

DICOM Conformance Statement
ALADDIN
version 1.5.0

1. Overview

Aladdin is an optical biometer with integrated corneal topographer that allows examinations of patient's eye and calculation of IOL power. Aladdin is an acquisition modality as described in the Dicom Workflow.

The Aladdin application entity allows to:

- query modality worklist
- query patients
- archive patient's eye examination report

This document is structured as suggested in the DICOM Standard (PS 3.2 Conformance).

| SOP Classes | User of Service (SCU) | Provider of Service (SCP) |
|---|-----------------------|---------------------------|
| Transfer | | |
| Multiframe True Color Secondary Capture Image Storage | Yes | No |
| Encapsulated PDF Storage | Yes | No |
| Workflow Management | | |
| Storage Commitment Push Model SOP Class | Yes | No |
| Modality Worklist Information Model - FIND | Yes | No |
| Query/Retrieve | | |
| Patient Root Query/Retrieve Information Model - FIND | Yes | No |
| Verification | | |
| Verification | Yes | Yes |

Table 1: Network Services

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3. Introduction

3.1. Revision History

| Document Version | Date | Changes |
|------------------|------------|------------------------------|
| 1.0 | 2016-07-10 | Initial release (ver. 1.5.0) |

Table 2: revision history

3.2. Audience

This document is written for people that have at least a basic understanding of the Dicom Standard. The reader should be the person which want to integrate in his healthcare facility the Dicom functionalities such as the safe storage of files and how Aladdin can do this. The document even explains how to use Dicom functionalities of the Aladdin and how these work. So it's intended for healthcare IT staff.

3.3. Remarks

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 TOPCON and other vendors' Medical equipment. The Conformance Statement should read and understood in conjunction with the DICOM Standard. However, by itself, it is not guaranteed to ensure the desired interoperability and a successful inter-connectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing inter-connectivity between TOPCON and non-TOPCON equipment.

- Test procedures should be defined to validate the desired level of connectivity.

- The DICOM standard will evolve to meet the users' future requirements. TOPCON is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

3.4. Terms and definitions

The following terms are explained for information purposes only, their formal definition is contained within the DICOM standard.

Abbreviations and terms are as follows:

| | |
|---------|---|
| AE | Application Entity |
| DICOM | Digital Imaging and Communication in Medicine |
| DIMSE-C | DICOM Message Service Element-Composite |
| IOL | Intra Ocular Lens |

| | |
|-----|------------------------|
| MWL | Modality WorkList |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SOP | Service Object Pair |
| UID | Unique Identifier |

3.5. References

Digital Imaging and Communication in Medicine (DICOM), NEMA PS 3, 2011

3.6. Basics of Dicom Communication

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in italics below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two Application Entities (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an initial network “handshake”. One of the two devices must initiate an Association (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (Negotiation).

DICOM specifies a number of network services and types of information objects, each of which is called an Abstract Syntax for the Negotiation. DICOM also specifies a variety of methods for encoding data, denoted Transfer Syntaxes. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called Presentation Contexts. The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on Roles – which one is the Service Class User (SCU - client) and which is the Service Class Provider (SCP - server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (PDU) size, security information, and network service options (called Extended Negotiation information). The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate Information Object Definition, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use

cases. Each transfer is explicitly acknowledged by the receiver with a Response Status indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a Media Application Profile that specifies “pre-negotiated” exchange media format, Abstract Syntax, and Transfer Syntax.

4. Networking

This section contains information regarding how Dicom's Services are implemented.

4.1. Implementation Model

4.1.1. Application Data Flow

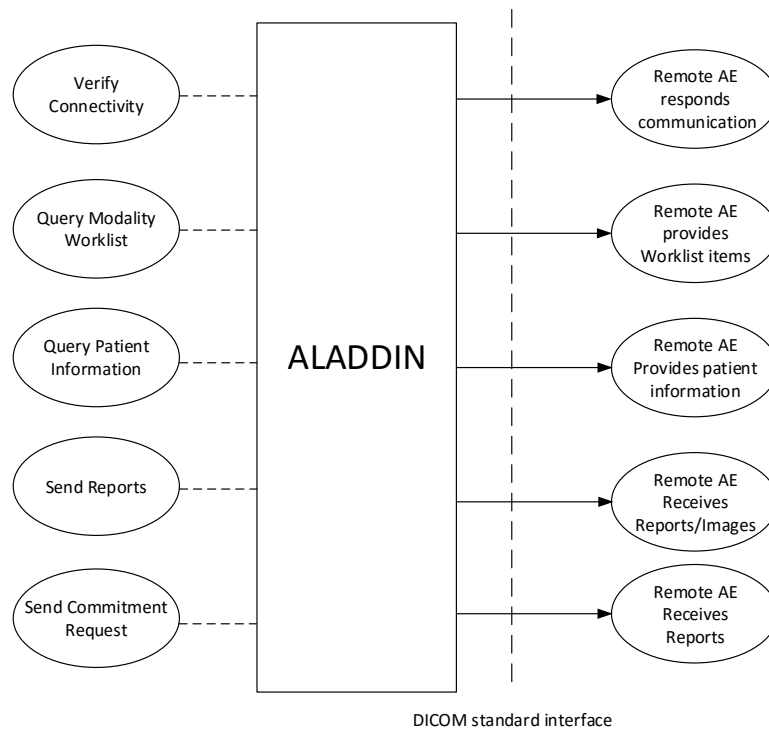


Figure 1: ALADDIN software as acquisition modality

4.1.2. Functional definitions of AE's

4.1.2.1. Functional Definition of ALADDIN

The Aladdin is an optical biometer that allows examinations of patient's eye and IOL power calculation. The acquisition modality enables biometry and examination of the eye of patient and the IOL calculation module enables to calculate the refractive power of a IOL to be implanted into an eye.

The Aladdin software is an application entity that allows to:

- query modality worklist
- query patients

- archive patient's eye examination report
-
-

Aladdin implements a Service Class User for the following Dicom Services:

- Verification
- Modality Worklist Information Model
- Patient Root Query/Retrieve Information Model
- Encapsulated PDF Storage
- Multiframe True Color Secondary Capture Image Storage
- Storage Commitment PUSH Model

Aladdin implements a Service Class Provider for the following Dicom Services:

- Verification

All Dicom functionalities are integrated in the Aladdin software user interface and they not need to be invoked manually.

Aladdin software logs extensive information about the DICOM operation in log files.

