

Version 1.4.3

# Administrator's Guide

Installation and Administration





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# 1 Introduction

# 1.1 General

This document is confidential! Passing onto third parties without written permission from company digipaX GmbH is not allowed!

In this document we explain the installation of various components as well as the functions and settings that go beyond the user's documentation. A normal user has particularly limited access possibilities to the system settings. The integration of digipaX software in an overallsystem comprising of numerous DICOM and GDT systems can only be made by competent persons – the administrators.

For administrators and maintenance personnel special training is needed. Information on trainings can be obtained from the manufacturer.

Using this documentation and the password at the end of this document, administrators will be able to configure digipaX for specific situations in practice.

# 1.2 Symbols and illustrations

Symbol	Meaning
<u>_!</u>	Note
	Тір

All digipaX illustrations (screenshots) show the program windows in Classic Style. This allows the images to be clearer in the documentation. The program is normally set to Black Style, which is more suitable for viewing medical images.



# 1.3 Possible risks

To reduce the risk of electric shock please heed the use of the CE marked hardware and keeping of the safe distance of 1.50 m between the installed hardware components and the patient (see Section 2.4 Hardware and safety and 2.9 Installation and connection instructions). In addition, galvanic isolation should be used when connecting devices with a data cable.

While using the module for acquisition of radiological images (image acquisition module), the loss of the current image can occur if the instructions are not properly observed after the error has had appeared. Therefore, while executing the activities according to the checklist special attention should be paid to instructing the staff related to the acquisition of images (an explanation of the backup/restore functions).

To prevent loss of the entire image archive, multiple and dispersed storage of the image data must be provided. For this purpose, please read Section 2.3 RAID system and backup.

The users of the system should be instructed that the failure to follow the operating manual is associated with the risk. In particular, it is imperative that all safety precautions in the User's Guide are observed.



# 2 Hardware

# 2.1 Conditions for use

This product is designed for use on personal computers in residential and commercial premises. The used hardware must be adapted to the prevailing environment conditions. The user of PC must verify if hardware corresponds to requirements prevailing in location of its installation.

#### 2.2 System requirements

#### 2.2.1 Supported operating systems

Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows 7



When using Windows server 2008 it is necessary that the feature "Desktop Experience" of Windows is installed. The installation is to be made in server manager above the switch "Add feature".

#### 2.2.2 Server

Recommended system configuration:

Processor	Dual-core processor 2,5 GHz or higher	
Main memory	Min. 2 GB RAM	
Operating system	Windows 7 Prof.	
Graphics card	Minimum 128 MB DVI (dual), 1280 x 1024	
Harddisk	System disk min. 60 GB + additional image store (RAID system)	
Network	1000BaseT (Gigabit Ethernet)	

Minimum system requirements:

Processor	Pentium 4 or similar min. 2,1 GHz	
Main memory	lin. 1 GB RAM	
Operating system	Vindows XP Prof. or higher	
Graphics card	On-board graphics, 1280 x 1024	
Harddisk	System disk min. 60 GB + additional image store (RAID system)	
Network	100BaseT	

#### 2.2.3 Workstation

Recommended system configuration:

Processor	Dual-core processor 2,5 GHz or higher	
Main memory	Min. 2 GB RAM	



Operating system	Windows 7 Prof.	
Graphics card	nimum 128 MB DVI (dual), 1280 x 1024	
Harddisk	60 GB or more	
Network	1000BaseT (Gigabit Ethernet)	

Minimum system requirements:

Processor	Pentium 4 or similar min. 2,1 GHz	
Main memory	in. 1 GB RAM	
Operating system	/indows XP Prof. or higher	
Graphics card	On-board graphics, 1280 x 1024	
Harddisk	Min. 60 GB	
Network	100BaseT	

RAID system size depends on the expected number of images.

#### 2.3 RAID system and backup



The data of archivized images are to be saved on a RAID system to minimise the data loss risk. RAID 1 or RAID 5 is recommended.

In addition, the data are to be put on further harddisks by their mirroring or daily backup (see also chapter 21 Archiving).

#### 2.4 Hardware and safety

The used hardware must be provided with CE and it must meet requirements provided in Electromagnetic Compatibility Directive and Low Voltage Directive. It is necessary to observe restrictions concerning the use and provisions regarding the maintenance and operation of the installed hardware according to the manufacturer's information and standard EN 60950–1.

It is necessary to ensure proper functioning of the installed hardware components before the software will be installed and taken in use.

#### 2.5 Use within urgent care facilities

The equipment used within urgent care facilities, such as ambulance or hospital emergency department must meet specific requirements. In these places, prevention against possible malfunction or breakdown during time-critical medical procedures is needed. Computers must be protected against power blackout by uninterruptible power supply solutions, if the urgent care facility is not already protected by any kind of emergency power supply. Permanent availability of image and patient data as well as server services must be assured. This can be obtained by mirroring of image data or any other cluster solutions. Appropriate measures should also be taken in order to prevent failure of the work stations, which means providing a ready to use substitute station. Networks must meet the requirements of IEC 80001.



# 2.6 Noise level

The installed components, in particular fans of the system should meet the current directives in terms of noise level and keep the required noise limits.

## 2.7 Diagnostic display

The diagnostic workstation requires a special diagnostic display according to quality assurance directives for radiographic equipment. In order to ensure the quality of the display, a daily visual inspection is necessary. This can be made via software (e.g. "LUXOR DisplayQ") or by using the SMPTE test patterns. The staff must be trained accordingly.

#### 2.8 Devices

The following devices can be connected to the digipaX software for data exchange:

Device type	Manufacturer	Unit
CR-Scanner:	iCRco	iCR-Serie
	Orex Computed Radiogra-	Orex
	phy Ltd.	
	Kodak (Carestream)	PoC-Serie
	Carestream Health	Vita LE
Detector:	Teleoptic PRA, Ltd.	Alpha 4600
	XCAN AG	XCAN DR-System
Generator:	JOSEF BETSCHART AG	GENESIS 50 RFT
	Provotec	ProVario
Dose-area-product meters:	Wellhöfer	KermaX IDP
Video sources:	any video sources with "WDM Stream Class Driver" and	
	DirectShow supported.	
Foot switch:	any foot switch with two programmable pedals for key	
	combination	

While connecting the equipment the instructions of the manufacturers of devices must be followed. In particular it is to ensure galvanic isolation if necessary.

Connection of devices is described in chapter 19 Device connections.



# 2.9 Installation and connection instructions

While installing and connecting the systems the specifications and precautions provided by the manufacturers must be followed.

The installed hardware must be CE marked and meet the requirements of EMC and Low Voltage Directive. The restrictions on application as well as maintenance and use instructions for the installed hardware are to be followed according to the manufacturer's information and DIN EN 60950-1.

It is to ensure that between the installed hardware components and a patient a distance of 1.50 meters will be kept (so that no simultaneous touch of hardware and patient is possible). Moreover, all the hardware must stand safely. Monitors should also stand safely so that they cannot be pulled down accidentally. Cables are to be so installed that loose hanging is avoided.

The hardware shall be located in such a manner to allow for quick and easy disconnection from power supply in emergency situations. The disconnectable power outlet strips with good access may be used as possible alternative.

The keyboard, mouse and monitor shall be located on workplace in such a manner to eliminate their physical impact on environment.

There are no known interactions between computer hardware and X-ray system. Therefore, no special precautions for their installation are given.

# 2.10 Uninterruptible power supply (UPS)



Check if an uninterruptible power supply of a device is necessary to prevent image loss during data transfer from external appliances and to exclude possible dangers for patients. The instructions of the manufacturers relating to this must be followed.

#### 2.11 Cleaning with disinfectants

The installed hardware should be cleaned in principle with common disinfectants. The hardware components may not get damaged by using such disinfectants. Inform the staff especially if such cleaning of installed hardware is not acceptable.

#### 2.12 Software

The same version of digipaX software is to be installed at all connected stations.



# 3 Installation guidelines

# 3.1 Server guidelines

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Adjusting caches	79
Adjusting X-Ray journal / storage location	90
Setting as veterinary version	99
GDT connection	
Configuration of TurboMed / PDE-TOP /	43 / 50 /
MediStar / DOCConcept / Quincy /	53 / 55 / 56 /
ALBIS / Duria / KiWi /	58/63/66/
MCS Isynet	68
digipaX configuration	74
HL7 connection	80



# 3.2 Workstation guidelines

Process	Page number for information
1. Installation of digipaX	
Installation of digipaX	17
2. Installation of other tools	
Installation of Nero	18
Installation of software remote control	
Installation of tool or image for daily visual inspection	12
3. digipaX configuration	
Commissioning digipaX (fill physician's data, enable modules)	19
Connecting image archives / DICOM configuration	25
Connecting worklist server	37
Adjusting caches	79
Setting as veterinary version	99
GDT connection	
Configuration of TurboMed / PDE-TOP /	43 / 50 /
MediStar / DOCConcept / Quincy /	53 / 55 / 56 /
ALBIS / Duria / KiWi /	58 / 63 / 66 /
MCS Isynet	68
digipaX configuration	74
HL7 connection	80

# 3.3 Completion of overall system

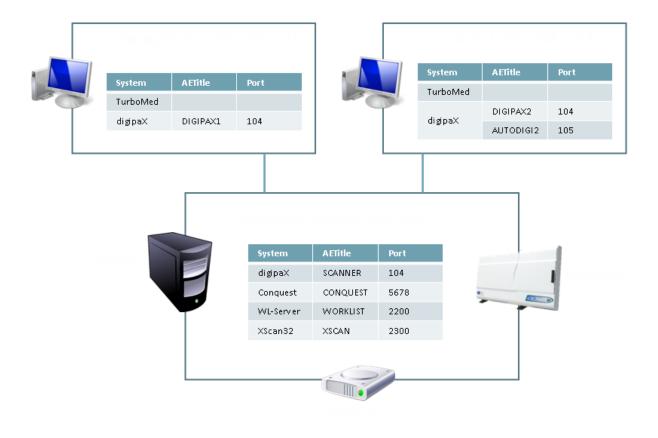
Process	Page number for information
1. Routing setup	
Enabling image receiving in digipaX	33
Adding ExportConverter in Conquest	34
2. Archiving	
Configuration of Conquest	138
Setting up a backup CD/DVD	140
Setting drive monitoring in digipaX	141
3. Acceptance of system	
Acceptance testing	142
Completing checklist	142



#### 3.4 Installation and interconnection plan

Especially for larger systems, in which DICOM router, worklist server, multiple image archives and even third-party system may be integrated, it is recommended to make an interconnection plan for the systems involved. For each computer, enter its name, IP address and systems which are to be installed. For each DICOM system, specify an AE Title and port, where it will be accessible (for servers – Service Class Provider (SCP)) or which will be used by it for image query as Service Class User (SCU).

Example of a simple system structure:





# 4 Program installations



For the installation the administrator rights are necessary. User account control as well as use of security software and firewalls may cause problems whilst installing the digipaX software. Settings of such programs may require adjusting (enabling of ports, approval of accession rights to the programs and for the user etc.).

# 4.1 Xinstall

All installation programs are started through the tool Xinstall.

Anwendungen	Informationen
digipaX	
Serversysteme	
MySQL MySQL	
MySQL GUI Tools	
Bildarchiv (Conquest)	Klicken Sie auf das zu installierende Softwarepaket,
offus Overlas	Beim Überfahren der Einträge mit der Maus erhalten Sie hier Informationen zu den Systemen.
Archivierung	
Datensicherung	
Tools	
DICOM Tageditor (DCM Editor)	
	Exit

By clicking on the appropriate menu item the setup of this software launches. Adjusting this installation software Xinstall is possible and is explained in a separate document.

# 4.2 digipaX

The installation program installs the digipaX software (typically in directory C:\digipaX\digipaX).

If setting as a veterinary version is needed, then it can be enabled as preset in the setup (see also 16 Veterinary version).



After the installation has been completed, a BodyGenX tool is accessed optionally. With this tool the organ tables for various specialities of human or veterinary medicine can be installed. Also, the Procedure Codes of various devices can be installed. Use of BodyGenX is described in the section 14 Body Generator (BodyGenX).

#### 4.3 PACS server: Conquest + Xadmin

A PACS server is absolutely necessary for operating the system.



The installation directory must not contain blank spaces. Otherwise, Conquest server cannot be logged in as a service! Select also e.g. under Windows Vista or Windows 7 the directory C:\Conquest or C:\digipaX\Conquest.

If needed, the tool Xadmin can also be used to support some administrator's tasks. Currently Xadmin supports acquisition of already existing data (DICOM images from previous system), modifications of tags in batch mode and creation of X-ray journals from the tags of the DI-COM files. The program starts through Xadmin.exe. For more, read the Xadmin user's manual.

Conquest image is based on database system MySQL.

#### 4.4 Worklist server: wlmscpfs

The worklist server is only needed if the worklist component of the digipaX system is intended to be used.

#### 4.5 Backup

This tool is necessary for creating image files backup on CD / DVD. It requires installation of Nero software.

#### 4.6 DICOM editor

With the DICOM editor, the DICOM tags of image files can be changed. This is necessary if e.g. wrong assignments of images occur.

#### 4.7 Nero

Burning of patients' CDs (DVDs) is directly possible in digipaX. For this, an integrated Built-In-Burning engine as well as the Nero software can be used. To use Nero, the Nero software must be installed on the computer. The settings which software is to be used are described under point 17.8 Selection of burning software.



# 5 Commissioning / general configurations

# 5.1 digipaX

## 5.1.1 Configuration of information on practice and physicians

In the configuration on the page "Information on practice and physicians" doctor's name and address are to be put in. If necessary, doctor's or company identification number can be added (for more see Chapter 22 Tips for group medical practices (team practices).

#### 5.1.2 Licensing

From digipaX version 1.2 software activation is required.

The program is installed on base of a standard, full-featured trial license, which expires after 30 days. Within those 30 days a new license file must be installed in the system. The application for new license file is possible just already during configuration of the server and hence the product activation can be done prior to delivery of the system.

5.1.2.1 Product activation flow

- 1. Launch the digipaX on the server and open the configuration page "License"
- 2. Click the button "Product activation ..."

Software: digipaX	1
Software version: 1.3.7.0	
Installation codes:	
00: B3F5AA23	
01: B31B6DD4	
02: B2AF1041	
03: 8C0247CB	
04: B4841872	
05: C68D5D41	
06: 1E714CEE	***
07: C0593726	
08: A6349696 09: 115313C1	
10: 54396E22	
11:	
12: E7024C65	
12. 2702 1005	
Hardware info:	
00:15:F2:7C:0E:66	
18:66:20:52:41:53	
18:66:20:52:41:53	
18:66:20:52:41:53	
18:66:20:52:41:53	
16:04:20:52:41:53	
16:04:20:52:41:53	<b>_</b>
33:50:6F:45:30:30	-

- 3. Copy the data using the appropriate button to the clipboard or text file
- 4. Log in on the website www.digipax.eu entering the vendor information, fill out an order form in the vendor area, paste text copied from the product activation and submit the order.
- 5. The company digipaX sends back to the email address provided the license file which must be again copied onto the server.



6. In the configuration of the server a new path to the license file must be specified, if the license file was copied in any another location.It is recommended to overwrite the default license file.

All other digipaX stations in the network must also use this license file, that means that the path of the license file is to be customized to the configuration.

#### 5.1.2.2 Extension of update period

When the update period expires, it must be first extended before new updates can be installed. For extension of the update period the number of the license file is required. It can be found in the license viewer (license configuration page). This number is needed to order an activation key from the manufacturer for extension of the update period. Enter this key in the license viewer (button "Activation key").

#### 5.1.3 Activating modules

The desired modules of the station are activated / deactivated on the configuration page "License".

#### 5.1.4 Errors when checking the license

If the license checking fails at the program launch, an error message with the error code is displayed. The following table presents the meaning of these codes:

Code	Meaning
0	Licence Passed
1	Licence Demo Mode
2	Lic File Not Registered
3	Module Is No
16	Licence Expired
17	Demo Licence Expired
32	Too Many Module User
64	User Is Deactivated
128	No Lic File Access
129	No Registry Access
256	Module Not Found
257	Key Already Used
258	Key Not Readable
512	Invalid Licence
1024	Invalid Inst Code
2048	Invalid Lic File
3001	Webservice Error
4096	No User
4097	No Item
4098	Entry Not Found
4099	Invalid Type



4100	Module Exists
4101	Invalid Parameter
4102	Insufficient Licence
5000	User Cancel
8192	Unsupported Version
8193	Unknown Language
8194	Not Implemented
16382	Sysdate Changed
16383	Lic Tampered
16384	Unhandled Error

If, for example, the license file has been moved, a new path can be set up using switch "Se-lect new license file".

Another reason for an error when checking the license can be that the PC has been replaced and the new computer has now a different computer name or the computer name has been simply changed in Windows only. Then, the old computer name is still activated in the license file and there is no license for the new computer name left. If this is the case, then you can open license viewer using switch "License Viewer" and deactivate the old name in the list. Afterwards, the license is available again and will be allocated to the new name after restart of digipaX.

The license viewer does not open if no license file is selected or the license does not belong to the system (Code 1024) or is damaged.

# 5.2 Conquest

For trial or demo installation with low volume of coming images DBASE III as database is offered. It is accessible easily without any additional softwares. But compared to other databases, it is very large and the startup time can be very long.

In normal systems, MySQL database should be used. At the installation you can additionally use the user's guide "windowsmanual.pdf" provided by the Conquest system (English).



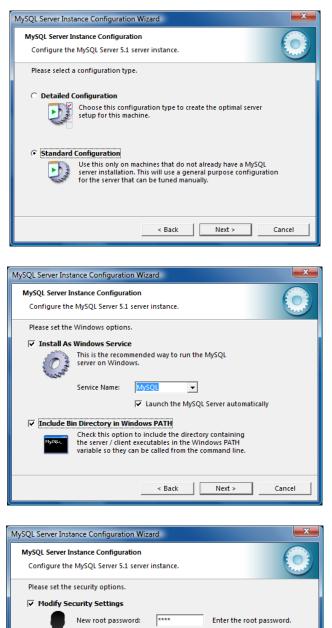
Consider exactly your choice of database in advance. A later change of the database system is possible only with high expenses.

5.2.1 MySQL

First install MySQL server on usual way ("Typical").

Just at the end of the setup select "Configure" and do the settings like shown in the following dialogues:







As password, here "root" was used.



SQL Server Instance Configuration Wizard	×
MySQL Server Instance Configuration	
Configure the MySQL Server 5.1 server instance.	
Ready to execute	
Prepare configuration	
<ul> <li>Write configuration file</li> </ul>	
○ Start service	
<ul> <li>Apply security settings</li> </ul>	
Please press [Execute] to start the configuration.	
< Back Execute	Cancel

Additionally, the installation of "MySQL Workbench" is recommended. It includes tools for testing and optimizing the database, which could be used immediately when only needed. The creating of an automatic backup of the MySQL database is described under point 22.2 Securing MySQL database.



#### If using Windows 7, after installation of MySQL a reboot is required!

Install the Conquest files on the target computer (e.g. C:\digipaX\Conquest) and launch ConquestDICOMServer.exe. At the first launch select "Native MySQL driver" as database driver.

New Installation		
Conquest DICOM server vers. 1.4.16 The Netherlands Cancer Institute		
This is a new installation; please select the (ODBC) database to be used, push OK, then fill in the configuration page and push 'Save configuration'. Then proceed to the installation page. Or use the default install button to install without questions.		
Database type Native MySQL driver		
Cancel OK Default install		

On the first configuration page enter AE Title and port and save the settings. It is recommended to set the checkbox "Keep Server Alive" in order to restart the Conquest automatically after a server crash. Furthermore, select the file format DCM in order to be able to read the saved files images with every DICOM standard software. The selected directory for data storage should have enough space for the expected volume of coming images and be stored on a RAID system.



