CARL ZEISS MEDITEC

DICOM Conformance Statement

VISUPAC® Digital Imaging and Archive Management System

Version 4.5.2 and above

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1 Conformance Statement Overview

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		
VL Photographic Image Storage	YES	No
Ophthalmic Photographic 8 Bit Image Storage	YES	No
Workflow Management		
Modality Worklist Information Model – FIND	YES	No

2 Table Of Contents

3 Introduction

3.1 Revision History

This table shall help to find the Conformance Statement to a specific VISUPAC version.

Document Version	Author	Date	VISUPAC Version
As document number 2009-00208			
1.0	Christian Schack	2009-06-08	4.4.3
1.1	Julia Mersmann	2012-03-07	4.4.4
1.2	Julia Mersmann	2014-04-29	4.5
1.3	Mohit Kapoor	2014-06-26	4.5.1
1.4	Hima Bindu S	2015-02-20	4.5.2
1.5	Venkatesha Josyer	2015-07-29	4.5.2
1.6	Venkatesha Josyer	2015-08-21	4.5.2
1.7	Mallikarjun HS	2016-02-01	4.5.3

3.2 Audience

This document is written for the people that need to understand how VISUPAC will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

3.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between VISUPAC and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

3.4 Definitions, Terms and Abbreviations

Abbreviation	Definition
AE	Application Entity

AET	Application Entity Title
DICOM	Digital Imaging and Communications in Medicine
ILE	Implicit Little Endian
IOD	Information Object Definition
MWL	Modality Work List
OP	Ophthalmic Photography
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair, pair of user and provider.
TCP/IP	Transmission Control Protocol / Internet Protocol
UID	Unique Identifier
VL	Visible Light

Capture Station
Name for a PC connected to an FF450 plus fundus camera, which runs the VISUPAC Application in capture mode. The PC is connected with a camera sensor. The VISUPAC Application controls the camera sensor and feeds the database with images and data, describing the camera state at the time when the images were taken.

Image Cache
A well known folder in the VISUPAC System. The size is supervised by the VISUPAC Application.

Viewing Station
Name for a PC, which runs the VISUPAC Application in viewing mode only.

VISUPAC Application
The application which is used by an operator. It has a user interface and it communicates with VISUPAC Database. It is installed on Viewing Stations and on Capture Stations.

VISUPAC Database
The database is used by the applications. In a VISUPAC System exists one database. All applications get their information from one database.

VISUPAC System
A VISUPAC System comprises of a VISUPAC Database, a file layout and at least one VISUPAC Application. Usually the VISUPAC System comprises one database and several VISUPAC Applications.

VISUPAC Visit
VISUPAC Visit does not relate to the DICOM Visit. Merely it relates to the DICOM Study. A restriction is that VISUPAC can control one visit per day.

3.5 References

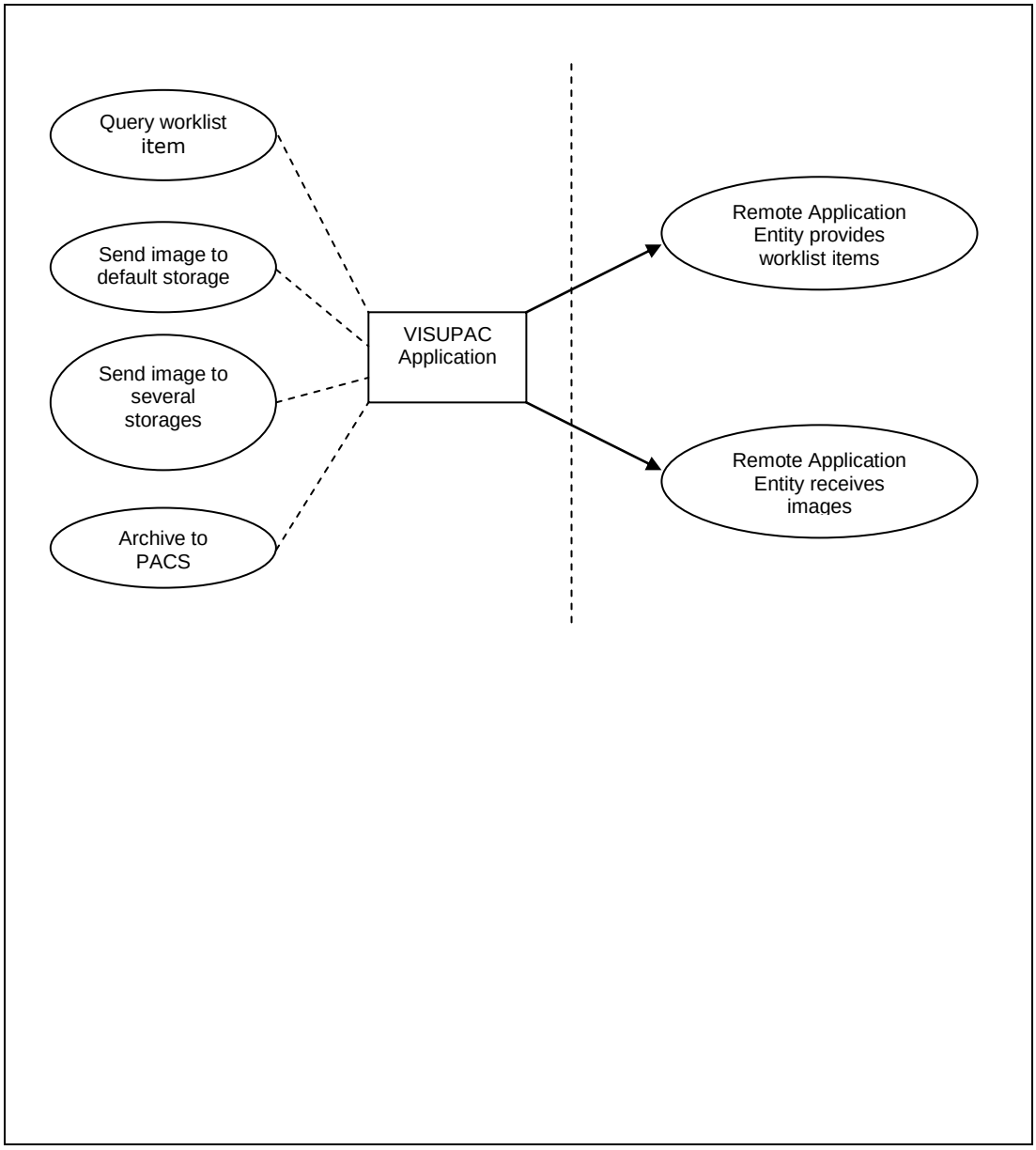
NEMA PS3 / ISO 12052, Digital Imaging and Communications in Medicine (DICOM) Standard, National Electrical Manufacturers Association, Rosslyn, VA, USA (available free at http://medical.nema.org/)

Integrating the Healthcare Enterprise (IHE) EYECARE Technical Framework, rev 3.7, 2010 (available free at http://www.ihe.net/Technical_Framework/index.cfm

4 Networking

4.1 Implementation Model

4.1.1 Application Data Flow



The VISUPAC Application, runs the User Interface for the operator. Here, the VISUPAC Application is located on a Capture Station or on a Viewing Station. From there an operator can perform the Real-World Activities “Query worklist item”, “Send image to default storage” and “Send image to several storages”.

4.1.2 Function Definition of AEs

4.1.2.1 Functional Definition of VISUPAC Application Entity

The VISUPAC Application allows to create data files for patients. It is possible to create visits and to attach images to visits. Image instances can be created and attached via camera sensors, file import and by image manipulation.

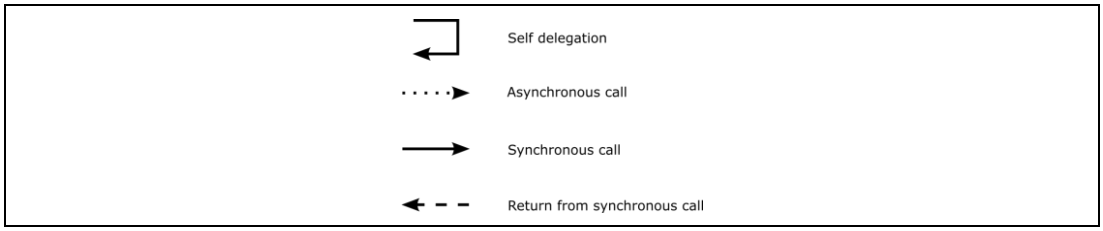
Stations equipped with camera sensors are called Capture Stations. It is meaningful to integrate VISUPAC Capture Stations so that it is possible to query the DICOM Modality Worklist from there.