4.2. AE Specifications

4.2.1.ALADDIN AE Specification

4.2.1.1. SOP Classes

| SOP Class Name | SOP Class UID | SCU | SCP |
|--|-------------------------------|-----|-----|
| Verification | 1.2.840.10008.1.1 | Yes | Yes |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Yes | No |
| Multiframe True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.1 | Yes | No |
| Encapsulated PDF Storage | 1.2.840.10008.5.1.4.1.1.104.1 | Yes | No |
| Patient Root Query/Retrieve Information Model - FIND | 1.2.840.10008.5.1.4.1.2.1.1 | Yes | No |
| Modality Worklist Information Model – FIND | 1.2.840.10008.5.1.4.31 | Yes | No |

Table 3: SOP Classes for the ALADDIN AE

4.2.1.2. Association Policies

4.2.1.2.1. General

The Application Context Name for DICOM 3.0 is the only Application Context proposed.

| | |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

Table 4: DICOM application context

4.2.1.2.2. Number of Associations

The Verification SCU can establish only one association simultaneously at a time.

| | |
|---|---|
| Maximum number of simultaneous associations | 1 |
|---|---|

Table 5: DICOM number of association

4.2.1.2.3. Asynchronous Nature

The Verification SCU support asynchronous operation, but the Verification SCU allows only a single operation for an association.

| | |
|--|---|
| Maximum number of outstanding asynchronous transaction | 1 |
|--|---|

Table 6: Asynchronous nature

4.2.1.2.4. Implementation Identifying Information

The implementation information for the Verification SCU AE is:

| | |
|-----------------------------|-----------------------|
| Implementation Class UID | 1.2.392.200106.1420.1 |
| Implementation Version Name | TEM_ALAD_100 |

Table 7: DICOM implementation class and version for ALADDIN AE

4.2.1.3. Association Initiation Policy

4.2.1.3.1. Activity – Verify Connectivity

Verification allows to check connectivity between each configured AE SCU and SCP.

4.2.1.3.1.1. Description and Sequencing Activities

This activity is available when configuring the DICOM Application Entities. The user can test connectivity at application level between ALADDIN Application Entity and its peer DICOM AE.

After the Verification AE establishes a new association to check the connection settings, it sends a verification request message to a remote verification AE by using a C-ECHO service DIMSE-C.

4.2.1.3.1.2. Proposed Presentation Contexts

The verification AE is capable of proposing the Presentation Contexts shown in the following table.

| Presentation Context | | | | | |
|----------------------|-------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |

Table 8: DICOM implementation class and version for the Verification SCU AE

4.2.1.3.1.3. SOP Specific Conformance for Verification SOP Class as SCU

ALADDIN software provides standard conformance.

4.2.1.3.2. **Activity – Query Modality Worklist**

The MWL query provides scheduled examinations information for patients. Query to MWL allows to find the scheduled procedures for this instrument.

4.2.1.3.2.1. *Description and Sequencing Activities*

The user can perform this activity in two modes:

- Automatic query (Today's pending tasks)

This is the activity mode that is automatically performed when opening the "Waiting Room" window in the ALADDIN application. The query is performed using predefined keys. The applied query keys are shown in the following table.

| Tag | Attribute Name | Description |
|--------------|--|--|
| (0040,0100) | Scheduled Procedure Step Sequence | |
| >(0040,0001) | Scheduled Station Application Entity Title | Is the value which is configured to be the Application Entity Title of this device (factory default setting is "ALADDIN", the user can change it as a setting) |
| >(0040,0002) | Scheduled procedure Step Start Date | Date of today |
| >(0008,0060) | Modality | Modality (factory default setting is "OT", the user can change it as a setting) |

Table 9: automatic Modality Worklist Query keys

The query is triggered automatically when opening the "Waiting Room" window. The ALADDIN application automatically populate the list of matching results. The user can select the desired work from the list to start the examination.

- Customized query

When in the "Waiting Room" view, the user can modify the query parameters editing the query fields available in the view and then execute a new query. All the available parameters are shown in the view. The applicable query keys are shown in the following table.

| Tag | Attribute Name | Description |
|--------------|--|--|
| (0040,0100) | Scheduled Procedure Step Sequence | |
| >(0040,0001) | Scheduled Station Application Entity Title | The default value is set by last used key. The factory default is "Aladdin". The user can enter another value or leave the field empty. If the user press "Reset" button the value is reset to factory default. |
| >(0040,0002) | Scheduled procedure Step Start Date | The default value is current date. The user can change the value to another specific day or dates range. The user can leave the field empty. |
| >(0008,0060) | Modality | The default value is set by last used key. The factory default is "OT". |

| | | |
|-------------|--------------|--|
| | | The user can enter another value or leave the field empty. If the user press "Reset" button the value is reset to factory default. |
| (0010,0010) | Patient Name | The default value is empty. The user can leave the field empty or fill it with characters according to standard DICOM Person Name value representation (5 component convention). "*" wildcard is accepted. |
| (0010,0020) | Patient ID | The default values is empty. The user can leave the field empty or fill it with characters. "*" wildcard is accepted. |

Table 10: customized Modality Worklist Query keys

The query is triggered when clicking on the "Update Worklist" button. The ALADDIN application automatically populate the list of matching results. The user can the select the desired work from the list to start the examination.

4.2.1.3.2.2. *Proposed Presentation Contexts*

The Modality Worklist IM - FIND AE is capable of proposing the Presentation Contexts shown in the following table.

| Presentation Context | | | | | |
|-----------------------------|------------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Modality Worklist IM - FIND | 1.2.840.10008.5.1.4.31 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |

Table 11: DICOM implementation class and version for the Modality Worklist IM - FIND SCU AE

4.2.1.3.2.3. *SOP Specific Conformance for Modality Worklist SOP Class*

| Tag | Tag Name | Query key | Imported | Displayed | SOP Instance |
|---------------------------------------|--|-------------|----------|-----------|--------------|
| Scheduled Procedure Step (SPS) | | | | | |
| (0040,0100) | Scheduled Procedure Step Sequence | | | | |
| >(0040,0001) | Scheduled Station Application Entity Title | DEF, AQ, CQ | X | PL | |
| >(0040,0003) | Scheduled Procedure Step Start Time | | X | PL | |

