

**Philips Medical Systems
DICOM Conformance Statement**

EasyGuide R2.1

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Table of Contents

1	Introduction	5
1.1	Scope and field of application	5
1.2	Intended audience	5
1.3	Contents and structure	5
1.4	Used definitions, terms and abbreviations	5
1.5	References	5
1.6	Important note to the reader	6
2	Implementation model	7
2.1	Application Data Flow Diagram	7
2.2	Functional definition of Application Entities	7
2.3	Sequencing of Real World Activities	8
2.4	Implementation Identifying Information	8
3	AE Specifications	9
3.1	EG AE Network Specification	9
3.1.1	Association Establishment Policies	10
3.1.2	Association Initiation Policy	12
3.1.3	Association Acceptance Policy	16
3.2	EG AE Media Specification	20
3.2.1	Application Entity Title	20
3.2.2	RWA Display Directory	20
3.2.3	RWA Store image in EG	20
3.2.4	Augmented Application Profile	21
3.2.5	Known Problems	21
4	Communication Profiles	22
4.1	Supported Communication Stacks	22
4.2	TCP/IP Stack	22
4.2.1	Physical Media Support	22
5	Extensions/Specializations/Privatizations	22
6	Configuration	22
6.1	AE Title/Presentation Address mapping	22
6.1.1	Local AE Titles and Presentation Addresses	22
6.1.2	Remote AE Titles and Presentation Addresses	22
6.2	Configurable parameters	23
7	Support of Extended Character Sets	23

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) clients,
- marketing staff interested in system functionality,
- system integrators and customer support engineers of medical equipment,
- 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).

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:

Introduction

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 following 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 Statement 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 networking) and incompatibility (in case of media).

2 Implementation model

The EasyGuide system (or short EG) of Philips Medical Systems is a medical imaging workstation which intended use is brain and lumbal spine surgery in the Operating Room. It provides the surgeon with a guidance tool enabling him/her to locate a lesion easily.

Besides this, the guidance feature of the system enables the surgeon to receive feedback during the surgical procedure. This feedback can be presented by means of three orthogonal 2D views (Multi Planar Reformatted images of a CT or MR scan in an axial, coronal and sagittal orientation) or a 3D view of the patients anatomy. The contents of these views are updated in real-time in order to provide the surgeon with the most recent information during the ongoing surgical procedure.

EasyGuide provides the following image exchange 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 EG local database and to retrieve images from it.
- The system is able to read DICOM information from CD-Recordable disks

The application allows the operator, among other things, to view, to analyse and to process the images stored in the local database. This viewing, analysis and processing functions are primarily designed for images generated by Philips equipment and that are sent to the EG 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 EG by means of DICOM. For example viewing of overlays, curves and colour images is not supported.

2.1 Application Data Flow Diagram

The EG system behaves as a single Application Entity. The related Implementation Model is shown in Figure 2-1 on page 8.

The EG operator can request to query on remote systems, to copy images from EG to remote systems or vice versa. This results in associations initiated by EG.

EG is able to reply on verification requests, to execute a requested query, to store images in EG and retrieve images from EG. These requests from remote systems are done via associations initiated by the remote systems.

EG is also able to read DICOM CD-Recordable media. This is the File Set Reader (FSR) function.

2.2 Functional definition of Application Entities

The EG Application Entity acts as a Service Class User (SCU) of the Query/Retrieve and STORE Service Classes.

The EG AE acts as a Service Class Provider (SCP) of the Verification, Query/Retrieve and STORE Service Classes.

The EG AE acts as a File Set Reader of the Media Service Class.

