

Philips Medical Systems DICOM Conformance Statement

EasyWeb 4.1

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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 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 [DICOM].

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.

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 and PS 3.4.

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
National Electrical Manufacturers Association (NEMA) Publication Sales
1300 N. 17th Street, Suite 1847
Rosslyn, Va. 22209, United States of America

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).

1.7 General Acronyms and Abbreviations.

The following acronyms and abbreviations are used in the document.

ACC	American College of Cardiology
AE	Application Entity
ACR	American College of Radiology
ANSI	American National Standard Institute
BOT	Basic Offset Table
CD-R	CD Recordable
CD-M	CD Medical
DCI	Digital Cardio Imaging
DCR	Dynamic Cardio Review
DICOM	Digital Imaging and Communication in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DICOM Message Service Element-Composite
DIMSE-N	DICOM Message Service Element-Normalized
ELE	Explicit VR Little Endian
EBE	Explicit VR Big Endian
FSC	File Set Creator
GUI	Graphic User Interface
HIS	Hospital Information System
HL7	Health Level Seven
ILE	Implicit VR Little Endian
IOD	Information Object Definition
ISIS	Information System - Imaging System
MPPS	Modality Performed Procedure Step
NEMA	National Electrical Manufacturers Association
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
RIS	Radiology Information System
RWA	Real World Activity
SC	Secondary Capture
SCM	Study Component Management
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet protocol
UID	Unique Identifier
WLM	Worklist Management

2 IMPLEMENTATION MODEL

EasyWeb is a web server that allows web users to access to medical images using a web browser interface and a minimal hardware configuration. It allows these users to view the images using a web browser over a Health Care Facility intranet, or remotely via the internet. *EasyWeb* is a single application entity that stores images sent to it by service class users, and simplifies the images into a format that can be viewed in a web browser. It also is able to query service class providers based on several standard query models, and retrieve requested images from a service class provider to the local database, either by an automated mechanism, or manually by user interaction.

2.1 Application Data Flow Diagram

EasyWeb 4.1 behaves as a system with 1 Application Entities (AE). The related Implementation Model is shown in Figure 1.1.4