Q ConQuest DICOM server 1.4.16 - CONQUESTS	RV1	
Configuration Installation Maintenance Known DI	COM providers   Browse database   Server status   Query / Move	
	rs for operation of the ConQuest DICOM server. lication entity, AE) : CONQUESTSRV1	Save configuration
TCP/IP port to use (other DICOM systems mu	st know this number) : 5678	Restore original configuration
Local disk directory to store DICOM images : Make directory		
Enable JPEG(2000) support	C digipax	Install server as NT service
Local unique name of this DICOM server (app TCP/IP port to use (other DICOM systems mu Local disk directory to store DICOM images : Make directory ✓ Enable JPEG(2000) support Images on disk are stored: C Uncompressed C NKI compressed C JPEG or NKI C Lossless JPEG C Lossy JPEG C Lossless JPEG	data     dbase     HEAD_EXP_00097038     printer_files	Uninstall server as NT service
Images on disk are named: V2 (allows NKI compression) CDCM (standard format)		Hide the server (as tray icon)
Cleanup disk below: (MB)		mae the server (as tray icon)
Cleanup nightly below: (MB)		About this server
Below 0 MB, move to:	C:\digipax\conquest\data	
Keep Server Alive	Free disk space: 24539 megabyte	Close the server

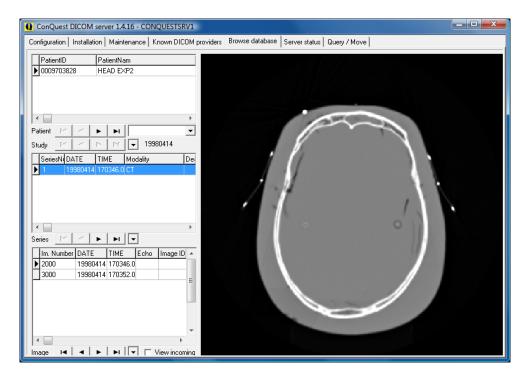
On the installation page, 5 top buttons on the right top-down can be used for proper creating and testing of the database.

Confirm the database name **conquest** (for multiple Conquest servers, you can select also e.g. "conquest1" and "conquest2") by using the button "Make mysql database" and enter it by using the password **root**. Confirm the question "Change TCPIP parameter to fix mysql problems?" with **Yes**.

ConQuest DICOM server 1.4.16 - CONQUESTSRV1	
Configuration Installation Maintenance Known DICOM providers Browse database Server status Query / Move	
However, active DICOM connections (image copy operations) may be terminated.	Verify TCP/IP installation
Follow the following steps for (re-jinstalling this program: In the 'Configuration' page, set the server name; port number and data directory. The defaults will do fine in most cases. Push the 'Save configuration' button.	Make mysql database
In the "Installation' page (this one), perform all installation steps (buttons top right) one by one from top to bottom.	Verify database installation
Verify TCP/IP installation: tests communication between the DICOM server and installation programs. This will fail if TCP/IP is not installed on this PC.	(Re)-initialize database
Make ODBC data source: defines the connection between a database on disk and the DICOM server. This fails if ODBC or the dBase driver is not installed. This option is not required when using the "DBASEIII without ODBC" driver	Clear worklist database
Verify database installation: Some ODBC versions (Drivers 3.40.2829) crash when used with this software. This test will fail to loop for 10 times if that is so. If the test fails, install newer ODBC drivers (e.g., supplied with office 97).	
(Re-jinitialize database: Deletes existing database tables (if they exist) and generates new tables from any images already stored on disk. (if any).	
After these steps, configure your other dicom systems to know this one and put them in in the list on the page 'Known DICOM providers'.	
Output of the installation programs will go here:	
CONQUESTSRV1 This output is generated by the dicom server application	Hide the server (as tray icon)
[CONQUESTSRV1] If you can read this, the console communication is OK [CONQUESTSRV1] This is systemdebug output; can you read this ? [CONQUESTSRV1] This is a very long text output for testing This is a very long text output for testing This is a very [CONQUESTSRV1]	About this server
· · · · · · · · · · · · · · · · · · ·	Close the server



On a tab "Browse database" you can see an image, which is already contained in the tab by default.



This installed test patient can be deleted in the context menu of the image by using "Delete this patient".

On the page "Configuration" use also "Install server as NT service", so that the server starts automatically always at the system boot and is always active in the background.



If using Windows 7, administrator rights must already be established and User Account Control (UAC) must be disabled before the installation as a Windows service ("Install server as NT service") will be done.

The installation is now completed.

#### 5.2.2 DBASE III

At the first launch of Conquest the database "DBASE III" is to be selected.

New Installation		
Conquest DICOM server vers. 1.4.16 The Netherlands Cancer Institute		
This is a new installation; please select the (ODBC) database to be used, push OK, then fill in the configuration page and push 'Save configuration'. Then proceed to the installation page. Or use the default install button to install without questions.		
Database type Built-in DBASEIII without ODBC (*.DBF)		
Cancel OK Default install		





Then enter AE title (e.g. CONQUEST1 or CONQUEST2) and a port, which is still not yet used (5678 can be left or e.g. 5679, if another server already runs).

Coming images will be saved in a Conquest-specific format V2 by default. The format can be later also read only with Conquest. Select the option "DCM (standard format)" in group "Images on disk are named" in order to store files in the standard DICOM format so that they can be then read with any program.

It is recommended to use option "Keep Server Alive", because it restarts the server automatically after a crash.

Choose a suitable storage location (directory) on the RAID system for the data. Make sure that there is enough disk space for the coming images. You can do the choice in the middle of directory window.

With button "Install server as NT service", register this PACS server as a Windows service, so that the server starts automatically always at the system boot and is always active in the background.

ConQuest DICOM server 1.4.16 - CONQUESTS	RV1			
Configuration Installation Maintenance Known DI	COM providers   Browse c	latabase   Server status   Que	ry / Move	
This screen contains essential paramete Local unique name of this DICOM server (app TCP/IP port to use (other DICOM systems mu Local disk directory to store DICOM images :	lication entity, AE) :	Quest DICOM server. CONQUESTSRV1 5678	1	Save configuration Make mysql database Restore original configuration
Make directory         ✓         Images on disk are stored:         C       Uncompressed         C       NKI compressed         C       NKI compressed         C       Lossless JPEG         C       Lossless JP2000         C       JP2G or Uncompressed	C:\ digipax digipax digipax data data HEAD_EXP_00 printer_files	097038	_	Install server as NT service Uninstall server as NT service
Images on disk are named:         C V2 (allows NKI compression)         C DCM (standard format)         Cleanup disk below: (MB)         Cleanup nightly below: (MB)         Below         MB, move to:	C:\digipax\conqu	iest\data		Hide the server (as tray icon) About this server
✓ Keep Server Alive	Free disk space: 2	4539 megabyte		Close the server

On the page "Installation" use the buttons for testing the TCP/IP connection and the database and create the database with the button "(Re)-initialize database".



ConQuest DICOM server 1.4.16 - CONQUESTSRV1	
Configuration Installation Maintenance Known DICOM providers Browse database Server status Query / Move	
[CONQUESTSRV1] Dropping test table	
[CONQUESTSRV1] Closing database	Verify TCP/IP installation
[CONQUESTSRV1] Attempting to open database; test #9 of 10 [CONQUESTSRV1] Creating test table	
[CONQUESTSRV1] Adding a record	Make ODBC data source
[CONQUESTSRV1] Dropping test table	Make UDBL data source
[CONQUESTSRV1] Closing database [CONQUESTSRV1] Attempting to open database; test #10 of 10	
[CONQUESTSRV1] Creating test table	Verify database installation
[CONQUESTSRV1] Adding a record	
[CONQUESTSRV1] Dropping test table [CONQUESTSRV1] Closing database	
[CONQUESTSRV1] Succesful end of test	(Re)-initialize database
Start database init and regeneration	
[CONQUESTSRV1] Regen Database	Clear worklist database
[CONQUESTSRV1] Step 1: Re-initialize SQL Tables	
[CONQUESTSRV1] Creating index on field 19 for C:\digipaX\Conquest\Data\dbase\DICOMImages.DBF with 0 rect [CONQUESTSRV1] Index for C:\digipaX\Conquest\Data\dbase\DICOMImages.DBF finished in 62 ms; total space =	
[CONQUESTSRV1] Creating index on field 0 for C:\digipaX\Conquest\Data\dbase\DICOMPatients.DBF with 0 recc	
[CONQUESTSRV1] Index for C:\digipaX\Conquest\Data\dbase\DICOMPatients.DBF finished in 469 ms; total space [CONQUESTSRV1] Creating index on field 15 for C:\digipaX\Conguest\Data\dbase\DICOMSeries.DBF with 0 record	
[CONQUESTSRV1] Index for C:\digipaX\Conquest\Data\dbase\DICOMSeries.DBF finished in 344 ms; total space	
[CONQUESTSRV1] Creating index on field 13 for C:\digipaX\Conquest\Data\dbase\DICOMStudies.DBF with 0 rec	
[CONQUESTSRV1] Index for C:\digipaX\Conquest\Data\dbase\DICOMStudies.DBF finished in 0 ms; total space = [CONQUESTSRV1] Creating index on field 0 for C:\digipaX\Conquest\Data\dbase\DICOMWorkList.DBF with 0 rec	
[CONQUESTSRV1] Index for C:\digipaX\Conquest\Data\dbase\DICOMWorkList.DBF finished in 172 ms; total spac	
[CONQUESTSRV1] Creating index on field 1 for C:\digipaX\Conquest\Data\dbase\UIDMODS.DBF with 0 records [CONQUESTSRV11Index for C:\digipaX\Conguest\Data\dbase\UIDMODS.DBF finished in 234 ms; total space = 2	
CONQUESTSRV1 Step 2: Load / Add DICOM Object files	
[CONQUESTSRV1] [Regen] C.\digipaX\Conquest\Data\HEAD_EXP_00097038\0001_002000_892665661.v2_SL = [CONQUESTSRV1] [Regen] C.\digipaX\Conquest\Data\HEAD_EXP_00097038\0001_003000_892665662.v2_SL	Hide the server (as tray icon)
[CUNQUESTSRVT] [Hegen] C: \digipax\Conquest\Data\HEAD_EXP_00097038\0001_003000_892666662.v2 -SC [CONQUESTSRVT] Regeneration Complete	
Finished database regeneration	About this server
Clearing worklist	
۲. III. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲. ۲.	Close the server

Now, an image should be already seen in the tab "Browse database".

ConQuest DICOM server 1.4.16 - CONQUESTSRV1	- <b>D</b> X
Configuration   Installation   Maintenance   Known DICOM providers   Browse database   Server status   Query / Move	
PATIENTID PATIENTNAM ▶ 0009703828 HEAD EXP2	
Patient     Image: Constraint of the state o	
Series     Id     Im. Number     DATE     TIME     Echo     Image ID       2000     19980414     170346.0       3000     19980414     170352.0	

This installed standard test patient can be removed in the context menu of the image ("De-lete this patient").

The installation is now completed.



## 5.2.3 Extended patient data on the list of the patients

In the patient management, the columns for address, telephone number and remarks can be additionally activated. In order that those data can be queried also through the database, an extension of the database layout is necessary. For this, the file "dicom.sql" in Conquest is to be edited. The same course of action applies for both database types (MySQL or DBASE III). In the section "\*Patient\*", the entries marked in red for the datasets must be added, so that the section looks as on the example below. Placement of a finishing comma after each row with exception of the last row is important.

*Patient*
{ 0x0010, 0x0020, "PatientID", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x0010, "PatientName", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x0030, "PatientBirthDate", 8, SQL_C_DATE, DT_DATE },
{ 0x0010, 0x0040, "PatientSex", 16, SQL_C_CHAR, DT_STR },
<pre>{ 0x0010, 0x1040, "PatientsAddress", 64, SQL_C_CHAR, DT_STR },</pre>
<pre>{ 0x0010, 0x2154, "PatientsTelephoneNumbers", 16, SQL_C_CHAR, DT_STR },</pre>
{ 0x0010, 0x4000, "PatientComments", 10240, SQL_C_CHAR, DT_STR }
}

Saving data. Finally the Conquest must be rebooted and the database reinstalled. For a new installation it is recommended to settle that extension at once.



# 6 DICOM configuration

#### 6.1 Without compression

In digipaX, one or more PACS systems can be set up. The system can work with multiple image archives at the same time.

						Configuration	
User				Administrator :: DICOM / network			
Informations about clinic and physician	local settings for query in	nages					
Image preview	AE title: PC1			Port for query images: 104		Timeout: 60 seconds 🚖 Repetitions: 0	0
Baseboard							
Loupe	local settings for automa	tic image receiving					
Image informations	X activate automatic im	age receiving AE title:	AUTOPC1		Port for automatic image rece	iving: 105	
Overlay / scout lines						s (	
Histogram	local (temporary) data						
Job management	save local patient dat	a File: C:\digipaX\dig	inaX\PatientI ist.xml				
Image acquisition		(at the phone the p	hart for a second second				
Other	Image archive (PACS)	Worklist server Pr	nter				
Administrator	Desi	gnation	AE title	Host/IP	Port	Use	
License	1 Image archive 1		CONQSRV01	192.168.1.10	5678	yes	
Veterinary surgeon	2 Image archive 2		CONQSRV02	192,168,1,20	11112	yes	
DICOM / network	E moge orenite E		conquinez	I DE LI ODIALEO		,8	_
Job management							
GDT							
Caches / IPS							
Device links							
X-ray journal							
Image transfer							
Other							
Log							
General							
Cache							
DICOM							
Image processing							
File import							
Worklist							
GDT							
Print							
burning CD / DVD					New.	Modify Delete Tes	est
Devices V							
Administrator login	Import	Export.	Info			Save	
		_					8
							<b>•</b>

Each archive is to be added to a list of image archives by clicking on "New..." and all required information are to be entered in dialogue box. As name, enter the name, which will be later shown in the list of archives. For communication, AE Title, hostname or IP address and port are needed. For speeding up performance, the DICOM connection can be temporarily sustained (late disconnection). With subsequently coming data queries, the connection does not need to be permanently reconnected, hence an increase of performance is achieved.

configure DIC	OM connection
Designation:	Image archive 1
AE Title:	CONQSRV01
Host/IP:	192.168.1.10
Port:	5678
Disconnect:	O never disconnect
	after inactivity of     20 seconds
Access:	X Reading
	X Writing
Colour:	
Use:	● yes ○ no
	Cancel





Not all DICOM systems can handle multiple connections at the same time. Therefore, it can occur that the systems might be blocked by late or failed any disconnection. With Conquest, multiple connections are possible, with the worklist server (wlmscpfs) are not. Too many opened connections at the same time also decrease the performance. For that reason, the system should work without disconnections only in exceptional cases.

For each archive, access for reading and writing can be declared separately. This is useful, when e.g. data have to be transferred from archive 1 to archive 2.

It is to note here, that the archives without read access are not presented in the list of queryable archives. Contrariwise, the archives without write access are not presented in the list of available archives while sending data. This is for a better overview.

For a better support for the user, each archive has its own colour for faster and better identification, when data from different archives are shown in the system or the user has to choose only one archive. Thereby, colours are assigned in sequence automatically, if this is not modified.

Archives can be disabled. Disabled servers are ignored during run of the system as if they would not be included in the list.

Some details about communication:

A port, that is to be indicated for each archive, is the port for DICOM communication (e.g. DICOM C-FIND). For retrieving the images (DICOM C-MOVE), the port in local settings provided is used. Normally, a common port 104 in DICOM is here used. If this port is not assigned, it should be replaced by another, free port. According to standards, each DICOM system should have an AE Title. A character string entered in the AE Title field will be assigned to the system and used for DICOM communications.

These settings are to be entered in Conquest in the list of "Known DICOM providers" as well. Already assigned connections with "\*" are to be deleted as they could cause errors. This first entry in the list should be connection to itself, in order to be able to retrieve "Query / Move" for the own archive. After the modifications in the list are made, the list needs to be confirmed with the button "Save this list".

ConQuest DICOM server 1	.4.16 - CONQUESTSRV1				
Configuration   Installation   Ma	intenance Known DICOM pro	oviders Browse datab	ase   Server status   Query /	Move	
<pre>* DICOM AE (Appli * (This is file A * All DICOM syste * Conquest DICOM * AE name, (IP ad * The first entry * The syntax for * AE <ip adre<br="">* For compression * ul-littleendian * j1,j2=lossless * jk = lossless *</ip></pre>	ms that want to re server must be lis ress or hostname) is the Conquest s	IP address / i trieve images ted here with and port numb ystem as exam; rt number co i anexplicit, w jpeg;n1n4=m jpeg2000	Port map * * from the * correct * er. * * ple. * * * * * * * * * * * * * * * * * * *	*	Restore this list
CONQUESTSRV1	127.0.0.1	5678	un		
DIGIPAX DPCSTORESCP	127.0.0.1 127.0.0.1	104 105	un un		
					Hide the server (as tray icon)
					About this server
				Ŧ	Close the server

Correctness of settings can be checked by changing to patient management in the digipaX system and retrieving sample images.

Depending on performance of existing network and size of image files transfer of images can take a few seconds. Installed time-out aborts if errors occur. With slower networks and problems with connections it can be necessary to extend time-out accordingly in order to avoid aborts too early. The number of retries tells how often the system should repeat retrieving an image in the case of an error. The default time-out is 60 seconds, the default number of retries is 0.



While sending images to the Conquest archive it can occur that the archive does not support normally this type – e.g. Enhanced CT Image Storage. In this case acquire an appropriate SOP class into the file dgatesop.lst. For this, add a new entry at the end of the file, e.g.:

EnhancedCTStorage 1.2.840.10008.5.1.4.1.1.2.1 sop

Note that the line must end with a line break!

Normally, patients are identified in the archives by patient's name, date of birth and patient ID. This may cause problems in special cases, e.g. when letters of the patient's name differ in digipaX and practice management (McDonald – MacDonald). In the cases like this, identification should be reduced to patient ID. You find this settings under Administrator / Others.



#### 6.2 With compression

With the digipaX processing of compressed image data is possible. This does not apply on the own image acquisitions. Those remain uncompressed. However, the documents and graphics can be imported via import components and thereby processed as compressed. For this, a lossless JPEG compression is used. This saves storage space on the server. Besides it is possible to open the compressed images of third-party manufacturers (patient CDs) and send them to the archive.

In order to do that, the configuration in the Conquest "dicom.ini" is to be processed. The target is that the Conquest retains the art of the compression at the saving. For this, the "di-com.ini" is to be changed as on the example below. After the change is done, the Conquest must be rebooted.

```
# Configuration of compression for incoming images and archival
DroppedFileCompression = un
IncomingCompression = as
ArchiveCompression = as
```

It is to note here that all images added to the archive per drag & drop are saved uncompressed (un). The IncomingCompression is to be set on "as" (as = store images as is, i.e. without changing the compression).



In Conquest combined with digipaX only the options "un" and "as" for incoming files are allowed.

For new installations it is recommended to enable the compression straight away.



# 6.3 Enabling JPEG support for the modules "Easy Report" and "Import"

To be able to transfer compressed files to the Conquest, the JPEG support must be enabled in the Conquest.

ConQuest DICOM server 1.4.16 - CONQUESTSRV1				
Configuration Installation Maintenance Known DI	COM providers Browse of	database   Server status   Query / M	Move	
This screen contains essential paramete	rs for operation of the Con	Quest DICOM server.	Save configuration	
Local unique name of this DICOM server (app	olication entity, AE) :	CONQUESTSRV1	Make mysql database	
TCP/IP port to use (other DICOM systems mu	ist know this number) :	5678	Restore original configuration	
Local disk directory to store DICOM images :	C: [system]	•		
Make directory C Enable PEG(2000) support Images or disk are stored: C Uncompressed C Uncompressed C JPEG or NKI C Lossless JPEG C Lossy JPEG C Lossy JP2000 C Lossy JP2000 C Lossy JP2000 C Lossy JP2000 C Lossy JP2000 C Lossless JP2000 C Lossy JP2000 C Lossless JP2000 C Lossy JP2000 C Lossy JP2000 C Lossless JP200 C Lo	C:\ digipax conquest data dbase HEAD_EXP_00 printer_files	097038	Install server as NT service Uninstall server as NT service	
C JPEG or Uncompressed     Images on disk are named:         C V2 (allows NKI compression)         C DCM (standard format)     Cleanup disk below: (MB)     0			Hide the server (as tray icon) About this server	
Cleanup nightly below: (MB) 0			About this server	
Below 0 MB, move to:	C:\digipax\conqu Free disk space: 2	-	Close the server	

It is recommended to enable this option as a basic principle.