Operators can create new image instances by performing image processing on images. The original data stays untouched. VISUPAC stores manipulated images as independent images, but marked as derived.

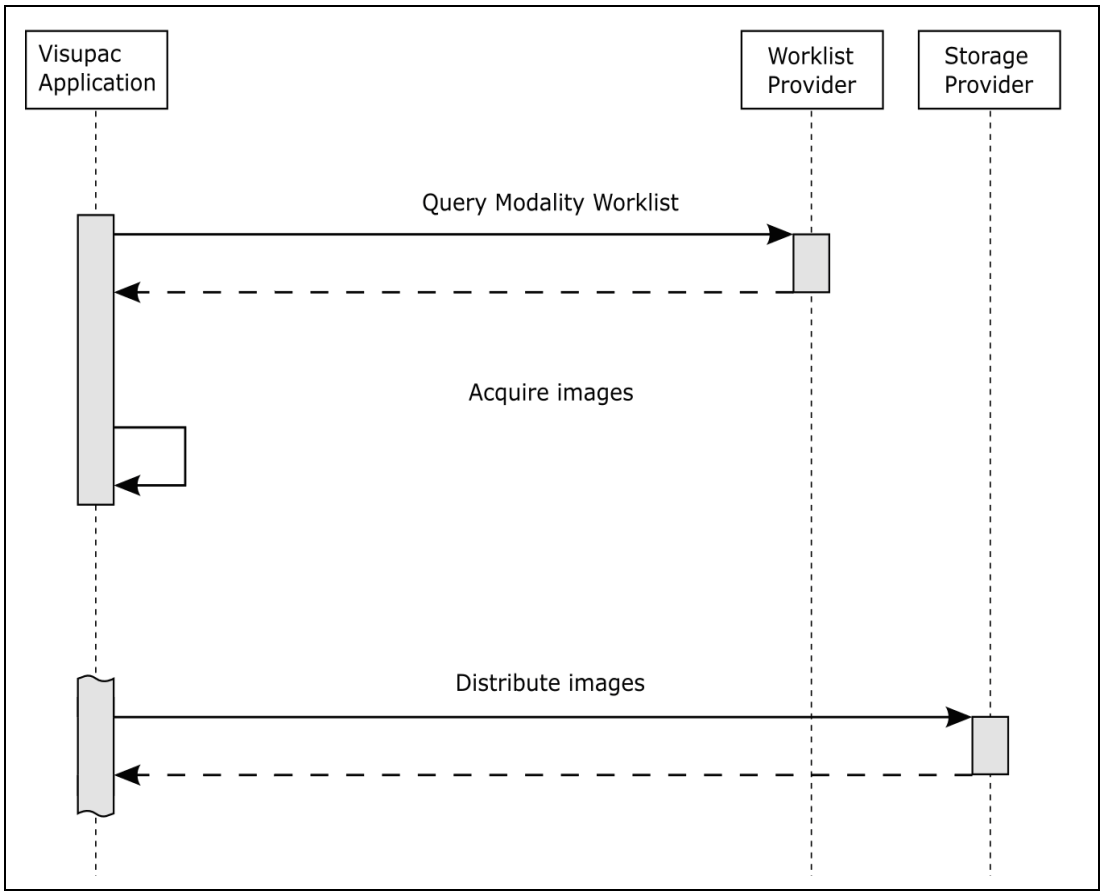
To the other side VISUPAC Application can distribute DICOM instances. So the operator can send images to other DICOM entities.

4.1.3 Sequencing of Real-World Activities

To realize the Real-World Activities, the different entities inside and outside of VISUPAC will work together. The sequence diagrams shall depict the way how they interact usually.



The diagrams uses slightly modified UML symbols. The asynchronous call is not realized as suggested. Some objects do have more than one dashed line. It symbolizes more than one thread.



All activities are initiated by an operator.

Query Modality Worklist

When the patient arrives at the Capture Station, then the operator queries the work list. He types in search criteria and gets matches back. Those matches are listed in a table, so the operator can select the correct entry. According to the entry VISUPAC creates a VISUPAC Visit for the patient and the day of visit. Then the system is prepared to acquire images for that patient.

Acquire images

Within this step the operator attaches images to the VISUPAC Visit.

Distribute images

With the VISUPAC Application, Distribution can be done in two ways. Either the operator sends images to a default AE or he/she sends images to several AEs.

4.2 AE Specifications

4.2.1 VISUPAC Application Entity

4.2.1.1 SOP Classes

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	Yes	No
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Yes	No
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	No
Ophthalmic Photographic 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Yes	No

4.2.1.2 Association Policies

4.2.1.2.1 General

4.2.1.2.2 Number of Associations

The number of simultaneous associations results is two since the activities “Query worklist item” and “Send image to default storage” can run in parallel.

Maximum number of simultaneous associations	2

4.2.1.2.3 Asynchronous Nature

VISUPAC does not support asynchronous communication (multiple outstanding transactions over a single Association).

4.2.1.2.4 Implementation Identifying Information

Implementation Class UID	1.2.826.0.1.3680043.2.139.1
Implementation Version Name	VISUPAC 453 0025

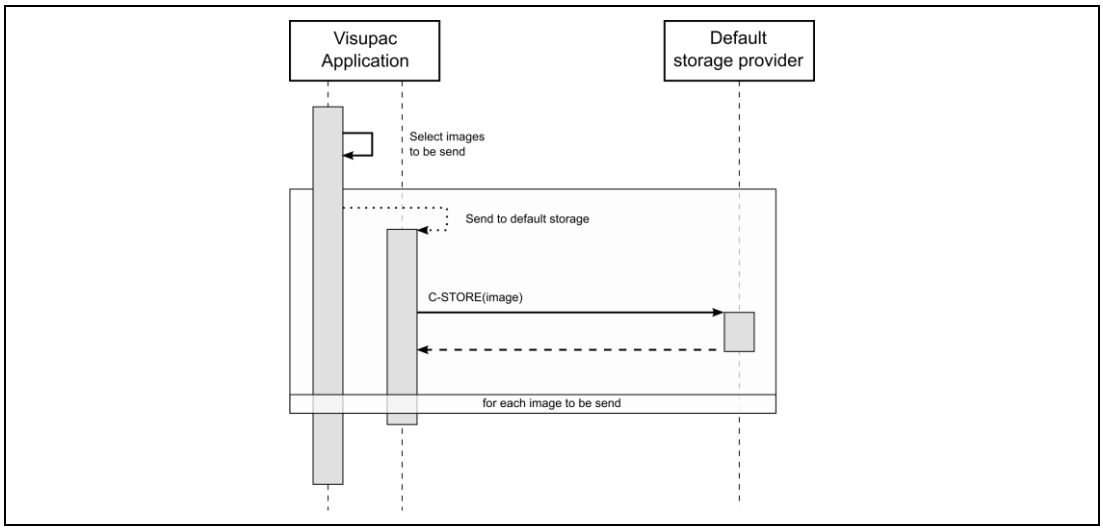
4.2.1.3 Association Initiation Policy

4.2.1.3.1 Activity - Send image to default storage

4.2.1.3.1.1 Description and Sequencing of Activities

After finishing the examination, the whole visit can be submitted from the database dialog in VISUPAC. In this case all images of the visit are selected. Alternatively some images can be selected in the image overview and sent to one or more DICOM storage servers. The operator can send images at any time to storages, except during image capture process.

Here the operator defines which images shall be sent to another Entity.



Sending images to the default storage is processed in the background (that means it is performed while operator continues work with VISUPAC).

4.2.1.3.1.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	ILE	1.2.840.10008.1.2	SCU	No
Ophthalmic Photographic 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	ILE	1.2.840.10008.1.2	SCU	No

4.2.1.3.1.3 SOP Specific Conformance for Image Storage SOP Class

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The job is removed from list. The list is not visible to the operator.
*	*	Any other status code	An error dialog opens up.