| | | | | | |
|--------------------------------|--------------------------------------|----------------|---|----|---|
| >(0040,0002) | Scheduled Procedure Step Start Date | DEF, AQ, CQ | X | PL | |
| >(0008,0060) | Modality | DEF, AQ, CQ | X | PL | |
| >(0040,0006) | Scheduled Performing Physicians Name | | | | |
| >(0040,0007) | Scheduled Procedure Step Description | | | | |
| >(0040,0010) | Scheduled Station Name | | | | |
| >(0040,0011) | Scheduled Procedure Step Location | | | | |
| >(0040,0008) | Scheduled Protocol Code Sequence | | | | |
| >>(0008,0100) | Code Value | | | | |
| >>(0008,0102) | Coding Scheme Designator | | | | |
| >>(0008,0103) | Coding Scheme Version | | | | |
| >>(0008,0104) | Code Meaning | | | | |
| >(0040,0012) | Pre-Medication | | | | |
| >(0040,0009) | Scheduled Procedure Step ID | | | | |
| >(0032,1070) | Requested Contrast Agent | | | | |
| Requested Procedure | | | | | |
| (0040,1001) | Requested Procedure ID | | X | PL | X |
| (0032,1060) | Requested Procedure Description | | X | PL | X |
| (0032,1064) | Requested Procedure Code Sequence | | X | | X |
| >(0008,0100) | Code Value | | X | | X |
| >(0008,0102) | Coding Scheme Designator | | X | | X |
| >(0008,0103) | Coding Scheme Version | | X | | X |
| >(0008,0104) | Code Meaning | | X | | X |
| (0020,000D) | Study Instance UID | | X | | X |
| (0008,1110) | Referenced Study Sequence | | X | | X |
| >(0008,1150) | Referenced SOP Class UID | | X | | X |
| >(0008,1155) | Referenced SOP Instance UID | | X | | X |
| (0040,1003) | Requested Procedure Priority | | X | | |
| (0040,1004) | Patient Transport Arrangements | | | | |
| (0040,1400) | Requested Procedure Comments | | X | PL | |
| Imaging Service Request | | | | | |
| (0008,0050) | Accession Number | | X | PL | X |
| (0032,1032) | Requesting Physician | | | | |
| (0008,0090) | Referring Physicians Name | | X | PL | X |
| Visit Identification | | | | | |
| (0038,0010) | Admission ID | | | | |
| Visit Status | | | | | |

| | | | | | |
|-------------------------------|--|----|---|---------|---|
| (0038,0300) | Current Patient Location | | | | |
| Visit Relationship | | | | | |
| (0008,1120) | Referenced Patient Sequence | | | | |
| >(0008,1150) | Referenced SOP Class UID | | | | |
| >(0008,1155) | Referenced SOP Instance UID | | | | |
| Patient Identification | | | | | |
| (0010,0010) | Patient Name | CQ | X | PL, APP | X |
| (0010,0020) | Patient ID | CQ | X | PL, APP | X |
| (0010,0021) | Issuer of Patient ID | | X | | X |
| (0010,1000) | Other Patient IDs | | X | | X |
| Patient Demographic | | | | | |
| (0010,0030) | Patients Birth Date | | X | PL, APP | X |
| (0010,0040) | Patients Sex | | X | PL, APP | X |
| (0010,1030) | Patients Weight | | | | |
| (0010,2160) | Ethnic Group | | X | | X |
| (0040,3001) | Confidentiality Constraint on Patient Data Description | | | | |
| (0010,4000) | Patients Comments | | | | |
| Patient Medical | | | | | |
| (0038,0500) | Patient State | | | | |
| (0010,21C0) | Pregnancy Status | | | | |
| (0010,2000) | Medical Alerts | | | | |
| (0038,0050) | Special Needs | | | | |

Table 12: Attributes involved in Modality Worklist C-FIND request and response

Values of column “Query Key”:

DEF: A tag marked with DEF has a value assigned when MWL is performed in automatic mode

RNG: A range can be applied as value for the query key

CQ: A tag marked with CQ is used and can be edited in the customized query mode

AQ: A tag marked with AQ is used in the automatic query mode

Values of column “Imported”:

X: The value gets imported in the application. This value may influence in information objects which will be created as a result of the performed examination.

Values of column “Displayed”:

PL: Values of this tag are visible in the pick list.

APP: Values of this tag are visible in the application.

Values of column “SOP Instance”:

X: Values of marked tags will be stored in created SOP Instances. See section 8.1.3 “Attribute Mapping”.

4.2.1.3.3. **Activity – Query Remote AE for patients**

This activity is used to get patient's data stored on a DICOM server.

4.2.1.3.3.1. *Description and Sequencing of Activities*

The user can perform this activity when the Aladdin application is configured and enable to allow search of patient's details on remote servers.

The user can query the server selecting alternatively between Patient Name or Patient ID. With one of these two keys selected the other one will be left automatically empty.

- Patient Name mode

The user select the Patient Name option for the query and types character in the search field. The application automatically populates the list of matching results. The user can select the desired patient information to start a new examination.

| Tag | Attribute Name | Description |
|-------------|----------------|---|
| (0010,0010) | Patient Name | The default value is empty. The user can fill it with characters according to standard DICOM Person Name value representation (5 component convention). “*” wildcard is accepted. |

Table 13: Patient Name mode Patient Root QR keys

- Patient ID mode

The user select the Patient ID option for the query and types character in the search field. The application automatically populates the list of matching results. The user can select the desired patient information to start a new examination.

| Tag | Attribute Name | Description |
|-------------|----------------|--|
| (0010,0020) | Patient ID | The default values is empty. The user can fill it with characters. “*” wildcard is accepted. |

Table 14: Patient ID mode Patient Root QR keys

4.2.1.3.3.2. *Proposed Presentation Contexts*

The Patient Root Query/Retrieve Information Model – FIND AE is capable of proposing the Presentation Contexts shown in the following table.

| Presentation Context | | | | | |
|---------------------------------------|-----------------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| 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 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |

Table 15: DICOM implementation class and version for Patient Root Query/Retrieve IM - FIND SCU AE

4.2.1.3.3.3. SOP Specific Conformance for Patient Root Query/Retrieve SOP Class

| Tag | Tag Name | Query key | Imported | Displayed | SOP Instance |
|-------------------------------|--|-----------|----------|-----------|--------------|
| Patient Identification | | | | | |
| (0010,0010) | Patient Name | X | X | PL, APP | X |
| (0010,0020) | Patient ID | X | X | PL, APP | X |
| (0010,0021) | Issuer of Patient ID | | | | |
| (0010,1000) | Other Patient IDs | | | | |
| Patient Demographic | | | | | |
| (0010,0030) | Patients Birth Date | | X | PL, APP | X |
| (0010,0040) | Patients Sex | | X | PL, APP | X |
| (0010,1030) | Patients Weight | | | | |
| (0010,2160) | Ethnic Group | | | | |
| (0040,3001) | Confidentiality Constraint on Patient Data Description | | | | |
| (0010,4000) | Patients Comments | | | | |

Table 16: DICOM implementation class and version for Patient Root Query/Retrieve IM - FIND SCU AE

Values of column “Query Key”:

X: The value is used for the query if the corresponding field is empty.

Values of column “Imported”:

X: The value gets imported in the application. This value may influence in information objects which will be created as a result of the performed examination.

Values of column “Displayed”:

PL: Values of this tag are visible in the pick list.

APP: Values of this tag are visible in the application.

Values of column “SOP Instance”:

X: Values of marked tags will be stored in created SOP Instances. See section 8.1.3 “Attribute Mapping”.

4.2.1.3.4. **Activity – Measure/Calculate data**

The user can perform “Measure/Calculate data” at any time if no other activity is in progress.

