** OnyxCeph³™ Guidelines **

How to transfer patient data to OnyxCeph³?

First a remark: OnyxCeph³ also supports the VDDS-media interface. Patient data could also be transferred using this interface (for more information see www.vdds.org)

1. Supported Data Tags

There are some ways of data delivery to OnyxCeph³: via command line parameters, via text file in .ini format or HTTP-request. Tags are used for transfer in any case. Following, you will find a survey of the tags supported:

1.1. Patient Data

Hand over this data for new patients in any case:

`PatID`	Unique ID, up to 50 Characters
`Firstname`	
`Lastname`	
`Birthday`	Format: YYYYMMDD e.g. "20090530" for 30.5.2009
`Sex`	Format: "M" for Male and "F" for Female "I" oder "D" für Intersexual (oder Divers)

Optional Data:

`Middlename`	
`PreferedName`	
`Title`	
`Race`	
`Country`	
`State`	
`ZIP`	
`City`	
`Street`	
`Street2`	
`Doctor`	
`Email`	
`Cellular`	
`HomePhone`	
`WorkPhone`	
`PatTags`	Keywords Concerning the Patient (Separated by ";")
`PatMarker`	Modify Marker in Patient-Tab 5 chars: „1" to set and „0" to reset the Marker, „-" no Change
`InsuranceID`	Insured Person Number of Health Insurance
`Salutation`	
`ContactDate`	Format: YYYYMMDD, e.g. "20090530"
`ModellNr`	Additional Cast ID
`PatShowNr`	Additional Patient's ID
`Notes`	Explanatory Notes Concerning the Patient If "<CLEAR>" is handed over, the already existing text is deleted.
`Client`	Client-ID, the HomeClient is used by default
`DCM_PatName`	Name in DICOM format separated by ^.

`Silent`	Adoption of New Patients without Query Unattended Image Import (see 1.2.) Unattended Container Import (see 6.)
`Overwrite`	In `Silent` mode: Patient Data is Overwritten without Query

1.2. Tags for Images or 3D Data

In addition, image files can be handed over to OnyxCeph's image acquisition.
Supported image formats are: BMP, TIF, JPG, GIF, CMP, PNG, PCX, IMG, DICOM and others.

In order to ensure correct image assignment you have to deliver at least the patient ID using the tag: `PatID` described above. You may also deliver all additional patient data.
2D image files as well as 3D data sets can be transferred.
All popular image formats and the following 3D file formats are supported:
`ii3 PLY DXF STL OBJ 3DS MSH OFF PMH BRE 3DC SOP o3m BCD ZPR OCXD`
Pass either 2D images or 3D data, not mixed!

For transferring of 2D images to OnyxCeph³, please, use the following tags:

`PicCount`	Number of Images to Transfer

Optionally, you may force that the image files are deleted after acquisition (in case the files are temporary). This functionality is only available for image files (2D):

`PicErase`	"Y" or "1" OnyxCeph³ Deletes the Files After Acquisition "N" or "0" (Default) OnyxCeph³ Doesn't Delete the Files.

This image information has to be handed over for any image in any case.
stands for the image number starting with 1; e.g. the first entry is `-PicPath1="C:\tmp\img.jpg"`

`PicPath#`	Full Path oft the Image File **#**

Optionally, you may deliver the following information on any image:

`PicInfo#`	Additional Information, Just Like Tags, Comments, etc.
`PicDate#`	Date of Aquisition, Format: `YYYYMMDD`, e.g. `"20090530"` or Date and Time of Aquisition, Format: `YYYYMMDDHHMMSS`
`PicTags#`	Keywords Concerning the Image (Separated by ";")
`PicNote#`	Image Comment (Lines Separated by ";") To pass a semicolon in the text, please use it double: ";;"
`PicTypeCode#`	Image type; The codes are listed in **Table 1** in the **Annex**
`PicImportMode`	"2D" or "3D": Here it can be specified whether the 2D or the 3D image acquisition should be opened.