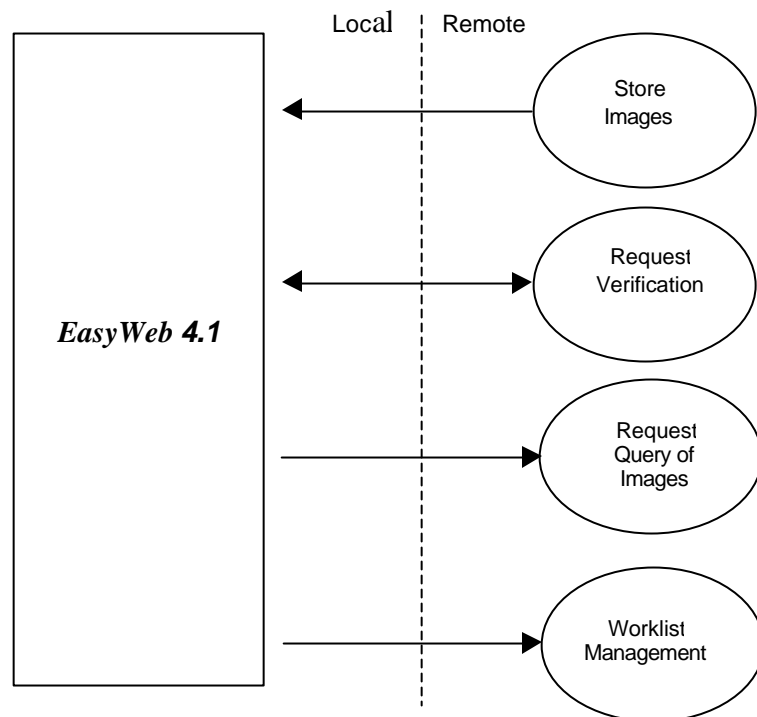


Figure 1.1 Implementation Model

2.1.1 Description of the *EasyWeb* Functionality

Figure 1.2 gives an overview of all the DICOM functionality of *EasyWeb* 4.1

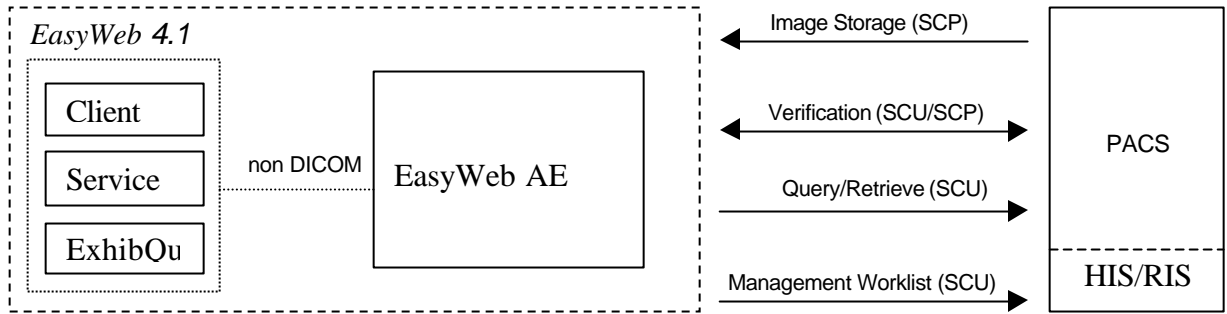


Figure 1.2 *EasyWeb* 4.1 in a DICOM network

EasyWeb AE provides the service of Query and Retrieve. It accepts DICOM images for storage from modalities

2.2 Functional Definition of Application Entities

2.2.1 Verification

EasyWeb acts as a Service Class User (SCU) of the Verification Service Class. *EasyWeb* requests verification to a remote DICOM AE. *EasyWeb* performs this request using the C-ECHO command.

EasyWeb acts as a Service Class Provider (SCP) of the Verification Service Class. After a remote DICOM AE invokes a connection, *EasyWeb* response to the C-ECHO command. Upon receipt of the C-ECHO confirmation, the SCU determines that verification is complete.

2.2.2 Store Images

EasyWeb stores a received DICOM image in its entirety internal data base without change.

EasyWeb stores each image with the File Meta Information attached to it. *EasyWeb* extracts the data information with respect to the patient, study, series and image, and stores this information within its internal database.

2.2.3 Query to PACS Devices

EasyWeb acts as a SCU of C-Find to query for studies stored on other PACS devices based on a number of criteria.

2.2.4 Retrieve Images from PACS Devices

EasyWeb acts as a SCU of C-MOVE to retrieve images from a remote PACS device. It does so by using the results obtained from a C-FIND to request that the images be moved to *EasyWeb* via C-MOVE.

2.2.5 Modality Work List Query to Information Management Devices

EasyWeb client users can query a RIS/HIS device directly in order to obtain a listing of studies that may not be available either in the local *EasyWeb* database, or on a remote PACS device. For example, users may wish to query for a list of studies that were not acquired digitally, i.e. images are available only on film. Once the study of interest has been located on the requested device, *EasyWeb* users can then query the device for a report for that study, even though no images are available for viewing.

The query constraints that can be applied when performing a MWL query to a RIS/HIS device will be constrained by the query options available to the *EasyWeb* client user (see *EasyWeb* User Manual for a listing of available query constraints). Note that a referring physician constraint is ignored when performing a MWL query to a RIS/HIS device.

2.2.6 Perform HIS Verification

EasyWeb acts as a Service Class Provider (SCP) of the Management Worklist Service to verify incoming demographics from HIS/RIS.

3 AE SPECIFICATION

3.1 EasyWeb DICOM AE Specification

3.1.1 Supported SOP Classes as SCU

EasyWeb provides Standard Conformance to the following DICOM SOP class as SCU:

Supported SOP Classes by <i>EasyWeb</i> AE as SCU	
SOP Class	SOP Class UID
Verification	1.2.840.10008.1.1
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2
Modality Worklist IM FIND	1.2.840.10008.5.1.4.31

Table 1 Supported SOP classes by *EasyWeb* AE as SCU

3.1.2 Supported SOP Classes as SCP

EasyWeb provides Standard Conformance to the following DICOM SOP class as SCP:

Supported SOP Classes by <i>EasyWeb</i> AE as SCP	
SOP Class	SOP Class UID
Verification	1.2.840.10008.1.1
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Ultrasound Multi-frame Image Storage (retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage (retired)	1.2.840.10008.5.1.4.1.1.5
Ultrasound Image Storage (retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-ray RadioFluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
Structured Report Basic Text Storage	1.2.840.10008.5.1.4.1.1.88.11
Structured Report Enhanced Storage	1.2.840.10008.5.1.4.1.1.88.22

Table 2 Supported SOP classes by *EasyWeb* AE as SCP

3.2 Association Establishment Policies

3.2.1 General

EasyWeb contains no limitations for maximum PDU size. The default size is 100.000 bytes. Note that *EasyWeb* always pads the UID's to even byte boundary during an association, which is not strict conformance to the DICOM standard.

3.2.2 Number of Associations

The maximum number of simultaneous associations accepted by *EasyWeb* is configurable at run time, based on the system resources available. By default, the maximum number of associations is set at 32. There is no inherent limit to the number of associations other than limits imposed by the computer operating system.

3.2.3 Asynchronous Nature

EasyWeb allows a single outstanding operation on any association. Therefore, *EasyWeb* does not support asynchronous operations and will not perform asynchronous window negotiation.

3.2.4 Implementation Identifying Information

3.2.4.1 Store

EasyWeb will respond with the following implementation identifying parameters:

- The Implementation Class UID is: 1.3.46.670589.16.3.30
- The Implementation Version Name is: EASYWEB4

3.2.4.2 Query/Retrieve

EasyWeb will respond with the following implementation identifying parameters:

- The Implementation Class UID is: 1.2.124.113532.1.1
- The Implementation Version Name is: MITRA22JAN97

3.2.5 Called/Calling Titles

The default calling title that *EasyWeb* will use is the host name of the computer. This parameter can be configured using the Exhibit Service Tools. *EasyWeb* can be configured to validate the Called Title of the requesting SCU during association negotiation.

3.3 Association Initiation Policy

EasyWeb AE initiates Associations as a result of the following events:

- The *EasyWeb* operator queries a remote database.
- The *EasyWeb* operator request a Worklist.

3.3.1 Real-World Activity – Verification

3.3.1.1 Associated Real World Activity

EasyWeb initiates as SCU Associations to other systems (PACS) that support Query/Retrieve.

3.3.1.2 Presentation Context Table

EasyWeb will initiate any of the Presentation Contexts listed in Table 3 for Verification.

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	ILE (default)	1.2.840.10008.1.2	SCU	None

Table 3 Proposed Presentation Context

3.3.1.3 SOP Specific Conformance

EasyWeb provides standard conformance to the DICOM Verification Service Class. *EasyWeb* receives one of the following status codes listed in Table 4 .

Verification Status Codes				
Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000		Operation performed properly

Table 4 Verification Status Codes

Since no DICOM data object is associated with a Verification command, only the default transfer Syntax is required/supported.

3.3.2 Real World Activity – Query Retrieve – FIND

3.3.2.1 Associated Real World Activity

EasyWeb will negotiate requests to an SCP. *EasyWeb* negotiates all of the query models listed in Table 5 on page 12 for Query/Retrieve.

3.3.2.2 Presentation Context Table

EasyWeb will initiate any of the Presentation Contexts listed in Table 5 for Query Retrieve – FIND

Presentation Context table						
Abstract Syntax			Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List			
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1	ILE	1.2.840.10008.1.2	SCU	See Note 1	

Table 5 Proposed Presentation Context

Note 1: C-FIND Extended negotiation will be supported. *EasyWeb* will respond with the information listed in Table 6, which is not activated by default.

C-FIND Extended Negotiation		
Field Name	Value	Description of Field
Relational -queries	1	Relational –queries supported

Table 6 C-FIND Extended Negotiation

3.3.2.3 SOP Specific Conformance

SOP classes of the Query/Retrieve Service Class are implemented via DIMSE. C-FIND services as defined in Part 7 of the DICOM Standard. *EasyWeb* will initiate one C-FIND Presentation Context per association request. Any one Abstract Syntax may be specified more than once in an association request, if the transfer Syntaxes differ between the Presentation Context.