This activity has no relation with DICOM messaging.

The “Measure/Calculate data” activity is always started by selecting a work from the result list of “Query Modality Worklist” or “Query Remote AE for patients” or by inserting new patient’s details or by selecting already present patient’s details from local or other external database.

In this activity the device acquires Biometry data and images and IOL calculations are performed.

Data created in this activity can be subject of activity “Store data to remote AE”.

4.2.1.3.5. **Activity – Create Report**

The user can create reports based on the measured or calculated data. This report can be printed directly.

Reports are created on the fly and without any manual intervention when measured data are archived during activity “store data to remote AE”.

4.2.1.3.6. **Activity – Store data to remote AE**

During this activity acquired data, calculation results and evidence reports are sent to configured Storage providers as Encapsulated PDF SOP instances or Multiframe True Color Secondary Capture Image SOP instances.

After some time the application request to the configured Storage Commitment Provider to verify the persistence of the data previously transferred to the remote Storage AE.

4.2.1.3.6.1. *Description and Sequencing of Activities*

- **Trigger “Store new data to remote AE”**
The user can perform this activity by pressing “Export” button or automatically, if so configured, when saving the exam to the local database.
Once triggered, the application create electronic reports and transfer the them to the Storage AE.
The user can configure to export the reports in two formats:
 - Encapsulated PDF Storage
(1.2.840.10008.5.1.4.1.1.104.1), factory default
 - Multiframe True Color Secondary Capture Image Storage
(1.2.840.10008.5.1.4.1.1.7.4)
- **Request Storage Commitment**
To verify that the data has been safely archived, the Application can be configured to request to the Storage Commitment AE the commit of storage instances.

4.2.1.3.6.2. Proposed Presentation Contexts

| Presentation Context | | | | | |
|---|-----------------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Multiframe True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |

Table 17: DICOM implementation class and version for Storage SCU AE in Encapsulated PDF Storage mode

| Presentation Context | | | | | |
|---|-----------------------------|---|------------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Multiframe True Color Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| | | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 | SCU | None |
| | | JPEG Lossless, Nonhierarchical (Processes 14) | 1.2.840.10008.1.2.4.57 | SCU | None |
| | | JPEG-LS Lossless Image Compression | 1.2.840.10008.1.2.4.80 | SCU | None |
| | | RLE Lossless | 1.2.840.10008.1.2.5 | SCU | None |

Table 18: DICOM implementation class and version for Storage SCU AE in Multiframe True Color Secondary Capture Image Storage mode

Note: All the available Transfer Syntaxes that the Storage SCU AE can support are listed above. The user can configure the preferred Transfer Syntax by the settings. The factory default is: Implicit VR Little Endian (1.2.840.10008.1.2).

| Presentation Context | | | | | |
|---|----------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |

Table 19: DICOM implementation class and version for Storage Commitment Push Model SCU AE

4.2.1.3.6.3. SOP Specific Conformance for Storage SOP Class

The Application Software AE provides standard conformance.

4.2.1.3.6.4. *SOP Specific Conformance for Storage Commitment SOP Class as SCU*

4.2.1.3.6.4.1. Storage Commitment Operations (N-ACTION)

The application requests storage commitment for instances of the Encapsulated PDF Storage or Multiframe True Color Secondary Capture Image Storage IOD.

The Storage Commitment Request addresses always only one SOP Instance.

4.2.1.4. Association Acceptance Policy

4.2.1.4.1. Activity – Verify Communication

This activity can be performed at any time. The service is available as soon as the ALADDIN application has been started.

4.2.1.4.1.1. Description and Sequencing of Activities

The ALADDIN application AE responds to verification requests made by remote AEs.

4.2.1.4.1.2. Accepted Presentation Contexts

| Presentation Context | | | | | |
|----------------------|-------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Verification | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |

Table 20: DICOM implementation class and version accepted by ALADDIN Verification SCP AE

4.2.1.4.1.3. SOP Specific Conformance for Verification SOP Class as SCP

The ALADDIN application AE provides standard conformance.

4.2.1.4.2. Activity – Receive Storage Commitment N-EVENT-REPORT Request

This activity can occur at any time when the ALADDIN application service receives an N-EVENT-REPORT notification from the remote Storage Commitment AE, following a previous Storage Commitment N-ACTION request sent to it by the ALADDIN Storage Commitment SCU.

4.2.1.4.2.1. Description and Sequencing of Activities

The user perform the storage of data to the remote Storage AE. Afterwards, if configured, the ALADDIN application automatically send the N-ACTION request to the remote Storage Commitment AE. The Storage Commitment AE can send an N-EVENT-REPORT request to the ALADDIN application service. The application elaborates the information contained in the N-EVENT-REPORT message and notifies to the user if the previous commitment request has positive result and the data have been safely stored.

4.2.1.4.2.2. Accepted Presentation Contexts

| Presentation Context | | | | | |
|---|----------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Storage Commitment Push Model SOP Class | 1.2.840.10008.1.20.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCP | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP | None |

Table 21: DICOM implementation class and version accepted by ALADDIN for Storage Commitment Push Model SCP AE

4.2.1.4.2.3. SOP Specific Conformance for Storage Commitment SOP Class as SCP

4.2.1.4.2.3.1. Storage Commitment Operations (N-EVENT REPORT)

The ALADDIN application is able of receiving an N-EVENT-REPORT notification if it has successfully negotiated a Presentation Context for the Storage Commitment Push.

4.3. Network Interfaces

4.3.1. Physical Network Interface

The physical network interface is not visible in the ALADDIN application. The application uses the communication stack as offered by the Operating System.

4.3.2. Additional Protocols

Both IP address and host names are supported and get resolved.

No additional protocols are supported.

4.3.3. IPv4 and IPv6 Support

IPv4 only is supported.

4.4. Configuration

Local Application Entity and remote AEs can be configured in the Connectivity section of the ALADDIN application settings.

4.4.1. AE Title/Presentation Address Mapping

The mapping from AE Title to TCP/IP addresses and ports is configurable and set when enabling the DICOM functionalities.

4.4.1.1. Local AE Titles

The IP can be configured to be set up manually or with DHCP by the Operating System. The Application Entity Title and the port number is configurable. The default port number is 115.

4.4.1.2. Remote AE Titles

The mapping of external AE Titles to TCP/IP addresses and ports is configurable. The ALADDIN application allows to configure a remote AE for each service.

For each AE the host name or IP, port and AE Title must be inserted.