# 7 Routing

# 7.1 General

In routing the images which are sent to an archive are automatically forwarded from that archive to a work station as well. Hence, the images already exist there in a local cache for later viewing and do not need to be required first from server anymore – **speed and efficiency**. On the other hand, when using **worklist** component it can be defined for which jobs the images are ready. When using **GDT** interface, a response to the requesting system can be sent, that new images are available.

# 7.2 digipaX configuration

In digipaX, activate the automatic image receiving on the configuration page "DICOM / net-work". For this, a separate AE Title (e.g. DPSTORESCP or RECEIVER) and a separate port (e.g. 105) are to be indicated.



This port must not be the same as port for image query.

Whether the image receiving works correctly, can be tracked in DICOM log.



If the automatic image receiving is active, a C-STORE (SCP), i.e. an own small PACS server, that can receive the images, is running in the background of the digipaX system.

Thereby, the storescp.exe from DCMTK of the "Kuratorium OFFIS e.V." is used. It can be checked in the DICOM log, whether this background process started successfully. This process stores the received images in configured local cache for DICOM images.

The image receiving is also protocolled in the DICOM log and can be tracked there.

By modifications in the configuration conc. automatic image receiving the background process restarts. This can also be tracked in the log.

#### 7.3 Conquest configuration

In Conquest, these connection data must be again acquired to the list of "Known DICOM providers" (e.g. "DPCSTORESCP 127.0.0.1 105 un"). Furthermore, the following changes or extensions in the file dicom.ini are necessary:

```
# Configuration of forwarding and/or converter programs to export DICOM slices
ForwardAssociationLevel = IMAGE
ForwardAssociationCloseDelay = 5
ForwardAssociationRefreshDelay = 3600
ForwardAssociationRelease = 1

ExportConverters = 1
ExportConverters = 1
ExportModality0 = *
ExportConverter0 = forward to DPCSTORESCP
ForwardCollectDelay = 600
MaximumExportRetries = 5
MaximumDelayedFetchForwardRetries = 0
```



This section does not initially exist in the dicom.ini and needs to be added completely.

DPCSTORESCP can be replaced with another, used AE Title.

The configuration for several redirections could look like in the following example:

```
# Configuration of forwarding and/or converter programs to export DICOM slices
ForwardAssociationLevel
                              = TMAGE
ForwardAssociationCloseDelay = 5
ForwardAssociationRefreshDelay = 3600
ForwardAssociationRelease
                               = 1
ExportConverters = 2
ExportModality0 = *
ExportConverter0 = forward to AUTODIGI1
ExportModality1 = *
ExportConverter1 = forward to AUTODIGI2
ForwardCollectDelay
                                  = 600
MaximumExportRetries
                                 = 5
MaximumDelayedFetchForwardRetries = 0
```



To improve performance (e.g. when importing patients' CDs), it is better to send all the images in the archive first, and then distribute them closed among stations in one round. Images can be transmitted thereby by series, studies or entirely for the patient. In order to do this first you need to change the row for export converter.

```
ExportConverter1 = forward SERIES to ... forwards by series
ExportConverter1 = forward STUDY to ... forwards by studies
ExportConverter1 = forward PATIENT to ... forwards all images of the patient
```

In the case of the "forward PATIENT to" option it is necessary to consider that even when for a patient only one new image comes in addition, there are always transferred all images of the patient. This could overload the network. Hence, forwarding by studies is certainly the most reasonable solution for most systems.

Furthermore, the row "ForwardAssociationLevel =" should also be adjusted. Also here the rule: series, study or patient applies.

The waiting time is set in the row "ForwardCollectDelay =" in seconds.

If there are forwardings with waiting time the configuration, for example, could look like this:

```
# Configuration of forwarding and/or converter programs to export DICOM slices
ForwardAssociationLevel
                               = STUDY
ForwardAssociationCloseDelay
                              = 5
ForwardAssociationRefreshDelay = 3600
ForwardAssociationRelease
                               = 1
ExportConverters = 2
ExportModalitv0 = *
ExportConverter0 = forward STUDY to AUTODIGI1
ExportModality1 = *
ExportConverter1 = forward STUDY to AUTODIGI2
ForwardCollectDelav
                                  = 600
MaximumExportRetries
                                  = 5
MaximumDelayedFetchForwardRetries = 0
```

In addition, the entry "QueueSize =" for the waiting queue of export converters should be adjusted. According to the Conquest manual, each entry in the waiting queue requires 1.5K pro export converter. So, if you want to import a patient CD with 500 MRT images and distribute them to 2 stations, you will need 1.5K x 500 x 2 = 1500 + buffer. Example: QueueSize = 2000

For more information read the Conquest manual. Restart the Conquest server after these changes.



With the bottom "Save configuration" on the Conquest configuration page the file dicom.ini will be newly written by Conquest and possibly brought into a new structure. After that it can be checked in the file if the changes were accepted.



# 7.4 Special routing

In special cases, it may be necessary to send selected images only to another station. For instance, this could be the case in a situation, in which only the DX images are sent from the acquiring station (e.g. the DROC or Fuji system) to the station, where the X-ray journal is maintained.

# Configuration of forwarding and/or converter programs to export DICOM slices

```
ForwardAssociationLevel
                              = IMAGE
ForwardAssociationCloseDelay = 5
ForwardAssociationRefreshDelay = 3600
ForwardAssociationRelease
                              = 1
ExportConverters
                  = 1
ExportModality0
                  = DX
ExportCalledAE0
                  = CONOUEST
ExportCallingAE0 = DROC
ExportFilter0
                  = *
ExportConverter0 = forward to AUTO-XRAY-JOURNAL
```

ExportConverters	= 1	# number of recipients
ExportModality0	= DX	# only this modality
ExportCalledAE0	= CONQUEST	# AE Title of image archive
ExportCallingAE0	= DROC	# AE Title of acquiring station
ExportFilter0	= *	# filter not needed here
ExportConverter0	= forward to XRAY-JOURN	# AE Title of receiving station

Optionally, the station name entered on the image in the DICOM header by the acquiring station can be used:

ExportStationName0 = DROC # Station AE Title in TAG 0008,1010

#### 7.5 Test

The routing function can be tested by drag & drop (only up to version 1.4.14) of a DICOM file onto the Conquest server (sample images are contained in the installation directory of digipaX software in the folder "Sample images"). From Conquest version 1.4.15, for the test purposes you must send an image from another source via DICOM to the Conquest server. As well in the server log (page "Server status") as in the log of the digipaX system (category "DICOM") the entries must exist, that the file was forwarded and received automatically.



# 8 DICOM worklist

# 8.1 General

In relation to job creation and deletion, the digipaX system can only work together with the worklist server wlmscpfs.exe from the DCMTK of "Kuratorium OFFIS e.V.". Thereby, creating and deleting of the jobs is made by the creation and deletion of files in the established communication directory (subfolder <AE Title>).

If the worklist server is installed on a different machine than that of the digipaX system, date and time must match on both machines. Otherwise problems can occur during timedependent, automatic deletion of the jobs.

MPPS (Modality Performed Procedure Step) for using the job status is not supported.

# 8.2 Configuration of worklist server

Install the worklist server files on the target system like described. The program wlmscpfs.exe is in effect the server which must be registered as a Windows service. This can be done most easily with batch file WLSSetup.bat contained in the same directory. Open it first to edit and adjust the values, which are set in it, to your custom needs. The following changes may be necessary:

*ApplicationPath:* customize installation path of worklist server *WorkListDir:* set another communication directory (local or network directory) *ServicePort*. change port for DICOM communication (default: 2200)

Save the changes and run the batch by double click. Choose "I" for installation of the service. You can uninstall the service by rerun of the batch file and then choose of the option "R".

For more information about the server wlmscpfs.exe read server's manual ("wlmscpfs manual.pdf").

# 8.3 digipaX configuration

The configuration of the worklist server is to be done in the same way like configuration of the image archives on the administration page "DICOM / Network". Create a new connection. Name and AE Titles are freely selectable. The port must match the worklist server port (de-fault: 2200). The communication directory must also match directory of the worklist server. The worklist server, delivered by digipaX, always allows for a single connection only. This means that when one station is connected to the worklist server, no other station can establish a connection at the same time. Therefore, the disconnection option must be always set to "after inactivity time of 0 seconds" (that is, immediately). The option "do not disconnect" or the longer inactivity time is designated for those worklist systems, which allow for many simultaneous connections.

The "Read" and "Save" options are also designated for special circumstances. In the case of some systems, which use their own worklist server (such as AGFA systems), jobs may not be created or removed by digipaX, but only made available for preview. In such case, on the



worklist server in digipaX, it is necessary to turn off the "Save" option to avoid errors. In absolutely exceptional cases, it is also possible to turn off the "Read" option as well. Further settings for work with this component can be made on the administration page "Job management".

		_	Cor	nfiguration
User		Administrator :: Job managemer	nt	
Informations about clinic and physician	Job management / worklist			
User interface	X Automatically update job list	Update interval in seconds:		10
Image preview	Delete jobs automatically	Delete jobs after:		10 hours 🜲
Window split	Show the column with number of received images and mark with the colour the list entr			
Baseboard	Deactivate check of the communication path (not recommended)	,		
Loupe				
Image informations	Study Instance UID	Source of er	ntry in X-ray journal	
Overlay / scout lines	for all jobs the same UID	Source for th	he pre-allocation of the fields for a new entry in X-ray journal:	
Histogram	<ul> <li>for all jobs the same of o</li> </ul>		<ul> <li>selected worklist job</li> </ul>	
Job management	<ul> <li>for each job its own unique UID</li> </ul>		received images	
Image acquisition	O enter no UID		<ul> <li>no source (all entries are empty)</li> </ul>	
Other		(Only if X-ray	y journal module activated.)	
Administrator	Visual selection			
License	Types: Configuration:			
Veterinary surgeon	X Referrals X Standard			
DICOM / network	Stanbard	1200 1200		
Job management	Part of the body / refinement / beam projection	Procedure codes		
GDT	Head			
HL7	Ccrpital bone     Cervical vertebrae			
Caches / IPS	🕀 🕱 Skul			
Image acquisition	⊕ 🗶 Orbit ⊕ 🗶 Nasal bone			
Device links	🕀 🕱 Sinus			
X-ray journal	⊕ ¥ Paranasal sinuses ⊕ ¥ Pyramid			
Patient CD	Pyramid (Schueller/Stenvers)			
Image transfer	K Cheek bone     Cheek bone     Cheek bone (Handle pot)			
Other	D. W Mandible			
Log		Scheduled Procedure Step Code Mean	ing Scheduled Procedure Step Code Value	
	integrate procedure codes in images	Schedured Procedure Step Code Mean	scheduled Procedure Step Code Value	•
General Cache	,,,			
DICOM	additional informations			
Image processing	Tag accession number: Accession Number	-		
File import		<ul> <li>Save job number as Accession Num</li> </ul>	ber in the study	
Workist		<ul> <li>Use job description as study description</li> </ul>		
	ag job description. Sciedules Procedule Step Description	<ul> <li>Use jub description as study description</li> </ul>	poor	
Administrator login	Import Export Info			Save
				8
<u></u>				<b>V</b>

If digipaX is a station on which the jobs are worked on, then for certain an automatic list of jobs is refreshed. If the user opens the "Job management" component, the job list will be automatically updated in the programmed intervals to the most recent status.

If the station where the jobs are worked on is not a digipaX station, the jobs cannot be removed from the list. In this case, jobs can be deleted from the station where they have been created (or another digipaX station). This procedure can be done manually by the user directly, or while activating the option "Automatically remove jobs". Then, the jobs are deleted that are older than the programmed interval. It is necessary to set the interval in a way that the jobs are completed within that time.

The DICOM MPPS service is not supported, the system cannot inform of the jobs that have been completed. Deleting a file through the station working on the job poses no problem because you can easily know that by the lack of a job. If the station where the jobs are worked on is not a digipaX system, it therefore will not delete the jobs from the list, and no message is returned first. However, if the routing on the PACS server and the digipaX workstation is set correctly, digipaX can tell which images were transferred to the image archives. To the list of jobs you can add a column with the number of newly submitted images for each patient. Due to the simultaneous colour indications of rows for patients with a number greater than 0, the user can easily recognize whether the job has already been completed or is still in progress. In case of the workstation, this option is unnecessary. It should be used on the station on which the jobs are created or images are described. When creating jobs for a patient, all the jobs get the same Study Instance UID by default (per generation process).

If the jobs are processed by another system, it can happen that those systems display then always the first job only (eg. Carestream). It can be set up for such cases that each job gets a separate Study Instance UID. However, each image lands in a separate study as a consequence.

If a third-party system should allocate the UID by itself, the UID can be released at the creating the job as a further possibility.

The entry in the X-ray journal can also be made through the job management system. If at the same time the image is completed the image parameters are saved (kV, mAs etc.), it is recommended to use these images as a base for new entries, because these values are automatically entered in the dialogue fields. Here also the column with the number of images received should be displayed. If the above mentioned values are not stored in the images, then you can create a job in the jobs database from the worklist, as it usually already contains the same values (the images do not contain additional values that are used for entries). Thanks to this option, you can create an entry, for example, during the scanning process.

# 8.4 Procedure Codes

For each beam projection, maximum of three Procedure Codes can be given, separated by a semicolon. From this we can distinguish between the positions body parts / organs (left, right, as well as front and back in the case of animals). The positions are defined when creating or customizing the Body.ini file, of the body of the patient. If the position does not have a Procedure Code, then a general Procedure Code is applied for the beam projection. If, for example, left and right sides are the same, the code is entered only once in the general field (first column).



A separate document exists for creating templates for visually selecting the organs.

Each Procedure Code is sent in a single tag. Which are tags set on the configuration page "Administrator / Job management". At the same time note the manufacturers of the devices information, which receive the jobs and analyze the Procedure Codes.

Procedure Codes can also be used for iCR devices manufactured by Xscan. However, they are transferred by the digipaX software, using the scanning interface with the provided ini files for this purpose to the software. It is not possible then to reselect the body parts by the user. The Procedure Code tag set in the job management configuration must also be defined in the device configuration on the target computer as a Procedure Code tag.

Optionally, the Procedure Codes can be saved on the image. This can, for example, automatically send this information to the X-rays journal and generate in this way settlements or statistics.



# 8.5 Additional information

If through the GDT or HL7 the job number and/or job description are also sent, they will be sent to the job of the worklist. For this purpose, 2 of 5 tags are required, which are also used to transmit Procedure Codes. For Procedure Codes only 3 tags are available. Furthermore, for identification of jobs for each worklist job is generated a unique accession number by the digipaX system. This number is independent from the job number. Initially the following tags are normally pre-set:

	ccession number ob number	AccessionNumber (0x0008, 0x0 ScheduledProcedureStepID (0x0040, 0x0	,
-	ob description	ScheduledProcedureStepDescription (0x0040, 0x0	,
additional infor			
tag job number	number: Accession Number :: Scheduled Procedure Step ID	<ul> <li>▼ save job number as Accession Number in the examination</li> </ul>	
tag job descrip	tion: Scheduled Procedure Step Description	▼ use job description as examination description	

If image acquisition runs with third-party systems, it can be necessary to transmit the job number in the Tag AccessionNumber, to have it later available on the image. In such a case the tags for accession and job number are to be adjusted accordingly. An important advice is that it relates to the tags within worklist jobs and not the tags of the DICOM images. By checking the appropriate box, you can optionally save **on the image** the job number as Accession Number and description of the job as the Study Description. At the same time this data is also stored in the GDT response file.

For more information on this topic, refer to chapters 9.1 "GDT" and 9.1.11.3 "Field assignment (mapping)".

# 8.6 DICOM tags

The following tags are saved for a job:

AccessionNumber	(0x0008, 0x0050)
PatientID	(0x0010, 0x0020)
PatientsName	(0x0010, 0x0010)
PatientsBirthDate	(0x0010, 0x0030)
PatientsBirthTime	(0x0010, 0x0032)
PatientsAddress	(0x0010, 0x1040)
PatientsTelephoneNumbers	(0x0010, 0x2154)
PatientsSex	(0x0010, 0x0040)
PatientComments	(0x0010, 0x4000)
RequestedProcedureDescription	(0x0032, 0x1060)
RequestedProcedurePriority	(0x0040, 0x1003)
PatientsWeight	(0x0010, 0x1030)
PregnancyStatus	(0x0010, 0x21c0)
LastMenstrualDate	(0x0010, 0x21d0)
ContrastAllergies	(0x0010, 0x2110)
MedicalAlerts	(0x0010, 0x2000)
RequestingPhysician	(0x0032, 0x1032)



ReferringPhysiciansName	(0x0008, 0x0090)
InstitutionName	(0x0008, 0x0080)
CurrentPatientLocation	(0x0038, 0x0300)
AdditionalPatientHistory	(0x0010, 0x21b0)
ScheduledProcedureStepSequence	(0x0040, 0x0100)
Modality	(0x0008, 0x0060)
RequestedContrastAgent	(0x0032, 0x1070)
ScheduledStationAETitle	(0x0040, 0x0001)
ScheduledProcedureStepStartDate	(0x0040, 0x0002)
ScheduledProcedureStepStartTime	(0x0040, 0x0003)
ScheduledPerformingPhysiciansName	(0x0040, 0x0006)
ScheduledProcedureStepDescription	(0x0040, 0x0007)
ScheduledProcedureStepID	(0x0040, 0x0009)
PreMedication	(0x0040, 0x0012)
CommentsOnTheScheduledProcedureStep	(0x0040, 0x0400)
StudyInstanceUID	(0x0020, 0x000d)
RequestedProcedureID	(0x0040, 0x1001)

Other tags are saved without values to conform to the DICOM standard.

For transferring Procedure Codes, depending on the settings, the following tags are added or overwritten:

RequestedProcedureID	(0x0040, 0x1001)
CodeMeaning	(0x0008, 0x0104)
CodeValue	(0x0008, 0x0100)
ScheduledProcedureStepDescription	(0x0040, 0x0007)
ScheduledProcedureStepID	(0x0040, 0x0009)
ScheduledProtocolCodeSequence	(0x0040, 0x0008)

# 8.7 Troubleshooting indicators

Problems can occur in case of incorrect network configurations. A registered digipaX system user must have access rights to a worklist computer server. You should check in the explorer, if you have access to set the path to the worklist files and the rights to read and save files. If necessary, contact your network administrator to have the correct settings. You should also check your firewall settings or deactivate it completely, if it will not cause any other problems. In some systems, you may need to edit the hosts file (C:\Windows\System32\drivers\etc) and indicate other computers on the network to enable a quick connection.

In some cases you may need to manually allow access to the communication directory. To do this you must first revoke the access rights, and then allow access to the folder on the net-work again.



In case of problems with the search speed, you can test the option of deactivating checking the communication paths. With this, you cannot check whether the directory exists and if the lockfile is in it.



# 9 Interfaces

# 9.1 GDT Interface

9.1.1 General

GDT tagging: GDT-D-11 The system uses GDT interface version 2.1.

# 9.1.2 Connecting TurboMed

### 9.1.2.1 General

The connection is done on the menu item "Devices / GDT interface settings" in the patient's record card.

The import and export paths must be the same as the paths set in digipaX. You can also use the same path for import and export.

The character set when exporting GDT files does not matter - digipaX identifies both correctly.

Because TurboMed performs the import only once at the end of the started GDT operations, you can choose in digipaX as an option for GDT response only "every job immediately or/and "after image acquisition". Jobs can also be consolidated. In this way, right after the request to digipaX system is made requesting a new study (record type 6302), the GDT response is written with information about the existence of new images, so that an appropriate new entry can be added to the record. The description of the created job in the worklist or a user-defined text is transferred, in this way an entry is also added to the record card.

During the import and export, you can work with both a fixed GDT extension, as well as incremental extensions, but in TurboMed enter digiturb.001 as an export file and turbdigi .\* as an import file. While importing images of the patients, no matter whether via patient CD or import of images, a response file is written for each study (if more studies exist). Therefore, it is recommended to use an increasing file extension, if response for patient CD or image import is written.