4.2.1.3.2 Activity - Send image to several storages

4.2.1.3.2.1 Description and Sequencing of Activities

The selection of images is the same as for the activity “Send image to default storage”. The difference is, here the user watches a dialog which lists several known AEs. The user can assign images to the destination AEs. The user gets immediate feedback whether the transfer was successful or not.

The user can leave the dialog when all images have been transferred or if he accepts that some images could not be sent.

4.2.1.3.2.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		

VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	ILE	1.2.840.10008.1.2	SCU	No
Ophthalmic Photographic 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	ILE	1.2.840.10008.1.2	SCU	No

4.2.1.3.2.3 SOP Specific Conformance for Image Storage SOP Class

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The job is removed from list. The list is visible to the operator.
*	*	Any other status code	The status label of the dialog shows an error message.

4.2.1.3.3 Activity - Archive to PACS

4.2.1.3.3.1 Description and Sequencing of Activities

The archiving of images will be triggered by VISUPAC‘s Archive Dialog. Only the supported modalities will be transmitted via VISUPAC DICOM Services to the PACS, in an asynchronous manner.

4.2.1.3.3.2 Proposed Presentation Contexts

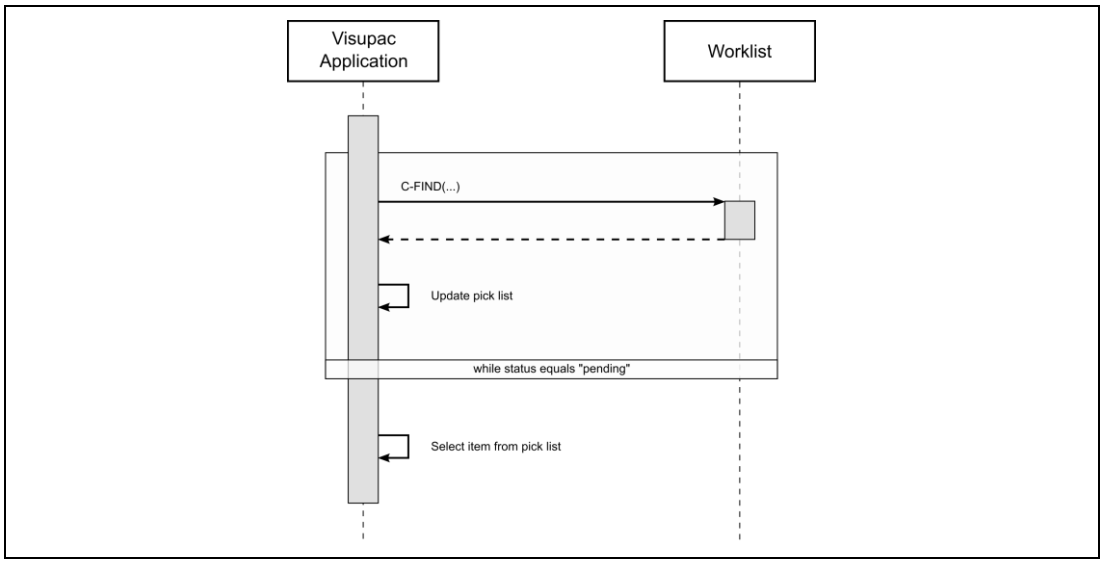
Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	ILE	1.2.840.10008.1.2	SCU	No
Ophthalmic Photographic 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	ILE	1.2.840.10008.1.2	SCU	No
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	No

4.2.1.3.3.3 SOP Specific Conformance for Image Storage SOP Class

Service Status	Further Meaning	Error Code	Behavior
Success	Success	0000	The job is removed from list. The list is not visible to the operator.
*	*	Any other status code	An error dialog opens up.

4.2.1.3.4 Activity - Query worklist item

4.2.1.3.4.1 Description and Sequencing of Activities



The Modality Worklist Query can be done at any time during a VISUPAC session. It is meaningful to have this feature enabled on Capture Stations.

The Modality Worklist Query can be done when the patient comes to the Capture Station. Then the Modality Worklist contains the latest information. The operator initiates the activity. Then he can fill in search criteria, for instance incomplete patient information. After sending the request, the system waits for the response from the partner Application Entity. VISUPAC receives finally a response. It updates the pick list with the inheriting information. The pick list instantly shows the received information. VISUPAC will wait for additional responses as long as the Worklist Provider sends “pending” as status and the number of already received responses does not overstep the number of 100.

When VISUPAC stopped receiving, then the operator can choose the exact item to create a new visit for. After that, the operator can start to acquire images for that visit.

4.2.1.3.4.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg.**
Name	**UID**	**Name List**	**UID List**		
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCU	No

4.2.1.3.4.3 SOP Specific Conformance for Modality Worklist SOP Class

Service Status	Further Meaning	Error Code	Behavior
Success	Matching is complete	0000	The operator is now allowed to select a worklist item to import.
Pending	Matches are continuing	FF00, FF01	VISUPAC Application puts received worklist item into the pick list. If the number of received items oversteps 100 then the SCU sends an ABORT to the SCP and the operator gets a request to specify query keys more accurate.
*	*	Any other status code	The status label of the dialog shows an error message.

	Query key, editable by operator	Displayable in pick list[1]	Retrieved for the application	Displayed in application
Scheduled Procedure Step Sequence		Y		
> Scheduled Station AET		Y		
> Scheduled Procedure Step Start Date	Y	Y		
> Scheduled Procedure Step Start Time		Y		
> Modality	Y	Y		
> Scheduled Performing Physician's Name		Y		
> Scheduled Procedure Step Description		Y		
> Scheduled Station Name		Y		
> Scheduled Procedure Step Location		Y		
> Scheduled Protocol Code Sequence		Y		
> Pre-Medication		Y		
> Scheduled Procedure Step ID		Y		
> Requested Contrast Agent		Y		
Requested Procedure ID	Y	Y		
Requested Procedure Description		Y		
Requested Procedure Code Sequence		Y		
Study Instance UID		Y	Y	
Accession Number	Y	Y	Y	Y
Referring Physicians Name[3]		Y	Y[2]	Y[2]
Patients Name[3]	Y	Y	Y[4]	Y[4]
Patient ID	Y	Y	Y	Y
Patients Birth Date		Y	Y	Y
Patients Sex		Y	Y	Y

The operator can fill in search criteria as query keys. VISUPAC offers two input masks for it.
Following tags are editable as search criteria in input mask "Patient based query".

Tag	Description
(0010,0010)	Patients Name
(0010,0020)	Patient ID
(0008,0050)	Accession Number
(0040,1001)	Requested Procedure ID

Following tags are editable as search criteria in input mask "Broad worklist query".

[1] The set of tags to be displayed can be configured.
[2] The application supports: Family name complex, given name complex and name prefix
[3] The DICOM tag type PN (Person Name) comprises of five components (shown order matches the order in the tag value): Family name complex, given name complex, middle name, name prefix, name suffix.
[4] The application supports: Family name complex and given name complex. Only alphabetic part will be used by VISUPAC

Tag	Description
(0040,0100)	Scheduled Procedure Step Sequence
>(0040,0002)	Scheduled Procedure Step Start Date
>(0008,0060)	Modality

4.2.1.4 Association Acceptance Policy

The VISUPAC Application does not accept Associations.

4.3 Network Interfaces

4.3.1 Physical Network Interface

The physical network interface is not visible for the applications. The applications use the communication stack as offered by the Operating System.

4.3.2 Additional Protocols

No additional protocols are supported.

4.4 Configuration for VISUPAC Application Entity

4.4.1 AE Title/Presentation Address Mapping

4.4.1.1 Local AE Titles

The mapping from AE Title to TCP/IP addresses and ports is configurable and set at the time of installation by Installation Personnel. The IP is not configurable by the VISUPAC Configuration Tool. The IP is administrated by the Operating System. The calling AET is configurable by parameters (see section 4.4.2).

4.4.1.2 Remote AE Title

The mapping of external AE Titles to TCP/IP addresses and ports is configurable and set at the time of installation by Installation Personnel. The information is passed as parameter to the VISUPAC Application Entity.