4.4.2. Parameters

| Parameter | Editable (Yes/No) | Default Value |
|---|-------------------|---------------|
| General Parameters | | |
| DIMSE RSP Timeout | No | 5 s. |
| Network log level | No | Activity |
| Storage Commitment for failed instances | No | Re-Archive |
| AE Specific Parameters | | |
| Number of simultaneous Associations by Service and/or SOP Class | No | 1 |
| Verification SCU Parameters | | |
| No specific configuration required. | | |
| Modality Worklist SCU Parameters | | |
| Scheduled Station AE Title | Yes | ALADDIN |
| Modality | Yes | OT |
| Patient Root Q/R SCU Parameters | | |
| No specific configuration required. | | |
| Storage SCU | | |

| | | |
|--|-----|---------------------------|
| Used SOP Class | Yes | Encapsulated PDF Storage |
| Transfer Syntax for Multiframe True Color Secondary Capture Image Storage mode | Yes | Implicit VR Little Endian |
| Storage Commitment SCU Parameters | | |
| Storage Commitment enable/disable | Yes | Disabled |
| Re-archive instances after N-EVENT-REPORT with Failure Reason "0112H" | No | Re-Archive |
| Verification SCP Parameters | | |
| Local AE Title | Yes | ALADDIN |
| Local AE Listening port | Yes | 115 |

5. Media Interchange

Media Interchange is not scope of this document since Media Interchange is not supported by ALADDIN application.

6. Support of Character Sets

All AE previously desrbied support UTF-8 character set.

| Supported Specific Character Set | |
|----------------------------------|--------------|
| Character Set Description | Defined Term |
| UTF-8 encoded Unicode | ISO_IR 192 |

Table 22: Supported Character Set

7. Security

The DICOM functionalities of ALADDIN application do not support any specific security measure.

It is assumed that ALADDIN is used in a secured environment. Secured environment includes at least:

- Firewall protections to ensure that only authorized hosts have access to the ALADDIN application
- Firewall protections to ensure that ALADDIN application has access to authorized hosts only
- Any communication with external hosts or services outside the local secured environment use proper secure network channels

Additional security features may be established by the local security policy and are out of the scope of this conformance statement.

8. Annexes

8.1. IOD Contents

8.1.1. Created SOP Instance(s)

Abbreviations used for presence of values:

ALWAYS: attribute always present with a value

ANAP: Attribute is not always present

VNAP: Value not always present.(zero length if no value is present)

Abbreviations used for sources of data:

USER: the attribute value source is from User Input

AUTO: the attribute value is generated automatically

MWL: the attribute value is the same as the value received by Modality Worklist

PRQ: the attribute value is the same as the value received by Patient Root Query

8.1.1.1. Encapsulated PDF IOD

| IE | Module | Presence of Module |
|-----------------------|------------------------------|--------------------|
| Patient | | |
| | Patient | ALWAYS |
| Study | | |
| | General Study | ALWAYS |
| Series | | |
| | Encapsulated Document Series | ALWAYS |
| Equipment | | |
| | General Equipment | ALWAYS |
| | SC Equipment | ALWAYS |
| Encapsulated Document | | |
| | Encapsulated Document | ALWAYS |
| | SOP Common | ALWAYS |

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|----------------------|---|--------|-------------------------------|
| (0010,0010) | 2 | PN | Patient's Name | Patient's full name. | ALWAYS | MWL, PRQ, USER, AUTO |
| (0010,0020) | 2 | LO | Patient ID | Primary hospital identification number or code for the patient. | ALWAYS | MWL, PRQ, USER, AUTO |
| (0010,0030) | 2 | DA | Patient's Birth Date | Birth date of the patient. | ALWAYS | MWL, PRQ, USER |
| (0010,0040) | 2 | CS | Patient's Sex | Sex of the named patient. Enumerated Values: M = male F = female O = other | VNAP | MWL, PRQ, USER |

| | | | | | | |
|-------------|---|----|--------------|--------------------------------------|------|----------|
| (0010,2160) | 3 | SH | Ethnic Group | Ethnic group or race of the patient. | ANAP | MWL, PRQ |
|-------------|---|----|--------------|--------------------------------------|------|----------|

Table 23: Module Patient

| Tag | Type | VR | Name | Description | PoV | Source |
|--------------|------|----|-----------------------------|--|--------|-----------|
| (0020,000D) | 1 | UI | Study Instance UID | Unique identifier for the Study. In unscheduled case ALADDIN uses a constant prefix of "1.2.392.200106.1420.1.2" followed by a date/time stamp and machine specific identifier. In scheduled case the value is copied from the Modality Worklist. | ALWAYS | MWL, AUTO |
| (0008,0020) | 2 | DA | Study Date | Date the Study started. | ALWAYS | AUTO |
| (0008,0030) | 2 | TM | Study Time | Time the Study started. | ALWAYS | AUTO |
| (0008,0090) | 2 | PN | Referring Physician's Name | Name of the patient's referring physician. | VNAP | MWL |
| (0020,0010) | 2 | SH | Study ID | Equipment generated Study identifier. | ALWAYS | AUTO |
| (0008,0050) | 2 | SH | Accession Number | A RIS generated number that identifies the order for the Study. Value does not exist in unscheduled case. | VNAP | MWL |
| (0008,1110) | 3 | SQ | Referenced Study Sequence | A sequence that provides reference to a Study SOP Class/Instance pair. The sequence may have zero or more Items. | ANAP | MWL |
| >(0008,1150) | 1 | UI | Referenced SOP Class UID | Uniquely identifies the referenced SOP Class. | ANAP | MWL |
| >(0008,1155) | 1 | UI | Referenced SOP Instance UID | Uniquely identifies the referenced SOP Instance. | ANAP | MWL |
| >(0008,0100) | 1 | SH | Code Value | See NEMA PS3.3 Section 8.1. | ANAP | MWL |
| >(0008,0102) | 1 | SH | Coding Scheme Designator | See NEMA PS3.3 Section 8.2. | ANAP | MWL |

| | | | | | | |
|--------------|----|----|-----------------------|---|------|-----|
| >(0008,0103) | 1C | SH | Coding Scheme Version | Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously. | ANAP | MWL |
| >(0008,0104) | 1 | LO | Code Meaning | See NEMA PS3.3 Section 8.3. | ANAP | MWL |