### 9.1.2.2 digipaX settings

					Configuration	
r			Administrator :: GDT			
rmations about clinic and physician	Identification					
r interface	GDT-ID: DIGIPAX1		Abbreviation: DIGI			
ge preview						
eboard	Communication					
pe	Import directory:	C:\digipaX\digipaX\GDT				
ge informations						
lay / scout lines	Export directory:	C:\digipaX\digipaX\GDT				
gram nanagement	Type of file:	<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	<ul> <li>incremental file extension (".001" - ".999")</li> </ul>	fixed file names		
e acquisition	Import file:	DIGIxxxx.gdt	e.g.: DIGIxxxx.003	import.gdt		
f	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt		
	Check interval in seconds:	10	•			
inistrator	Readout delay in miliseconds:	0	\$			
se	Log:	log content of files				
inary surgeon						
M / network	Adapt field allocation (mapping)	)				
anagement						
	Create GDT answer					
	GDT answer files can be created	for automatic acquited images (via this digipax station	) as well as for the images which have been received	d in the background.		
es / IPS		Image acquisition and image receipt	ot	ner events		
e acquisition		<ul> <li>for each image (immediately)</li> </ul>				
te links	Moment of creating:	O each series Waiting time: 3 minutes	×	immediately after job	Collect jobs	
/ journal		O the study Waiting time: 10 minutes	×	after import of image		
int CD		Unie study Walding unie: 10 minutes				
		ask user before creating				
	Entry in comment field (6227):	automatically (according to mode)				
r	Entry in comment field (6227):	automatically (according to mode)     this common taxt in accurate flag	[New			
er		O this comment text in answer file:	Nev	v images exist.		
er eral			Nev	v images exist.		
ge transfer er eral he OM		O this comment text in answer file:		v images exist. G00		
er eral	Characteristics field:	this comment text in answer file:     add additional tags:     Type of study carried out:	ALL	G00		
ral 2 9 processing	Characteristics field: Set of characters:	this comment text in answer file: add additional tags: Type of study carried out: IBM CP 437 (DOS)	ـــــــــــــــــــــــــــــــــــــ			
r ral e M e processing prot	Characteristics field: Set of characters: Require an answer in GDT stande	this comment text in answer file: d additional tags: Type of study carried out: IBM CP 437 (DOS) dt K require (despite whether a request has been in	ALL 1 made to this system or not)	G00 ISO 8859-1 (ANSI)		
r ral e M e processing prot	Characteristics field: Set of characters: Require an answer in GDT stande	this comment text in answer file: dd additional tags: Type of study carried out: BMC P437 (DOS) BMC P437 (DOS) CH require (despite whether a request has been i Recipient ID	ALL 1 made to this system or not)	G00		
r al M processing prot lat	Characteristics field: Set of characters: Require an answer in GDT stande	this comment text in answer file: d additional tags: Type of study carried out: IBM CP 437 (DOS) dt K require (despite whether a request has been in	ALL 1 made to this system or not)	G00 ISO 8859-1 (ANSI)		
r ral e M	Characteristics field: Set of characters: Require an answer in GDT stande	this comment text in answer file: dd additional tags: Type of study carried out: BMC P437 (DOS) BMC P437 (DOS) CH require (despite whether a request has been i Recipient ID	ALL 1 made to this system or not)	G00 ISO 8859-1 (ANSI)		Save

#### TurboMed settings for all functions 9.1.2.3

GDT Einstellungen			- Cy
Übersicht Expe	rt Impor	GDT 2.1	
Hyperlink Datei nicht kopieren X Datei auf Server kopieren Datei auf Server kopieren und Karteieintrag X Karteieintrag nach Typ	schen	Speicherpfad X TurboMedDokumente Anderer X JahrMonat	
		<u>Ü</u> bernehmen <u>O</u> K	Abbrechen



# 9.1.2.4 Showing images of a study (record type 6311)

GDT E	instellungen	(J)
Über	rsicht Export Import	GDT 2.1
Name	Bilder zeigen	Bilder zeigen -
	X GDT Anbindung 2.1 nutzen	
Programm	C.\digipaX\digipaX\digipax.exe	•
Parameter		
	X Programm aufrufen beim Export	
	Export	Import
	C:\digipaX\digipaX\GDT	C:\digipaX\dgipaX\GDT
Dateiname	digiturb.001	turbdigi.*
	Beim Export aus dem Menü Formular anzeigen	Import nur manuell
	X Automatischer Export beim Formularaufruf aus dem Menü	Beim Import Formular anzeigen
	Beim Export aus der Karteikarte Formular anzeigen	
	X Automatischer Export beim Formularaufruf aus der Karteikarte	
		)
Löscher	n <u>K</u> opieren <u>N</u> eu <u>M</u> enue	Übernehmen <u>O</u> K <u>Abbrechen</u>

GDT Einstellu	ngen				(y)
Übersicht	Export	Import	GDT 2.1		
GDT-ID Empfanger GDT-Version Zeichensatz Satzart 8402 8410 Patientenkennung Arztkennungen Ansicht	02.10 IBM(Standard) CP 437 6311 Pat. Nr.	· · ·	Grösse/Gewicht Dezimalzeichen	Punkt •	
			Übernehmen	<u>0</u> K	Abbrechen





### 9.1.2.5 Creating worklist job (record type 6302)

	icht Export Import GDT 2.1	
	/orklist	
		-
	GDT Anbindung 2.1 nutzen \digipaX\digipaX\digipax.exe	-
Ex		
Dateiname dig		
X	Beim Export aus der Karteikarte Formular anzeigen	
Löschen	Automatischer Export beim Formularaufruf aus der Karteikarte     Kopieren Neu Menue Übernehmen OK	Abbrechen





For imports in digipaX, writing the GDT response file must be enabled.



The **character set** setting must match the character set setting in digipaX. Warning: If it's set to "9206", it will always automatically use the ANSI set (in TurboMed version 7.3.1).

For the **entry date,** select the current date. When using the "field 6200 tag", the entry is not created in the record card if this field contains a date (TurboMed version 7.3.1).

If the **text entry** is selected, then the comment text will be pasted to the patient's record card. This text can be defined as the default in digipaX or it may correspond to the job description.

If the **back option** is active then in the record card an entry is added, which when doubleclicked restarts the digipaX program and displays image record of type GDT 6311.



### 9.1.2.6 Reading patient-CD (record type 6302)









9.1.2.7 Import of images or documents through import component (record type 6302) Example for documentation of a wound

Name	Wunddokumentation	Wunddokumentation -
		TTUIUUUKumentauun
Decement	X GDT Anbindung 2.1 nutzen	
	C:\digipaX\digipaX\digipax.exe	
Parameter	V D // L' E .	
	X Programm aufrufen beim Export	1
	Export	Import
Pfad	C:\digipaX\digipaX\GDT	C:\digipaX\digipaX\GDT
Dateiname	digiturb.001	turbdigi.*
	Beim Export aus dem Menü Formular anzeigen	Import nur manuell
	X Automatischer Export beim Formularaufruf aus dem Menü	Beim Import Formular anzeigen
	Beim Export aus der Karteikarte Formular anzeigen	
	Denn Export aus der Karteikarte i official anzeigen	

GDT Einstellu	ngen			6
Übersicht	Export Impor	t GDT 2.1		
GDT-ID Empfanger GDT-Version Zeichensatz Satzart 8402 8410 Patientenkennung Arztkennungen Ansicht	02.10 - IBM(Standard) CP 437 - 6302 - MP Pat. Nr			
		Übernehme	en <u>O</u> K	<u>Abbrechen</u>





# 9.1.3 Connecting PDE-TOP

### 9.1.3.1 General

To get to the GDT configuration interface, you must first go to the patient's dialogue, and then use the "Extern" (Ctrl + Shift + X). Here you can configure starting digipaX with GDT arguments.

Automatic importing and analyzing GDT files in the background can be set in the main program. To do this, select in the main menu "Options / System". On this dialogue you can change the settings accordingly. Activate the automatic GDT import and set the GDT directory.

System - Einstellungen	×
🗸 OK 🗶 Abbrechen 🛛 Protok	oll
Ansicht Installation Dienste Verschiedene	s Geräte / System AutoGDT
Automatischer BDT-Import	
GDT Verzeichnis:	C active
Kartenkürzel:	Kennfeld: CODE
Automatischer GDT-Import	
GDT Verzeichnis: C:\Programme\digipax\dig	gipax\GDT 🔽 active
Kartenkürzel:	Kennfeld: CODE
Systemanbindung PDE> Extern	Extern> PDE
Med+Org	
🗖 bidirektiona 🖡	1
🗖 MediDok	
Medosys	
Protokollierung BDT/GDT -Import	
Diese Einstellungen beeinflussen die F Für weitere Hilfen zu diesem Thema be	

### 9.1.3.2 Transferring constant data (record type 6301)

🛃 Externe Programme 📃 🗆 🔀	🛃 Externe Programme 📃 🗖	×
Eigenschaften BDT out	GDT / BDT - Optionen BDT out	
Speichern       Abbruch       Optionen [BDT/GDT]         Details       Bezeichnung         Jdigipax - Stammdaten übermitteln         Anwendung         C:\Programme\digipax\digipax\digipax\digipax.exe         Stattparameter         Image: Menue-Eintrag         Hintergrund-Programm         Bestätigung (nur bei Aufruf aus Menü: EXTRAS)         Image: Menue-Beenden	OK         Kommando         Stammdaten zum externen Programm übermitteln       Satzat '6301'         Neue Untersuchung starten       Satzat '6302'         Daten einer Untersuchung anzeigen       Satzat '6311'         Kartenkürzel       Kürzel immer verwenden         GDT - Einstellungen       Typ (z.B. EKG01)         GDT-Empfänger       DIGIPAX	
Datentransfer         C AUS       BDT       GDT       TEXT       XML         Verzeichnisse       Dateien für Test sichern         C:\Programme\digipax\digipax\GDT\DIGIPDE_gdt       Import.Verzeichnis         C:\Programme\digipax\digipax\digipax\GDT\PDE_DIGI.gdt       Import.Verzeichnis         C:\Programme\digipax\digipax\digipax\digipax\digipax.exe	Labordaten übermitteln [max. 90 Tage alt ] Erwarte Typ oder Kennfeld einer Objektdatei:	

Verify that the export and import directory have the file names entered.



🗐 Externe Programme	
GDT / BDT - Optionen BDTout	1
Diese Werte gelten beim BDT-Export	
BDT Dateiheader ausgeben       [SA 0020 und SA 0022]         BDT Satzart 0010       ausgeben       [SA 6100]         BDT Dauerdiagnosen       [SA 6100]         BDT Dauerdiagnosen       [SA 6100]         BDT Abschluß erzeugen       [SA 6100]         BDT Abschluß erzeugen       [SA 0021; SA 0023]         GDT Benutzer / Arzt in GDT Satz als FK 3901 ausgeben	
1	
4 GDT C:\Programme\digipax\digipax\digipax.exe	

These settings also apply to all subsequent connections.

9.1.3.3 Requesting new study (record type 6302)

🛿 Externe Programme	🛃 Externe Programme 📃 🗖
Eigenschaften BDT out	GDT / BDT - Optionen BDT out
Speichern         Abbruch         Optionen [BDT/GDT]           Details         Bezeichnung         Image: Compare the second se	OK Kormando
digipax - neue Untersuchung anfordern	C Stammdaten zum externen Programm übermitteln Satzart '6301' Rue Untersuchung starten Satzart '6302'
Anwendung C:\Programme\digipax\digipax\digipax.exe	C Daten einer Untersuchung anzeigen Satzart (5311)
Startparameter	Kartenkürzel
<ul> <li>Menue-Eintrag</li> <li>✓ Hintergrund-Programm</li> <li>Bestätigung (nur bei Aufruf aus Menü: EXTRAS)</li> <li>✓ Menue-Beenden</li> </ul>	GDT - Einstellungen Typ (z.B. EKG01) GDT-Empfänger DIGIPAX
Datentransfer C AUS C BDT © GDT C TEXT C XML	Labordaten übermitteln [max. 90 Tage alt ] Erwarte Typ oder Kennfeld einer Objektdatei:
Verzeichnisse   Dateien für Test sichern  Export-Verzeichnis	
C:\Programme\digipax\GDT\DIGIPDEgdt	
Import-Verzeichnis C.\Programme\digipax\dgipax\GDT\PDE_DIGI.gdt	
GDT C:\Programme\digipax\digipax.exe	5 GDT C:\Programme\digipax\digipax\digipax.exe



### 9.1.3.4 Requesting new study through the job worklist (record type 6302)

🛃 Externe Programme 📃 🗖 🔀	🗧 Externe Programme 📃 🗆 🛛
Eigenschaften BDTout	GDT / BDT - Optionen BDTout
Speichern     Abbruch     Optionen (BDT/GDT)       Details     Bezeichnung        tigipax - neuer Worklistauftrag       Anwendung       [C:\Programme\digipax\digipax\digipax.exe       Startparameter       /w	OK         Kommando         Stammdaten zum externen Programm übermitteln       Satzart '6301'         Neue Untersuchung starten       Satzart '6302'         Daten einer Untersuchung anzeigen       Satzart '6311'         Kartenkürzel       Kürzel immer verwenden
<ul> <li>Menue-Eintrag</li> <li>✓ Hintergrund-Programm</li> <li>✓ Bestätigung (nur bei Aufruf aus Meniù: EXTRAS)</li> <li>✓ Menue-Beenden</li> </ul>	GDT - Einstellungen Typ (z.B. EKG01) GDT-Empfänger DIGIPAX
C AUS C BDT © GDT C TEXT C XML	Labordaten übermitteln [max. 90 Tage alt ]
Verzeichnisse Export-Verzeichnis Dateien für Test sichern	
C:\Programme\digipax\digipax\GDT\DIGIPDE_gdt Import-Verzeichnis C:\Programme\digipax\digipax\GDT\PDE_DIGI.gdt	
GDT C:\Programme\digipax\digipax\digipax.exe	3 GDT C:\Programme\digipax\digipax\digipax.exe

With the help of the  $_{m}/w^{*}$  start parameter a dialogue is displayed to create a new job from the worklist.

### 9.1.3.5 Displaying study data (record type 6311)

🛃 Externe Programme 📃 🗆 🗙	🗐 Externe Programme 📃 🗖 🖡
Eigenschaften BDTout	GDT / BDT - Optionen BDTout
Speichern       Abbruch       Optionen [BDT/GDT]         Details       Bezeichnung         Bezeichnung       [digipax - Untersuchung anzeigen         Anwendung       C:\Programme\digipax\digipax\digipax\exe         C:\Programme\digipax\digipax\digipax\exe       Startparameter         Menue-Eintrag       Intergrund-Programm         Bestätigung       (nur bei Aufruf aus Menix EXTRAS)	OK         Kommando         Stammdaten zum externen Programm übermitteln         Satzart '6301'         Neue Untersuchung starten         Satzart '6302'         O Daten einer Untersuchung anzeigen         Satzart '6311'         Kartenkürzel         GDT - Einstellungen         Typ (z.B. EKG01)
V Menue-Beenden	GDT-Empfänger DIGIPAX
Datentransfer	Labordaten übermitteln [max. 90 Tage alt ] Erwarte Typ oder Kennfeld einer Objektdatei:
Verzeichnisse Dateien für Test sichern Export-Verzeichnis C:\Programme\digipax\digipax\GDT\DIGIPDEgdt Import-Verzeichnis C:\Programme\digipax\digipax\GDT\PDE_DIGI.gdt @	
2 GDT C:\Programme\digipax\digipax\digipax.exe	2 GDT C:\Programme\digipax\digipax\digipax.exe



# 9.1.4 Connecting MediStar

					Configura	ation
User			Administrator :: GDT			
Informations about clinic and physician	Identification					A
User interface	GDT-ID: DIGIPAX1		Abbreviation: DIGI			
Image preview						
Baseboard	Communication					
Loupe Image informations	Import directory:	C:\pd				
Image informations Overlay / scout lines	Export directory:					
Histogram		C:\digipaX\digipaX\GDT				<b>M</b>
Job management	Type of file:	<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	<ul> <li>incremental file extension (".001" - ".9</li> </ul>			
Image acquisition	Import file:	DIGIxxxx.gdt	e.g.: DIGIxxxx.003	import.gdt		
Other	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt		
	Check interval in seconds:	10	-			
Administrator	Readout delay in miliseconds:	0	\$			
License	Log:	log content of files				
Veterinary surgeon						
DICOM / network	Adapt field allocation (mapping)					
Job management						
GDT	Create GDT answer					
HL7	GDT answer files can be created f	or automatic acquited images (via this digipax station	) as well as for the images which have been rece	eived in the background.		
Caches / IPS		X Image acquisition and image receipt		other events		
Image acquisition		<ul> <li>for each image (immediately)</li> </ul>		🗆 terme distatute a Gara data	Collectories	
Device links	Moment of creating:	O each series Waiting time: 3 minutes		immediately after job	Collect jobs	
X-ray journal		the study Waiting time: 0 minutes		after import of image		
Patient CD						
Image transfer		ask user before creating				
Other	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>				
Log	,,	<ul> <li>this comment text in answer file:</li> </ul>		New images exist.		
General		add additional tags:		inen magea exact		
Cache		add additional tags:				
DICOM	Characteristics field:	Type of study carried out:		ALLG00		
Image processing	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>		O ISO 8859-1 (ANSI)		
File import						
Worklist	Require an answer in GDT standar	d: 🕱 require (despite whether a request has been r				
GDT A		Redpient ID:		Recipient abbreviation:		
U 7		delete attached physician number				
Administrator login	Import	Export Info				Save

Settings in MediStar are done by the administrator of the system and cannot be independently adjusted.

The digipaX import directory is found on the local system, while the export directory is a directory shared on the network. It is recommended that incremental extensions of the file are applied to prevent data loss (in case of system failure data can be downloaded from there later).

The response file should be created only in this system, in which the images are received (ideally for each completed study). For this purpose, it is necessary to establish proper communication with the Conquest server to that system.

MS3.FM_GDT				
Nr	Symbol Name	Symbol Definition	Kommentar	
001	name_fa	Geräteanbindungen	Name in FA-Auswahl	
002	c_mtxt_1	Worklist	Menupunkt 1	
003	c_gnam_1	Digipax	Geraet	
004		WL	Untersuchungsart	
	c_sart_1	6302	Satzart	
	c_lzif_1	Second and a second sec	Leistung	
	c_mtxt_2	Bilder zeigen	Menupunkt 2	
	c_gnam_2	Digipax	Geraet	
	c_uart_2		Untersuchungsart	
	c_sart_2	6311	Satzart	
	c_lzif_2		Leistung	
	c_mtxt_3	Patienten-CD einlesen	Menupunkt 3	
	c_gnam_3	Digipax	Geraet	
	c_uart_3	PM	Untersuchungsart	
	c_sart_3	6302	Satzart	
016	c_lzif_3		Leistung	

MediStar settings GDT form part 1



453.	FM_GDT		
٧r	Symbol Name	Symbol Definition	Kommentar
017 018 019 020 021 022 023 024 025	c_lzif_4 c_mtxt_5 c_gnam_5 c_uart_5 c_sart_5	Patienten-CD brennen Digipax PCD 6311 Wunddokumentation Digipax IMP 6302	Leistung Menupunkt 4 Geraet Untersuchungsart Satzart Leistung Menupunkt 5 Geraet Untersuchungsart Satzart Leistung Menupunkt 6 Geraet Untersuchungsart Satzart
031	c_lzif_6		Leistung



ix				
		exe		
medidigi.* d:\rp mm Befund	Kommentar	Antwort GD Signatur	T konform Werte	
	c:\digipax\dig 	medidigi.☆ d:\rp mm	c:\digipax\digipax\exe medidigi.* d:\rp mm Antwort GD	c:\digipax\digipax.exe medidigi.* d:\rp mm Antwort GDT konform

MediStar basic settings GDT server

Gerät <mark>Digipax</mark>		Untersuchungsart	WL	
Patientennummer Mit führenden Nullen Mit Praxisnummer Rein numerisch	N N J			
Zeichensatz	DOS			
Export Größe/Gewicht	N			

MediStar export options GDT server



ät <mark>Digipax</mark>	Untersuchungsart WL		
lentypen weis E Befund gnose Fremdbefund weiseintrag	Kommentar Ergebnis	Signatur Größe/Gew.	Werte
ersuchungsart eintragen	J		
ersuchungsdatum_eintragen	]		
te Kommentarzeile anhänge um und Uhrzeit aus Einzel stungsziffern			
lentyp EBM stige Einstellungen		GOÄ	
chensatz	DOS		
pelte Einträge vermeiden henfolge der Einträge	J		

MediStar import options GDT server

9.1.5 Connecting DOCConcept

					Configuration
User 🖸			Administrator :: GDT		
Informations about clinic and physician	Identification				
Image preview	GDT-ID: DIGIPAX1		Abbreviation: DIGI		
Baseboard					
Loupe	Communication				
Image informations	Import directory:	C:\digipaX\digipaX\GDT			
Overlay / scout lines Histogram	Export directory:				
Job management		C:\dgpaX\dgpaX\GDT			K
Image acquisition	Type of file:	<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	<ul> <li>incremental file extension (".001" - ".999</li> </ul>		
Other	Import file:	DIGIxxxx.gdt	e.g.: DIGIxxxx.003	import.gdt	
	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt	
Administrator	Check interval in seconds:	10	÷		
License	Readout delay in miliseconds:	0	•		
Veterinary surgeon	Log:	log content of files			
DICOM / network					
Joh management	Adapt field allocation (mapping) —				
License					
Veterinary surgeon	Create GDT answer				
DICOM / network Job management	GDT answer files can be created for	automatic acquited images (via this digipax station)			
GDT		X Image acquisition and image receipt		other events	
Caches / IPS		<ul> <li>for each image (immediately)</li> </ul>			
Device links	Moment of creating:	🔿 each series Waiting time: 3 minutes 👘		immediately after job Collect jobs	
X-ray journal		examination Waiting time: 10 minutes *		after import of image	
Image transfer		<ul> <li>if the last job is ready</li> </ul>			
Other		ask user before creating			
Log	Entry in comment field (6227):	automatically (according to mode)			
General		O this comment text in answer file:	[-	There are new images available	
Cache		add additional tags:			
DICOM					
Image processing	Characteristics field:	Type of examination carried out:		ALLGOD	
File import	Set of characters:	IBM CP 437 (DOS)	(	ISO 8859-1 (ANSI)	
Worklist	Require an answer in GDT standard	Require (despite whether a request has been n	sade to this system or not)		
GDT Print	require or or or or our starloard	Recipient ID: DOCCONC		ecipient abbreviation: EDV1	
burning CD / DVD		delete attached physician number	/×	EDAT	
Devices		uelete attached physician number			
Administrator login	Import	Export Info			Save
					(

The settings shown in the above illustration outline the correct connection set up.