* Attribute can be used as match criterion.

Attributes used when querying PACS Devices		
Attribute	Tag	Matching Attributes
Station Name		
Study Status ID		
Study Date *	0008,0020	Note 2
Study Time *	0008,0030	Note 2
Accession Number *	0008,0050	
Modality	0008,0060	
Referring Physician's Name *	0008,0090	Note 2
Study Description	0008,1030	
Performing Physician's Name	0008,1050	
Name of Physican(s) Reading Study	0008,1060	
Admitting Diagnoses Description	0008,1080	
Patient name *	0010,0010	Note 1
Patient ID or MRN *	0010,0020	Note 2
Patient's Birth Date	0010,0030	
Patient sex *	0010,0040	Note 2
Patient's Age	0010,1010	
Number of Study Related Series	0020,1206	
Requesting Physician	0032,1032	
Current Patient Location	0038,0300	

Table 7 Allowable Query Attributes for C-FIND Study level

Note 1: A “ ” (blank) wildcard entry matches any number of characters. *EasyWeb* interprets a blank wildcard as asterisk on DICOM level.

A “?” (question mark) wildcard entry matches a single character.

Note 2: This query may not be supported by all PACS devices (A PACS device is a DICOM device capable of storing images). Check DICOM Conformance Statement for details. Unless otherwise stated only exact matches are supported. Other query constraints (such as patient location) may be specified in the *EasyWeb* client user interface, but these are ignored when querying a PACS device.

3.3.3 Real World Activity – Query Retrieve – MOVE

3.3.3.1 Associated Real World Activity

EasyWeb will initiate retrieve requests to an SCP. *EasyWeb* negotiates all of the query models listed in Table 4 on page 10

3.3.3.2 Presentation Context Table

EasyWeb will initiate any of the Presentation Contexts listed in Table 8 for Query Retrieve – MOVE

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2	ILE	1.2.840.10008.1.2	SCU	None

Table 8 Proposed Presentation Context

3.3.3.3 SOP Specific Conformance

SOP classes of the Query/Retrieve Service Class are implemented via DIMSE. C-MOVE services as defined in Part 7 of the DICOM Standard. *EasyWeb* will try to establish an association with the move destination specified in the C-MOVE request. One or more of the Presentation Contexts listed in Table 8 for Query/Retrieve, may be negotiated in this association. *EasyWeb* accept any number of MOVE Presentation Contexts per association request. Any individual Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts. *EasyWeb* currently supports the Transfer Syntax that was originally when the image was stored.

3.3.4 Real World Activity – Modality Worklist – FIND

3.3.4.1 Associated Real World Activity

The *EasyWeb* user can query a RIS/HIS device for a DICOM worklist form.

3.3.4.2 Presentation Context Table

EasyWeb will initiate any of the Presentation Contexts listed in Table 9 for Modality Worklist – FIND

Presentation Context table						
Abstract Syntax			Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List			
Modality Worklist IM FIND	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCU	None	

Table 9 Proposed Presentation Context

3.3.4.3 SOP Specific Conformance

EasyWeb users can query a remote RIS/HIS device for studies that match certain query constraints. The list of constraints that users can specify when querying a RIS/HIS device are limited by the capabilities of the *EasyWeb* client user interface, and include the following:

Attributes Allowed in Modality Work List Query		
Query Constraint	Allowed in local query	Matching Attributes
accession_number	Yes	Yes
referring_physician_name	Yes	Yes ^{Note 1}
patient_name	Yes	Yes
patient_id	Yes	Yes
patient_sex	Yes	Yes
current_patient_location	Yes	No
modality	Yes	Yes
study_date	Yes	Yes
study_time	Yes	No ^{Note 2}
body_part	Yes	No
study_status_id	Yes	No
department	Yes	No

Table 10 Attributes Allowed in Modality Work List Query

Note 1: May not be supported because of a limitation of the EasyLink DICOM MWL interface. The full structure of the modality work list response is shown in Table 12, including the mapping of returned DICOM attributes to database tables. Studies returned by this query can be selected by the user to retrieve reports using the SQL RIS interface on the EasyLink, or to retrieve images from a remote PACS device using C-MOVE. See the *EasyWeb* User Manual for more details.