Table 24: Module General Study

| Tag | Type | VR | Name | Description | PoV | Source |
|--------------|------|----|---------------------------------|---|--------|--------|
| (0008,0060) | 1 | CS | Modality | The modality appropriate for the encapsulated document. This Type definition shall override the definition in the SC Equipment Module. Always "OT" | ALWAYS | AUTO |
| (0020,000E) | 1 | UI | Series Instance UID | Unique identifier of the Series. ALADDIN uses a constant prefix of "1.392.200106.1420.1.2." followed by a date/time stamp and machine specific identifier. | ALWAYS | AUTO |
| (0020,0011) | 1 | IS | Series Number | A number that identifies the Series. | ALWAYS | AUTO |
| >(0040,1001) | 1C | SH | Requested Procedure ID | Identifier that identifies the Requested Procedure in the Imaging Service Request. Required if procedure was scheduled. May be present otherwise. | ANAP | MWL |
| >(0032,1060) | 3 | LO | Requested Procedure Description | Institution-generated administrative description or classification of Requested Procedure. | ANAP | MWL |

| | | | | | | |
|---------------|----|----|--------------------------------------|---|--------|-----|
| >(0032,1064) | 3 | SQ | Requested Procedure Code Sequence | A sequence that conveys the Procedure Type of the requested procedure. The Requested Procedure Code Sequence shall contain only a single item. | ANAP | MWL |
| >>(0008,0100) | 1 | SH | Code Value | See NEMA PS3.3 Section 8.1. | ANAP | MWL |
| >>(0008,0102) | 1 | SH | Coding Scheme Designator | See NEMA PS3.3 Section 8.2. | ANAP | MWL |
| >>(0008,0103) | 1C | SH | Coding Scheme Version | See NEMA PS3.3 Section 8.2. Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously. May be present otherwise. | ANAP | MWL |
| >(0040,0007) | 3 | LO | Scheduled Procedure Step Description | Institution-generated description or classification of the Scheduled Procedure Step to be performed. | ANAP | MWL |
| >>(0008,0100) | 1 | SH | Code Value | See NEMA PS3.3 Section 8.1. | ALWAYS | MWL |
| >>(0008,0102) | 1 | SH | Coding Scheme Designator | See NEMA PS3.3 Section 8.2. | ALWAYS | MWL |
| >>(0008,0103) | 1C | SH | Coding Scheme Version | See NEMA PS3.3 Section 8.2. Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously. May be present otherwise. | ANAP | MWL |
| >>(0008,0104) | 1 | LO | Code Meaning | See NEMA PS3.3 Section 8.3. | ALWAYS | MWL |

Table 25: Module Encapsulated Document Series

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|--------------|---|--------|--------|
| (0008,0070) | 2 | LO | Manufacturer | Manufacturer of the equipment that produced the composite instances Always "Visia Imaging SRL" | ALWAYS | AUTO |

| | | | | | | |
|-------------|---|----|---------------------------|---|--------|------|
| (0008,1010) | 3 | SH | Station Name | Name composed by "TEM_ALAD" and the device serial number. | ANAP | AUTO |
| (0008,1090) | 3 | LO | Manufacturer's Model Name | Manufacturer's model name of the equipment that produced the composite instances. Always "Aladdin" | ALWAYS | AUTO |
| (0008,1195) | 1 | UI | Transaction UID | Unique identifier for the Transaction. ALADDIN uses a constant prefix of "1.2.392.200106.1420.1. " followed by a date/time stamp and machine specific identifier. | ALWAYS | AUTO |
| (0018,1000) | 3 | LO | Device Serial Number | Manufacturer's serial number of the equipment that produced the composite instances. | ALWAYS | AUTO |
| (0018,1020) | 3 | LO | Software Version(s) | Manufacturer's designation of software version of the equipment that produced the composite instances. "1.5.0" higher versions: "1.5.x" where x denotes a patch version. | ALWAYS | AUTO |

Table 26: Module General Equipment

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|-----------------|---|--------|--------|
| (0008,0064) | 1 | CS | Conversion Type | Describes the kind of image conversion. SYN = Synthetic Image Always "SYN" for Synthetic Image | ALWAYS | AUTO |

Table 27: Module SC Equipment

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|-----------------|---|--------|--------|
| (0020,0013) | 1 | IS | Instance Number | A number that identifies this SOP Instance. The | ALWAYS | AUTO |

| | | | | | | |
|-------------|---|----|----------------------------|--|--------|------|
| | | | | value shall be unique within a series. | | |
| (0008,0023) | 2 | DA | Content Date | The date the document content creation was started. | ALWAYS | AUTO |
| (0008,0033) | 2 | TM | Content Time | The time the document content creation was started. | ALWAYS | AUTO |
| (0008,002A) | 2 | DT | Acquisition Datetime | The date and time that the original generation of the data in the document started. | ALWAYS | AUTO |
| (0028,0301) | 1 | CS | Burned In Annotation | Indicates whether or not the encapsulated document contains sufficient burned in annotation to identify the patient and date the data was acquired. Enumerated Values: YES NO Identification of patient and date as text in an encapsulated document (e.g., in an XML attribute or element) is equivalent to "burned in annotation". A de-identified document may use the value NO. Always "YES" | ALWAYS | AUTO |
| (0042,0010) | 2 | ST | Document Title | The title of the document. Note: In the case of a PDF encapsulated document, this may be the value of the "Title" entry in the "Document Information Directory" as encoded in the PDF data. Always "Aladdin_reports" | ALWAYS | AUTO |
| (0040,A043) | 2 | SQ | Concept Name Code Sequence | A coded representation of the document title. Zero or one item may be present. Always empty sequence | EMPTY | AUTO |

| | | | | | | |
|-------------|---|----|------------------------------------|--|--------|------|
| (0042,0012) | 1 | LO | MIME Type of Encapsulated Document | The type of the encapsulated document stream described using the MIME Media Type (see RFC 2046). Always "application/pdf" | ALWAYS | AUTO |
| (0042,0011) | 1 | OB | Encapsulated Document | Encapsulated Document stream, containing a document encoded according to the MIME Type. | ALWAYS | AUTO |

Table 28: Module Encapsulated Document

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|------------------|---|--------|--------|
| (0008,0016) | 1 | UI | SOP Class UID | Uniquely identifies the SOP Class. See C.12.1.1.1 for further explanation. See also PS 3.4. Always "1.2.840.10008.5.1.4.1.1.104.1" | ALWAYS | AUTO |
| (0008,0018) | 1 | UI | SOP Instance UID | Uniquely identifies the SOP Instance. See C.12.1.1.1 for further explanation. See also PS 3.4. ALADDIN uses a constant prefix of "1.2.392.200106.1420.1.2." followed by a date/time stamp and machine specific identifier. | ALWAYS | AUTO |

Table 29: Module SOP Common

8.1.1.2. MultiFrame True Color Secondary Capture Image IOD

| IE | Module | Presence of Module |
|-----------|------------------|--------------------|
| Patient | | |
| | Patient | ALWAYS |
| Study | | |
| | General Study | ALWAYS |
| Series | | |
| | General Series | ALWAYS |
| | Multiframe Image | ALWAYS |
| Equipment | | |

| | | |
|-------|-------------------|--------|
| | General Equipment | ALWAYS |
| | SC Equipment | ALWAYS |
| Image | | |
| | General Image | ALWAYS |
| | Image Pixel | ALWAYS |
| | MultiFrame | ALWAYS |
| | SOP Common | ALWAYS |

