiles

4.1 Supported Communication Stacks

The EasyVision application provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 TCP/IP Stack

EasyVision inherits its TCP/IP stack from the SUN Solaris system upon which it executes.

4.2.1 Physical Media Support

Ethernet ISO 8802-3. Standard AUI, optional twisted pair 10-BaseT.

5 Extensions/Specializations/Privatizations

The supported Image Storage SOP Classes may be extended; the images exported may contain additional Standard and Private attributes, dependent of the origin of the images.
See section 3.1.2.2.3 on page 9.

6 Configuration

The EasyVision system is configured by means of a configuration program. This program is accessible at start-up of the EasyVision system. It is password protected and intended to be used by Philips service engineers only. The program prompts the service engineer to enter configuration information needed by the EasyVision application.

6.1 AE Title/Presentation Address mapping

6.1.1 Local AE Titles and Presentation Addresses

The EasyVision AE title is equal to the IP host name. This host name is to be entered by the service engineer at EasyVision configuration time.
EasyVision listens on port 3010. This port number is not configurable.

6.1.2 Remote AE Titles and Presentation Addresses

All remote applications that wish to communicate with EasyVision must be defined at EasyVision configuration time. The service engineer must provide the following information for each remote application:
•   The application entity title.

For remote applications that act as service class provider the following additional information must be provided:
•   The host name on which the application resides.

- The port number at which the application accepts association requests.
- The SOP classes for which the application provides conformance as an SCP.

6.2 Configurable parameters

The following items are also configurable:
- automatic conversion of images of SOP classes not supported by remote stations into SC Image Storage SOP instances,
- the maximum PDU size per node,
- export of private (and retired DICOM if present) attributes or not,

7 Support of Extended Character Sets

EasyVision supports Extended Character Set "ISO_IR 100" which is the Latin alphabet No 1, supplementary set.

8 Specification of exported CR Images from PCR R5.2

This chapter specifies in detail the applied attributes in the CR images from Philips PCR R5.2 system and exported by EasyVision RAD.

The modules selected from the CR Image IOD module table of DICOM 3.0 are given in the table below.

Table 8-1: Applied Modules in the CR Image IOD

Information Entity	Module	Note
Patient	Patient	
	Patient Study	
Study	General Study	
Series	General Series	
	CR Series	
Equipment	General Equipment	
Image	General Image	
	Image Pixel	
	Contrast/Bolus	
	CR Image	
	Modality LUT	
	VOI LUT	
	SOP Common	
	EasyVision RAD Private extensions	Present if configured

The details of these applied modules are given in the tables below. The list of possible values are given (if applicable). The situation that an attribute is present conditionally/optionally or that an attribute may contain a zero length value, is indicated too. Conditions and Defined/Enumerated Values of DICOM 3.0 are applicable but are not shown in the tables.

Table 8-2: Computed Radiography Image Storage SOP Class - Patient Module

Attribute Name	Tag	Note
Patient's Name	0010,0010	Empty if not entered by operator or sent by RIS.
Patient ID	0010,0020	Always filled

Table 8-2: Computed Radiography Image Storage SOP Class - Patient Module (Continued)

Attribute Name	Tag	Note
Patient's Birth Date	0010,0030	Empty if not entered by operator or sent by RIS.
Patient's Sex	0010,0040	Always filled

Table 8-3: Computed Radiography Image Storage SOP Class - General Study Module

Attribute Name	Tag	Note
Study Date	0008,0020	Always filled
Study Time	0008,0030	Always filled
Accession Number	0008,0050	Empty if not entered by the operator or sent by RIS
Referring Physician's Name	0008,0090	Empty if not sent by RIS
Study Description	0008,1030	Always filled
Study Instance UID	0020,000D	Created by EV if not sent by RIS
Study ID	0020,0010	Always filled

Table 8-4: Computed Radiography Image Storage SOP Class - Patient Study Module

Attribute Name	Tag	Note
Admitting Diagnosis Description	0008,1080	Only present if sent by RIS

Table 8-5: Computed Radiography Image Storage SOP Class - General Series Module

Attribute Name	Tag	Note
Modality	0008,0060	Applied value(s): CR
Patient Position	0018,5100	Always empty
Series Instance UID	0020,000E	Created by EV
Series Number	0020,0011	Always filled

Table 8-6: Computed Radiography Image Storage SOP Class - CR Series Module

Attribute Name	Tag	Note
Body Part Examined	0018,0015	Always empty
View Position	0018,5101	Always empty

Table 8-7: Computed Radiography Image Storage SOP Class - General Equipment Module

Attribute Name	Tag	Note
Manufacturer	0008,0070	Applied value(s): Philips Medical Systems
Institution Name	0008,0080	Always filled
Station Name	0008,1010	Always filled
Institutional Department Name	0008,1040	Always filled
Manufacturer's Model Name	0008,1090	In format "PCR..."
Software Version(s)	0018,1020	In format "EasyVision RAD R2.2..."

