EUREKA
CLINICAL AI PLATFORM

Eureka™ Clinical AI Platform DICOM Conformance Statement

Version 2.4.0

English

TERARECON
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General Description

The Eureka Clinical AI Platform 2.3 (hereafter identified as "Platform") is a software solution that serves as a compute environment for TeraRecon and 3rd party image processing algorithms (hereafter identified as "Artificial Intelligence Algorithms" or "AI Algorithms"). It provides healthcare practitioners access to AI algorithms and uses cloud-based or off-the-shelf hardware for its functionalities. The platform consists of three subsystems –

- a compute environment which contains Eureka AI Explorer and Visualization Workflow Applications,

- Eureka Clinical AI Platform which contains multiple microservices which serve the Eureka AI Explorer application,

- and Eureka AI Interoperability Platform which contains multiple microservices that handle DICOM workflows and DICOM data management.
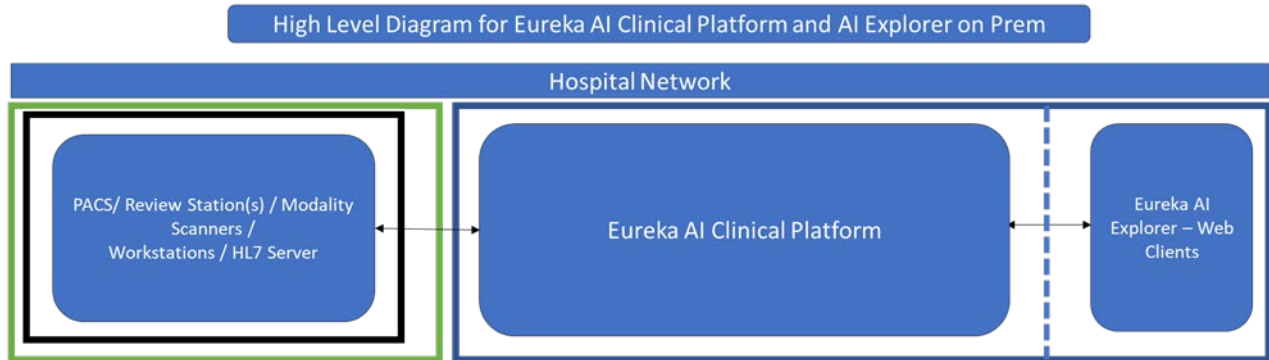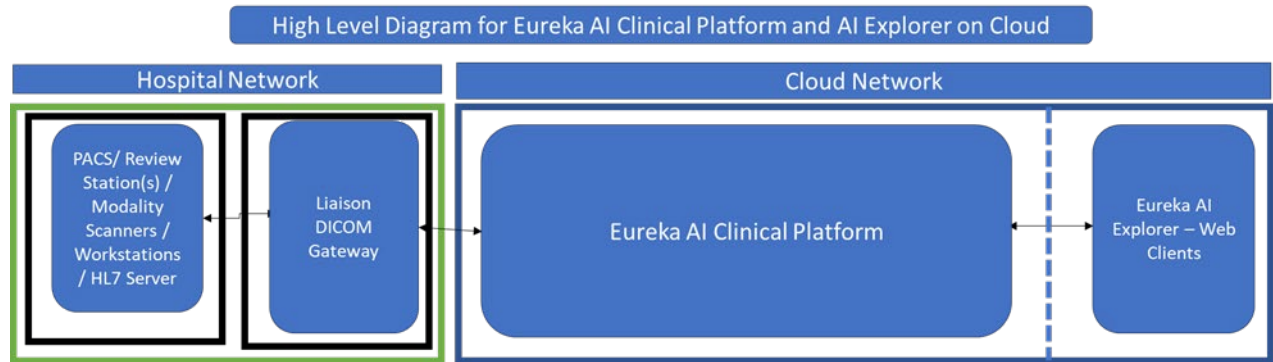
Eureka Clinical AI Platform Components

The platform is either locally sited software that typically resides inside the hospital system such as the PACS server or on Cloud that accepts the input, DICOM2 and non-DICOM data.

If the platform deployed with in the hospital network (on-premises / on-prem) the other DICOM nodes in the hospital can be configured in the platform to communicate to the platform directly for sending and receiving DICOM data.