4.4.2 Parameters

The Installation Personnel can modify parameters to adapt the system according to the needs of the DICOM environment. It is not necessary to set up all parameters. Depending on whether to set up the Storage Service User or the Modality Worklist User only a few parameters must be changed.

The syntax for values that describe Application Entities shall match

<ae> := <*host*>; <*port*>; <*timeout*>; <*ae title*>; <*name*>

- <host> Network address of host machine where AE resides, may be a name or IP.
- <port> Port number where the remote AE is listening for incoming requests.
- <timeout> Timeout in milliseconds
- <ae title> Application Entity Title

Valid examples for a Modality Worklist Provider:

```
192.168.42.42; 104; 10000; WL-scp; WL Ophthalmic Department
```

```
wl-host.clinic.org; 104; 15000; wList; Work List for Oph. Dep.
```

4.4.2.1 General DICOM Messaging parameters

Parameter Name	Description	Default Value
useMessaging	Enables DICOM messaging at all.	false
callingApplicationEntityTitle	This is the AET of the VISUPAC Application when calling Service Providers.	E_I_S
institutionName	Contains the name of the institution which will mapped to the appropriate DICOM tag of the SOP Common Module	institution

4.4.2.2 Modality Worklist SCU parameters

Parameter Name	Description	Default Value
modalityWorklistServer[5]	Information about the Modality Worklist Provider. Value shall match syntax of <ae> (see above).	-
modalityWorklistPickListTags0	Tags that values are shown in the pre-selection table after accessing a Modality Worklist server.	(0010,0010) (0010,0020) (0008,0050)
modalityWorklistPickListTags1	First extension to parameter modalityWorklistPickListTags0	(0040,0100)>(0040,0007) (0040,0100)>(0040,0002) (0040,1001)
modalityWorklistPickListTags2	Second extension to parameter modalityWorklistPickListTags0	-

Additionally, for this service file-based parameters are available. The file-based parameter describes a template for DICOM objects which will be used to perform the request. Whenever the operator performs a request, the VISUPAC Application loads the template file and creates a DICOM object of it. Then the application fills in values which were typed in by the operator in the current active input mask. A dedicated file contains template information for the Modality Worklist Query. By default, the file looks like this:

```
# Empty lines and comments are allowed now!
# Feel free to use this file to preset values
# for a Modality Worklist Query.
# Remember that only listed tags will
# be responded by SCP
(0008,0016)=
(0008,0018)=
(0008,0020)=
(0008,0021)=
(0008,0023)=
(0008,0030)=
(0008,0031)=
(0008,0033)=
(0008,0050)=

(0008,0090)=
(0008,1030)=
(0008,103E)=
(0010,0010)=
(0010,0020)=
(0010,0030)=
```

```
(0010,0040)=
(0010,1010)=
(0010,1030)=
(0020,0013)=
(0020,000d)=
(0020,000e)=
(0020,0010)=
(0020,0011)=

# Scheduled Station AE Title
(0040,0100)>(0040,0001)=

# Scheduled Step Start Date
(0040,0100)>(0040,0002)=

# Scheduled Procedure Step Description
(0040,0100)>(0040,0007)=

# Modality
(0040,0100)>(0008,0060)=

(0040,1001)=
(0020,1204)=
```

Presets can be assigned by writing the value behind the character '=' in the according line. The syntax of the value must match the syntax as defined by the DICOM VR.

4.4.2.3 Storage SCU parameters

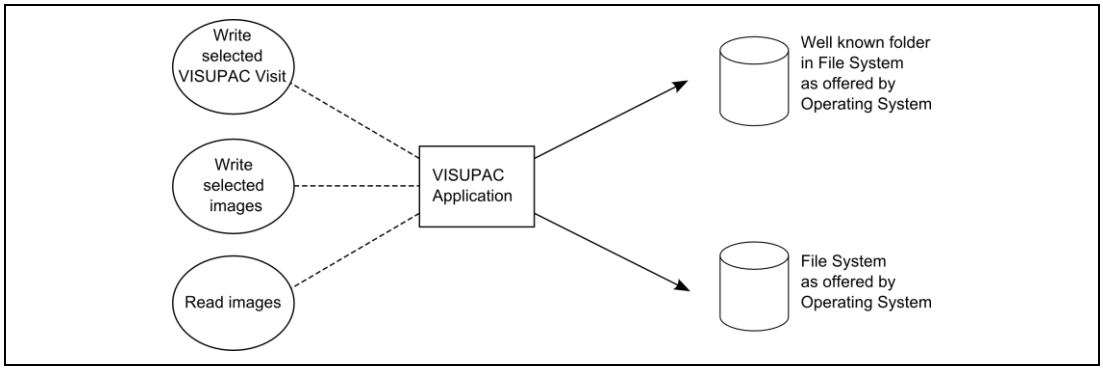
Parameter Name	Description	Default Value
defaultStorageServer[5]	Information about the Default Storage Provider. Value shall match syntax of <ae> (see above).	-
storageServer0[5]	Information about a storage provider. Value shall match syntax of <ae> (see above).	-
storageServer1[5]	Information about a storage provider.	-
storageServer2[5]	Information about a storage provider.	-
multipleStoragesPickListTags0	These tags are visible in the overview on outgoing DICOM objects.	(0010,0010) (0020,0013) (0010,4000)
multipleStoragesPickListTags1	First extension to parameter multipleStoragesPickListTags0	-
multipleStoragesPickListTags2	Second extension to parameter multipleStoragesPickListTags0	-

[5] The syntax for this parameter contains information about host, port, timeout, AET and a human-readable alias.

5 Media Interchange

5.1 Implementation Model

5.1.1 Application Data Flow



5.1.2 Functional Definition of AEs

5.1.2.1 VISUPAC Application Entity

VISUPAC Application Entity does not support the Media Storage Service class since it does not access a DICOMDIR.

However, the VISUPAC AE is capable to write DICOM files and to read DICOM files. “Read files” is available from the patient selection dialog only. Files can be read from the file system as offered by the Operating System. “Write files” is available from the patient selection dialog as well as from the overview on current selected VISUPAC Visits. Files can be written to the file system as offered by the Operating System. The VISUPAC Application proposes a name root for the file names. The operator can take over that name root or can type in another one. The VISUPAC Application enumerates the files.

5.1.3 Sequencing of Real-World Activities

5.1.4 File Meta Information Options

Implementation Class UID	1.2.826.0.1.3680043.2.139.1
Implementation Version Name	VISUPAC 453 0025

5.2 AE Specifications

5.2.1 VISUPAC AE

VISUPAC AE does not support the Media Storage Service class since it does not access a DICOMDIR.

5.2.1.1 File Meta Information

VISUPAC AE does not access tag Source Application Entity Title. It also does not access private information, so it does not use tags Private Information Creator UID and Private Information.

5.2.1.2 Real-World Activities

The operator can export files from patient selection dialog as well as from overview on current selected VISUPAC Visit.

5.2.1.2.1 Activity: Write selected VISUPAC Visits

This activity supports same SOP Class UID and transfer syntax as the activity “Write selected images”.

When the operator exports files from the patient selection dialog then VISUPAC proposes to write the files in a well known folder. That folder is configurable by parameter. The operator can decide whether to use JPEG Baseline compression or not.

5.2.1.2.2 Activity: Write selected images

Here the operator can select discrete images from the current visible VISUPAC Visits. Then he/she pushes the button for the export activity. The operator can decide whether to use JPEG Baseline compression or not.

5.2.1.2.2.1 Media Storage Application Profiles

VISUPAC AE does not support Media Storage Application Profiles since it does not support the Media Storage Class.

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	ELE	1.2.840.10008.1.2.1
		JPEG Baseline	1.2.840.10008.1.2.4.50
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	ELE	1.2.840.10008.1.2.1
		JPEG Baseline	1.2.840.10008.1.2.4.50

5.2.1.2.3 Activity: Read files

For this activity, the VISUPAC AE has a well known folder. VISUPAC checks for the existence of DICOM files in that folder when the operator activates the patient selection dialog. The icon of the button which triggers that activity, changes the color depending on the existence of DICOM files in that folder. However, the operator clicks on the button to import the DICOM files.