Table 8-8: Computed Radiography Image Storage SOP Class - General Image Module

Attribute Name	Tag	Note
Acquisition Date	0008,0022	Always filled
Image Date	0008,0023	Always filled
Acquisition Time	0008,0032	Always filled
Image Time	0008,0033	Always filled
Acquisition Number	0020,0012	Always filled
Image Number	0020,0013	Always filled

Table 8-9: Computed Radiography Image Storage SOP Class - Image Pixel Module

Attribute Name	Tag	Note
Samples per Pixel	0028,0002	Applied value(s): 1

Table 8-9: Computed Radiography Image Storage SOP Class - Image Pixel Module (Continued)

Attribute Name	Tag	Note
Photometric Interpretation	0028,0004	Applied value(s): MONOCHROME2
Rows	0028,0010	Between 1576 and 2510 (same as Columns)
Columns	0028,0011	Between 1576 and 2510 (same as Rows)
Bits Allocated	0028,0100	Applied value(s): 16
Bits Stored	0028,0101	Applied value(s): 10
High Bit	0028,0102	Applied value(s): 9
Pixel Representation	0028,0103	Applied value(s): 0
Pixel Data	7FE0,0010	Between 0 and 1023

Table 8-10: Computed Radiography Image Storage SOP Class - Contrast/Bolus Module

Attribute Name	Tag	Note
Contrast/Bolus Agent	0018,0010	Always empty

Table 8-11: Computed Radiography Image Storage SOP Class - CR Image Module

Attribute Name	Tag	Note
Plate ID	0018,1004	Empty if not entered by operator
Cassette Size	0018,1403	Always filled
Sensitivity	0018,6000	Always filled

Table 8-12: Computed Radiography Image Storage SOP Class - Modality LUT Module

Attribute Name	Tag	Note
Rescale Intercept	0028,1052	Always filled
Rescale Slope	0028,1053	Always filled
Rescale Type	0028,1054	Always filled

Table 8-13: Computed Radiography Image Storage SOP Class - VOI LUT Module

Attribute Name	Tag	Note
Window Center	0028,1050	Always filled
Window Width	0028,1051	Always filled

Table 8-14: Computed Radiography Image Storage SOP Class - SOP Common Module

Attribute Name	Tag	Note
Specific Character Set	0008,0005	Applied value(s): ISO_IR 100
SOP Class UID	0008,0016	Applied value(s): 1.2.840.10008.5.1.4.1.1.1
SOP Instance UID	0008,0018	Created by EV

Table 8-15: Computed Radiography Image Storage SOP Class - EasyVision RAD Private Extensions Module [a]

Attribute Name	Tag	Note
Private Creator Group 0009	0009,00YY	VR=LO, VM=1 Possible values: 'SPI-P Release 1' or 'SPI-P-PCR Release 2'
Image Data Consistency	0009, YY04	VR=LO, VM=n See also section 3.1.2.2.3 on page 9. Always empty.
Private Creator Group 0019	0019,00YY	VR=LO, VM=1 Possible values: 'SPI-P Release 1' or 'SPI-P-PCR Release 2'
Reader Mode	0019, YY10	VR=US, VM=1 Data Element indicating the mode used to read the image plates. Always filled with one of the enumerated values: 0: Automatic, 1: Semi-Automatic, 2: Fixed
MRM Code	0019, YY20	VR=ST, VM=1 Data Element identifying the anatomical region and view via a code. Always filled.

Table 8-15: Computed Radiography Image Storage SOP Class - EasyVision RAD Private Extensions Module

Attribute Name	Tag	Note
Original Pixel Data Quality	0019, YY25	VR=LO, VM=n See also section 3.1.2.2.3 on page 9. Always filled; the first value is one of the enumerated values: unknown, normal, limited
Latitude	0019, YY40	VR=DS, VM=1 PCR Reader analyses the signal histogram while reading the image plate. The latitude describes the width of this histogram. So it is a PCR Reader parameter like Sensitivity. Always filled.
View Name	0019, YY60	VR=ST, VM=1 Free text Data Element to describe the patient position. Always filled.
Private Creator Group 0029	0029,00YY	VR=LO, VM=1 Possible values: 'SPI-P Release 1' or 'SPI-P-PCR Release 2'
Processed Pixel Data Quality	0029, YY25	VR=LO, VM=n See also section 3.1.2.2.3 on page 9. Always empty.

a. This module is present if Private attributes are configured to be exported.