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|----------------------|---|--------|----------------------|
| (0010,0010) | 2 | PN | Patient's Name | Patient's full name. | ALWAYS | MWL, PRQ, USER, AUTO |
| (0010,0020) | 2 | LO | Patient ID | Primary hospital identification number or code for the patient. | ALWAYS | MWL, PRQ, USER, AUTO |
| (0010,0030) | 2 | DA | Patient's Birth Date | Birth date of the patient. | ALWAYS | MWL, PRQ, USER |
| (0010,0040) | 2 | CS | Patient's Sex | Sex of the named patient. Enumerated Values: M = male F = female O = other | VNAP | MWL, PRQ, USER |
| (0010,2160) | 3 | SH | Ethnic Group | Ethnic group or race of the patient. | ANAP | MWL, PRQ |

Table 30: Module Patient

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|--------------------|--|--------|-----------|
| (0020,000D) | 1 | UI | Study Instance UID | Unique identifier for the Study. In unscheduled case ALADDIN uses a constant prefix of "1.2.392.200106.1420.1.2" followed by a date/time stamp and machine specific identifier. In scheduled case the value is copied from the Modality Worklist. | ALWAYS | MWL, AUTO |
| (0008,0020) | 2 | DA | Study Date | Date the Study started. | ALWAYS | AUTO |
| (0008,0030) | 2 | TM | Study Time | Time the Study started. | ALWAYS | AUTO |

| | | | | | | |
|--------------|----|----|-----------------------------|---|--------|------|
| (0008,0090) | 2 | PN | Referring Physician's Name | Name of the patient's referring physician. | VNAP | MWL |
| (0020,0010) | 2 | SH | Study ID | Equipment generated Study identifier. | ALWAYS | AUTO |
| (0008,0050) | 2 | SH | Accession Number | A RIS generated number that identifies the order for the Study. Value does not exist in unscheduled case. | VNAP | MWL |
| (0008,1110) | 3 | SQ | Referenced Study Sequence | A sequence that provides reference to a Study SOP Class/Instance pair. The sequence may have zero or more Items. | ANAP | MWL |
| >(0008,1150) | 1 | UI | Referenced SOP Class UID | Uniquely identifies the referenced SOP Class. | ANAP | MWL |
| >(0008,1155) | 1 | UI | Referenced SOP Instance UID | Uniquely identifies the referenced SOP Instance. | ANAP | MWL |
| >(0008,0100) | 1 | SH | Code Value | See NEMA PS3.3 Section 8.1. | ANAP | MWL |
| >(0008,0102) | 1 | SH | Coding Scheme Designator | See NEMA PS3.3 Section 8.2. | ANAP | MWL |
| >(0008,0103) | 1C | SH | Coding Scheme Version | Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously. | ANAP | MWL |
| >(0008,0104) | 1 | LO | Code Meaning | See NEMA PS3.3 Section 8.3. | ANAP | MWL |

Table 31: Module General Study

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|---------------------|---|--------|--------|
| (0020,000E) | 1 | UI | Series Instance UID | Unique identifier of the Series. ALADDIN uses a constant prefix of "1.392.200106.1420.1.2." followed by a date/time stamp and machine specific identifier. | ALWAYS | AUTO |

| | | | | | | |
|---------------|----|----|-----------------------------------|---|--------|------|
| (0020,0011) | 1 | IS | Series Number | A number that identifies the Series. | ALWAYS | AUTO |
| >(0040,1001) | 1C | SH | Requested Procedure ID | Identifier that identifies the Requested Procedure in the Imaging Service Request. Required if procedure was scheduled. May be present otherwise. | ALWAYS | MWL |
| >(0032,1060) | 3 | LO | Requested Procedure Description | Institution-generated administrative description or classification of Requested Procedure. | ANAP | MWL |
| >(0032,1064) | 3 | SQ | Requested Procedure Code Sequence | A sequence that conveys the Procedure Type of the requested procedure. The Requested Procedure Code Sequence shall contain only a single item. | ANAP | MWL |
| >>(0008,0100) | 1 | SH | Code Value | See NEMA PS3.3 Section 8.1. | ALWAYS | MWL |
| >>(0008,0102) | 1 | SH | Coding Scheme Designator | See NEMA PS3.3 Section 8.2. | ALWAYS | MWL |
| >>(0008,0103) | 1C | SH | Coding Scheme Version | See NEMA PS3.3 Section 8.2. Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously. May be present otherwise. | ANAP | MWL |
| >>(0008,0104) | 1 | LO | Code Meaning | See NEMA PS3.3 Section 8.3. | ALWAYS | MWL |
| >>(0008,0100) | 1 | SH | Code Value | See NEMA PS3.3 Section 8.1. | ALWAYS | MWL |
| >>(0008,0102) | 1 | SH | Coding Scheme Designator | See NEMA PS3.3 Section 8.2. | ALWAYS | MWL |
| >>(0008,0103) | 1C | SH | Coding Scheme Version | See NEMA PS3.3 Section 8.2. Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) | ANAP | MWL |

| | | | | | | |
|---------------|---|----|--------------|--|--------|-----|
| | | | | unambiguously. May be present otherwise. | | |
| >>(0008,0104) | 1 | LO | Code Meaning | See NEMA PS3.3 Section 8.3. | ALWAYS | MWL |

Table 32: General Series

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|----------|---|--------|--------|
| (0008,0060) | 1 | CS | Modality | The modality appropriate for the encapsulated document. This Type definition shall override the definition in the SC Equipment Module. Always "OT" | ALWAYS | AUTO |

Table 33: Multiframe Image

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|---------------------------|---|--------|--------|
| (0008,0070) | 2 | LO | Manufacturer | Manufacturer of the equipment that produced the composite instances Always "Visia Imaging SRL" | ALWAYS | AUTO |
| (0008,1010) | 3 | SH | Station Name | Name composed by "TEM_ALAD" and the device serial number. | ANAP | AUTO |
| (0008,1090) | 3 | LO | Manufacturer's Model Name | Manufacturer's model name of the equipment that produced the composite instances. Always "Aladdin" | ALWAYS | AUTO |
| (0008,1195) | 1 | UI | Transaction UID | Unique identifier for the Transaction. ALADDIN uses a constant prefix of "1.2.392.200106.1420.1." followed by a date/time stamp and machine specific identifier. | ALWAYS | AUTO |

| | | | | | | |
|-------------|---|----|----------------------|---|--------|------|
| (0018,1000) | 3 | LO | Device Serial Number | Manufacturer's serial number of the equipment that produced the composite instances. | ALWAYS | AUTO |
| (0018,1020) | 3 | LO | Software Version(s) | Manufacturer's designation of software version of the equipment that produced the composite instances. "1.5.0" higher versions: "1.5.x" where x denotes a patch version. | ALWAYS | AUTO |