5.2.1.2.3.1 Media Storage Application Profiles

VISUPAC AE does not support Media Storage Application Profiles since it does not support the Media Storage Class.

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	ILE	1.2.840.10008.1.2
		ELE	1.2.840.10008.1.2.1
		JPEG Baseline	1.2.840.10008.1.2.4.50
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	ILE	1.2.840.10008.1.2
		ELE	1.2.840.10008.1.2.1
		JPEG Baseline	1.2.840.10008.1.2.4.50

5.3 Augmented And Private Application Profiles

VISUPAC AE does not support Augmented Application Profiles nor Private Application Profiles since it does not support the Media Storage Class.

5.4 Media Configuration

There is not specialized configuration for Media Interchange.

6 Support Of Character Sets

VISUPAC supports the DICOM default character repertoire.

7 Security

The DICOM capabilities of the VISUPAC System do not support any specific security measures.

It is assumed that VISUPAC System is used within a secured environment. 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 VISUPAC System.
- Firewall or router protections to ensure that VISUPAC System 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 (e.g. such as a Virtual Private Network (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 conformance statement.

8 Annexes

8.1 IOD Contents

8.1.1 Created SOP Instance(s)

8.1.1.1 The table shows the content of the Visible Light IOD.

IE	Module	Reference[6]	Usage	Presence of Module
Patient	Patient	C.7.1.1	M	Always
	Specimen Identifier	C.7.1.2	C	Never
	Clinical Trial Subject	C.7.1.3	U	Never
Study	General Study	C.7.2.1	M	Always
	Patient Study	C.7.2.2	U	Always
	Clinical Trial Study	C.7.2.3	U	Never
Series	General Series	C.7.3.1	M	Always
	General Trial Series	C.7.3.2	U	Never
Equipment	General Equipment	C.7.5.1	M	Always
Image	General Image	C.7.6.1	M	Always
	Image Pixel	C.7.6.3	M	Always
	Acquisition Context	C.7.6.14	M	Always
	VL Image	C.8.12.1	M	Always
	Overlay Plane	C.9.2	U	Never
	SOP Common	C.12.1	M	Always

The rows of not supported tags are grey.

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
Patient	Patient, C.7.1.1, M	Patient's Name	(0010,0010)	2	Y	Y			Supported components[7] • Family name • Given name	
		Patient ID	(0010,0020)	2	Y	Y			Editable for the case that MWL is not reachable.	
		Patient's Birth Date	(0010,0030)	2	Y	Y				
		Patient's Sex	(0010,0040)	2	Y	Y				
		Other Patient IDs	(0010,1000)	3		Y				
		Patient Comments	(0010,4000)	3		Y				
Study	C.7.2.1, M	Study Instance UID	(0020,000D)	1	Y		Y*		1.2.276.0.75.2.3.20.1. as leading string when UID was created in the VISUPAC system, by current software	

[6] Reference to DICOM PS 3.3-2008.
[7] The DICOM tag type PN (Person Name) comprises of five components (shown order matches the order in the tag value): Family name complex, given name complex, middle name, name prefix, name suffix.

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
									version. The Study Instance UID is not created by VISUPAC if it was included in the result of an earlier Modality Worklist Request.	
		Study Date	(0008,0020)	2			Y			
		Study Time	(0008,0030)	2			Y			
		Referring Physician's Name	(0008,0090)	2	Y	Y			Supported components[7] • Family name • Given name • Name prefix	
		Study ID	(0020,0010)	2			Y			
		Accession Number	(0008,0050)	2	Y	Y			Editable for the case that MWL is not reachable.	
		Admitting Diagnoses Code Sequence	(0008,1084)	3		Y			Information is not exported by file export module	
		>Include 'Code Sequence Macro', Table 8.8-1, No Baseline Context ID is defined.				Y				
		Patient's Size	(0010,1020)	3		Y				
		Patient's Weight	(0010,1030)	3		Y				
Series	General Series, C.7.3.1, M	Modality	(0008,0060)	1			Y		XC	
		Series Instance UID	(0020,000E)	1			Y		1.2.276.0.75.2.3.20.1. as leading string when UID was created in the VISUPAC system, by current software version. An imported DICOM object will keep UID.	
		Series Number	(0020,0011)	2			Y			
		Laterality	(0020,0060)	2C		Y			R for right L for left or empty	
		Series Date	(0008,0021)	3			Y			
		Series Time	(0008,0031)	3			Y			
		Performing Physicians' Name	(0008,1050)	3		Y			Supported components[7] • Family name • Given name • Name prefix	
		Series Description	(0008,103E)	3		Y				
		Operators' Name	(0008,1070)	3		Y			Supported components[7] • Family name • Given name • Name prefix	
Equipment	General EquipmentC.7.5.1, M	Manufacturer	(0008,0070)	2				Y	Defined by camera properties.	
		Institution Name	(0008,0080)	3				Y	Defined by property DIC institutionName	
		Institution Address	(0008,0081)	3				Y	Defined by property DIC institutionAddress	
		Station Name	(0008,1010)	3				Y	Name of the host in the network environment.	
		Institutional Department Name	(0008,1040)	3				Y	Defined by property DIC institutionalDepartmentName	
		Manufacturer's Model Name	(0008,1090)	3				Y	Defined by camera properties.	
		Device Serial Number	(0018,1000)	3				Y	Defined by camera properties.	
		Software Versions	(0018,1020)	3			Y		As defined above. See 3.1 and 4.2.1.2.4.	
Image	6.1, M	Instance Number	(0020,0013)	2			Y			

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Patient Orientation	(0020,0020)	2C			Y		Always empty	
		Content Date	(0008,0023)	2C			Y		Date when image was stored to the database	
		Content Time	(0008,0033)	2C					see Module VL-Image	
		Image Type	(0008,0008)	3					see Module VL-Image	
		Acquisition Time	(0008,0032)	3			Y		Exists when Image Type contains FAG or ICG as fourth element. Then it contains time since injection of contrast agent.	
		Image Comments	(0020,4000)	3		Y				
		Lossy Image Compression	(0028,2110)	3					see Module VL-Image	
	Image Pixel, C.7.6.3, M	Samples per Pixel	(0028,0002)	1					see Module VL-Image	
		Photometric Interpretation	(0028,0004)	1					see Module VL-Image	
		Rows	(0028,0010)	1			Y		Number of rows	
		Columns	(0028,0011)	1			Y		Number of columns	
		Bits Allocated	(0028,0100)	1					see Module VL-Image	
		Bits Stored	(0028,0101)	1					see Module VL-Image	
		High Bit	(0028,0102)	1					see Module VL-Image	
		Pixel Representation	(0028,0103)	1					see Module VL-Image	
		Pixel Data	(7FE0,0010)	1					see Module VL-Image	
		Planar Configuration	(0028,0006)	1C					see Module VL-Image	
	Acquisition Context, C.7.6.14, M	Acquisition Context Sequence	(0040,0555)	2		Y	Y		The acquisition context is used for additional information.	
	VL Image, C.8.12.1, M	Image Type	(0008,0008)	1			Y		4 Items: 1. `ORIGINAL | DERIVED` 2. `PRIMARY` 3. 4. `FAG | ICG | COLOR | RED | BLUE | GREEN | NONE`	
		Photometric Interpretation	(0028,0004)	1			Y		`MONOCHROME2` for monochrome images, compressed or not compressed. `RGB` for color images, not compressed. `YBR_FULL_422` for color images, compressed.	`MONOCHROME2` for monochrome images `RGB` for color images
		Bits Allocated	(0028,0100)	1			Y		`8`	
		Bits Stored	(0028,0101)	1			Y		`8`	
		High Bit	(0028,0102)	1			Y		`7`	
		Pixel Representation	(0028,0103)	1			Y		`0`	
		Samples per Pixel	(0028,0002)	1			Y		`1`, for monochrome images `3`, for color images	
		Planar Configuration	(0028,0006)	1C			Y		`0`, for color images. Meaning is color-by-pixel.	