If the platform is deployed in cloud (on-cloud) a Liaison DICOM gateway component is deployed with in the hospital network. In this case, the DICOM nodes in the hospital network can be configured via the Liaison DICOM gateway component in the platform to communicate to the platform via the Liaison DICOM gateway component for sending and receiving DICOM data.

Refer the on-prem and on-cloud deployment diagrams of Eureka Clinical AI Platform below:-

High Level Diagram for Eureka AI Clinical Platform and AI Explorer on Cloud

Hospital Network

Cloud Network

PACS/ Review Station(s) / Modality Scanners / Workstations / HL7 Server

Liaison DICOM Gateway

Eureka AI Clinical Platform

Eureka AI Explorer – Web Clients

High Level Diagram for Eureka AI Clinical Platform and AI Explorer on Prem

Hospital Network

PACS/ Review Station(s) / Modality Scanners / Workstations / HL7 Server

Eureka AI Clinical Platform

Eureka AI Explorer – Web Clients

2. DICOM (Digital Imaging and Communications in Medicine) is a standard protocol for the management and transmission of medical images and related data and is used in many healthcare facilities.

How to Use this Guide

It is recommended that you read all content to gain a complete understanding of how the Platform communicates with other 3rd party hospital systems, such as PACS, on the network using DICOM 3.1. Use the table of contents to navigate to the desired information.

Pay special attention to all *NOTES, IMPORTANT, TIP, WARNING, and CAUTION* notifications, whether presented on-screen, or contained in this manual, including all precautionary statements and advisories in the Notice section, as these are essential to the effective and authorized use of the Platform.

Conventions used in this Manual

This manual uses the following conventions:

- The text that appears on buttons, menu items, dialog boxes and other elements of the application are printed in a bold font. For example, Click the **Save** button.

- Screen names are capitalized. For example, Patient List, Viewer.

- The chapters are arranged based on the functions in the application.

- A NOTE contains supplementary and important information about a topic. Please do not ignore NOTES, IMPORTANT, TIP, WARNING, and CAUTION notifications. ***Read each one carefully.***

Contents

Chapter 1: Introduction

The purpose of this document is to describe the conformance of the Eureka AI Interoperability Platform server to the DICOM.

Standard as described by the NEMA in the edition 2019b. Table 1.1 lists the supported SOP classes.

Table 1.1: Supported SOP Classes

SOP Class Name	SOP Class UID	SCU	SCP
Network			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
GrayscaleSoftcopyPresentationState Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Yes	Yes

SOP Class Name	SOP Class UID	SCU	SCP
Networking			
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
Encapsulated PDF	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
Radiation Therapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
Query\Retrieve			
Patient Root Query/Retrieve IM – Find	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root Query/Retrieve IM – Move	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root Query/Retrieve IM – Find	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Query/Retrieve IM -Move	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

Note: Table 1.1 lists the system defaults.

Intended Audience

The intended audience for this DICOM conformance statement:

- Hospital staff or Customer
- System integrator of medical equipment
- DICOM Software engineer or designer
- Marketing or Sales personal with DICOM knowledge

First-level Validation

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM

Standard [DICOM]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following issues:

- Test procedures should be defined to validate the desired level of connectivity.
- The DICOM standard will evolve to meet the users' future requirements.

Abbreviations, Terms, and Definitions

Table 1.2 lists the definitions, terms, and abbreviations for the DICOM standard.

Table 1.2: Abbreviations, Terms, and Definitions

Abbreviations, Terms	Definition
AE	DICOM Application Entity
AET	Application Entity Title
EAIP	Eureka AI Interoperability Platform
ASCE	Association Control Service Element
FSC	File-Set Creator
IOD	Information Object Definition
ISO	International Standard Organization
PDU	Protocol Data Unit
SCU	Service Class User (DICOM client)
SCP	Service Class Provider (DICOM server)
SOP	Service-Object Pair
UID	Unique Key Attribute

Note: *Reference*: [DICOM] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1, 2019b