Optionally, image data may be imported in unattended mode. For this transfer the following parameter:

`Silent`	"Y" or "1" Images are Adopted without Image Acquisition Dialog

The following should be noted:

- Images or 3D-data will not be aligned and have to be edited later.
- Data is stored in a new session with the current date.
- All 3D files of a call are saved together as one finding. This receives the image type transferred with `-PicTypeCode=`. Pass the image date after `-PicDate=`.
- All images get the image type "Unknown". This has to be adjusted later.
- Volume data (CTs, DVTs) can not be imported in unattended mode.

1.3. Open image acquisition for transfer directory

If many image files or a 3D DICOM study are to be transferred to OnyxCeph³, it is possible to open the image acquisition for a transferred directory remotely.
The following parameters should be used for this:

`PicImportPath`	Complete name of the directory to be opened in the image acquisition. If this string ends with /*, subdirectories are searched as well.
`PicImportMode`	"2D" or "3D": Here it can be specified whether the 2D or the 3D image acquisition should be opened. Default: "2D"
`PicImportMask`	Optional: Windows WildChars, with which the files are filtered

1.4. Data of a Referring Doctor

Similar to the patient's data also data of the referring doctor can be optionally handed over.

Used Tags:

`Ref_ID`	Unique ID of the Referring Doctor (Always Required)
`Ref_Employer`	Name of the Referring Doctor's Practice,

Apart from that the same tags as for patient data are used. They have, however, to be extended by the prefix **„`Ref_`"**:

```
Ref_Firstname, Ref_Lastname, Ref_Sex, Ref_Middlename, Ref_PreferedName,
Ref_Title, Ref_Country, Ref_State, Ref_ZIP, Ref_City, Ref_Street, Ref_Street2,
Ref_Email, Ref_Cellular, Ref_HomePhone, Ref WorkPhone, Ref_Notes
```

2. Transfer via Command Line Parameters

If patient and image data is transferred via command line parameters the file OnyxCeph.exe is started with the tags and followed by the values as command line. Any value should be formatted as follows:

-*Tag***="***Value***"**

Between the values there has to be at least one space character. At the end of this text you find some examples.

3. Transfer via HTTP

If the infoserver is active in OnyxCeph³ master data can also be transferrred to OnyxCeph³ via HTTP requests.
OnyxCeph³ operates as HTTP server and serves the configured port.
In case the checkbox **Only Local** is activated (Standard) only access from IP 127.0.0.1 is allowed.

Syntax
Server:Port/SetPat -Tag="Value" -Tag="Value" ...
If no space character is in Value the quotation marks can be omitted.

4. Transfer via Text File

For this a text file in INI format has to be generated. This file has to contain a [PatDat] paragraph. Patient and image data can be stored in this paragraph using the tags described above. Please, find an example at the end of this text.
In order to start data adoption OnyxCeph.exe has to be started with the following parameters: -PatID and -Data. After -Data= the entire path of the INI file has to be transferred together with the patient data. OnyxCeph³ checks if the patient number delivered via PatID matches the patient number in the INI file. Only in case of consistency the data is adopted.

5. Transfer via DICOM File

A DICOM file includes patient data as well as image data.
If with the command line parameter:

```
-DICOM="File Name"
```

the name and path of a DICOM file is transferred, the patient's master data is compared. And the patient is selected.

6. Import of .O3C-Containers

An .O3C-container-file comprises patient data as well as image data. It may include data of several patients.
If the path of the container-file is transferred after the command line parameter:

```
-ContainerFile="File Name"
```

the patient's master data and image data is compared. For this purpose the import dialog opens.
If the container was uploaded to an FTP-server the key can be transferred via command line parameter ContainerFTP:

```
-ContainerFTP="C5UW5SJNN3....B6DKHUWUQKD73"
```

With the parameter Silent, the display of the container import dialog can be suppressed. The container is read without any further dialog and the data are merget in. In the case of a conflict, the data of the container is always used.

```
-Silent=1
```

The command line parameter ContainerNote allows handing over of a string that can be attached to the comment of the images adopted. The comment may also be multi-line, the semicolon ";" is interpreted as a line feed:

```
-ContainerNote="Order=#0-8-15;Customer=13"
```

After import OnyxCeph³ automatically opens the respective client and patient.
All other parameters are ignored and do not have to be handed over.