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Content Time	(0008,0033)	1C			Y			
		Lossy Image Compression	(0028,2110)	2			Y		00, for no compression. 01, for JPEG Baseline compression.	00, no compression
	SOP Common, C.12.1, M	(0008,0005)	Specific Character Set	1			Y		ISO_IR 100 Character Set that expands or replaces the Basic Graphic Set.	
		SOP Class UID	(0008,0016)	1			Y		1.2.840.10008.5.1.4.1.1.77.1.4	
		SOP Instance UID	(0008,0018)	1			Y		1.2.276.0.75.2.3.20.1. as leading string when UID was created in the VISUPAC system, by current software version. An imported DICOM object will keep its UID.	
		Instance Number	(0020,0013)	3			Y			

8.1.1.2 Ophthalmic Photography Image IOD.

IE	Module	Reference[8]	Usage	Presence of Module
Patient	Patient	C.7.1.1	M	ALWAYS
	Clinical Trial Subject	C.7.1.3	M	NEVER
Study	General Study	C.7.2.1	U	ALWAYS
	Patient Study	C.7.2.2	U	NEVER
	Clinical Trial Study	C.7.2.3	M	NEVER
Series	General Series	C.7.3.1	M	ALWAYS
	Ophthalmic Photography Series	C.8.17.1	U	ALWAYS
	Clinical Trial Series	C.7.3.2	M	NEVER
Frame of Reference	Synchronization	C.7.4.2	M	ALWAYS
Equipment	General Equipment	C.7.5.1	M	ALWAYS
Image	General Image	C.7.6.1	M	ALWAYS
	Image Pixel	C.7.6.3	C	ALWAYS
	Enhanced Contrast/Bolus	C 7.6.4b	M	CONDITIONAL - Included if contrast was administered
	Cine	C.7.6.5	U	ALWAYS
	Multi-frame	C.7.6.6	U	ALWAYS
	Device	C.7.6.12	M	NEVER
	Acquisition Context	C.7.6.14	C	ALWAYS
	Ophthalmic Photography Image	C.8.17.2	M	ALWAYS
	Ophthalmic Photographic Parameters	C.8.17.3	U	ALWAYS
	Ophthalmic Photography Acquisition Parameters	C.8.17.4	M	ALWAYS
	Ocular region Imaged	C.8.17.5	M	ALWAYS
	ICC Profile	C.11.15	U	NEVER
	SOP Common	C.12.1	M	ALWAYS
	Common Instance Reference	C.12.2	U	NEVER
	Frame Extraction	C.12.3	C	NEVER

[8] Reference to DICOM PS 3.2,2014b.

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
Patient	Patient, C.7.1.1, M	Patient's Name	(0010,0010)	2	Y	Y			Supported components[9] • Family name • Given name	
		Patient ID	(0010,0020)	2	Y	Y			Editable for the case that MWL is not reachable.	
		Patient's Birth Date	(0010,0030)	2	Y	Y				
		Patient's Sex	(0010,0040)	2	Y	Y				
		Other Patient IDs	(0010,1000)	3		Y				
		Patient Comments	(0010,4000)	3		Y				
Study	General Study, C.7.2.1, M	Study Instance UID	(0020,000D)	1	Y		Y*		1.2.276.0.75.2.3.20.1.1 as leading string when UID was created in the VISUPAC system, by current software version. The last 1 represents Study The Study Instance UID is not created by VISUPAC if it was included in the result of an earlier Modality Worklist Request.	
		Study Date	(0008,0020)	2			Y		Acquisition Datetime (0008,002A) is recommended to be used for deriving the Visit Date	
		Study Time	(0008,0030)	2			Y			
		Referring Physician's Name	(0008,0090)	2	Y	Y			Supported components7 • Family name • Given name • Name prefix	
		Study ID	(0020,0010)	2			Y			
		Accession Number	(0008,0050)	2	Y	Y			Editable for the case that MWL is not reachable.	
	Patient Study, C.7.2.2, U	Admitting Diagnoses Code Sequence	(0008,1084)	3		Y			Information is not exported by file export module	
		>Include 'Code Sequence Macro', Table 8.8-1, No Baseline Context ID is defined.				Y				
		Patient's Size	(0010,1020)	3		Y				
		Patient's Weight	(0010,1030)	3		Y				
Series	General Series, C.7.3.1, M	Series Instance UID	(0020,000E)	1			Y		1.2.276.0.75.2.3.20.1.2 as leading string when UID was created in the VISUPAC system, by current software version. An imported DICOM object will keep UID. The last 2 represents Series	
		Series Number	(0020,0011)	2			Y			
		Laterality	(0020,0060)	2C		Y			R for right L for left or empty	
		Series Date	(0008,0021)	3			Y			
		Series Time	(0008,0031)	3			Y			
		Performing Physicians' Name	(0008,1050)	3		Y			Supported components7 • Family name • Given name • Name prefix	
		Series Description	(0008,103E)	3		Y				
		Operators' Name	(0008,1070)	3		Y			Supported components7 • Family name • Given name • Name prefix	

[9] The DICOM tag type PN (Person Name) comprises of five components (shown order matches the order in the tag value): Family name complex, given name complex, middle name, name prefix, name suffix.

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
	Ophthalmic Photography Series C.8.17.1	Modality	(0008,0060)	1			Y		OP	
Frame of Reference	Synchronization C.7.4.2, M	Synchronization Trigger	(0018,106A)	1			Y		"NO TRIGGER" - data acquisition is not synchronized by common channel or trigger.	
		Acquisition Time Synchronized	(0018,1800)	1			Y		"N " - Acquisition Datetime (0008,002A) is not synchronized with external time reference.	
		Synchronization Frame of Reference UID	(0020,0200)	1			Y		1.2.276.0.75.2.5.10.1.2.140619104143437.140074187074	
Equipment	General EquipmentC.7.5.1, M	Manufacturer	(0008,0070)	2				Y	Defined by camera properties.	
		Institution Name	(0008,0080)	3				Y	Defined by property DIC institutionName	
		Institution Address	(0008,0081)	3				Y	Defined by property DIC institutionAddress	
		Station Name	(0008,1010)	3				Y	Name of the host in the network environment.	
		Institutional Department Name	(0008,1040)	3				Y	Defined by property DIC institutionalDepartmentName	
		Manufacturer's Model Name	(0008,1090)	3				Y	Defined by camera properties.	
		Device Serial Number	(0018,1000)	3				Y	Defined by camera properties.	
		Software Versions	(0018,1020)	3			Y		As defined above. See 3.1 and 4.2.1.2.4.	
Image	Image, C.7.6.1, M	Patient Orientation	(0020,0020)	2C			Y		Always empty	
		Acquisition Time	(0008,0032)	3			Y		This contains the time of acquisition of data that resulted in this image.	
		Image Comments	(0020,4000)	3		Y				
	Image Pixel, C.7.6.3, M	Rows	(0028,0010)	1			Y		Number of rows	
		Columns	(0028,0011)	1			Y		Number of columns	
		Bits Allocated	(0028,0100)	1					8	
		Bits Stored	(0028,0101)	1					8	
		High Bit	(0028,0102)	1					7	
		Pixel Data	(7FE0,0010)	1					see Module OP-Image	
	Enhanced Contrast/Bolus, C 7.6.4b M	Contrast/Bolus Agent Sequence	(0018,0012)	1			Y		Contains zero or one item. Sequence that identifies one or more contrast agents administered prior to or during the acquisition. Shall contain one or more Items. Included macro 'Code Sequence Macro', context 'Baseline Context ID is 12.' Only included in case of FA or ICG acquisition.	
		Code Value	>(0008,0100)	1			Y		"C-B02CC" for FA or "C-B0156" for ICG	
		Coding Scheme Designator	>(0008,0102)	1			Y		"SRT"	