# 9.1.6 Connecting Quincy

Connecting to the Quincy clinic management software can be done independently if the system administrator is not present.

ne		eburtsdatum Alter	Status	Kasse: 61125	Kassenart		Scheine PG Straße	1 45	
azi, Imer	Arbeitsplatz	0.04.1960   48 Jahre	Mitglied	AUK Baden-	₩ürttemb  R / AOK	BMÄ	Im Gaisi	graben 17 ×	
nerkungen		enstellungen	~					<u> </u>	
Programmans	chlüsse								
10 1			1 -				1		
	ommentar	Programmaufruf	Datenverz		Anschlußart	Kennwort	Arbeitsverzeichnis	Übergabedatei	
	menteneingänge GDT-Anschlu			Quine	Funktion -			×	
Nachricht an	ar Menü			_					
DIGIPAX1	Rezeichnung des	angeschlossenen Programm	as/Garätas		Kanana 011	MCSZ VZINI (4 D. J. L. L.			
AMIS Plus	Röntgen	angeseniossenen i rogramin	1637 GIOTARES		QWIN	INCT WIN (4 BUCHSta	ben zur Bildung der Dateir	amenj	
	GDT-ID des Fren	odnrogrammer			- Charles and a second	ndprogramme (4 Buck	istaben zur Bildung der Da	teinamen)	
	DIGIPAX	obligatorisch, dient der Iden	ifikation des Anschlu	0000	DIGI	naprogramms (+ buch	staben zur bildung der De	(cindition)	
	1	geschlossene Gerätesoftwar			In the second second				
		sene Programm kann als Ser		en. 💌	Austauschdat	eien mit einer laufende	n Nummer versehen		
	the second	programms mit kompletter Pfa			Sonderoption:	dieser Aufruf soll kein	en Neubefund auslösen		
		jogramms mit Kompletter i na igipax\digipax\digipax.exe	idaligabe					1	
		hnisses für den Datenexport					iefkastenverzeichnissen a		
	C:\GDT	nnisses für den Diatenexport			Sonderoption: abv	veichender Programm	aufruf für Aufruf aus der Ka	artei	
0	DACTION								
	C:\GDT	hnisses für den Datenimport			Sonderoption: abv	veichende GDT-Anfor	derungsdatei bei Aufruf au	is Kartei	
	ALLG00	hrensspezifische Kennung				wartet bis es manuell			
	ALLGOO				🔽 bei Stammdate	enübergabe mehr Info	mationen (z.B. Kasse) mitj	geben	
						isatz verwenden (sons			
					Karteieintrag n	nur neu erzeugen, wer Inst alten Eintrag aktu	n dieser noch nicht alisieren		
1025) 1026					voindriden, se	inst allori Entrag alla	1		
1	Abbrec	hen	Hilfe	Vorlage	laden als	Vorlage speiche	rn Speiche	ern l	
									Ī
		<u> </u>							1
			<i>.</i>	Rí	거				
		Hilfe		Ansch	¥	Schaltfläch		Casishawa	
A	bbrechen	Hine		Alisch	lusse	Sunaidlach		<u>S</u> peichern	
			BMA 4	18	👗 Muster, A			Frike Mustaalaa	1
		Diagnose	Mer Mer	E-GO	Golo- pfi	ze id zeo		Erika Musterfrau 1234567890 7/2007	

The menu item "Administration of support files / Workstation settings", then other programs (button below).

If new:

- Select empty row
- "Connect" button
- Choose the other program with GDT connection

To modify job:

• Click the row number

Setting for connections should be done as shown in the above illustration.



In digipaX it is necessary to set the incremental extension of data.

er 🖸 📤			Administrator :: GDT		
ormations about clinic and physician	Identification				
age preview	GDT-ID: DIGIPAX		Abbreviation: DIGI		
seboard					
lpe	Communication				
age informations	Import directory:	C:\gDT			
erlay / scout lines .togram	Export directory:	C:\GDT			
o management					
age acquisition	Type of file:	<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	Incremental file extension (".001" - ".999		
her	Import file:	DIGIxxxx.gdt	e.g.: DIGIxxxx.003	import.gdt	
	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt	
ministrator 🖸	Check interval in seconds:	10	<b>\$</b>		
ense	Readout delay in miliseconds:	0	•		
terinary surgeon	Log:	log content of files			
COM / network					
o management	Adapt field allocation (mapping)				
т					
ches / IPS	Create GDT answer				
vice links	GDT answer files can be created fi	or automatic acquited images (via this digipax station)	-	-	
ay journal		X Image acquisition and image receipt		other events	
age transfer		<ul> <li>for each image (immediately)</li> </ul>			
her	Moment of creating:	🔾 each series Waiting time: 3 minutes 🚖		X immediately after job	K Collect jobs
, A		examination Waiting time: 10 minutes		after import of image	
		<ul> <li>If the last job is ready</li> </ul>		after import of image	
neral che					
COM		ask user before creating			
age processing	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>			
e import		O this comment text in answer file:	Г	here are new images available	
orkist		add additional tags:			2
т					9
nt	Characteristics field:	Type of examination carried out:	4	ALLG00	
rring CD / DVD	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>	C	ISO 8859-1 (ANSI)	
Administrator login	Import	Export Info			Save



# 9.1.7 Connecting ALBIS

### 9.1.7.1 Settings digipaX

Configuration in digipaX should be done as shown in the illustration below:

					Configuration
r			Administrator :: GDT		
rmations about clinic and physician	Identification				
r interface	GDT-ID: DIGIPAX		Abbreviation: DIGI		
ge preview					
board	Communication				
e e informations	Import directory:	C:\digipaX\digipaX\digipaX\GDT			
: informations ay / scout lines	Export directory:	C:\digipaX\digipaX\digipaX\GDT			
ram					]
anagement	Type of file:	<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	<ul> <li>incremental file extension (".001" - ".999")</li> </ul>		
acquisition	Import file:	DIGIxxxx.gdt	e.g.: DIGIXXXX.003	import.gdt	
	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt	
	Check interval in seconds:	10	•		
nistrator	Readout delay in miliseconds:	0	\$		
	Log:	log content of files			
ary surgeon					
l / network	Adapt field allocation (mapping)				
anagement					
	Create GDT answer				
	GDT answer files can be created f		<ul> <li>as well as for the images which have been received</li> </ul>	d in the background.	
s / IPS		Image acquisition and image receipt	ot	her events	
acquisition		O for each image (immediately)			
e links	Moment of creating:	each series Waiting time: 3 minutes	×	immediately after job	<ul> <li>Collect jobs</li> </ul>
journal	Former of deburg.	O the study Waiting time: 10 minutes			
tCD		O if the last job is ready	×	after import of image	
transfer		C II the last job is ready			
		ask user before creating			
	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>			
al		<ul> <li>this comment text in answer file:</li> </ul>	Nes	w images exist.	
		add additional tags:			
4					1
processing	Characteristics field:	Type of study carried out:	ALL	LG00	
port	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>	01	ISO 8859-1 (ANSI)	
st	Rear ins an assure in CDT shade	d: require (despite whether a request has been	made to this sustant as not)		
	Require an answer in GDT standar				
		Recipient ID:	Red	pient abbreviation:	
Administrator login	Import	Export Info			Save

### 9.1.7.2 Settings in ALBIS

First, it is necessary to close all of the open tabs using "View/ Close all".

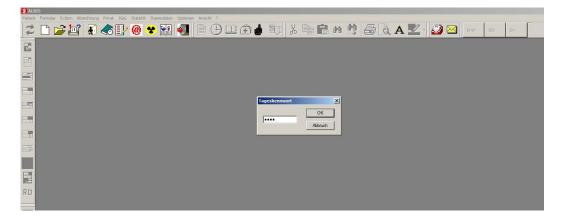
			m / 01.01.2000 / AO	K Niedersachsen] L. Statistik Stammdaten Optionen	Ansicht ?			
Sector Sector				@ 😤 🔛 🐖 🗄	Funktionsleiste ✓ Statuszefe	'	6 🖪 A 🛃 · 🥥	brief bild bv
	Karteikarte		ale	▣ 씨 ↗ ≞ <mark>?</mark>	Nur Stammdaten Geteilt Nur Dokumentation	Strg+Alt+X Strg+Alt+Y Strg+Alt+Z		
E	20030	01.01.200		Mitglied (BMÄ), West	Filterregister anwählen	Strg+Alt+Shift+C		
	Name, Voman Test, To Adresse			Krankenkasse AOK Niedersachsen Vers-Nit	Überlappend Nebeneinander Svmbole anordnen			
	Tel. :			Einlesedatum (Gültig) fehit (-) Entiernung	Verankern Alle schließen	•		
	Arbeitgeber - Hausarzt			Zuständiger Arzt	✓ 1 20030 / Test, Toni / m / 01.01.2000 / ACK Net	dersachsen		
<b>-</b> P	-							
23	alle Anar	[		· · · · · · · · · · · · · · · · · · ·	1	* 	r	· · · · · · · · · · · · · · · · · · ·
HMU	Links	nnese Befun		Leistung Rezepte Therapie Röntg	n Ascan			
13 a	28.10.2011	tau	1 lag, 28.10.2011	(Erstbescheinigung)				
		fakür	Antrag auf Kosten	übernahme Muster 56				
RÖ	02.11.2011	fhv13	E-VO					
	20.12.2011	brief						
	07.02.2012	b	AA-Schulter-E	Befund re/li: Nackengriff	verzögert; Schürzengriff verzög	e		
			HWS: LR/RR	50-0-50 , LN/RN : 25-0-2	5,Kinn-Jugulum-Abstand 5 cm, F	Reklin		
		brief	nicht definiert					

The ALBIS settings are available in the menu "Options/Service/External programs ...".



💈 ALBIS	X
Patient Formular Extern Abrechnung Privat IGeL Statistik Stammdaten Optionen Ansicht	
🗢 🗋 🚅 🔛 💰 🐟 🛃 🧶 😭 Abredmung	Pess 🔰 🖄 🖟 🖧 🛤 🤮 🥘 A 👱 - 🥔 🖂 bid bid
Arbeitsplat Arzthref Aufoaberliste	
Augenartmodul Bidvorlagen	
Biometriedaten CGM ELAT	
Cordba CSD Patienten La DALE-LV	ngzetstude
Diagnosen Diagnosen DMP-Assist	
eGK Formulare	
Gerate Hausbesuchsmoot HZ/	st
Ifap Ifap	
Impf-doc IQ - Premium	
Karteikarte Kassenbuch	
RÖ RÖ	Ale Indues lochen Arbeitpätze
OPS Patientenfenster	Daterbarkedtor
Pravisgebür Pravis Timer Privis Timer	EM 2009
Prostautation. Programmdatum. Regionale Peiert	Externe Programme Freischaltungen
2 Röntgenbuch Schein	Inport  NU Eduar Index Radien
Rintgerbut Schen Schriftarten Schor Statistik	Instaliston  Korrektur
	Manuele Densterung Patenten zusamenführen Sam Schware
Verordnungen Versorgungsprog	
Wartezimmer Zeitintervale	Verax Informationen Verzeichnisse
Externe Programme einbinden	Verzeichnisse externer Programme

A single-day password is required for external program settings. In order to get the password, it is necessary to contact ALBIS.



Upon expiry of the external program use period, it is also necessary to contact ALBIS.



<b>()</b> ^	
Patie	nt Formular Extern Abrechnung Privat IGeL Statistik Stammdaten Optionen Ansicht ?
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R	
	Externe Programme
	Menüentäge:
	Löpptern Trefer Abbuch
	Befelt
	Belefi ALDIS
	Merilih Die Freischaltung für «Einflugen externer Programme Param perehmigen» für BS NV. (KV-Vk.) 3744-4600 Burkt in 3 Tagen aust
	Abbets Funktion staft Them each dem 05.08.2012 mich metry ar
	Katek *- ranger gi Silatu: Bitte neimen Sie Kontakt zu Ihren ALBIS Vertrebs- und ege
Ric	Auts
E	Debezeichnung (SEIN)
	Aktion bei erneuter Valideurg
2	Nicht übernehmen

Creating a job:

Menüeinträge:				
Digipax mport	*	Einfügen	Höher	OK
PatCD imp		Löschen	Tiefer	Abbruch
Befehl: Befehlszeile: Menütext: Parameter: Arbeitsverz. (\$VER2): Karteik-artenkürzet: Statuszeilentext: Ausführung: 15 Bit Windows- Programm	C:\digipaX\digip Digipax C:\digipaX\digip digi C immer C Programmen Datenbanke	Patient aktiv de abwarten n schließen	BDT (7/92) € 1 BDT (2/94) € 1 BDT (Mix) € 1	Diabetes BDT 2.0 GDT 6301 + 6302 ALLE00 ALLE00 SAUS): SDT SEIN): /alidierung:

Command line: C:\digipaX\digipaX\albis\start.bat (\$AUS): C:\digipaX\digipaX\gdt\digialbi.gdt (\$EIN): C:\digipaX\digipaX\GDT\albiDIGI.gdt

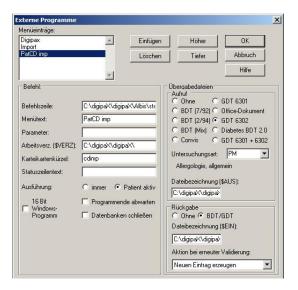


File import (wound documentation):

fenüeinträge: Digipax	*	Einfügen	Höher	OK
Import PatCD imp		Löschen	Tiefer	Abbruch
Befehl: Befehlszeile: Menütext: Parameter: Arbeitsverz: (\$VERZ): Karteikartenkürzet: Statuszeilentext: Ausführung:		eX\albis\sta c eX\ eX\ v Patient aktiv	BDT (7/92) C BDT (2/94) C BDT (Mix) C	Diabetes BDT 2.0 GDT 6301 + 6302 IMP • emein (\$AUS):
16 Bit Windows- Programm	☐ Programmen	n schließen	iückgabe Ohne OBDT. Jateibezeichnung C:\digipaX\digipa ktion bei erneuter Neuen Eintrag erz	(\$EIN): Validierung:

Command line: C:\digipaX\digipaX\albis\start.bat (\$AUS): C:\digipaX\digipaX\gdt\digialbi.gdt (\$EIN): C:\digipaX\digipaX\GDT\albiDIGI.gdt

Import of patient-CD:



Command line: C:\digipaX\digipaX\albis\start.bat (\$AUS): C:\digipaX\digipaX\gdt\digialbi.gdt (\$EIN): C:\digipaX\digipaX\GDT\albiDIGI.gdt



### 9.1.7.3 Start.bat

If the GDT response file has not been received by ALBIS, digipaX may not write a new returned response. Therefore, the unnecessary GDT file must be removed prior to relaunching of digipaX. Therefore, digipaX is launched by ALBIS via a batch file.

Create folder "ALBIS" in the local directory C:\digipaX\digipaX\. -> C:\digipaX\digipaX\ALBIS In this folder, create start.bat with following contents:

@echo off
del C:\digipaX\digipaX\GDT\albiDIGI.gdt /q
start /d C:\digipaX\digipaX digipax.exe

If the digipaX is installed in another path, the path must be adjusted in the batch file as well and put in the path separated by blank spaces or in quotation marks.

Example:

start /d C:\Programme\digipaX\digipaX digipax.exe
start /d "C:\Program Files\digipaX\digipaX" digipax.exe



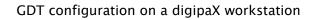
# 9.1.8 Connecting Duria

The Duria system does not possess a polling server. The digipaX server creates incremental GDT files on a shared disk on the server (locally is not possible).

While importing into the Duria system, all GDT files are imported in one sequence with assignments to the appropriate patients.

The illustrations below demonstrate the configurations:

User			Administrator :: GDT		
Informations about clinic and physician Image preview	Import directory:	C:\digipaX\digipaX\GDT			1 1 1
Baseboard Loupe	Export directory:	\\Server001\C\befund\GDT			14
Image informations Overlay / scout lines	Type of file: Import file:	<ul> <li>fixed GDT file extension (".gdt")</li> <li>DIGLxxxx.gdt</li> </ul>	<ul> <li>incremental file extension (".001" - ".999")</li> <li>e.g.: DIGIXXXX.003</li> </ul>	import.gdt	
Histogram	Export file:	xxxxDIGI.gdt		export.gdt	
Job management	Check interval in seconds:	10	•		
Image acquisition	Readout delay in miliseconds:	0	<b>\$</b>		
Other	Log:	log content of files			
Administrator	Adapt field allocation (mapping)				
License					
Veterinary surgeon	Create GDT answer				



Hilfe 7	F2	F3	F4	F5	F6	F7	F8	F9	F10	E11	ок√
e 🚦	12	13	14		10	17	10		110		
			Date	eien ers	tellen					23.04	.2010
						_					
			· · · · i 📱								
				//LOCALH	OST/C:/	DIGIPA					
8-bit	: Code.		····: 0	la l			Zeilent	crenner.		CR+LF	
-											
			••••• E	3D'l'							
Fetal	kennung	, Textgr	uppe:								
17		etzen	_								
		etzen.									
aurei	1										
vorb	n Tmpc	rt-Proc	ur omm •								
				:Ödiqip	avödiai	navödia	rinav ar	70			
ercer	.nes rr	ogramm.		··ourgrp	anouryi	panour	Jipar.ez	70			
'reite	•xt ode	r Anfar	ashuchs	taben V	orauswa	hlen->	. (<	->) #2	2/003	23.04.	Kyo
20200		- mirai	igos acin.	Cabon V	oraabna			- / // // 2	. 27000	20.01.	nyo .