7. Select an Image in OnyxCeph³

The following tag can be used for selection of a specific image in OnyxCeph³. The code that is given as file name in the image properties has to be handed over:

```
-SelectImage="10000ZTE7"
```

8. Start Modules in OnyxCeph³

The parameters ActionBefore and ActionAfter allow starting of specific modules.
At present starting the following modules is supported (will be extended):

- **ActionBefore** (prior to master data comparison)
  - Copy patient: `-ActionBefore="CLONEPATIENT:123" -PatID="123New"`

- **ActionAfter** (after master data comparison or container import)
  - Presentation template: `-ActionAfter="PRESENTATION:TemplateName"`
  - Create a container with all patient data:
    `-PatId="123" -ActionAfter="PATCONTAINER:C:\Temp\FileName.O3C"`

9. Trigger Ready Message

If more than one job is handed over to OnyxCeph via CLI an OnyxCeph it may happen that the second job is handled prior to the first one. To prevent this, OnyxCeph supports two mechanisms:

9.1. OnyxCeph returns immediately

If OnyxCeph is set with the parameter:

`-SwiftReturn`

is started, the call returns even before the data has been processed. A second instance of the program performs the data synchronization.
The calling programme can in such a way wait for the process to be completed.

9.2. Windows-Event

OnyxCeph can be started with the parameter:

`-EventReady="EventABC"`

will cause a Windows event to be triggered after the job has been read. The calling program can wait and send another job only after receiving this event.
By `CreateEvent` the event must already be created by the calling program. The calling program should use the function `MsgWaitForMultipleObjects` for waiting and only start the next CLI call after receiving the ready signal.

q.v. **Code Example 1** in the annex

9.3. Delete file

OnyxCeph can be used with the parameter:

`-DeleteOnReady="Filename"`

are requested to delete a temporary file after the job has been read in.
The calling program must first create this file, then wait for the file to be deleted and and only then send another job.

Example: The following batch file is only finished when OnyxCeph has taken over the data:

```
@ECHO OFF
SET filename=C:\TEMP\NotReady.tag
CLS >> %filename%
START "" OnyxCeph.exe -PatID=10000 -DeleteOnReady=%filename%
:WAIT
IF EXIST %filename% GOTO WAIT
ECHO Ready
```

As the ready signal occurs immedially after OnyxCeph has read the job the reaction should follow within short time (2 seconds are typical).

10. Detect Position of OnyxCeph.exe

In order to hand over the data you have to call **`OnyxCeph.exe`**.
This file is installed locally at any client. The default position is:

```
<ProgramFiles>\Image Instruments\Onyx3Client\OnyxCeph.exe
```

However, because this position can be changed during the client install, the safest way is to obtain the position of the client installation folder from the registry. Therefore you have to read the following key:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Image Instruments\OnyxCeph\Install Path
```

There you find the folder of the OnyxCeph³ client.

11. Transfer Server Connection

During the start, a database-connection can be handed over to the programs **OnyxCeph**, **OnyxStat**, **OnyxRegister** and **OnyxAdmin**. These programs try to connect to the specified server.
After parameter:

```
-ConnectMode=1
```

the protocol to be used for database-connection can be specified. The following parameters are possible:

"0": Searching for Server
"1": Connection via „TCP/IP"
"2": Connection via „NamedPipes"

After parameter:

```
-ConnectSName="[MyServer]@MyServer"
```

the name of the server can be indicated. It consists of the name of the server computer in square brackets followed by the charakter „@" and a valid connection.
Examples for valid server names are:

- `[OnyxServer]@OnyxServer`
- `[DBServer]@local.practice.com`
- `[MyServer]@192.12.13.1`

In case of the OnyxDBServer serving a port different from 16300 it has to be named after the server name:
`[OnyxServer]@OnyxServer:17300`

12. Examples

First read the registry key:

```
"HKEY_LOCAL_MACHINE\SOFTWARE\Image Instruments\OnyxCeph\Install Path"
```

The Value may be e.g. "*c:\Program Files\Image Instruments\Onyx3Client*"

Transfer of a new patient, set the second Marker:

```
"c:\Program Files\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123"
-Firstname="Test" -Lastname="Patient" -Birthday="19960313" -Sex="F"
-PatMarker=-1---
```

Transfer of a patient together with his/her referring doctor:

```
"c:\Programme\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123" -
Firstname="Test" -Ref_Lastname="Patient" -Ref_Id="456" -Ref_Firstname="Frank"
-Ref_Lastname="Physician" -Ref_Title="Dr."
```

Asign a known referring doctor to a known patient:

```
"c:\Programme\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123"
-Ref_Id="456"
```

Open patient, delete notes on patient:

```
"c:\Programme\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123"
-Notes="<CLEAR>"
```

Transfer of two images for an already known patient:

```
"c:\Programs\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123"
-PicCount=2 -PicPath1="C:\temp\XRay.tif" -PicPath2="C:\My Images\Photo.jpg"
```

Transfer of two STL-files for a known patient, delete files after import:

```
"c:\Program Files\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123"
-PicErase=1 -PicCount=2 -PicPath1="C:\scan\Upper.stl" -PicPath2="C:\scan\
Lower.stl"
```

In OnyxCeph the 3D image acquisition will open and the files can be imported. After successful import the files will be deleted.

Transfer of two STL-files for a known patient, silent mode: without dialog:

```
http://127.0.0.1:24000/setpat -PatId="123" -PicCount=2 -PicPath1="C:\scan\
Upper.stl" -PicPath2="C:\scan\Lower.stl" -Silent=1
```

With this request, the two STL files are captured together as one record. Upper and lower jaw should already be aligned in the STL data. The new image data-set has the type "No Type 3D".

Transfer of patient and images in one Step.

Source Files are to be Deleted After Acquisition:

```
"c:\Program Files\Image Instruments\Onyx3Client\OnyxCeph.exe" -PatId="123"
-Firstname="Test" -Lastname="Patient" -Birthday="19960313" -Sex="F"
-Title="Dr. med. dent." -City="Chemnitz" -PicCount=2 -PicErase=1
-PicPath1="C:\temp\XRay.tif" -PicInfo1="Lateral Ceph" -PicDate1="20000815"
-PicPath2="C:\My Images\Photo.jpg" -PicInfo2="Lateral Photo"
-PicDate2="20000814"
```

Opening of a patient via HTTP and updating the name

Opens patient 123 and updates master data when indicated

```
http://127.0.0.1:24000/setpat -PatId="123" -Firstname="Test" -Lastname="Patient"
-Birthday="19960313" -PatMarker="-1---"
```

Generate or update a referring doctor HTTP:

Generates the referring doctor *456*, or updates his/her master data

```
http://127.0.0.1:24000/setpat -Ref_Id="456" -Ref_Employer="My Practice"
-Ref_Firstname="Frank" -Ref_Lastname="Physician" -Ref_Title="Dr."
```

Opening of a patient and presentation template via HTTP.
Opens patient *123* and after that the presentation template *Onyx_Images_8*
http://127.0.0.1:24000/setpat -PatId=*123* -
StartModule="*PRESENTATION:Onyx_Images_8*"

Copying of a patient via HTTP.
Copies the patient *123* inclusive of all images. The copy gets the new patient ID *123New* and is renamed to „*Test Patient*"
http://127.0.0.1:24000/setpat -ActionBefore="ClonePatient:*123*" -PatID="*123New*"
-Firstname="*Test*" -Lastname="*Patient*"

Use of a file for data transfer
Generate an .INI File of arbitrary name (e.g. *C:\Temp\MyPatientData.INI*) :

MyPatientData.ini