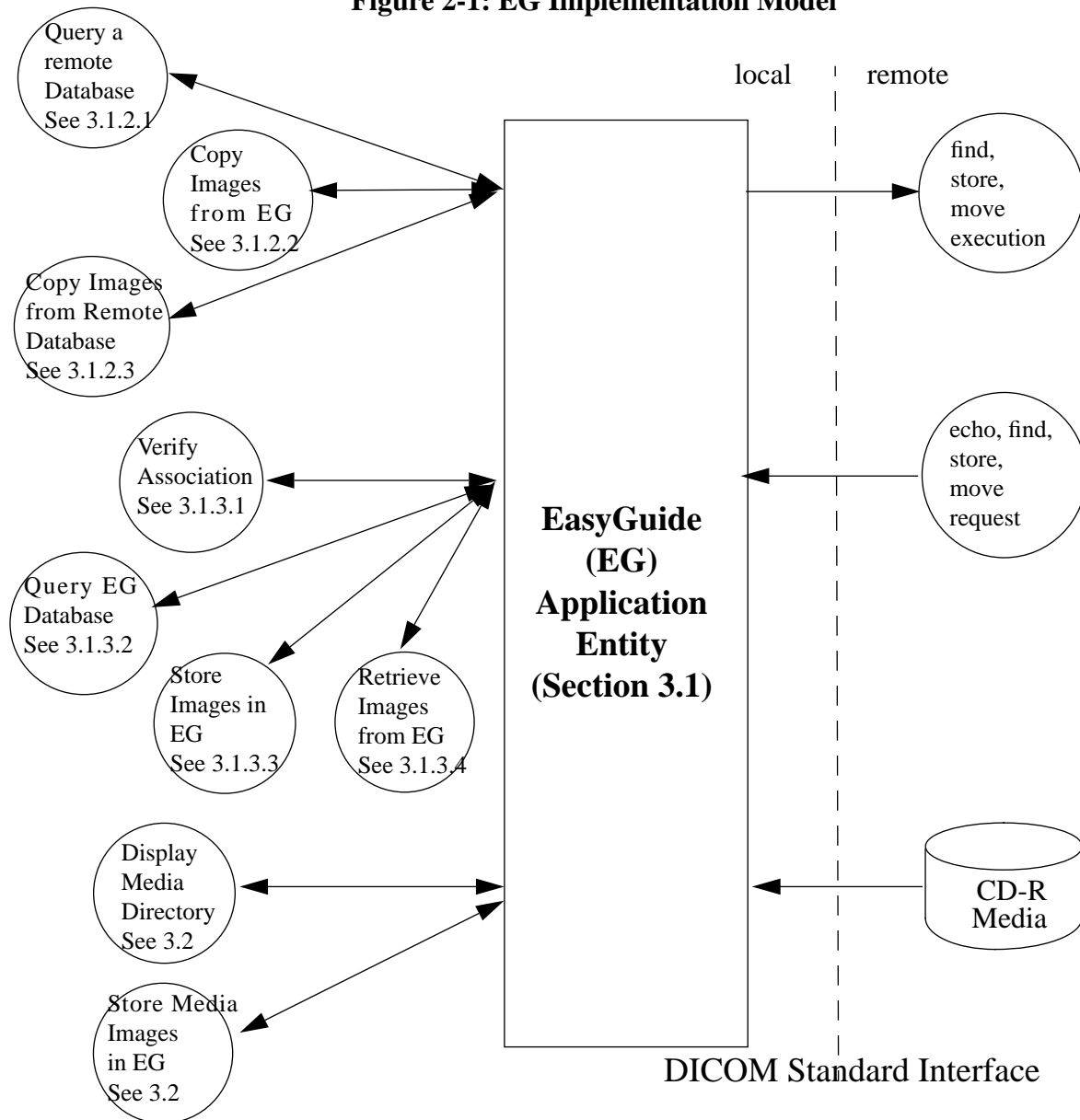
2.3 Sequencing of Real World Activities

Not applicable.

2.4 Implementation Identifying Information

See section 3.1.1.4 on page 11.

Figure 2-1: EG Implementation Model



3 AE Specifications

The Network capabilities of the EasyGuide DICOM Application Entity (EG AE) are specified in section 3.1 and the Media capabilities are specified in section 3.2.

3.1 EG AE Network Specification

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

Table 3-1: Supported SOP classes by the EG 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 (old class)	1.2.840.10008.5.1.4.1.1.5
US Image Storage - STORE (old class)	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 the XA and/or RF Image SOP Class, EG will convert these images and sends them via the SC Image SOP Class.