Chapter 2: Networking

Implementation Model

Application Data Flow

The platform implements an Application Entity (AE) which acts as C-STORE / C-ECHO SCP. The diagram below depicts communications as they might occur between an SCU AE and an EAIP.
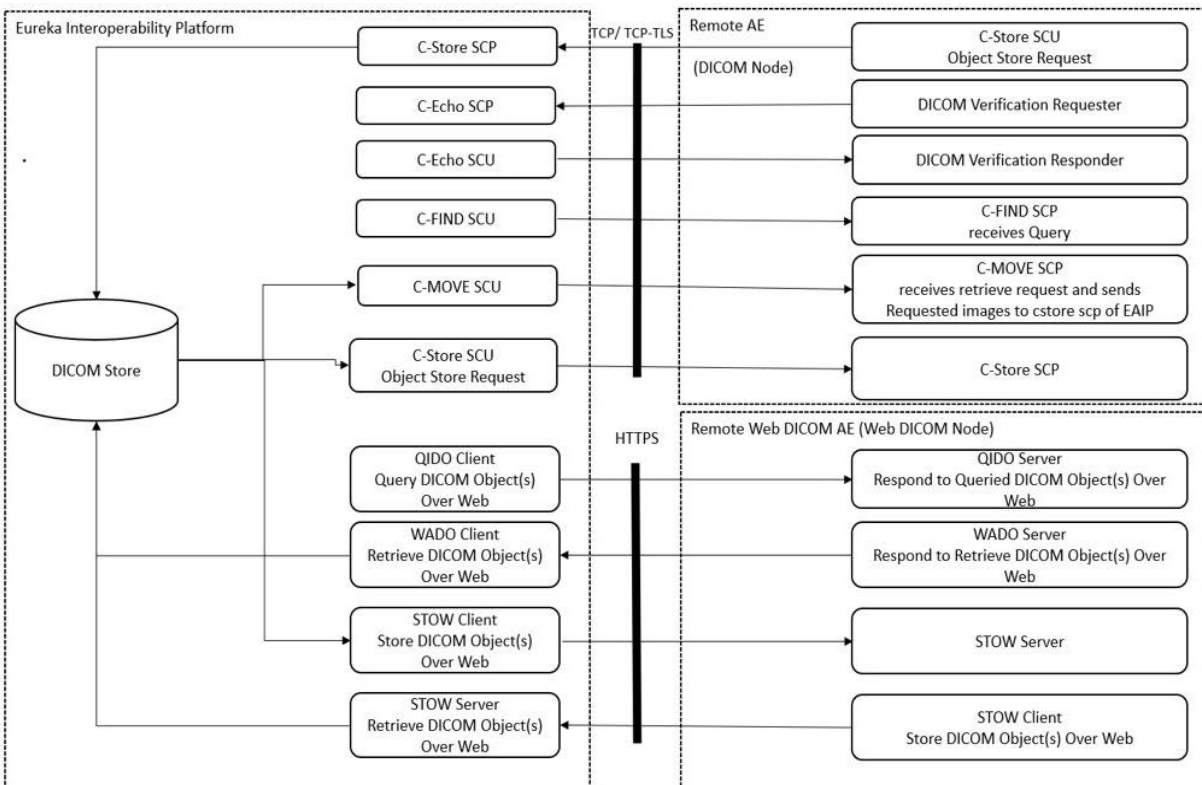
Figure 2-1 Communications between a Eureka AE and an EAIP AE

Functional Definitions of AE

Platform Network related functions

Platform network related functions:

1. Storage of received SOP instances sent to EAIP by a remote SCU AE.
2. EAIP sends SOP instances to remote SCP as per user request or configuration.
3. EAIP responds to verification requests for the purpose of troubleshooting connectivity problems.
4. EAIP request verification from the purpose of trouble shooting connectivity problems
5. EAIP supports QIDO client and WADO client to query review DICOM objects from the remote DICOM Web server which supports QIDO and WADO server.

6. EAIP supports initiating C-FIND SCU queries from EAIP to remote QRSCP.

7. EAIP supports retrieving images from remote QRSCP by initiating C-MOVE SCU request

Sequencing Real World Activity

No assumptions are made about the sequencing of real-world activities.

AE Specifications

Storage SOP Classes

EAIP supports standard conformance to the following storage SOP classes as SCU and SCP.

Table 2.1: **Storage SOP classes as SCU and SCP**

SOP Class Name	SOP Class UID	SCU	SCP
	Networking		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Yes	Yes
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Yes	Yes
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes

SOP Class Name	SOP Class UID	SCU	SCP
	Networking		
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes

Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
Encapsulated PDF	1.2.840.10008.5.1.4.1.1.104.1	Yes	Yes
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
Radiation Therapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes

Transfer Syntaxes

The platform supports the transfer syntaxes listed below. For a given SOP, the supported syntax list name (which refers to one of the names listed in Table 2.2) can be found in one of the presentation context tables found later in this document. When EAIP is acting as CStore SCP, the syntax selection policy is from top down as listed in Table 2.2.