Note 2: Query “Study Time” can just be done on DICOM level and not on Application level.

3.3.5 Real World Activity – Modality Worklist – HIS Verification

3.3.5.1 Associated Real World Activity

The *EasyWeb* user can query a RIS/HIS device for a DICOM worklist form.

3.3.5.2 Presentation Context Table

EasyWeb will initiate any of the Presentation Contexts listed in Table 11 for Modality Worklist – HIS Verification

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist HIS Verification	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCU	None

Table 11 Proposed Presentation Context

3.3.5.3 SOP Specific Conformance

When images arrive at SCP, *EasyWeb* use DICOM C-FIND MWL to verify incoming demographics with the HIS/RIS, depending on the configuration of the Source Manager of the Service Tools Application. If *EasyWeb* is configured to use DICOM C-FIND MWL, verifying incoming information is done by using the incoming “patient_id” and “accession_number” pair to query the HIS/RIS using DICOM MWL to look for a match. If *EasyWeb* finds one and only one match, then it will use the mappings defined in DICOM MWL to image mapping, shown in Table 12 to modify the patient and study information contained in the incoming images. If *EasyWeb* does not find one and only one match, then it will mark the study as being unverified and the user must manually link the incoming study information to a MWL object at a later point in time using the FixUp tool in the Service Tools application.

If either the patient_id or the accession_number are not available and/or not reliable, then *EasyWeb* allows different query constraints to search for a match. These query constraints are configurable in the Source Manager of the Service Tools Application (see *EasyWeb* System Administration Manual for more information). Nevertheless it is strongly recommended that at least one key piece of patient information (“patient id”, “patient name”) and one key piece of study information (“accession number”, “study date/modality”) is used to constrain the query. After the association with the modality is closed, *EasyWeb* will perform a C-FIND Modality Worklist query to the RIS/HIS device, using the study attributes defined in the Source Manager to identify the study. If the study is found on the RIS/HIS device, the MWL response is returned to *EasyWeb* with the updated study information. The attributes that are updated are summarised in Table 12 .

OIV *: Overwriting Image Values
OIN **: Overwriting Image Nulls

Summary of Modality Worklist Mappings					
MWL Attribute Name	MWL Tag	Image Attribute Name	Image Tag	OIV *	OIN **
Accession_number	0008,0050	accession_number	0008,0050	Yes	
Referring_physician_name	0008,0090	referring_physician_name	0008,0090	Yes	
Referenced_patient_sequence	0008,1120				
Referenced_sop_instance_uid	0008,1155	patient_instance_uid	0003,3000	Yes	
Patient_name	0010,0010	patient_name	0010,0010	Yes	
patient_id	0010,0020	patient_id	0010,0020	Yes	
Patient_birth_date	0010,0030	patient_birth_date	0010,0030	Yes	
patient_sex	0010,0040	patient_sex	0010,0040	Yes	
Other_patient_ids	0010,1000	other_patient_ids	0010,1000	Yes	
(1)patient_age	0010,1010	patient_age	0010,1010	Yes	
(1)military_rank	0010,1080	military_rank	0010,1080	Yes	
(1)branch_of_service	0010,1081	branch_of_service	0010,1081	Yes	
Study_instance_uid	0020,000d	study_instance_uid	0020,000d	Yes	
Study_status_id	0032,000a	study_status_id	0032,000a	Yes	
Study_priority_id	0032,000c	study_priority_id	0032,000c	Yes	
Requesting_physician	0032,1032	requesting_physician	0032,1032	Yes	
Requesting_service	0032,1033	requesting_service	0032,1033	Yes	
Requested_procedure_description	0032,1060	(4)study_description	0008,1030	Yes	
Requested_procedure_code_sequence	0032,1064				
>code_value	0008,0100	requested_procedure_code	0008,0100	Yes	
>coding_scheme_designator	0008,0102				
>Code_meaning	0008,0104	(4)study_description	0008,1030	Yes	
Current_patient_location	0038,0300	current_patient_location	0038,0300	Yes	
Scheduled_procedure_step_sequence	0040,0100				
>modality	0008,0060	modality	0008,0060	No	No
>Scheduled_station_ae_title	0040,0001				
>Scheduled_procedure_step_start_date	0040,0002	study_date	0040,0002	No	Yes
>Scheduled_procedure_step_start_time	0040,0003	study_time	0040,0003	No	Yes
>Scheduled_performing_physician_name	0040,0006	performing_physician_name	0008,1050	Yes	
>Scheduled_station_name	0040,0010	station_name	0008,1010	No	Yes
>Comments_on_the_scheduled_procedure_step	0040,0400	(2)study_comments	0032,4000	No	Yes
Requested_procedure_id	0040,1001	requested_procedure_id	0040,1001	Yes	
reason_for_the_requested_procedure	0040,1002	(3)additional_patient_history, reason_for_study	0010,21b0 0032,1030	No	Yes
Requested_procedure_comments	0040,1400	(2)study_comments	0032,4000	No	Yes
reason_for_the_imaging_service_reque	0040,2001	(3)additional_patient_history,	0010,21b0	No	Yes