Configuration of the worklist job in Duria

### Page 63 / 155



	Hillebrand/Wei erstr. 35, 594		W	30.06.1		4/9 J P:: 2922-9792		1(
PR	erstr. 55, 594	S/ Werr		PRE	IM 0	2922-9192	Kein	Fall
AB			ntling.com eitszentrum Pentl					
Zeile	Inhalt (fix)	ab Pos.	Inhalt (variabel	)		Textgr	BDT	L.ze
1	01380006302	ļ					Ja	Nein
2	xxx8100§§§						Ja	Nein
3 5	xxx3000 xxx3101	8	Patienten Nr. Nachname				Ja Ja	Nein Nein
5 6	xxx3102	8	Vorname				Ja	Nein
7	xxx3103	8	Geburtsdatum				Ja	Nein
13	xxx3110	8	Geschlecht 1/2				Ja	Nein
	Korrek	tur:	Erfassung		L	öschen		

### Row configuration for creating a worklist job (6302)

Allen PR	erstr. 35, 594	info§pe	ntling.com	0DKM PRE	M	02922-9792	Kein	Fall
AB		gesundh	eitszentrum Pentl	ing				
Zeile	Inhalt (fix)	ab Pos.	Inhalt (variabel	)		Textgr.	BDT	L.ze
1	01380006311						Ja	Nein
2	xxx8100§§§						Ja	Nein
3	xxx3000	8	Patienten Nr.				Ja	Nein
5	xxx3101	8	Nachname				Ja	Nein
6	xxx3102	8	Vorname				Ja	Nein
7	xxx3103	8	Geburtsdatum				Ja	Nein
13	xxx3110	8	Geschlecht 1/2				Ja	Nein
	Korrek		Prfassung			Löschen		

# Row configuration to display images (6311)



Dateien einlesen	23.04.2010
Import Gerät/Typ <mark>DIGI</mark> Dateiname / Port //SERVER001/C Datei löschen Ja	/BEFUND/GDT/DURIDIGI.* seriell einlesen: Ja
Datei-FormatBDT Feldkennung,TG.: 8402,DPAX-6227,DPAX-620 (siehe F1).:	1,DPAX-6200,DPAX
Hintergrund / Bildschirm.: Vordergrund	Warte Sekunden:
Zeichen ersetzen:	durch:
Auswerte-Programm vorher Export-Programm:	

Configuration in Duria for importing GDT files



# 9.1.9 Connecting KiWi (KIND - Hearing Aids)

The illustrations below demonstrate connecting GDT to the KiWi system.

	ndurg Formular Programme Einstellungen ? Knopf für GDT 6302	_ @ ×
** 館 A B D L 06 1 総G 修 G		
	nann, Wolfsburg *12.08.1954, 55 Jahre	
	0 Dauer/Diagnozen	
Qrt Datum Arz A K	Kein Arzt - Barnenia	
■ 3/2010 29.07.2010 G G	Untersuchung ALLG00 vom 29 07 2010 - LWS	
29.07.2010 G G	Contersuchung ALLGud vom 29 07 2010 - LWS	
	Gesantorgobnis [Details]	
	Datum: 23.07.2010 🔢 Uhrzeit 17.11.46 GeräteID: DIGIPACO Art der Untersuchung ALLGOO	
	Diagnose:	
	Befund A	
	Frendbelund	
	Kommentar: LWS	
	Ergebria:	
	Dateiachiv	
	Signatur:	
	Testreihen: Messdatum TestID Bezeichnung ProbenID Ergebnis Enheit Normwerte Ergebnis	
	Iett arceigen Untersuchung am Gerät arceigen 🏻 👜 Ducken 🗶 Abbrechen	
	Bilder/Dokumente zeigen GDT 6311	
Alle Scheine 🔲 🔪 Kar	ei f	
29.07.2010		17:26
Start 🔁 C:\Dokument	e u   🔁 Cl\dgipaX\dgipa   🔁 Sl\Kind Kiwi   🔁 Sl\Kind Kiwi   🖻 Arronis Backup   🕅 Datenbank-Utility   🎆 KIND Praxis-ED 🗶 dgipax   👔 Unbernant - P	aint « 🗾 <u>V2</u> 17:26

					Configuration
User 🖸 📥			Administrator :: GDT		
Informations about clinic and physician Image preview Baseboard Loupe	Import directory: Export directory: Type of file:	C:\GDT C:\GDT fixed GDT file extension (".gdt")	<ul> <li>incremental file extension (".001" - ".999")</li> </ul>	fixed file names	
Image informations Overlay / scout lines Histogram Job management Image acquisition Other	Import file: Export file: Check interval in seconds: Readout delay in miliseconds: Log:	DIGIxoox.gdt xooxDIGI.gdt	e.g.: DIGboox.003 e.g.: xooxDIGL.017	import.gdt	
Administrator	Adapt field allocation (mapping)	r automatic acquited images (via this digipax station)	as well as firr the images which have been received	d in the background.	
26 management COT Caches / IPS Device Inis X-ray journal Image travefer Other	Moment of creating:	Image acquisition and mage receipt     for each image (mmediately)     @ each series: Walting time: <u>I minutes</u> coxamination Walting time: <u>I minutes</u> if the last tob is ready     lask use before creation	ot	her events 1) immediately after job after import of image	X Collect jobs
General Cache DICOM	Entry in comment field (6227):	automatically (according to mode)     this comment text in answer file:     add additional tags:		ere are new images available	
Image processing File Import Worklist	Characteristics field: Set of characters:	Type of examination carried out:  IBM CP 437 (DOS)	0	LG00 ISO 8859-1 (ANSI)	
GDT Print burning CD / DVD Deutydes	Require an answer in GDT standard	I: require (despite whether a request has been mi Recipient ID: delete attached physician number		ipient abbreviation: KIWI	
Administrator login	Import	Export Info			Save



Igemein Schnittstellen		
Schnittstellenbezeichnung:	DigiPacs 💌	
asiseinstellungen spezielle	e Einstellungen	
WSID:	0	
Exportdatei (KiWi-> Gerät,	Beispiel: Satzart 6302)	
Zeichensatz:	Standard	
Verzeichnis:	C:\gdt	<del>-</del>
Dateiname:	digikiwi.gdt	
Importdatei (Gerät-> KiWi,	Beispiel: Satzart 6310)	
Zeichensatz:	Standard 💌	
Verzeichnis:	C:\gdt	<del>_</del>
Dateiname:	kiwidigi.gdt	
Kennfeld:	ALLG00	

GDT-Konfiguration					
Allgemein Schni <u>t</u> tstellen					
Schnittstellenbezeichnung:	DigiPacs				
Basiseinstellungen spezielle	e Einstellungen				
Schnittstelle:	V Aktiv				
Seri interestene.	Hochzählend				
	Untersuchungsanforderung automatisch erstellen				
	Untersuchungsergebnisse automatisch einlesen				
	✓ "Untersuchung vom" in Karteikarteneintrag einfügen				
GDT-ID Gerät:	DIGIPACO				
Test-ID neue Untersuchung:					
Eintrag Karteikarte:					
Karteikarte ergänzen um:	Kommentar				
Spezielle Anpassungen:	T				
Anzeige am Gerät:	'C:\digipaX\digipaX Demo\digipax.exe''				
⊕ Schnittstelle <u>e</u> infügen [] ģ	🖋 Schnittstelle löschen 🛛 拱 Speichern 🔹 🗶 Abbreche				



# 9.1.10 Connecting MCS Isynet (configuration with Windows terminal servers)

These instructions describe connecting of MCS using Windows terminal servers. MCS works on a terminal server and from each workstation a terminal client session is run on that server to allow working with MCS. However, digipaX runs locally on each workstation. The image server is not connected to MCS. The server receives the jobs through the worklist, scans images, stores them in the archive and writes the GDT response.

9.1.10.1 Terminal server configuration:

On the server a GDT directory is required. The directory is created on "I:\" (standard path Isynet). For each digipaX station, a separate subdirectory should be created. Responses are written directly in the GDT directory, which are used by all stations. Paths to individual stations may look like this:

I:\GDT\AP01 I:\GDT\AP02

I:\GDT\AP05

### 9.1.10.2 Workstation configuration

9.1.10.2.1 digipaX

					Configuration		
User			Administrator :: GDT				
Informations about clinic and physician	Identification						
Image preview	GDT-ID: DIGIPAX1	GDT-ID: DIGIPAX1 Abbreviation: DIGI					
Baseboard							
Loupe Image informations	Communication						
Overlay / scout lines	Import directory:	I:\GDT\AP01					
Histogram	Export directory:	I:\GDT					
Job management	Type of file:	fixed GDT file extension (".gdt")	<ul> <li>incremental file extension (*.001" - *.999</li> </ul>	1 ○ fixed file names		-	
Image acquisition	Import file:	DIGIXXXX.qdt	e.q.: DIGIXXXX.003	[import.gdt			
Other	Export file:	xxxxDIGI.qdt	e.g.: xxxxDIGI.017	export.gdt			
Administrator	Check interval in seconds:	5	÷	Levhor ridor			
		0	•				
License	Readout delay in miliseconds:	log content of files	•				
Veterinary surgeon DICOM / network	Log:	log content or files					
Job management	Adapt field allocation (mapping) –						
GDT							
Caches / IPS	Create GDT answer						
Device links	GDT answer files can be created fo	r automatic acquited images (via this digipax station)	as well as for the images which have been receive	ed in the background.			
X-ray journal		Image acquisition and image receipt	)[	ther events			
Image transfer		O for each image (immediately)					
Other	Moment of creating:	each series Waiting time: 3 minutes		immediately after job	ollect jobs		
Log	Moment of creating:	O examination Waiting time: 10 minutes					
		O if the last job is ready		after import of image			
General Cache							
DICOM		ask user before creating					
Image processing	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>					
File import		O this comment text in answer file:	Π	here are new images available			
Worklist		add additional tags:				2	
GDT					,	4	
Print	Characteristics field:	Type of examination carried out:	A	LLG00			
burning CD / DVD	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>	C	ISO 8859-1 (ANSI)		-	
Administrator login	Import	Export Info			Save		
						8	

GTD-ID should be the same for all stations, because MCS works while creating files with predefined templates. For each station the import directory should be modified. The export directory is the "I:\GDT" directory. As the incremental file extension file types are used. Stations save the response only in the case of patient's CD import. For the character set use IBM CP-437. digipaX must be in the system tray and should launch on system start up. The im-



logo - Onlinew

Y

port directory is monitored and digipaX launches itself when a GDT file is created in the directory.

### 9.1.10.2.2 MCS Isynet:

In Isynet, 3 buttons are required: "Create a job", "Show image" and "Load patient's CD." The above mentioned templates are used for this.

3 buttons need to be configured individually for each station using the "Online service management." Also here, the GDT directory must be modified for each station. The GDT file name for digipaX is set permanently as "digiisyp.001" (the basis for the 001 is an incremental extension of the file in digipaX).

For the GDT file, specify the template (here, "worklist.tpl").

The import directory for the response is "I:\GDT." The file name is isypdigi.\* and as a template the file "rueck.tpl" is used. Responses need to be configured only on one station. Only it controls the import directory.

Direktsuche: Pat-CD	Direktsuche: Zeigen
Onlines	Onlines
Online	Online
OnlineNummer: 1 Arbeitsplatz: 1 TAktiv 🔽 ASCII-Format	OnlineNummer: 1 Arbeitsplatz: 1 Aktiv 🔽 ASCII-Format
Suchwort: Pat-CD	Suchwart Zeigen
Beschreibung:	Beschreibung
Export	Export
Dateiname: II:\GDT\AP01\digiisyp.001	Dateiname: JI:\GDT\AP01\digiisyp.001
Vorlage: I:\WINACS\VORLAGE\patcd.tpl >> Bearbeiten	Vorlage: I:\WINACS\VORLAGE\zeigen.tpl >> Bearbeiten
Programmdatei: >>	Programmdatei >>>
Typ: Textdatei (ASCII)	Typ: Textdatei (ASCII)
Dateityp: Datei überschreiben 💌 🗖 Scheinaktivierung	Dateityp: Datei überschreiben 💌 🗖 Scheinaktivierung
Import	- Import
Dateiname: testen	Dateiname: testen
Vorlage: >> Bearbeiten	Vorlage: >> Bearbeiten
Typ: Textdatei (ASCII)	Typ: Textdatei (ASCII)
₩ immer löschen	V immer löschen
Q + Pa i DK Abbrechen Übernehmen Hilfe	Q + Pa a Ubernehmen Hille
Septege - Onlineverwaltung	SPRege - Onlineverwaltung
Direktsuche: jworklist	Direktsuche: Rückantwort
Onlines	Onlines
OnlineNummer: 1 Arbeitsplatz: 1 Arbeitsplatz: 1 Arbeitsplatz: 1	OnlineNummer: 5 Arbeitsplatz 5 IV Aktiv ASCII-Format
Suchwort Worklist	Suchwart Rückantwort
Beschreibung:	Beschreibung
beschrobung.	booting.
Export	Export
Dateiname: I:\GDT\AP01\digitsyp.001	Dateiname:
Vorlage: I:\WINACS\VORLAGE\worklist.tpl	Vorlage: >>> Bearbeiten
Programmdatei: >>	
	Programmdate: >>
Typ: Textdatei (ASCII)	Programmdater
Dateityp: Datei überschreiben 🔽 🗖 Scheinaktivierung	Typ: Textdatei (ASCII)  Datei überschreiben  Cscheinaktivierung
Dateityp: Datei überschreiben 🔄 🗖 Scheinaktivierung	Typ: Textdatei (ASCII)  Dateityp: Datei überschreiben  Scheinaktivierung Import
Dateityp: Datei überschreiben T Scheinaktivierung Impot Dateiname: testen	Typ: Textdatei (ASCII)  Datelyp: Datei überschreiben  Scheinaktivierung Import Dateiname: [L\GDT\usypdigi* testen
Datelitye: Datei überschreiben T Scheinaktivierung Import Dateiname: Vorlage: Seheinaktivierung Bearbeiten	Typ: Textdatei (ASCII)  Dateityp: Datei überschreiben  Scheinaktivierung Import Dateiname: [L\GDT\sypdigi* testen Vorlage: [L\WINACSWORLAGE vueck.tpl >> Bearbeiten
Dateityp: Datei überschreiben	Typ: Textdatei (ASCII) Dateityp: Datei überschreiben Scheinaktivierung Impott Dateiname: [I\GDT\isypdigi* testen Voliage: [I\WINACS\VORLAGE\vueck.tpl Syp: Textdatei (ASCII) Scheinaktivierung S
Datelyp: Datei überschreiben T Scheinaktivierung Impot Dateiname: Vorlage: Sbeeinaktivierung Bearbeiten	Typ: Textdatei (ASCII)  Dateityp: Datei überschreiben  Scheinaktivierung Import Dateiname: [L\GDT\sypdigi* testen Vorlage: [L\WINACSWORLAGE\ueck.tpl >> Bearbeiten
Dateityp: Datei überschreiben T Scheinaktivierung Import Dateiname: Vorlage: Typ: Textdatei (ASCII)	Typ: Textdatei (ASCII)  Dateityp: Datei überschreiben  Cscheinaktivierung  Impott Dateiname: [I\GDT\isypdigi* testen Volage: [I\WINACS\VORLAGE\vueck.tpl  Typ: Textdatei (ASCII)



To be able to re-call the images with a double click while re-entering in the record card, the entry in MCS database is needed. In order to do this, "KRABLMEMO" must be entered in the "dbo.krablfeld" table after "Show digipaX".

eue Abfrage   🛐 📸 📸 🔯 🔡 🥁													
📰 🔤 Typ ändern 🔹 📍 😽 🛛 🚺		0.000	ibo.KrabiFeld Deta	ls zum Obiekt-Exr	alaran D							• X	Eigenschaften
fen • 📑 💷 🍸	TER	Nummer	Suchwort	Satzart	Kategorie	SymbolNummer	KategorieLangt	Programmblame	FixedFont	Format	Maske	ZielTabelle 🔔	
e do.fappers		258	FREI REZ	100088	REZ	0	Rezent	riogrammanic	Fake	Tornas	1142400	Derrebene	
e doutrappers	-	13 7 1975.	10000000000000	8000	RÓ	0	1.122.000	-	100000				21 🖾
dbo.IFVorlage		23	Röntgen				Röntgen	@ao DigiPAXzeigen	14.447.747			( KRABLMEMO	🖯 🗆 (Identität)
ImageListPictures		260	FREI_OPTAG	100102	OPTAG	0	Operations-Tag		False			$\sim$	(Name) Query
🕀 🛄 dbo.Images		261	FREI_OPBEZ	100099	OPBEZ	0	Operation		False				Datenbankname WINACS
🗄 🛄 dbo.ImportKonfig		262	FREI_OPOPE	100101	OPOPE	0	Operateur		False				Servername w2k3
dbo.ImportKonfigSpake		263	FREI OPASS	100098	OPASS	0	OP-Assistenz		False				Abfrage-Designer
dbo.ImportKonfigTab		264	FREI OPNAR	100100	OPNAR	0	Anästhesie		False				Abfrageparameterli Für diese Abfra Alle Spalten ausgeb 3a
dbo.ImportNDTDatei     dbo.ImportProtokol		112127											Alle spalten ausgeb Ja DISTINCT-Werte Nein
doo.importProtokol      doo.iSoftCCPBefehle		265	FREI_OPLAGE	100108	OPLAGE	0	Lagerung		False				GROUP BY-Erweiten <keine></keine>
do.IsvDokuMandantModul		266	FREI_OPAN	100097	OPAN	0	Anästhesist		False				E Oberste Angabe Nein
E dbo.IsyDokuModule		267	FREI_OPBLUT	100109	OPBLUT	0	Blutsperre		False				SQL-Kommentar
🗉 🛅 dbo.KaBuKassenbuch		268	DCDMPTEDMPI	48200	DCDMP	0	indikationsüberg	@AO DCDMP	False			KRABLMEMO	Zieltabelle
🗉 🛄 dbo.KaBuKassenbuchMandanti		269	DCDMPEHKS	48220	DCDMP	0	Früherkennung	@AO DCDMP	False			KRABLMEMO	LINGLOID
🗉 🔄 dbo.KaBuKassenbuecher						0		15000000					
E dbo.KaBuKategorien		270	DCDMP201	48240	DCDMP		Früherkennung	(@AO DCDMP	False			KRABLMEMO	
dbo.KaBuKategorienBuchungst		271	FREI_CHIRO	100110	CHIRO	0	Chirotherapie		False				
		272	ISYDOKUMA	71000	MAKRO	0	Workflow		False				
dbu.Kasterneser     dbu.Kasterneser		273	ABKLQ	70300	ABKLQ	0	Rechnung §116b		False				
doukaseJannestelen		274	ABKS	70400	ABKS	0	Gutschrift/Storn		False				
dbo.KBVPrúfnummer		275	ABKES	70500	ABKES	0	Falstorno §116b		False				
🖅 🛄 dbo.Kennziffern							-						
🗉 🛄 dbo.KennziffernDetail		276	LAN	9600	LAN	0	Laborauftrag		False				
E dbo.KISEventLog		277	HeiRezSSST	2090	R	0	Rezept für Stim		False				
E dbo.KISFal		278	PIALQ	70600	PIALQ	0	Rechnung §118		False				
dbo.KISFalBesuche		279	PIAS	70700	PIAS	0	Gutschrift/Storn		False				
dbo.KISFalBesucheProt     dbo.KISFalDiagnosen		280	PIAFS	70800	PIAES	0	Falstorno §118		False				
<ul> <li>doo.ktoraiutagnosen</li> <li>doo.ktoraiutagnosen</li> </ul>		10000			10.5.05	0	1		False				
doc.KISFalinformation		281	SPZLQ	71100	SPZLQ		Rechnung §119						
dbo.KISFallProzeduren		282	SPZS	71200	SPZS	0	Gutschrift/Storn		False				
🗉 🔄 dbo.KISImportListe		283	SPZFS	71300	SPZPS	0	Fallstorno §119		False				
🗉 🔝 dbo.KissFallChangeLog		284	SMS	9700	SMS	0	SMS		False				
Image:		285	DIKT	12100	DIKT	0	Diktat		False				
dbo.KKDlagnosenSort	1	286	FREI PACS	100111	PACS	0	DigPAX	@ao DigPAXzeigen				KRABLMEMO	
dbo.KKMedikamentenSort     dbo.KKWerkzeugToolbar	*	100		NUL	ALL	MAL	NUL	Wall Digranzeigen	NEEL	MAL	NERL	MAL	
dbo.KKWerkzeugToolbar     dbo.KKWerkzeugToolbarButtor	*	nell	MAL	NULL	AREL	MAL.	Nell	NOL	mall.	MAL	Ver	MAL _	GROUP BY-Erweiterung
doukk werkzeug totbarbotol     doukki werkzeug totbarbotol	4				1							٦	_ GROOP DI-LIWelkerung

### 9.1.10.3 Image server configuration

				Conf	iguration
User			Administrator :: GDT		
Informations about clinic and physician	Identification				
User interface	GDT-ID: DIGIPAX1		Abbreviation: DIGI		[]
Image preview Baseboard					
Loupe	Communication				
Image informations	Import directory:	C:\digipaX\digipaX\GDT			
Overlay / scout lines	Export directory:	I:\GDT			
Histogram	Type of file:	fixed GDT file extension (".gdt")	<ul> <li>incremental file extension (".001" - ".99</li> </ul>	9") (fixed file names	
Job management	Import file:	DIGIxxxx.qdt	e.g.: DIGIXXXX.003	import.gdt	
Image acquisition	Export file:	xxxxDIGI.qdt	e.g.: xxxxDIGI.017	export.odt	
Other	Check interval in seconds:	10	•	exportiger	
Administrator	Readout delay in miliseconds:	0	-		
License	Log:	log content of files			
Veterinary surgeon					
DICOM / network	Adapt field allocation (mapping)				
Job management					
GDT	Create GDT answer				88
HL7	GDT answer files can be created for	or automatic acquited images (via this digipax station)	-		
Caches / IPS Image acquisition		Image acquisition and image receipt		other events	
Device links	Moment of creating:	<ul> <li>for each image (immediately)</li> </ul>		immediately after job Collect jobs	
X-ray journal	Moment of creating:	🔿 each series Waiting time: 3 minutes 🏝		X after import of image	
Patient CD		the study Waiting time: 0 minutes		arter import of mage	
Image transfer		ask user before creating			
Other	Entry in comment field (6227):	automatically (according to mode)			
Log	End y in comment new (0227).	<ul> <li>this comment text in answer file:</li> </ul>	ſ	New images exist.	
General			L	wew images exist.	
Cache		add additional tags:			
DICOM	Characteristics field:	Type of study carried out:		ALLG00	
Image processing	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>	C	) ISO 8859-1 (ANSI)	
File import	Require an answer in GDT standars	d: 🗙 require (despite whether a request has been m	ade to this system or not)		L
Worklist	Acquire an anomer in doir standar	Redpient ID:		Lecipient abbreviation: ISYP	
GDT T		delete attached physician number		[2011	
Administrator login	Import	Export Info			Save
Harmstead Ngrin		and a second sec			
					<b>U</b>

The image server is not actually connected to MCS, but here also an Isynet directory on the terminal server is connected to a network drive "I:\" and the export directory is set to "I:\GDT". A response file is saved after image acquisition, when the last job is completed and when the image is imported. The forced GDT response function must be active and set as a ISYP recipient shortcut.