Table 2.2: Syntax Selection Order Transfer Syntax Table

Syntax List Name	Transfer Syntax	
Uncompressed Syntax List	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1
Compressed Syntax List	JPEG Lossless First Order	1.2.840.10008.1.2.4.70

Association Establishment Policies

General

The platform proposes the DICOM Application Context Name listed in the Table 2.3 during the establishment of all associations.

Table 2.3: DICOM Application Context Name

Name	UID
DICOM 3.1 Application Context	1.2.840.10008.3.1.1.1

Asynchronous Nature

The platform only supports a single outstanding transaction over an existing association. As such, it does not support asynchronous communication.

Implementation Identifying Information

EAIL will respond with the implementation identifying parameters listed in Table 2.4.

Table 2.4: DICOM Application Context Name

Name	UID
TeraRecon.EurekaClinicalAIPlatform	2.16.840.1.113669.632.21.778

Association Initiation by Real-World Activity

The platform will initiate C-STORE associations when sending storage requests due either to a triggered auto-routing rule, or at a user's request.

Real-world activity: EAIP AE as C-STORE SCU

Associated Real-world activity: Store

The platform will initiate a C-Store association as SCU when attempting to send SOP Instances to remote AE. The transfer syntaxes that can be proposed are normally determined entries in Table 2.5. However, they may also propose the transfer syntax that was used to store an instance on disk; that is, any of the transfer syntaxes for that storage class as listed in Table 2.7

Table 2.5: Presentation Context Table

Abstract Syntax		Transfer Syntax List Name	Role	Extended Negotiation
Name	UID			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Refer Table 2.2	SCU	None
Digital X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Refer Table 2.2	SCU	None
Digital X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Refer Table 2.2	SCU	None
Digital Mammography X- Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Refer Table 2.2	SCU	None
Digital Mammography X- Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Refer Table 2.2	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Refer Table 2.2	SCU	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Refer Table 2.2	SCU	None
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Refer Table 2.2	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Refer Table 2.2	SCU	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Refer Table 2.2	SCU	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Refer Table 2.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Refer Table 2.2	SCU	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Refer Table 2.2	SCU	None

Abstract Syntax		Transfer Syntax List Name	Role	Extended Negotiation
Name	**UID**			
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Refer Table 2.2	SCU	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Refer Table 2.2	SCU	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Refer Table 2.2	SCU	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Refer Table 2.2	SCU	None
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Refer Table 2.2	SCU	None
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Refer Table 2.2	SCU	None
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Refer Table 2.2	SCU	None
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Refer Table 2.2	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Refer Table 2.2	SCU	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Refer Table 2.2	SCU	None
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Refer Table 2.2	SCU	None
Encapsulated PDF	1.2.840.10008.5.1.4.1.1.104.1	Refer Table 2.2	SCU	None
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	Refer Table 2.2	SCU	None
Radiation Therapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Refer Table 2.2	SCU	None

SOP Specific Conformance for all Storage Service Classes

No extended negotiation is supported.

Association Acceptance by real-world activity

The platform will accept associations for Verification and Storage requests. EAIP will accept C- Store association requests as C-STORE SCP as sub-operations during a C-Move.

Real-world activity: EAIP as C-ECHO SCP

The platform will accept associations for requests using the Verification Service. The association will be closed either by the initiator or aborted by EAIP if certain error conditions arise.

Associated Real-world activity: Echo

The platform will respond to an echo request with an echo response.

Table 2.6: Acceptable Presentation Contexts: Echo

Abstract Syntax		Transfer Syntax List Name	Role	Extended Negotiation
Name	**UID**			
Verification	1.2.840.10008.1.1	Uncompressed Syntax List	SCP	None

SOP Specific Conformance to Verification Service Class

The platform supports standard conformance to the Verification Service Class.

Presentation Context Acceptance Criterion for Verification

The platform will accept any of the presentation contexts listed in Table 2.6.

Real-world activity: EAIP as C-STORE SCP

The platform will accept associations for Storage Service requests. The association will be closed either by the initiator or aborted by the Platform if certain error conditions arise.

Associated Real-world activity: Store

The platform will accept C-Store association requests as SCP. Received instances are stored to disk. Some attributes of the stored instances will be kept in a database.