Summary of Modality Worklist Mappings					
MWL Attribute Name	MWL Tag	Image Attribute Name	Image Tag	OIV *	OIN **
st		reason_for_study	0032,1030		
Imaging_service_request_comments	0040,2400	(2)study_comments	0032,4000	No	Yes
Admission ID ^{Note 1}	0038,0010				
Special Needs ^{Note 1}	0038,0050				

Table 12 Summary of Modality Worklist Mappings

Note 1: Additional attributes

3.4 Association Acceptance Policy

3.4.1 Verify Application Level Communication

3.4.1.1 Associated Real World Activity - Verification

EasyWeb will respond as SCP to Verification requests to provide an SCU with the ability to determine if *EasyWeb* is receiving DICOM requests

3.4.1.2 Presentation Context Table – Verification

EasyWeb supports the Proposed Presentation Contexts for the Verification request listed in Table 13 .

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	ILE (default)	1.2.840.10008.1.2	SCP	None

Table 13 Presentation Context Table

3.4.1.3 SOP Specific Conformance - Verification

EasyWeb provides standard conformance to the DICOM Verification Service Class. *EasyWeb* returns one of the following status codes.

Verification Status Codes				
Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000		Operation performed properly

Table 14 Verification Status Codes

EasyWeb will always accept a Presentation Context for the Verification SOP Class with the default DICOM Transfer Syntax listed in Table 8 on page 14. Since no DICOM Object is associated with a Verification command, only the default DICOM Transfer Syntax is required/supported.

3.4.1.4 Storage Application Level Communication

3.4.2 Associated Real World Activity - Storage

EasyWeb will respond as SCP to Verification requests to provide an SCU with the ability to determine if *EasyWeb* is receiving DICOM requests

3.4.2.1 Presentation Context Table – Storage

The following table illustrates the proposed presentation contexts for the Image Storage request.

Presentation Context table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Note 1	Note 1	ILE	1.2.840.10008.1.2	SCP	Note 2
		ELE	1.2.840.10008.1.2.1	SCP	Note 2
		DICOM Lossy JPEG 8 bit JPEG 1	1.2.840.10008.1.2.4.50	SCP	Note 2
		DICOM Lossy JPEG 12 bit JPEG 4	1.2.840.10008.1.2.4.51	SCP	Note 2
		DICOM Lossless Non-Hierarchical JPEG 14	1.2.840.10008.1.2.4.57	SCP	Note 2
		DICOM Lossless Non-Hierarchical first-order prediction JPEG 14-1	1.2.840.10008.1.2.4.70	SCP	Note 2
		DICOM RLE Lossless	1.2.840.10008.1.2.5	SCP	Note 2

Table 15 Presentation Context Table

Note 1: Any of the Standard Storage SOP classes listed in Table 1 and Table 2 except 12-lead ECG Waveform Storage, Hemodynamic Waveform Storage, Cardiac Electrophysiology, Waveform Storage, X-ray Angiographic Image Storage, X-ray RadioFluoroscopic Image Storage, Nuclear Medicine Image Storage, Structured Report Basic Text Storage, Structured Report Enhanced Storage which will be supported by ILE and ELE only.