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

Table 3-2: Supported SOP classes by the EG 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

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

SOP class Name	UID
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
US Multi Frame Image Storage - STORE (old class)	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 (old class)	1.2.840.10008.5.1.4.1.1.5
US Image Storage - STORE (old class)	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

EG will offer unrestricted PDU size (i.e. equal to 0) on associations initiated by EG itself. This is also configurable.

EG will accept any PDU size offered on associations initiated by remote applications.

3.1.1.2 Number of Associations

The number of simultaneous associations supported by EG as a Service Class Provider (SCP) 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, EG will initiate as Service Class User (SCU) at most 2 simultaneous associations. One association is used to issue FIND requests. The other association is used to issue STORE and MOVE requests.

EG will further initiate an association for each remote MOVE request executed by EG. 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

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

3.1.1.4 Implementation Identifying Information

The Implementation Class UID is: 1.3.46.670589.5.2.8

The implementation version name is: EG21

3.1.2 Association Initiation Policy

EG initiates associations as a result of the following events:

- The EG operator queries a remote database: see 3.1.2.1.
- The EG operator or a remote application copies images from the EG database to another database: see 3.1.2.2.
- The EG operator copies images from a remote database to another database: see 3.1.2.3.

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 EG data handling facility. EG initiates an association to the selected peer entity and uses it to send 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

EG will propose the following presentation contexts:

Table 3-3: 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 EG AE as SCU," on page 9.

3.1.2.1.3 C-FIND SCU Conformance

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

3.1.2.2 Copy Images from the EG Database to another Database

3.1.2.2.1 Associated Real-World Activity

The operator copies a (part of a) study from the local EG database to a another database by means of the copy tool in the EG data handling facility. EG 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. EG handles operator copy requests one after another. A remote application copies images from the local EG database to a another database by sending a C-MOVE request to EG. EG 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. EG simultaneously handles simultaneous C-MOVE requests.

3.1.2.2.2 Proposed Presentation Contexts

EG will propose the following presentation contexts:

Table 3-4: Proposed Presentation Contexts for Copy EG 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 EG AE as SCU," on page 9.

3.1.2.2.3 C-STORE SCU Conformance

EG 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 EG operator requested the transfer, the STORE response status is displayed via the user interface of EG. 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 the XA and/or RF Image SOP Class, EG will convert these images and sends them via the SC Image SOP Class.

The transmitted Storage SOP instances may include all optional elements specified in the standard and its supplements 4 and 6, depending on the source of the images.

The transmitted Storage SOP instances contain retired and private data elements, depending on the source of the images and of the EasyVision configuration (see section 6.2 on page 23).

Private elements are not described except for the following elements that facilitate the correct

interpretation of the pixel data of images exported by EG:

- *odd group number, 00YY Owner Data Elements (VR=LO, VM=1)*
The value of this text element is 'SPI-P Release 1'. It declares that all elements YYxx in the odd group are private Philips elements.
- *0009, YY04 Image Data Consistence (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:
 - 'unknown'. This is the default value.
 - 'normal'. Normal consistency.
 - 'limited'. Possibly limited consistency.
- *0019, YY25 Original Pixel Data Quality (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:
 - 'unknown'. This is the default value.
 - 'normal'. Normal quality, as usual for the modality.
 - 'limited'. Possibly limited quality.
- *0029, YY25 Processed Pixel Data Quality (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:
 - '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 EG data handling facility. EG 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

EG will propose the following presentation contexts:

Table 3-5: 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 EG AE as SCU," on page 9.

3.1.2.3.3 C-MOVE SCU Conformance

The AE provides standard conformance.

3.1.3 Association Acceptance Policy

The EG 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 EG system.

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

EG accepts associations for the following purposes:

- To allow remote applications to verify application level communication with EG: see 3.1.3.1.
- To allow remote applications to query the EG database: see 3.1.3.2.
- To allow remote applications to store images in the EG database: see 3.1.3.3.
- To allow remote applications to retrieve images from the EG database: see 3.1.3.4.