As a result, all digipaX stations receive the GDT file for all 3 activities in its own GDT directory, but only write the response when loading the patient's CD to the commonly used GDT directory as an incremental file.

The image server saves the response file when scanning and loading into the same directory. For all 3 activities, 3 buttons are available in MCS. For the buttons, you can define different symbols.

Create a job	Show images	Load patient's CD
La MtS-15YNET 11.2v (6.60.17) - 5QL Version 2. Ø ∰ Datei Bearbeiten Anscht Patient Terminnanager Labor Auswertung Extras Sy	10.100.100.39 - 6 X	1979 Alter: 32 Johre; M]
<u></u> <u></u> <u></u> <u></u> <u></u>	Sector         Field Cold         Sector         Sec	
Cave :		
Algemein Selektiv 3 Diagnoser Diege-Onlineverwaltung Anscht : Alle Eintige- (11 Eintig Datum Selepoin: Diektsche: Workist [08.05.2017] Konsultaionste		×
Datum Kategorie		
Online     Online     Online     Online     Online     Online     Online	olatz:	ASCII-Format
29.03.2010 GKS Suchwort: Worklist	plate 1 Matter 14	Aberrolina
KBEM Beschreibung:		
24.08.2004 AKTAM Export		
Deteiname: I:\GDT\AP01\digityp.001 Vorlage: I:\WINACS\VORLAGE\worklist.tol		Bearbeiten
27.07.2001 GKS Programmdater	<u>&gt;&gt;</u>	
Tury Tautdatai (ASCII)	<u></u>	
	cheinaktivierung	
PKS Dateryp: Dater uberschreiben		
Dateiname:	tesi	ten
Vorlage:	>>	Bearbeiten
Typ: Textdatei (ASCII)		
🔽 immer löschen		
	<u>OK</u> <u>Abbrechen</u> <u>Ü</u> bernehme	m <u>H</u> ilfe
💡 21 Z1 🗃 🚭 📷 🗊 🛈 🛅 44		OK Abbrechen Demehmen Hilfe
	dung 1 🗈 (134) Testmann, Otto 32J 4M 6T N/N 🕅	
🏹 Start   🚠 🔐 🍃 🕼 🚺	Sang 1. Participal from the second state of the term	DE 客 陀 🐑 🗤 14:50 📰



### 9.1.10.4 Templates

Templates are simple text files with "tpl" extensions. They can be edited using an editor, demonstrated in the 4 following examples:

worklist.tpl

show.tpl

### patcd.tpl

*** Create GDT worklist ***	'*** Show GDT images ***	'*** Read GDT Pat CD ***
[@SL]80006302	[@SL]80006311	[@SL]80006302
[@SL]8100[@FL]	[@SL]8100[@FL]	[@SL]8100[@FL]
[@SL]8315DIGIPAX1	[@SL]8315DIGIPAX1	[@SL]8315DIGIPAX1
[@SL]8316MCS-ISYNET	[@SL]8316MCS-ISYNET	[@SL]8316MCS-ISYNET
[@SL]8402WL	[@SL]92180100	[@SL]8402PM
[@SL]92180100	[@SL]3000[3000]	[@SL]92180100
[@SL]3000[3000]	[@SL]3100[3100]	[@SL]3000[3000]
[@SL]3100[3100]	[@SL]3101[3101]	[@SL]3100[3100]
[@SL]3101[3101]	[@SL]3102[3102]	[@SL]3101[3101]
[@SL]3102[3102]	[@SL]3103[3103]	[@SL]3102[3102]
[@SL]3103[3103]	[@SL]3104[3104]	[@SL]3103[3103]
[@SL]3104[3104]	[@SL]3105[3105]	[@SL]3104[3104]
[@SL]3105[3105]	[@SL]3106[3106]	[@SL]3105[3105]
[@SL]3106[3106]	[@SL]3107[3107]	[@SL]3106[3106]
[@SL]3107[3107]	[@SL]3108[3108]	[@SL]3107[3107]
[@SL]3108[3108]	[@SL]3110[3110]	[@SL]3108[3108]
[@SL]3110[3110]	[@SL]3622[3622]	[@SL]3110[3110]
[@SL]3622[3622]	[@SL]3623[3623:/ 1000 # 000]	[@SL]3622[3622]
[@SL]3623[3623:/ 1000 # 000]	[@SL]3628[3628]	[@SL]3623[3623:/ 1000 # 000]
[@SL]3628[3628]	[@SL]8402[@KKDATA MEMO.Category]	[@SL]3628[3628]
	'*** Category can vary, see Return	
	[@SL]8432[@KKDATA MEMO.Date]	
	[@SL]8439[@KKDATA MEMO.Time]	
	[@SL]6200[@KKDATA MEMO.Date]	
	[@SL]6201[@KKDATA MEMO.Time]	

### burnpatcd.tpl

'*** Burn GDT images on CD ***
[@SL]80006311
[@SL]8100[@FL]
[@SL]8315DIGIPAX1
[@SL]8316MCS-ISYNET
[@SL]8402PCD
[@SL]92180100
[@SL]3000[3000]
[@SL]3100[3100]
[@SL]3101[3101]
[@SL]3102[3102]
[@SL]3103[3103]
[@SL]3104[3104]
[@SL]3105[3105]
[@SL]3106[3106]
[@SL]3107[3107]
[@SL]3108[3108]
[@SL]3110[3110]
[@SL]3622[3622]
[@SL]3623[3623:/ 1000 # 000]
[@SL]3628[3628]

#### imageimport.tpl

'*** Import GDT image/graphics ***
[@SL]80006302
[@SL]8100[@FL]
[@SL]8315DIGIPAX1
[@SL]8316MCS-ISYNET
[@SL]8402IMP
[@SL]92180100
[@SL]3000[3000]
[@SL]3100[3100]
[@SL]3101[3101]
[@SL]3102[3102]
[@SL]3103[3103]
[@SL]3104[3104]
[@SL]3105[3105]
[@SL]3106[3106]
[@SL]3107[3107]
[@SL]3108[3108]
[@SL]3110[3110]
[@SL]3622[3622]
[@SL]3623[3623:/ 1000 # 000]
[@SL]3628[3628]



#### respons.tlp

******************
'*** Read GDT format ***
*****
'*** Find character string '3000' on position 4 and take in the found
'*** row from pos. 8 20 characters and assign them to variable "PATNR".
[@PATNR:\$FIND(4,3000);8;20]
'*** Date in format DDMMYYYY
[@DATUM:\$FIND(4,6200);8;8]
'*** Time in format HHMMSS
[@ZEIT:\$FIND(4,6201);8;255]
[@2E11.3FIND(4,0201),0,233]
'*** 8402 specific characteristic field for device or process (must be compiled as case sheet
*** category in MCS-NEXUS for MCS-ISYNET).
'*** With the command \$MAP characteristic fields are transformed in corresponding KK categories.
'*** There are significantly more characteristic field existing, e.g.EKG05 etc Those are to be adjusted if need be.
[@KAT:\$FIND(4,8402);8;6\$MAP "R" RÖ EKG00 "EKG" EKG01 "R-EKG" EKG04 "LZ-EKG" ERG00 "ERG0" ERG00 "LUFU00 "LUFU" LUFU1 "LUFU"
BDM00 "BDM" BDM01 "BDM"]
'*** Find all rows with character string '6228' (tabular text)
'*** on position 4 and take all in the found rows from pos. 8 to the
'*** row end (255) and assign it to variable "TEXT".
[@TEXT:\$FIND+(4,6227);8;255]
*** 6220 is result characteristic of GDT
[@BEF:\$FIND+(4,6220);8;255]
**** 6221 is foreign result characteristics of GDT
[@FBEF:\$FIND+(4,6221);8;255]
**** Variable MEMO
[@MEMO:Datum(]
'*** Attach date (8432) to Variable MEMO.
'*** Date can also be in another field characteristic, e.g. 6200
[@MEMO+:\$FIND(4,6200);8;255]
'*** Attach time to Variable MEMO.
[@MEMO+:)[CRLF]Time(]
'*** Attach time (6201) to Variable mEMO (original value:8432)
[@MEMO+:\$FIND(4,6201);8;255]
*** Attach time to Variable MEMO.
[@MEMO+:)[CRLF]Category(]
'*** Attach category (8402) to Variable MEMO.
[@MEMO+:\$FIND(4,8402);8;255]
'*** Attach bracket to Variable MEMO.
[@MEMO+:)]
'*** Space for sequential control in MCS-ISYNET starts here
\$ASS
litit Fature for an interest for the second second
**** Entry of program linkage for the case sheet
*** M command for easy transfer without memo entry
'*** MX command for memo entry fwd. double click from KK
'MX  [KAT] Measurement [MEMO]
MX  [KAT] [Date] [Time] [TEXT] [MEMO]

Symbols and templates can also be downloaded from the website <u>www.digipax.eu</u> on the "Downloads" tab.



# 9.1.11 digipaX configuration

					Configuration
User 🖸			Administrator :: GDT		
Informations about clinic and physician	Identification				
Image preview	GDT-ID: DIGIPAX Abbreviation: DIGI				<u> </u>
Baseboard Loupe					^
Image informations	Communication				
Overlay / scout lines	Import directory:	C:\digipaX\digipaX\GDT			
Histogram	Export directory:	C:\digipaX\digipaX\GDT			
Job management	Type of file:	<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	O incremental file extension (".001" - ".999	") 🔘 fixed file names	
Image acquisition Other	Import file:	DIGIxxxx.gdt	e.g.: DIGIXXXX.003	import.gdt	
	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt	
Administrator	Check interval in seconds:		÷		
License	Readout delay in miliseconds:		•		
Veterinary surgeon	Log:	log content of files			
Administrator	Adapt field allocation (mapping) -	or automatic acquited images (via this digipax station).	as well as for the images which have been receiv	ed in the background.	
Job management GOT Caches / IPS Device Inis Xivary journal Image transfer	Moment of creating:	Image acquisition and image recept     for each image (immediately)     @ each series Waiting time: <u>3 minutes</u> examination Waiting time: <u>10 minutes</u> if the last job is ready		ther events  immediately after job after import of image	X Collect jobs
Other		ask user before creating			
Log	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>			
General		O this comment text in answer file:	[	here are new images available	
Cache DICOM		add additional tags:		Reffering %1, Date %2, Time %3)	
Image processing	Characteristics field:	Type of examination carried out:	k	-RAY	
File import	Set of characters:	O IBM CP 437 (DOS)		ISO 8859-1 (ANSI)	
GDT	Require an answer in GDT standar	d: 🕱 require (despite whether a request has been ma	ade to this system or not)		
Print		Recipient ID: TEST-ID	R	ecipient abbreviation: TEST	
burning CD / DVD		delete attached physician number			•
Administrator login	Import	Export Info			Save
					8

#### 9.1.11.1 Identification

As described in the GDT standard in version 2.1, it is necessary to enter a unique identification (GDT-ID, 8 characters) and an abbreviation (4 characters).

#### 9.1.11.2 Communication

Import and export files are exchanged through configured communication directories. As for file names, the following options are supported:

Variant	Description	Example	Standard
Constant GDT file ex-	<receiver abbreviation=""><sender abbre-<="" td=""><td>DIGITURB.gdt</td><td>yes</td></sender></receiver>	DIGITURB.gdt	yes
tension	viation> . GDT	TURBDIGI.gdt	
(".gdt")			
Incremental file exten-	< receiver abbreviation >< sender ab-	DIGITURB.003	yes
sion	breviation > . <incremental no=""></incremental>	TURBDIGI.017	
(".001" – ".999")			
Constant file names	Any file name – this is often a simple	import.gdt	no
	alternative and allows you to adjust to	export.abc	
	most systems		

Communication directory is monitored after each activity and also periodically searched to find new GDT files (polling), if there were to be problems with normal activity reception. The interval can be adjusted with the value of the periodic search (value in seconds, 5 seconds is recommended). The files, which could not be read or which are addressed to other recipients remain in the directory and are not read the second time (until you restart the application).



All other files are imported, processed appropriately, and then the file is deleted, as required by the standard. In some other systems, it may be that the GDT is not written in one sequence. In such cases, you can enter a delay for reading the GDT.

For the purpose of testing and analysis of the contents of GDT files (incoming and outgoing) a log can be recorded (category GDT).

#### 9.1.11.3 Field assignment (mapping)

#### 9.1.11.3.1 Patient data area

GDT files that are inconsistent with the standard can cause errors in interpretation of the fields. Configuration of field assignments allows you to customize importing. For each value an appropriate field number can be given, from which value is read. When exporting, the data is restored back from the customized fields.

#### 9.1.11.3.2 Controlling area

If the clinic management system sends the job number and a description of the job, you can configure the appropriate fields. Further processing of this data is done through job management. See chapter 8 DICOM worklist section 8.5 Additional information.

The following fields are the station name and modality. If they are defined, the data from the fields are passed to job management and while creating a job, the station number and modality will be set by default.

#### 9.1.11.3.3 Veterinary area

This area is used for customizing the veterinary version. For this purpose, see section 16.5.

#### 9.1.11.3.4 Standard fields

With the help of the "Set standard GDT fields" button, the field numbers are reset to the initial values.

#### 9.1.11.4 Response file

For studies which have been requested from other systems using GDT files, a response GDT file can be created. As the recipient's ID, enter the requestor's ID. When using a GDT file type with a permanent extension, the requestor's abbreviation is used in the file name.

#### 9.1.11.4.1 Point in time of creation

Usually the response GDT files are created after downloading the images for the respective study, and after directly acquiring the images in the digipaX system or when digipaX get the pictures from another system. This does not work, however if the target device may "incidentally" receive and analyze the GDT files. If that is not the case, then the GDT respond file must be created immediately after the creation of a job. Besides this, optionally you can also generate the GDT file after successful import of raster images.

With the "Immediately after job" option, the response GDT file is created when you create a job with the description contained in the order on the worklist or after the creating the job with a user-defined comment (after reading the GDT file of record type 6302). The clinic management systems, such as TurboMed, which do not constantly monitor the GDT direc-



tory, can read responses immediately after requesting them and then add entries to the patient's record card. It is recommended to activate the option "Job summary" to create a response file with a description of the summary for all jobs. Otherwise the system will try to generate a response file for each job. Systems, which also periodically search the communication directory for the presence of GDT files, should first obtain information if images were actually uploaded. Thus, one of the options in the "image acquisition and image receipt" must be selected. If the images on the station are not scanned by digipaX, the routing PACS server and digipaX system must be properly set, as this is the only way you can determine the creation of new images. If the "For every image" option is selected, the response GDT file is created when receiving an image or when saving a study for each scanned image. If the GDT file already exists with the same name (for example, is using the permanent GDT file extension option, when the previously created file has not yet been received by the recipient), the system will repeatedly try to create this file, with a specified time interval between the trials. If these attempts fail repeatedly, the process is interrupted. Therefore, we recommend the use of incremental file extensions, if it is supported by the second system

When creating a GDT response to series of images or a study for received images a "countdown" begins after receipt of the first image. If until the moment the countdown ends no other images will be uploaded for this series or study, the series / study will be deemed complete and a response file will be created. The countdown can be configured by entering the waiting time in minutes. If you enter 0, then immediately after the arrival of further images for a series or study response files will be created. If other images are not received to the series or study, no further response files will be created for this series / study.

If this station acquires images or image series directly, then after saving the study either for every series or complete study the response file is created. With this option, waiting time makes little sense and should be set on "0". Here, it is also recommended to use incremental file extensions for the option "Each series".

Therefor, information on the new study (StudyDescription) is also transferred if needed.

When creating a GDT response file after importing an image (option "After image import") a GDT file is created, which in an automatic mode provides a description of the study, in the images which were saved. This GDT file is created when a user imports raster graphics (graphic files or images from a scanner) or DICOM files (e.g. patient's CD).

Due to the option "Prompt user before creating" each time before generating a response GDT file, user agreement is obtained. This option is useful when information for all tests or images is not to be sent back.

#### *9.1.11.4.2 Comment field entry (6227)*

In the comment field of the GDT response file (field number 6227) you can enter text. Text may be automatically specified to the description field of the worklist job (Requested Procedure Description: 0x0032, 0x1060), comment tag of the image (Image Comment: 0x0020, 0x4000), series (Series Description: 0x0008, 0x103e), study (Study Description: 0x0008, 0x1030) or user-defined. For option <When last order is ready> the Study Description of a new study is also used.

To the comment field you can also add user-defined tags and text. As in the case of displaying image information on the overlay, you can add up to 3 tags, or their parts.



Capton: (Reffering: %1, Date: %2, Time: %3)				
Value 1: DICOM tag:	(0008,0090) - ReferringPhysiciansName	Tag element:	completed	▼ Position: 1
Value 2: DICOM tag:	(0008,0020) - StudyDate	Tag element:	completed	▼ Position: 1
Value 3: DICOM tag:	(0008,0030) - StudyTime	Tag element:	completed	Position: 1
Remark:				
OK Cancel				

Which tags will be used depends on the selected type of response (job, image, series or study). For one job different tags are available than for images.



On the configuration page "Administrator / Others" you can specify whether the beam projections are to be included in the description of the study.

#### 9.1.11.4.3 Characteristic field

The value sent in field 8402 can be selected freely. The "ALLG00" is standard for general studies.

#### 9.1.11.4.4 Character set

You can select the character set used to create a GDT response file. The standard is "IBM CP 437". When downloading GDT files character set is automatically recognized and used. 7-bit character set is not supported by the system.