Table 34: Module General Equipment

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|-----------------|---|--------|--------|
| (0008,0064) | 1 | CS | Conversion Type | Describes the kind of image conversion. SYN = Synthetic Image Always "SYN" for Synthetic Image | ALWAYS | AUTO |

Table 35: Module SC Equipment

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|----------------------|--|--------|--------|
| (0020,0013) | 1 | IS | Instance Number | A number that identifies this SOP Instance. The value shall be unique within a series. | ALWAYS | AUTO |
| (0008,0023) | 2 | DA | Content Date | The date the document content creation was started. | ALWAYS | AUTO |
| (0008,0033) | 2 | TM | Content Time | The time the document content creation was started. | ALWAYS | AUTO |
| (0008,002A) | 2 | DT | Acquisition Datetime | The date and time that the original generation of the data in the document started. | ALWAYS | AUTO |

| | | | | | | |
|-------------|---|----|----------------------------|---|--------|------|
| (0028,0301) | 1 | CS | Burned In Annotation | <p>Indicates whether or not the encapsulated document contains sufficient burned in annotation to identify the patient and date the data was acquired. Enumerated Values: YES NO</p> <p>Identification of patient and date as text in an encapsulated document (e.g., in an XML attribute or element) is equivalent to "burned in annotation". A de-identified document may use the value NO.</p> <p>Always "YES"</p> | ALWAYS | AUTO |
| (0040,A043) | 2 | SQ | Concept Name Code Sequence | <p>A coded representation of the document title. Zero or one item may be present.</p> <p>Always empty sequence</p> | EMPTY | AUTO |

Table 36: General Image

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|----------------------------|--|--------|--------|
| (0028,0002) | 1 | US | Samples Per Pixel | Number of samples for each pixel of the image. Always "3" | ALWAYS | AUTO |
| (0028,0004) | 1 | US | Photometric Interpretation | Meaning of the Samples per pixel. Always "RGB" | ALWAYS | AUTO |
| (0028,0006) | 1 | US | Planar Configuration | Always "1" | ALWAYS | AUTO |
| (0028,0008) | 1 | CS | Number of Frames | Number of images in the multiframe | ALWAYS | AUTO |
| (0028,0010) | 1 | US | Rows | Number of rows in the image. | ALWAYS | AUTO |
| (0028,0011) | 1 | US | Columns | Number of columns in the image | ALWAYS | AUTO |
| (0028,0100) | 1 | US | Bits Allocated | <p>Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See PS 3.5 for further explanation.</p> <p>Always "8"</p> | ALWAYS | AUTO |
| (0028,0101) | 1 | US | Bits Stored | Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. See PS 3.5 for further explanation. | ALWAYS | AUTO |

| | | | | | | |
|-------------|----|-------|----------------------|--|--------|------|
| | | | | Always "8" | | |
| (0028,0103) | 1 | US | Pixel Representation | Always "0" | ALWAYS | AUTO |
| (0028,0102) | 1 | US | High Bit | Most significant bit for pixel sample data. Each sample shall have the same high bit. See PS 3.5 for further explanation. Always "7" | ALWAYS | AUTO |
| (7FE0,0010) | 1C | OB OW | Pixel Data | A data stream of the pixel samples that comprise the Image. See C.7.6.3.1.4 for further explanation. Required if Pixel Data Provider URL (0028,7FE0) is not present. | ALWAYS | AUTO |

Table 37: Image Pixel

| Tag | Type | VR | Name | Description | PoV | Source |
|-------------|------|----|------------------|---|--------|--------|
| (0008,0016) | 1 | UI | SOP Class UID | Uniquely identifies the SOP Class. See C.12.1.1.1 for further explanation. See also PS 3.4. Always "1.2.840.10008.5.1.4.1.1.104.1" | ALWAYS | AUTO |
| (0008,0018) | 1 | UI | SOP Instance UID | Uniquely identifies the SOP Instance. See C.12.1.1.1 for further explanation. See also PS 3.4. ALADDIN uses a constant prefix of "1.2.392.200106.1420.1.2." followed by a date/time stamp and machine specific identifier. | ALWAYS | AUTO |

Table 38: Module SOP Common

8.1.2. Usage of Attributes from Received IOD's

The usage of attributes of Modality Worklist IOD is described in section 4.2.1.3.2.

8.1.3. Attribute Mapping

In scheduled chase, the following attributes are mapped from Modality Worklist to instances of Encapsulated PDF IOD and Multiframe True Color Secondary Capture Image IOD.

| Modality Worklist | | Instance IOD | | Editable |
|-------------------|-----------------------------------|--------------|-----------------------------------|----------|
| (0010,0010) | Patient's Name | (0010,0010) | Patient's Name | No |
| (0010,0020) | Patient ID | (0010,0020) | Patient ID | No |
| (0010,0021) | Issuer of Patient ID | (0010,0021) | Issuer of Patient ID | No |
| (0010,1000) | Other Patient IDs | (0010,1000) | Other Patient IDs | No |
| (0010,0030) | Patient's Birth Date | (0010,0030) | Patient's Birth Date | No |
| (0010,0040) | Patient's Sex | (0010,0040) | Patient's Sex | No |
| (0010,2160) | Ethnic Group | (0010,2160) | Ethnic Group | No |
| (0008,0050) | Accession Number | (0008,0050) | Accession Number | No |
| (0008,0090) | Referring Physicians Name | (0008,0090) | Referring Physicians Name | No |
| (0040,1001) | Requested Procedure ID | (0040,1001) | Requested Procedure ID | No |
| (0032,1060) | Requested Procedure Description | (0032,1060) | Requested Procedure Description | No |
| (0032,1064) | Requested Procedure Code Sequence | (0032,1064) | Requested Procedure Code Sequence | No |
| >(0008,0100) | Code Value | >(0008,0100) | Code Value | No |
| >(0008,0102) | Coding Scheme Designator | >(0008,0102) | Coding Scheme Designator | No |
| >(0008,0103) | Coding Scheme Version | >(0008,0103) | Coding Scheme Version | No |
| >(0008,0104) | Code Meaning | >(0008,0104) | Code Meaning | No |
| (0020,000D) | Study Instance UID | (0020,000D) | Study Instance UID | No |
| (0008,1110) | Referenced Study Sequence | (0008,1110) | Referenced Study Sequence | No |
| >(0008,1150) | Referenced Sop Class UID | >(0008,1150) | Referenced Sop Class UID | No |
| >(0008,1155) | Referenced Sop Instance UID | >(0008,1155) | Referenced Sop Instance UID | No |

8.2. Data Dictionary of Private Attributes

No private attributes are supported.

8.3. Coded Terminology and Templates

Not applicable.

8.4. Greyscale Image Consistency

Not applicable.

8.5. Standard Extended/Specialized/Private SOP Classes

Not applicable.

8.6. Private Transfer Syntaxes

No private syntax is supported.