Table 2.7: Acceptable Presentation Contexts: Store

Abstract Syntax Name	UID	Transfer Syntax List Name	Role	Extended Negotiation
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Refer Table 2.2	SCP	None
Digital X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.1	Refer Table 2.2	SCP	None
Digital X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Refer Table 2.2	SCP	None
Digital Mammography X-Ray Image Storage for Presentation	1.2.840.10008.5.1.4.1.1.1.2	Refer Table 2.2	SCP	None
Digital Mammography X-Ray Image Storage for Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Refer Table 2.2	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Refer Table 2.2	SCP	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Refer Table 2.2	SCP	None
US Multi-Frame Image	1.2.840.10008.5.1.4.1.1.3.1	Refer Table 2.2	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Refer Table 2.2	SCP	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Refer Table 2.2	SCP	None
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Refer Table 2.2	SCP	None
Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7	Refer Table 2.2	SCP	None
Multi-frame Grayscale Byte Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7.2	Refer Table 2.2	SCP	None

Abstract Syntax		Transfer Syntax List Name	Role	Extended Negotiation
Name	UID			
Multi-frame Grayscale Word Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7.3	Refer Table 2.2	SCP	None
Multi-frame True Color Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7.4	Refer Table 2.2	SCP	None
Grayscale Softcopy Presentation	1.2.840.10008.5.1.4.1.1.11.1	Refer Table 2.2	SCP	None
X-Ray Radiofluoroscopic Image	1.2.840.10008.5.1.4.1.1.12.2	Refer Table 2.2	SCP	None
Breast Tomosynthesis	1.2.840.10008.5.1.4.1.1.13.1.3	Refer Table 2.2	SCP	None
Segmentation Storage	1.2.840.10008.5.1.4.1.1.66.4	Refer Table 2.2	SCP	None
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Refer Table 2.2	SCP	None
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Refer Table 2.2	SCP	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Refer Table 2.2	SCP	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	Refer Table 2.2	SCP	None
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Refer Table 2.2	SCP	None
Encapsulated PDF	1.2.840.10008.5.1.4.1.1.104.1	Refer Table 2.2	SCP	None
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	Refer Table 2.2	SCP	None
Radiation Therapy Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Refer Table 2.2	SCP	None

SOP Specific Conformance for all Storage SOP Classes

The Platform supports level 2 (full) conformance to the Storage SOP Classes listed above. The Platform stores all attributes, including those that are private or unknown. A runtime configurable option determines if duplicate instances will be rejected or stored with coercion of (0008,0018) SOP Instance UID.

The Platform sends a response message with status codes listed in Table 2.8.

Table 2.8: Status Codes

Service Status	Status Description	Status Code (0000,	Related Fields
Refused	**Calling AE title not recognized -** The Association request contained an unrecognized Called AE Title. An Association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the Association initiator is incorrectly configured and attempts to address the Association acceptor using the wrong AE Title.	A300	None
	No reason given - The Association request could not be parsed. An Association request with the same format will not succeed at a later time.	B100	None
Error	**Data Set does not match SOP Class** – A required attribute is not present in the message. The request was not processed.	-	None
	Cannot understand – The message was not properly encoded. The request was not processed.	-	None
	Duplicate SOP Instance – An instance with this SOP Instance UID has been stored previously. The request was not processed.	-	None
	Processing failure – A condition arose which prevented the request from being processed.	-	None
Success	**Success –** The log entry was successfully received and stored in the Medication Administration Record System database.	0000	None

Presentation Context acceptance criterion for Storage

The platform will accept any of the presentation contexts listed in Table 2.8.

Transfer Syntax selection policies for Storage

The platform selects from available transfer syntaxes from the top-down.

Network Interfaces -

The platform uses FO-DICOM Toolkit to communicate over the TCP/IP protocol stack on any physical interconnection media supporting the TCP/IP stack. The Toolkit inherits the TCP/IP stack from the host operating system upon which it executes.

Configuration

The platform uses configuration files which are intended to be used by TeraRecon service engineers or authorized and trained customers.
The following fields are configurable for every remote DICOM AE used as Image storage SCP:

- • Remote AE Title
- • Remote IP Address
- • Listening TCP/IP Port Number

Real-world activity: EAIP as C-FIND and C-MOVE SCU

Associated Real-world activity: Find and Move

EAIP will initiate C-FIND and C-MOVE requests as SCU in response to client requests.