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Code Meaning	>(0008,0104)	1			Y		"Fluorescein" for FA or "Indocyanin green" for ICG	
		Contrast/Bolus Administration Route Sequence	>(0018,0014)	1			Y		Contains one item. Sequence that identifies the route of administration of contrast agent. Shall contain exactly one Item. Included macro 'Code Sequence Macro', context 'Baseline Context ID is 11.' Only included in case of FA or ICG acquisition.	
		Code Value	>>(0008,0100)	1			Y		"G-D101"	
		Coding Scheme Designator	>>(0008,0102)	1			Y		"SNM3"	
		Code Meaning	>>(0008,0104)	1			Y		"Intravenous route"	
		Contrast/Bolus Volume	>(0018,1041)	2			Y		Exists for conformance, but empty.	
		Contrast/Bolus Ingredient Concentration	>(0018,1049)	2			Y		Exists for conformance, but empty.	
		Contrast/Bolus Agent Number	>(0018,9337)	1			Y		"1" because at maximum there is one item in this sequence.	
		Contrast/Bolus Ingredient Code Sequence	>(0018,9338)	2			Y		Exists for conformance, but empty. Active ingredient of agent. Zero or more Items may be included in the Sequence. Included macro 'Code Sequence Macro', context 'Baseline Context ID is 13.'	
		Contrast Administration Profile Sequence	>(0018,9340)	3			Y		Contains one item. Sequence that describes one or more phases of contrast administered. If present, shall contain one or more Items.	
		Contrast/Bolus Start Time	>>(0018,1042)	3			Y		Time of start of administration.	
	Cine C.7.6.5, U	Frame Time	(0018,1063)	1C			Y		Nominal time (in msec) per individual frame. See C.7.6.5.1.1 for further explanation. Required if Frame Increment Pointer (0028,0009) points to Frame Time. "0.0"	
	Multiple Frame, C.7.6.6, U	Number of Frames	(0028,0008)	1			Y		"1" – the VISUPAC does not create multi-frame images	
		Frame Increment Pointer	(0028,0009)	1			Y		"(0018,1063)"	
	Context, C.7.6.14, M	Acquisition Context Sequence	(0040,0555)	2		Y	Y		The acquisition context is used for additional information. A sequence of Items that describes the conditions present during the acquisition of the data of the SOP Instance. Zero or more items may be included in this sequence.	

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Measurement Units Code Sequence	>(0040,08EA)	1C		Y	Y		Units of measurement. Only a single Item shall be included in this Sequence. Required if Numeric Value (0040,A30A) is sent. Shall not be present otherwise.	
		Code Value	>>(0008,0100)	1		Y	Y		See Section 8.3. Required if a sequence item is present.	
		Coding Scheme Designator	>>(0008,0102)	1		Y	Y		See Section 8.3. Required if a sequence item is present.	
		Coding Scheme Version	>>(0008,0103)	1C		Y	Y		See Section 8.3. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
		Code Meaning	>>(0008,0104)	1		Y	Y		See Section 8.3. Required if a sequence item is present.	
		Concept Name Code Sequence	>(0040,A043)	1		Y	Y		A concept that constrains the meaning of (i.e. defines the role of) the Observation Value. The "Name" component of a Name/Value pair. This sequence shall contain exactly one item. Included macro 'Code Sequence Macro', context 'No Baseline Context is defined.'	
		Code Value	>>(0008,0100)	1		Y	Y		See Section 8.3. Required if a sequence item is present.	
		Coding Scheme Designator	>>(0008,0102)	1		Y	Y		See Section 8.3. Required if a sequence item is present.	
		Coding Scheme Version	>>(0008,0103)	1C		Y	Y		See Section 8.3. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
		Code Meaning	>>(0008,0104)	1		Y	Y		See Section 8.3. Required if a sequence item is present.	
		Concept Code Sequence	>(0040,A168)	1C		Y	Y		This is the Value component of a Name/Value pair when the Concept implied by Concept Name Code Sequence (0040,A043) is a Coded Value. Only a single Item shall be included in this sequence. Required if Date (0040,A121), Time (0040,A122), Person Name (0040,A123), Text Value (0040,A160), and the pair of Numeric Value (0040,A30A) and Measurement Units Code Sequence (0040,08EA) are not present.	
		Code Value	>>(0008,0100)	1		Y	Y		See Section 8.3.	
		Coding Scheme Designator	>>(0008,0102)	1		Y	Y		See Section 8.3.	
		Coding Scheme Version	>>(0008,0103)	1C		Y	Y		See Section 8.3.. 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.	
		Code Meaning	>>(0008,0104)	1		Y	Y		See Section 8.3.	
	Image, C.8.17.2 M	Image Type	(0008,0008)	1			Y		4 Items: 1. ORIGINAL | DERIVED 2. PRIMARY 3. 4. FAG | ICG | COLOR | RED | BLUE | GREEN | NONE	

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Photometric Interpretation	(0028,0004)	1			Y		MONOCHROME2 for monochrome images, compressed or not compressed. RGB for color images, not compressed. YBR_FULL_422 for color images, compressed.	MONOCHROME2 for monochrome images RGB for color images
		Content Date	(0008,0023)	1			Y		Date when image was stored to the database	
		Planar Configuration	(0028,0006)	1C					0	
		Acquisition Datetime	(0008,002A)	1C			Y		Acquisition Datetime (0008,002A) is recommended to be used for deriving the Visit Date	
		Instance Number	(0020,0013)	1			Y			
		Pixel Representation	(0028,0103)	1			Y		0	
		Samples per Pixel	(0028,0002)	1			Y		1, for monochrome images 3, for color images	
		Planar Configuration	(0028,0006)	1C			Y		0, for color images. Meaning is color-by-pixel.	
		Content Time	(0008,0033)	1			Y			
		Lossy Image Compression	(0028,2110)	1			Y		00, for no compression. 01, for JPEG Baseline compression. Send images to default/several storages done via Visupac application has no lossy image compression	00, no compression Archiving to PACS has lossy image compression
		Lossy Image Compression Ratio	(0028,2112)	1C						
		Lossy Image Compression Method	(0028,2114)	1C					ISO_10918_1	
		Presentation LUT Shape	(2050,0020)	1C					IDENTITY. Available only for monochrome images.	
		Burned In Annotation	(0028,0301)	1		Y			"YES" or "NO"	
	Ophthalmic Photographic Parameters, C.8.17.3 U	Detector Type	(0018,7004)	2			Y		Empty.	
		Acquisition Device Type Code Sequence	(0022,0015)	1			Y		Describes the type of acquisition device. A single item shall be present in the sequence.	
		Code Value	>(0008,0100)	1			Y		"R-1021A"	
		Coding Scheme Designator	>(0008,0102)	1			Y		"SRT"	
		Code Meaning	>(0008,0104)	1			Y		"Fundus Camera"	
		Illumination Type Code Sequence	(0022,0016)	2			Y		Contains no item. Exists because of conformance.	

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Light Path Filter Type Stack Code Sequence	(0022,0017)	2			Y		Contains no item. Exists because of conformance.	
		Image Path Filter Type Stack Code Sequence	(0022,0018)	2			Y		Contains no item. Exists because of conformance.	
		Lenses Code Sequence	(0022,0019)	2			Y		Contains no item. Exists because of conformance.	
		Camera Angle of View	(0022,001E)	3			Y		The aperture angle of the camera, in degrees.	
	Ophthalmic Photography Acquisition Parameters C.8.17.4, M	Patient Eye Movement Commanded	(0022,0005)	2			Y		Enumerated Values: YES NO	
		Emmetropic Magnification	(0022,000A)	2			Y		Empty, exists because of conformance.	
		Intra Ocular Pressure	(0022,000B)	2			Y		Empty, exists because of conformance. Value of pressure. Value in mmHg. Zero length means the pressure was not measured.	
		Pupil Dilated	(0022,000D)	2			Y		If this tag is empty, no information is available.	
		Refractive State Sequence	(0022,001B)	2			Y		Contains no item. Exists because of conformance.	
	Ocular Region Imaged, C.8.17.5 M	Anatomic Region Sequence	(0008,2218)	1			Y		One item present Sequence that identifies the anatomic region of interest in this Instance (i.e. external anatomy, surface anatomy, or general region of the body). Only a single Item shall be permitted in this sequence.	
		Code Value	>(0008,0100)	1			Y		“T-AA000”	
		Coding Scheme Designator	>(0008,0102)	1			Y		“SRT”	
		Code Meaning	>(0008,0104)	1			Y		“Eye”	

IE	Module	Attribute Name	Tag	Type	MWL	Editable by operator	Automatically generated	Editable by Administrator	Generated by file export module, comments	Generated by archiving module, comments
		Image Laterality	(0020,0062)	1			Y		R for right L for left or empty	
	SOP Common, C.12.1, M	Specific Character Set	(0008,0005)	1			Y		ISO_IR 100 Character Set that expands or replaces the Basic Graphic Set.	
		SOP Class UID	(0008,0016)	1			Y		1.2.840.10008.5.1.4.1.1.77.1.5.1	
		SOP Instance UID	(0008,0018)	1			Y		1.2.276.0.75.2.3.20.1.3 as leading string when UID was created in the VISUPAC system, by current software version. An imported DICOM object will keep its UID. The last 3 represents Instance	
	Czm Ophthalmic Photography Image Extension	Horizontal Field of View	(0022,000C)	3			Y		The horizontal field of view in degrees	

8.1.2 Usage Of Attributes From Received IOD's

Attributes are used in the meaning as for creating SOP Instances.