```
[PatDat]
PatId=123
Firstname=Test
Lastname=Patient
Birthday=19960313
Sex=F
Title=Dr. med. dent.
City=Chemnitz
PatMarker=-1---
PicCount=1
PicPath1=C:\temp\XRay.tif
PicInfo1=Lateral Ceph
PicDate1=20000815
```

Start OnyxCeph.exe with the following parameters:
"*c:\Program Files\Image Instruments\Onyx3Client*\OnyxCeph.exe" -PatId="*123*"
-Data="*C:\Temp\MyPatientData.INI*"

If in the section `[PatDat]` an entry `UTF8=1` exists, all values are read as UTF-8, otherwise ASCII-strings are expected.

Transfer of a patient, specifying names in DICOM format.
"*c:\Programme\Image Instruments*\Onyx3Client\OnyxCeph.exe" -PatId="*124*"
-DCM_PatName="*Kirk^James^Tiberius*" -Birthday="*19320708*" -Sex="*M*"

Transfer of patient data via DICOM File.
OnyxCeph³ is supposed to load patient data from the DICOM file and open it:
"c:\Program Files\Image Instruments\Onyx3Client\OnyxCeph.exe" -DICOM="*C:\Temp\
XRayPost.DCM*"

Open 3D image acquisition for a patient.
OnyxCeph³ should open a patient and offer the files of a directory for transfer:
"*c:\Programme\Image Instruments*\Onyx3Client\OnyxCeph.exe" -PatId="*123*"
-PicImportPath="*C:\Temp*" -PicImportMode=*3D*

Import of patients and images from a container
OnyxCeph³ is supposed to load patient and image data from a container that is located on an FTP-server. The comment field of the recorded images is filled with the order number:
"*c:\Program Files\Image Instruments*\Onyx3Client\OnyxCeph.exe" -
ContainerFTP="*C5UW5SJNN3....B6DKHUWUQKD73*" -ContainerNote=*#42*
or via HTTP
http://127.0.0.1:24000/setpat -ContainerFTP="*C5UW5SJNN3....B6DKHUWUQKD73*"
-ContainerNote=*#42*

Transfer of server connection
OnyxCeph³ is expected to connect to a specified OnyxDBServer via TCP/IP which serves the port 17300:

```
"c:\Programs\Image Instruments\Onyx3Client\OnyxCeph.exe" "-ConnectMode=1"
"-ConnectSName=[MYSERVER]@MYSEVER:17300"
```

Annex

Table 1: Token of Image Types for Parameter PicTypeCode

Image Type	Image Type (for Code)	Code
Lateral Right	PhotoLateralRight	PLR
Frontal	PhotoFrontal	PF
Frontal Smile	PhotoFrontalSmile	PFS
Oblique Right	PhotoObliqueRight	POR
Oblique Left	PhotoObliqueLeft	POL
Lateral Left	PhotoLateralLeft	PLL
No Type	NoType 2D	NO2D
Oblique Open Right	PhotoObliqueRightOpen	PORO
Oblique Open Left	PhotoObliqueLeftOpen	POLO
Oblique Smile Right	PhotoObliqueRightSmile	PORS
Oblique Smile Left	PhotoObliqueLeftSmile	POLS
Frontal	PhotoFrontalOpen	PFO
Lateral Open Left	PhotoLateralLeftOpen	PLLO
Lateral Open Right	PhotoLateralRightOpen	PLRO
Lateral Smile Right	PhotoLateralRightSmile	PLRS
Lateral Smile Left	PhotoLateralLeftSmile	PLLS
Bottom View	FotoFrotalSMV	PFSMV
FaceScan	FaceScan3D	FS3D
Frontal Mouth Wide Open	PhotoFrontalMouthWideOpen	PFMWO
Frontal Mouth Relaxed	PhotoFrontalMouthRelaxed	PFMR
No Type 3D	NoType 3D	NOD
Nose Mouth	PhotoFrontalNoseMouth	PFNM
Nose	FotoFrontalNose	PFN
Crown	PhotoCrown	PC
USER 1	USer1	US1
USER 2	USer2	US2
USER 3	USer3	US3
USER 4	USer4	US4
USER 5	USer5	US5
USER 6	USer6	US6
USER 7	USer7	US7
Lateral Ceph	XRayCephalogramRight	XRCR
PA Ceph	XRayCephalogramPostAnt	XRCPA
Panoramic	XRayPanoramic	XRPAN
SMV	XRaySMV	XRSMV
Lateral Ceph (Left)	XRayCephalogramLeft	XRCL
AP Ceph	XrayCephalogramAntPost	XRCAP
Left Hand	XrayHandLeft	XRHL
Right Hand	XRayHandRight	XRHR
Teeth	XRayTeeth	XRTT
CT-HeadScan	CTHead3D	CTH3D
Tooth 1	XRayTooth1	XRT1
Tooth 2	XRayTooth2	XRT2
Tooth 3	XRayTooth3	XRT3
Tooth 4	XRayTooth4	XRT4
Tooth 5	XRayTooth5	XRT5
Tooth 6	XRayTooth6	XRT6

Tooth 7	XRayTooth7	XRT7
TMJ Right	XRayTMJRight	XRTMJR
TMJ Left	XRayTMJLeft	XRTMJL
TMJ	XRayTMJ	XRTMJ
Model Upper Occlusal	CAstMaxillaOcclusal	CAMAXO
Model Lower Occlusal	CAstMandibulaOcclusal	CAMANDO
Model Right Buccal	CAstBuccalRight	CABR
Model Anterior Dental	CAstAntDental	CAAD
Cast Left Buccal	CAstBuccalLeft	CABL
Cast Deciduous Dentition	CAstDeciduous	CAD
Cast Permanent Dentition	CAstPermanent	CAP
Cast Mixed Dentition	CAstMixed	CAM
Cast Permanent 3D	CAstPermanent3D	CAP3D
Cast Deciduous 3D	CAstDeciduous3D	CAD3D
Cast Mixed 3D	CaAstMixed3D	CAM3D
Cast Maxilla 3D	CAstMaxilla3D	CAMAX3D
Cast Mandibula 3D	CAstMandibula3D	CAMAND3D
Overlay 3D	OVerlay	OV3D
Upper Occlusal	IntraOralMaxillaOcclusal	IOMAXO
Lower Occlusal	IntraOralMandibulaOcclusal	IAOMANDO
Right Occlusion	IntraOralOcclusionRight	IOOR
Anterior Occlusion	IntraOralOcclusionAnterior	IOOA
Left Occlusion	IntraOralOcclusionLeft	IOOL
Overjet Left	IntraOralOverJetLeft	IOOJL
Overjet Right	IntraOralOverjetRight	IOOJR
Anterior Occlusion Relaxed	IntraOralOcclusionAnteriorRelaxed	IOOAR
Anterior Occlusion Wide Open	IntraOralOkklusionAnteriorWideOpen	IOOAWO

Code Example 1:

The following code should be executed by the calling program if the ready signal is used:

```
String EventName = "RandomName";
HANDLE EventH = CreateEvent(0, 1, 0, EventName.c_str());

// Start OnyxCeph.exe with CLI Parameters and -ReadyEvent=RandomName

MsgWaitForMultipleObjects(1, &EventH, false, INFINITE, QS_ALLINPUT);
CloseHandle(EventH);
```

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