Proposed Presentation Contexts: Find and Move

Presentation context table					
Abstract Syntax		**Transfer Syntax**		Role	Extended Negotiation
Name	UID	Name	UID		
Patient Root Query/Retrieve IM – Find	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Patient Root Query/Retrieve IM – Move	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/ Retrieve IM – Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/ Retrieve IM -Move	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

SOP Specific Conformance for all Query / Retrieve Service Classes

No extended negotiation is supported.

Real-world activity: EAIP AE as C-FIND, C-Move SCU

Associated Real-World Activity: Find and Move

EAIP initiates C-FIND and C-MOVE requests as SCU in response to prior filter configurations in the prefetch use cases. The proposed Presentation Contexts are as per the above table.

SOP Specific Conformance

No extended negotiation is supported for any of the storage, query and retrieve service classes.

Association Acceptance by Real-World Activity

EAIP will accept associations for Verification, Query / Retrieve requests. EAIP will accept CStore association requests as C-STORE SCP as sub-operations during a C-Move.

Chapter 3: Support of Character Sets

Table 3.1 lists character sets support by the platform.

Table 3.1: Supported Character Sets

Character Set Description	Defined Term
Latin alphabet No. 1	ISO_IR 100

Chapter 4: Web DICOM Interface

EAIP received DICOM Store request over the web with following web API.

- **Https://<fqdn>/api/stowrsserver/{calling-aeTitle}/stowrs**

or

- **Https://<fqdn>/api/stowrsserver/{calling-aeTitle}/stowrs/studies**

Chapter 5: Security

The platform's servers provide security support for DICOM web interfaces (QIDO/WADO/STOW) and supports DICOM over TLS for TCP-IP based DICOM interfaces. It is assumed that the servers are used within a secured environment for non-TLS TCP-IP based DICOM communication. It is assumed that a secured environment includes at a minimum:

- Firewall or router protections to ensure that only approved external hosts have network access to Eureka AI Interoperability Platformservers.
- Firewall or router protections to ensure that Eureka AI Interoperability Platform only has network access to approved external hosts and services.
- Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (for example, such as a Virtual Private Network, also called VPN)

Other network security procedures such as automated intrusion detection may be appropriate in some environments. Additional security features may be established by the local security policy and are beyond the scope of this conformancestatement.

Certificate Management for DICOM Over TLS:

EAIP supports DICOM over TLS. By default, EAIP is configured with a self-signed Identity certificate and this certificate is used as a server certificate during DICOM image transfers. EAIP also has an option to import external certificate to enable two-way TLS. If the party have certificate from different CA, EAIP has an option to import external CA certificates for validation. Hence enables two-way TLS for DICOM communication.

Supported TLS Versions:

TLSv1.0, TLSv1.1, TLSv1.2

TLS Fallback option:

In case all three versions are selected, highest supported TLS version by third party system will be used. For example, if third party system supports TLS1.1 then TLS1.1 will be used.

Chapter 6: Private Tags

EAIP may add private modules to GSPS and RTStruct IOD. This module contains some application specific data. Data that specified the patient directly are not included.

Private Tag Creator	Tag	Private Tag Range
EUREKA AI 01	0077,0077	0077,7700 – 77FF

Tag	Tag Name	VR	VM
0077,7700	GSPS / RTSTRUCT Source	LO	1
0077,7701	GSPS / RTSTRUCT Source Name	LO	1
0077,7702	Pending Count	US	1
0077,7703	Accepted Count	US	1
0077,7704	Rejected Count	US	1
0077, 7705	Text Annotation State Sequence	SQ	1
0077, 7706	Graphic Annotation State Sequence	SQ	1
0077,7707	Annotation Tracking UID	UI	1
0077,7708	Annotation State	LO	1
0077,7709	Annotation State Description	LO	1
0077,770A	Annotation State Feedback Sequence	SQ	1
0077,770B	User Identifier	LO	1
0077,770C	Username	LO	1
0077,770D	User Feedback	LO	1
0077,770E	User Feedback Description	LO	1
0077,770F	AI Output GSPS / RTSTRUCT Series UID	UI	1
0077,7710	ROI Contour State Sequence	SQ	1
0077,7711	ROI Contour Number	LO	1

Chapter 7: Communication Profile

Supported Communication Stacks (PS 3.8)

DICOM Upper Layer (PS 3.8) is supported using TCP/IP.

OSI Stack

OSI stack not supported.

IPv4 and IPv6 Support

This product supports only IPv4.

Additional Protocol Support

This product does not support DHCP.

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