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

Table 3-6: 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 EG AE as SCP,” on page 9.

3.1.3.1 Verify Application Level Communication

3.1.3.1.1 Associated Real-World Activity

EG 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 3-6, “Acceptable Presentation Contexts,” on page 16 are acceptable.

3.1.3.1.3 C-ECHO SCP Conformance

EG provides standard conformance.

3.1.3.1.4 Presentation Context Acceptance Criterion

EG 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

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

3.1.3.2 Query the EG Database

3.1.3.2.1 Associated Real-World Activity

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

3.1.3.2.2 Presentation Context Table

Any of the presentation contexts shown in Table 3-6, "Acceptable Presentation Contexts," on page 16 are acceptable.

3.1.3.2.3 C-FIND SCP Conformance

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

3.1.3.2.4 Presentation Context Acceptance Criterion

See section 3.1.3.1.4 on page 17.

3.1.3.2.5 Transfer Syntax Selection Policies

See section 3.1.3.1.5 on page 17.

3.1.3.3 Store Images in the EG Database

3.1.3.3.1 Associated Real-World Activity

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

3.1.3.3.2 Presentation Context Table

Any of the presentation contexts shown in Table 3-6, "Acceptable Presentation Contexts," on page 16 are acceptable.

3.1.3.3.3 C-STORE SCP Conformance

EG 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 EG database. The duration of the storage of the image is determined by the operator of the EG system.

The EG storage implementation has the following restrictions:

- Although EG accepts colour images, it does not properly support storage and retrieval of such images.
- EG stores XA Bi-Plane as two Single Plane images.
- EG stores multi-frame images as a series of single frame images.

EG allows the operator to modify attributes of the stored images. EG does not modify the pixel values of the 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.

EG 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 EG was C-STORE SCP) using one of the explicit value representations or
- The image was encoded (when EG was C-STORE SCP) using implicit value representation and the MOVE destination (i.e. a C-STORE Service Class Provider) has accepted implicit value representation as the only transfer syntax applicable to the storage SOP class of the image (when EG is C-STORE SCU).

The Mandatory (Type 1) attributes in the received CT and MR images are required to perform the EG application functions (like 2D and 3D reconstructions as described in section 2 on page 7); no Optional CT/MR attributes are needed. However the following additional requirements are applicable in order to run the EG application functions successfully:

- The hard pixel related characteristics (like Rows, Columns, Bits per Pixel) should be equal for all slices in the image set (i.e. the DICOM Series).
- The Field of View should be equal for all slices in the image set.
- Attributes Image Orientation and Image Position should be filled as specified by DICOM.
- The Scannogram image should be in a separate image set (if present on CD-R).
- There should be a well defined relation between the values of these Mandatory DICOM attributes. This value relation is forced by the applied CT / MR scanning protocol, described in the operators' manual of the EasyGuide system.

If one of these requirements are not satisfied, the EG application functions cannot be started. Note that EasyGuide **does not require** that the slices in the image sets (i.e. the DICOM Series) are in right order, does not require that Image Number is filled on a certain way and does not require that the slices are equidistant.

The C-STORE is unsuccessful if EG returns one of the following status codes:

- A700 - Indicates the database is full or that the image is larger than 4 Mb. 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 17.

3.1.3.3.5 Transfer Syntax Selection Policies

See section 3.1.3.1.5 on page 17.

3.1.3.4 Retrieve Images from the EG Database

3.1.3.4.1 Associated Real-World Activity

EG accepts associations from nodes that wish to retrieve images from the EG database using the C-MOVE command.

3.1.3.4.2 Presentation Context Table

Any of the presentation contexts shown in Table 3-6, "Acceptable Presentation Contexts," on page 16 are acceptable.

3.1.3.4.3 C-MOVE SCP Conformance

EG supports all the Storage SOP classes listed in Table 3-2, "Supported SOP classes by the EG AE as SCP," on page 9.

3.1.3.4.4 Presentation Context Acceptance Criterion

See section 3.1.3.1.4 on page 17.