8.1.3 Attribute Mapping

The implemented mapping is straight forward. It explains the flow of data through the VISUPAC System. The VISUPAC Application requests information by a Modality Worklist request. Later it passes parts of the information to a Storage Provider via an Image IOD.

Modality Worklist	**Image IOD**
Study Instance UID	Study Instance UID
Accession Number	Accession Number
Referring Physicians Name	Referring Physicians Name
Patients Name	Patients Name
Patient ID	Patient ID
Patients Birth Date	Patients Birth Date
Patients Sex	Patients Sex

8.1.4 Coerced/Modified Fields

When reading/receiving DICOM objects, the VISUPAC AE stores supported tags only. Thus, Private Attributes get lost and are not available in the VISUPAC System.

8.2 Data Dictionary Of Private Attributes

VISUPAC AE does not define Private Attributes.

8.3 Coded Terminology And Templates

8.3.1 Context Groups

8.3.2 Template Specifications

8.3.3 Private Code Definitions

Several coding concepts have been defined for the VISUPAC System. The Coding Scheme Designator is “99HIKO”.

Tag	Name	CID	Configurable
0008,1084	Admitting Diagnosis Code Sequence		
0040,0555	Acquisition Context Sequence		

CC Concept Code

NVU Numeric Value with Unit

TV Text Value

NV Numeric Value[10]

Coding Scheme Designator	Coding Scheme Version	Concept Name	Concept Type
99HIKO	VP4.0	OP-Modality	CC
		OP-Procedure	CC
		Sensor	CC
		Stereo	CC
		Angle	NVU
		Flash	NVU
		Gain	NVU
		Sensor Gain	NVU
		Sensor Offset	NVU
	VP3.2.1	Angle	TV
		Flash	TV
		Gain	TV
		Sensor	TV
		Sensor Gain	TV
		Sensor Offset	TV
	VP3.2	Angle	NV
		Flash	NV
		Sensor	TV
		Sensor Gain	NV
		Pixel Height	TV
		Pixel Width	TV

VISUPAC can read and interpret all Coding Scheme Versions of coding scheme “99HIKO".

Coding Scheme Version VP4.0

for images which was captured by a VISUPAC Capture Station. It is used for export of exams as DICOM files and for DICOM Messaging.

[10] The concept of Numeric Value is not conform to DICOM. It is listed because the reading capability is still implemented. The implementation exists because of backward compatibility reasons.

Coding Scheme Version VP3.2.1

for images which were captured by a VISUPAC Capture Station and if backward compatibility was selected by operator. Backward compatibility is available for export of exams as DICOM files. It is not supported for DICOM Messaging.

Coding Scheme Version VP3.2

for backward compatibility reasons. It is not supported for export of exams as DICOM files nor for DICOM Messaging.

8.3.3.1 Concept OP-Modality

Code Value	Code Meaning	Definition
M-FUNDUS-CAM	Funduscamera	Used for Zeiss FF450+, Zeiss FF450, Zeiss FF4, Kowa Pro
M-SLITLAMP	Slitlamp	Used for Zeiss SL 120, Zeiss SL 130.
M-S-OCT	Stratus OCT	Used for Stratus OCT.
M-US	Ophthalmic Ultrasound	
XC		Imported. Generated by an external camera.

Presence of Concept Codes depends on Ophthalmic Modality

Concept Name	Ophthalmic Modality		
	M-FUNDUS-CAM	**M-SLITLAMP**	**M-S-OCT**
OP-Modality	Y	Y	Y
OP-Procedure	c	Y	Y
Sensor	c	Y	
Stereo	c		
Angle	c		
Flash	c		
Gain	c		
Sensor Gain	c	Y	
Sensor Offset	c	Y	

Here ‘c’ means ‘conditional’. The according Concept is supported if images was captured by Carl Zeiss FF450+, connected to a Capture Station.

8.3.3.2 Concept OP-Procedure

Value range of codes for OP-Procedure depends on value of OP-Modality.

OP-Modality	OP-Procedure		
	Code Value	**Code Meaning**	**Definition**
M-FUNDUS-CAM	FC-FA	FA Fundus Mode	Fluorescine Angiogram
	FC-ICG	ICG Fundus Mode	Indocyanine Green
	FC-COLOR	Color Fundus Mode	
	FC-RED	Red Fundus Mode	
	FC-BLUE	Blue Fundus Mode	
	FC-GREEN	Green Fundus Mode	
M-S-OCT	OCT-LINE	Line	
	OCT-CIRCLE	Circle	
	OCT-C-CIRCLE	Composite Circle	
	OCT-R-SCAN	Raster Scan	
	OCT-C-6-RING	Concentric 6 Rings	
	OCT-C-3-RING	Concentric 3 Rings	
	OCT-R-LINES	Radial Lines	
	OCT-C-HAIR	Cross Hair	
	OCT-X-LINE	X-Line	

	OCT-P-CIRCLE	Proportional Circle Scan	
	OCT-N-H-CIRCLE	Nerve Head Circle	
	OCT-RNFL-T3.4	RNFL Thickness (3.4)	
	OCT-RNFL	RNFL Thickness	
	OCT-FAST-RNFL-T3.4	Fast RNFL Thickness (3.4)	
	OCT-RNFL-T2.27	RNFL Thickness (2.27xdisc)	
	OCT-M-T-MAP	Macular Thickness Map	
	OCT-O-DISC	Optic Disk Analysis	
	OCT-F-O-DISK	Fast Optic Disk	
	OCT-H-LINE	Horizontal Line	
	OCT-F-M-MAP	Fast Macular Map	
	OCT-F-M-THICK	Fast Macular Thickness	
	OCT-F-M-THICK-MAP	Fast Macular Thickness Map	
	OCT-F-RNFL-THICK	Fast RNFL Thickness	
	OCT-RNFL-MAP	RNFL Map	
	OCT-F-RNFL-MAP	Fast RNFL Map	

8.3.3.3 Concept Sensor

OP-Modality	Sensor	
	Code Value	**Definition/Comment**
M-FUNDUS-CAM	JVC	JVC, 3-CCD
	Sony RGB	Sony, 3-CCD
	DCS	Kodak, 1-CCD
	Sony ICG	Sony
	Megaplus	Roper
	SVHS	Retired
	FBAS	Retired
	SVHS-NTSC	Retired
	NTSC	Retired
	VideoCapture	General interface to WDM compatible video source (single image taken from video stream).
	AVT ZK-5	AVT, DCAM interface, 1-CCD
	AVT Dolphin F201b	AVT, DCAM interface
	AVT PIKE F145b	AVT, DCAM interface
	AVT PIKE F421b	AVT, DCAM interface
	JVC KY-F75U	JVC, DCAM interface, 3-CCD
	h5	Phase One, 1-CCD
	h10	Phase One, 1-CCD
	h101	Phase One, 1-CCD
	Canon 20D	Canon, 1-CCD
	Canon 5D	Canon, CMOS
	Canon 5D Mark III	Canon, CMOS
M-SLITLAMP	Canon G3	Canon, 1-CCD
	Canon G5	Canon, 1-CCD
	Canon 10D	Canon, 1-CCD
	Sony RGB	Sony, 3-CCD

A column for the Code Meaning does not exist. The Code Meaning repeats value of the Code Value.

8.3.3.4 Concept Stereo

OP-Modality	Stereo		
	Code Value	Code Meaning	Definition
M-FUNDUS-CAM	True	Assigned condition is fulfilled	Image is part of a stereo pair.

The products meet the essential requirements stipulated in Annex I of the 93/42/EEC Directive governing medical devices. The products are labeled with:

CE 0297

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