Note 2: Storage Extended Negotiation is supported by *EasyWeb* and will be responded with the information listed in Table 16.

Storage Extended Negotiation		
Field Name	Value	Description of Field
Level of support	2	Level 2 (FULL) SCP
Element Coercion	0	Does not coerce any element

Table 16 Storage Extended Negotiation

3.4.2.2 SOP Specific Conformance - Storage

EasyWeb conforms to the DICOM Storage Service Class at Level 2 (FULL). No Elements are discarded or coerced by *EasyWeb*. In the event of a successful C-STORE operation, the image has been written to internal storage database.

EasyWeb returns one of the following status codes.

C-Store Status Codes				
Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of Resource.	A700		Indicates that there was not enough storage space to store the image. Recovery from this condition is left to the administrative functions.
	SOP Class not supported.	A800		Indicates that the SOP Class of the Image in the C-STORE operation did not match the Abstract Syntax negotiated for the Presentation Context.
Error	Data set does not match SOP Class.	A900		Indicates that the Data Set does not encode an instance of the SOP Class specified.
	Failed	C000		The operation was not successful.
	Cannot understand.	C005		Indicates that the Data Set cannot be parsed into elements.
Warning	Data set does not match SOP Class.	B007		Indicates that the Data Set does not match the SOP Class, but that the image was stored anyway.
	Duplicate SOP Instance UID.	D000		Indicates that the SOP Instance UID of the specified image is already stored in the database.
Success	Success	0000		Operation performed properly.

Table 17 C-STORE Status Codes

EasyWeb will accept any number of Storage Presentation Context per association request. Any individual Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

4 COMMUNICATIONS PROFILES

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

4.1 TCP/IP Stack

EasyWeb inherits its TCP/IP stack from the computer system upon which it executes.

4.2 Physical Media Support

EasyWeb is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it executes.

5 EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS

EasyWeb supports the extended, private SOP Classes listed in Table 18 . These SOP Classes will be transmitted during an Association but will not have any consequences. *EasyWeb* supports standard for any other SOP Classes listed in Table 1 and Table 2.

Private SOP Classes	
SOP Class	SOP Class UID
Private Detached Study Management	1.2.840.113532.3500.13
Private Detached Patient Management	1.2.840.113532.3500.10
Private Detached Interpretation Management	1.2.840.113532.3500.16

Table 18 Private SOP Classes

6 CONFIGURATION

6.1 AE Title/Presentation Address Mapping

EasyWeb obtains configuration information from the following sources:
Mapping from Application Entity Title to Presentation Address is provided by the database. Along with this mapping, the database stores those AE titles that are allowed to communicate with *EasyWeb*.

The *EasyWeb* system accepts a 'leading-space' in the AE-title of an SCP which is not a normal behavior of the system according to DICOM. The "leading-space" should normally be automatically removed and solved.

6.2 Support for Extended Character Sets

EasyWeb supports the extended character sets listed in Table 19 .

Supported Extended Character Set	
ISO Encoding Code	Encoding Description
ISO-IR 100	Latin Alphabet No. 1
ISO-2022-JP	Japanese Character Encoding

Table 19 Supported Extended Character Sets

7 REMARKS, IMPLEMENTATION RESTRICTION AND CHOICES

At HIS Verification EasyWeb perform during the association the DICOM Detached Visit Management SOP Class (1.2.840.10008.3.1.2.2.1) in addition to the SOP Class listed in Table 11 on page 14, without any consequences. During any other Verification association EasyWeb performs in addition to the SOP Classes listed in the Table 3 on page 9 and Table 13 on page 16 the following private Service Class: 1.2.840.113532.3500.8, without any consequences.

EasyWeb will not execute a DICOM image validation during DICOM image import. EasyWeb supports for storage Extended Negotiation “Level 2 – Full SCP”. This means that the SCP may, but not required to validate the requirements of the IOD and its attributes of the SOP Instance UID.

EasyWeb accepts the ISO-IR 6 character code 5CH “\” (Backslash) in DICOM Attribute “Patient Name” (0010,0010). This character is used in DICOM as delimiter between values in multiple valued data elements.