3.1.3.4.5 Transfer Syntax Selection Policies

See section 3.1.3.1.5 on page 17.

3.2 EG AE Media Specification

The EG AE provides Standard Conformance to the DICOM Media Storage Service and File Format Class (PS 3.10) and the Media Storage Application Profile (PS 3.11) as far as the reading of uncompressed images on CD-Recordable medium is concerned.

The supported Application Profiles, their Roles and the Service Class (SC) options, all defined in DICOM terminology, are listed in Table 3-7.

Table 3-7: Application Profile, Activities and Roles of the DICOM Media part of EG

<i>Application Profile</i>	<i>Identifier</i>	<i>Real World Activity</i>	<i>Role</i>	<i>SC Option</i>
General Purpose CD-R Image Interchange Profile	STD-GEN-CD	Display Directory	FSR	Interchange
	STD-GEN-CD	Store image in EG	FSR	Interchange

The same SOP Classes are supported as mentioned in Table 3-2 on page 9 via this Application Profile.

3.2.1 Application Entity Title

The Application Entity Title is specified in section 3.1.1.4 on page 11 but is for the Media part of EG not relevant because EG only reads CD-R Media.

3.2.2 RWA Display Directory

The EG AE will act as a FSR using the Interchange option when reading the directory of the medium. This will result in an overview of the patients, studies, series and images on the EG screen.

3.2.2.1 Application Profile(s) for this RWA

See Table 3-7.

3.2.2.2 Required and optionally DICOMDIR Keys

The Mandatory DICOMDIR Keys are required for the correct display of Directory information. The display is structured according the DICOM Composite Information Model: Patient, Study, Series, Image.

Possible present optionally Keys are displayed too.

3.2.3 RWA Store image in EG

The EG AE will act as a FSR using the Interchange option when reading the images from the CD-R medium.

3.2.3.1 Application Profile(s) for this RWA

See Table 3-7.

3.2.3.2 Support for Attributes in the images

The Mandatory Attributes of the DICOM images are required for the correct storage of the

images in the EG internal image database. Optionally and possible Private Attributes are stored too; this is equivalent with the Level 2 (Full) conformance for the Storage Service Class in the Network support, see section 3.1.3.3 on page 17.

The same remarks as in section 3.1.3.3.3 on page 17 are applicable about the storage of multi-frame images and about requirements to run EG application functions on imported images via DICOM Media.

3.2.4 Augmented Application Profile

None

3.2.5 Known Problems.

- CD-ROM's that have the "Dataset Trailing Padding" tag units DICOMDIR are refused by EG.

4 Communication Profiles

4.1 Supported Communication Stacks

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

4.2 TCP/IP Stack

EG 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

Not applicable.

6 Configuration

The EG system is configured by means of a configuration program. This program is accessible at start-up of the EG system. It is password protected and intended to be used by Philips Customer Support Engineers only. The program prompts the Customer Support Engineer to enter configuration information needed by the EG application.

6.1 AE Title/Presentation Address mapping

6.1.1 Local AE Titles and Presentation Addresses

The EG AE title is equal to the IP host name. This host name is to be entered by the Customer Support Engineer at EG configuration time.

EG listens on port 3010. This port number is not configurable.

6.1.2 Remote AE Titles and Presentation Addresses

All relevant remote applications able to setup a DICOM Association towards EG must be configured at EG configuration time. The Customer Support Engineer must provide the following information for each remote application:

- The Application Entity title.
- The SOP classes and Transfer Syntaxes for which EG accepts Associations.

All relevant remote applications able to accept DICOM Associations from EG, the following information must be provided:

- The Application Entity title.
- The host name on which the remote application resides.

- The port number at which the remote application accepts association requests.
- The SOP classes and Transfer Syntaxes for which EG sets-up Associations.

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 remote system,
- export of private and retired DICOM attribute (if present) or not (pure DICOM or rich DICOM).

7 Support of Extended Character Sets

EG supports Extended Character Set “ISO_IR 100” which is the Latin alphabet No 1, supplementary set.