#### *9.1.11.4.5 Forced GDT responses*

The "Forced GDT response file" allows you to create response messages, to given stations where there has been no request by the GDT. If, for example at station A, a new study was requested by the GDT, then after creating the job, you can close the system, and at station B after the images have been created, a GDT response will be generated. At this time the receiver's GDT-ID and its GDT abbreviation is not known, therefore it should be entered into the configuration.

Since in this case you cannot determine whether the physician ID (or the company number) in the digipaX system was added to the patient ID, removal of such an identifier may only be done by using the option "Remove the added physician ID" (relates only to devices used by many physicians).

#### 9.1.11.4.6 Program exit

If at the end of the program not all GDT response files have been created yet (in the case of option of series or study with a programmed waiting time), they will be saved automatically.



# 9.1.12 Activities control system digipaX

#### 9.1.12.1 Program parameter

If in the set GDT communication directory, a valid, addressed to this system GDT file is found, then the effect on the start on the program will depend on the contained in the record type and the eventual passed the program parameter "/w" or "/i" (or ",\w","-w" as opposed to ",\i", "-i"). This parameter determines the losing of the worklist or import component.

GDT record type	Action
6301: Send constant data	<ul> <li>Patient management start</li> <li>The patient passed in the GDT file is selected if the patient exists in the archives, or on the contrary, the patent in this case will be created locally</li> </ul>
6302: Request new study	<ul> <li>Here also the patient gets selected or created locally</li> <li>If the image acquisition module is active, at this time the patient is updated and images can be read in (since digipaX version 1.1.0).</li> <li>If the image acquisition module is not available or the "/w" parameter was passed, at this time the worklist component is loaded and a dialogue for creating new jobs is displayed.</li> <li>If the "/i" parameter was passed, at this time the import component is loaded.</li> <li>If the "/pm" parameter was passed, at this time the patient management module is loaded.</li> </ul>
6311: Show study data	<ul> <li>Here as well the patient is selected or created locally.</li> <li>No component is loaded, but all the available studies for this patient are displayed in a tree view format and can be immediately viewed in the browser.</li> <li>The first study image is displayed (if a study date has been passed and such study with this date has been found).</li> <li>If the "/pcd" parameter was passed, at this time the patient is selected and the module for creating the patient's CD is loaded.</li> </ul>

If at the start of the program no valid GDT file is found, the parameter "/w", "/i" as opposed to "/pm" has no meaning.



#### 9.1.12.2 GDT 8402 or 8410 field

In the GDT file record type 6302 ("Request a new study") or record type 6311 ("Show study data"), you can use the 8402 field "Tools and process characteristics map" or 8410 "Test-Ident", in order to pass instructions for a particular action.

The following table shows the possible settings:

Value	Name	Record type	Meaning
ACQ	ACQUIRE	6302	Requests direct image acquisi-
			tion. Available only if the image
			acquisition module is active.
WL	WORKLIST	6302	Loading the worklist component
			and opening the dialogue to cre-
			ate the job.
IMP	IMPORT	6302	Loading the import component
			for importing image files or
			scanning of documents.
PM	PATIENT MANAGEMENT	6302	Loading patient management,
			e.g. for importing patent's CD or
			other DICOM images for this pa-
			tient.
PCD	PATIENT'S CD	6311	Loading the patient's CD module
			for creating patient's CD of the
			selected patient.

Please enter only one of two fields, depending on what is supported by the system that creates the GDT file.

#### 9.1.13 Patient data consistency

If the names and birth dates of patients do not match fully with the data management system and clinic image data archive, accurate assignment of patients cannot be done. This can happen after receiving complete data image from previous image archives. Therefore, on the configuration page "Administrator / Others" in the "Patient ID" group, you can change this feature to compare to "Only patient ID." In this way, only IDs will be compared and not the names and dates of birth of patients.

## 9.1.14 Working without being connected to GDT

digipaX can also be operated without being connected to the GDT as opposed to being connected to the clinic management system and perform basic patient management functions. It does not, however, have a local database of patients. This means that patient data are saved only when the image is in the archive.

However, you can temporarily save the patients created locally. This option can be activated in the configuration of the DICOM network "Save patients locally." These data can be ar-



chived centrally in the network and can be used by all stations. Thanks to this, patients who do not yet have images in the archive are also available to all other stations.

## 9.2 HL7 Interface

### 9.2.1 General

With HL7 the connection with radiology and hospital information systems is possible. Data exchange between digipaX and other systems takes place via the TCP/IP connection. Exchange of messages over the files is not possible. The settings in digipaX are made over the page Configuration / Administrator and over a configuration file (HL7.ini) in the digipaX directory.

#### 9.2.2 Types of messages

ORM - general order message (event O01)

From the data fields of ORM message a worklist job is derived. It is either saved directly in the background in the worklist or a dialogue for creating a job is opened.

ORR - general response message to any ORM (event O02)

If the option for sending an acknowledgement is enabled, after the ORM message the ORR message is sent to the sender.

ORU - unsolicited transmission of an observation message (event R01)

After each image received via automatic image receipt or when the last job is completely processed and ready, a message is sent to the radiology/hospital information system, that the job is executed.

#### 9.2.3 Action type

As with the GDT interface, an action type control can be forwarded with the HL7. The following functions are possible.

Value	Designation	Type of message	Meaning
ACQ	ACQUIRE	ORM	Requires direct image acquisition. Only pos- sible if image acquisition module is enabled.
WL	WORKLIST	ORM	Depending on setting in the digipaX recalls worklist components and opens the dialogue for job creation or automatic job creation in the background.
IMP	IMPORT	ORM	Recalls import components for import of image data or scanning of the documents.
РМ	PATIENT MANAGEMENT	ORM	Recalls the patient management, e.g. to im- port a patient CD or another DICOM images for that patient.



# 9.2.4 digipaX configuration

		Configuration
User 🗅	Administrator :: HL7	
Informations about clinic and physician	General	
User interface	Identification:	
Image preview		
Baseboard	Segment separator:      HL7 Standard <0x0D>	
Loupe	Set of characters: System	-
Image informations	Timeout for sending: 10 seconds	
Overlay / scout lines		
Histogram Job management	Log output: Log message protocol	
Image acquisition	Configuration file: C:\digipaX	reload
Other		
oue	_ Cincoming messages	
Administrator	Port: 2575	
License	Response: X Send receipt	
Veterinary surgeon	Dalog box: Show dialog box for creating a job	
DICOM / network		
Job management	Send response	
GDT		
HL7	Response: Send HL7 response	
Caches / IPS	Host: 127.0.0.1	
Image acquisition Device links	Port: 21110	Test the connection
X-ray journal		
Patient CD	Mode: 🖹 self-created studies	
Image transfer	received studies Waiting time: 10 minutes 🐳	
Other		
Log		
General		
Cache		
DICOM		
Image processing		
File import		
Worklist		
GDT A		
Administrator login	Import Export Info	Save

General

**Identification**: determines a unique identification name for a station. In this case only HL7 messages are processed, that are exactly defined for the system. If the field is blank, all incoming messages will be processed.

**Segment separator**: determines, what character the segments within an HL7 message are separated with. The setting must be the same for all systems.

**Character set**: determines the set of characters that is used in the messages. As a standard the typical character set for Windows is used.

Timeout for sending: timeout for sending a message, if the recipient is not available.

Log output: all HL7 messages with the contents are protocolled in the log.

**Configuration file:** path to HL7 configuration file (HL7.ini), name and path can be freely chosen.

**reload:** with this button the loading of the configuration file is refreshed (e.g. after changes).

Incoming messages

**Port:** port, on that digipaX receives the HL7 messages.

**Response:** if enabled, each incoming message is confirmed to the sender with receipt acknowledgement.

**Dialogue:** if enabled, a dialog box for creation a job is opened for incoming HL7 job. If disabled, a worklist job is created in the background.

Send response

**Response:** if enabled, the messages can be sent to other systems, that e.g. a new image exists.

Host: the host name or IP address of another HL7 recipient.

**Port:** the port, on that the system receives the HL7 messages.



Test the connection: tests the connection with the defined recipient. Self-created study: for each study acquired a message to the recipient is sent. Received study: for images received via automatic image receipt a message for each study is sent.

**Waiting time**: waiting time after receipt of the last image; if no further image for the study comes in during this waiting time, a message for corresponding study is sent. **when the last job is executed**: when the last job for the patient is executed and the image has been saved, a response is sent.

### 9.2.5 Configuration file HL7.ini

Various informations such as patient's name, patient CD, date of birth etc. are transmitted in each HL7 message in a defined field. The fields which those data are transmitted in can vary for different radiology / hospital information systems. In the HL7.ini the assignment of the fields is configured, so that the data are assigned properly. To be able to make the correct settings, you should also know which fields the data are transmitted in by the system to be connected.

Example for an HL7 message (ORM)

 MSH|^~\&|SendingApp|Sender|ReceivingApp|Receiver|201201011200||ORM^001|123456|P|2.3.1||||de|||

 PID|||1234567890||Mustermann^Max||200001010000|M||Musterplatz 1^^Musterhausen^99999^DE||0123 456789

 PV1||||||^Physician^Performing^^^|Physician^Requesting^^^||^1^2^^34^Station 5

 AL1||Allergien

 ORC|NW|0123^^|||^^20120315112500^T|||||||||^Institution^||

 OBR(||RIS-ID-01^C-Spine / AP||||||||Commends|||^Physician^Reffering^^|||||||||||||||||||||||||||||

 ZDS|1.2.276.0.7.3|WL|X-RAY|75|||Medical notes|Contrast agent|Premedication|Patient history|CR|

This message creates for Max Mustermann, sex "male" with the patient ID "1234567890" a job "Cervical spine/AP" of the institution with a name "Institution".

Each row is designated as a segment. First 3 characters make the segment name. The segments are subdivided into fields separated with a pipe "|". In the fields the components are contained that again are separated (e.g. with a symbol "^").

In this example, the patient ID (1234567890) is in the segment **PID** field 3, patient's name Max Mustermann in the segment **PID** field 5, sex in the segment **PID** field 8 and name of the institution in the segment **ORC**, field 17, Component 2.

The HL7.ini is divided into 3 sections:

In the section "Incoming messages" [ORM] the fields for incoming messages and in the section "Outgoing messages" [ORU] the fields for outgoing messages are assigned. In the section "Value replace tables" the abbreviations used in DICOM and their values useable in HL7 standard are assigned. Thus the "US" modality from the DICOM corresponding with "RUS" in HL7 or pregnancy status is presented as "3=pregnant" in the DICOM and "B6=pregnant" in the HL7. As not all values are assignable, user-defined ones can be used as well.

The following fields are assignable with the job creating:



```
PatientName = Patient name
Birthdate = Birth date
PatientID = Patient ID
Sex = Gender
Address = Address
Telephone = Phone number
DateStart = Fixed date
TimeStart = Fixed time
Modality = Modality
StationAET = Station (AE Title)
RequestedProcedurePriority = Priority
PatientsWeight = Weight oft the patient
Pregnancy = Pregnancy
LastMenstruation = Last menstruation
RequestedProcedureDescription = Job
ContrastAllergies
                             = Allergies
RequestedContrastAgent = Contrast agent
MedicalAlerts = Medical notes
PreMedication = Premedication
ReferringPhysician = Referring physician
RequestingPhysician = Requesting physician
PerformingPhysician = Performing physician
InstitutionName = Institution
PatientLocation = Patient's place of residence
PatientHistory = Patient history/indication
Comments = Remarks
AccessionNumber = Accession number
StudyInstanceUID = Study ID
ProcedureCode1 = Procedure Code 1
ProcedureCode2 = Procedure Code 2
ProcedureCode3 = Procedure Code 3
ActionType = Action type
RISID
                  = RIS ID
RISDescription = RIS description
PlacerOrderNumber = Placer Order Number according HL7 standard
FillerOrderNumber = Filler Order Number according HL7 standard
```

The table below shows possible values and abbreviations of the section "Value replace tables". On the left the definitions for HL7 and on the right for DICOM are placed. For the values with no assignment individual definition should be made.





R=ROUTINE

;low T=MEDIUM
;Table for pregnancy status [Pregnancy]
;not pregnant ;=1
;eventually pregnant ;=2
;pregnant ;B6=3
; unknown ;=4
;Table for modality [Modality]
;Radiology RAD=CR
;Ultrasound RUS=US

Some rows of the HL7.ini, adequate for the message above look then as follows: PatientID=PID|3(CX) PatientName=PID|5(XPN) Sex=PID|8(IS|Sex) InstitutionName=ORC|17|2(ST)

The syntax up to that point is:

Identifier=Segment|Field{|Component}(DataType{|ValueReplaceTable})

The identifier, field and component are separated with a pipe. Afterwards the data type is attached in brackets. The data type is compatible with the way of interpreting of the data record. The used data type must correspond with that of the radiology / hospital information system.

The Component and ValueReplaceTable are thereby optional and do not have to be specified. For the sex, the HL7 value must be converted into the DICOM value. For this, the table provided in the section "Value replace tables" [Sex] must be evaluated. Therefore, the name of the table pipe delimited is attached to the data type. Thus the value incoming from the HL7 (M for male) is translated by the DICOM for the worklist job (in this case also M).

Next segment of the HL7.ini is for outgoing messages. This segment is defined under [ORU]. For outgoing messages there are three forms of the values. The syntax is basically reversed here. The specified value, such as Patient-ID or Study-ID, is transmitted to radiologi-cal/hospital information system on the "X" segment in the "Y" field. In addition, each segment receives a segment number. This is important when one segment type is used repeatedly (e.g. OBX1 for Patient-ID or OBX2 for Study-ID).

There are three options of values for outgoing messages. The first one is transfer of variable values such as patient ID or patient's name. Another form are fixed values which are sent



with each message always on the same position. Most of radiology / hospital information systems need such the fixed values for further internal processes.

As the third the contents of the DiCOM tags of received or self-acquired images or the assigned worklist job can be transferred. It is important to use the pipe symbol also upon specifying the tag.

In all three variants, the left part of rows begins always with the segment and segment number, followed by field and component, all separated with the pipe symbol. As for incoming messages, the value "Component" is optional and depends on the used radiology / hospital information systems as well as the segment and field.

The syntax for all three variants is:

Segment|SegmentNumber|Field{|Component}(DataType)=Identifier Segment|SegmentNumber|Field{|Component}(DataType)=FixValue(Wert) Segment|SegmentNumber|Field{|Component}(DataType)=DcmTag(xxxx|xxxx)

Variant 1 for variable values: Example for patient-ID: PID|1|3(CX)=PatientID

Variant 2 for fixed values: In the following example, the value "F" is transferred on two fields.

Example for fixed values: OBR|1|25(ID)=FixValue(F) OBR|2|11(ID)=FixValue(F)

Variant 3 for DICOM tag: Example for performing physician: OBR|1|34(CM)= DcmTag(0008|1050)



; Technician

OBR | 1 | 34 (CM) = DcmTag (0008 | 1070)

#### Example of the section [ORU] for outgoing messages:

[ORU] PID|1|3(CX)=PatientID PID|1|5(XPN)=PatientName PID|1|7(TS)=Birthdate PID|1|8(ID)=Sex ; Receiving Application MSH|1|4(HD)=FixValue(RIS-SYSTEM) ; Process Type MSH|1|11(PT)=FixValue(P) ; Order Type (RE - observations to follow) ORC|1|1(ID)=FixValue(RE) (II) Fix(II) Fix(III) (Always F - verified results)
(OBR|1|25(ID)=FixValue(F)
; Observ Result Status (always F - verified results)
OBX|1|11(ID)=FixValue(F) ; Number of Segment OBX OBX|1|1(SI)=FixValue(1) ; Value Type OBX|1|2(ID)=FixValue(TX) ; Date and Time of performing OBR | 1 | 7 (TS) = DcmTag (0008 | 0020) ; Date and Time of the Observation OBX|1|14(TS)=DcmTag(0008|0020) ; Unique Order ID (Accession Number) ORC | 1 | 2 (EI) = DcmTag (0008 | 0050) ; Orders Local Number OBR | 1 | 2 (EI) = DcmTag (0008 | 0050) ; Exam's Name OBR | 1 | 4 (CE) = DcmTag (0008 | 1030) ; Exam's Name OBX | 1 | 3 (CE) = DcmTag (0008 | 1030)



# 10 Caches / IPS

# 10.1 General

Three areas in which files can be archived in must be defined. These areas are called caches, and in them DICOM files are stored for their temporary use by digipaX software, the related thumbnail and Presentation States, in which the user-defined information about the presentation of different images are archived.

Caches are created on the configuration page "Caches" and there they may also be cleared. There is an option to automatically clean the caches when exiting the program. For each cache a size in MB is set. If the file size exceeds the size set for files stored in the given cache, then the old data is removed from the cache. This process can be deactivated, so you can archive any number of files without checking the available memory space, or automatically delete old files.

Processes of caches can be tracked in the cache-log.

# 10.2 DICOM images

DICOM images must be saved in a local cache so that you can use them. The cache for DI-COM images should have the appropriate size. Cache size should be more than 0,1 GB – this is the minimum capacity of the cache.

## 10.3 Thumbnails

Image thumbnail cache must be set up in a central place on the network. Checking for free space in the cache should be deactivated.

If it is necessary to limit the space, you should check the free space in the cache on your computer, which it is physically part of.

## **10.4 Presentation States**

Information on the presentation of greyscale images are stored in Presentation State files, which also can be managed in the cache. These files are saved automatically.

The cache path should be created in such a way, so that all stations in the network have access to the same directory. Then the images will be displayed in the same way at all stations. Deactivate the control of the cache.

## 10.5 Intelligent Prefetch System (IPS)

IPS allows you to load images of the chosen patient, depending on the working memory option selected in the background, making them quickly accessible. It is useful, for instance, in the case of CT or MR series. Loading status is shown in the tree view format next to each node as a percentage and as the general status under the image preview bar in the form of a progress bar. With the option "Automatically download remaining images of the series", after clicking on the image other images in this series are downloaded automatically (without waiting time when scrolling through the CT or MR series). With the option "Automatically download images of the newest study", after activating the patient, images are immediately



and automatically downloaded from the new study. Both of these options can be combined with each other. With the option "Automatically download all images", all images are automatically downloaded to the working memory when you select a patient.

It is recommended to activate this feature only for the describing station and equip it with sufficient capacity working memory.



# 11 Image acquisition configuration and connecting devices

# 11.1 General

For image acquisition functions, you can integrate various types of devices with the system: scanners, detectors, generators and equipment for measuring dose-area product. These devices provide the appropriate values, or image data.

On the "Connected devices" configuration page you can activate and configure connected devices. First, you must activate the appropriate device type, if needed (for example, "Scanner"), deactivate the non existing types. From the drop-down list of available devices, select the appropriate device and adjust the settings according to the system. In the "Scanning" tools set on the right side of the main window (with image acquisition module activated), you can see at the top the integrated device. The operation and processes of the system with connected devices are described in the User's Guide.



Additional instructions are available for connecting specific devices!

# 11.2 Image acquisition configuration

Settings for image acquisition may be mostly defined by the user (automatic transformations of images, the number of backups, etc.) As administrator the following optional settings are assigned:

*Station:* if the station name and modality have been provided, these will be used automatically for new jobs, created directly in the planning tab, and the job display in the planning tab will be filtered according to the options provided here

*Study description:* upon launching, the beam path will be applied directly in the study description

Action after saving: after saving of all images, the part of the program specified here will be opened automatically

*Image parameters for image acquisition:* specifying whether the kV, mAs and dose area product parameters are optional or mandatory data.

You can select the unit for the dose-area product ( $dGy^*cm^2$ ,  $\mu Gy^*m^2$  or  $mGy^*cm^2$ ), depending on which unit is indicated by the device. The system performs automatic conversion of units. If necessary, instead of entering mAs, you can enter the mA and ms separately, the system automatically calculates the mAs product. In this case, the value of mA and ms are also transferred to the relevant DICOM tags (0018.1151 and 0018.1150). If entering of the mAs value is marked as optional (and therefore not a mandatory field), the same applies to the individual values of mA and ms.

With the "Allow mAs as decimal numbers" option, the values may also contain decimal places.



When entering you should use for all values the decimal separator used in the Windows regional and language settings.

The "Text mode" allows you to enter any text into the fields. This is useful when a few images are to be found on one film. This allows you to enter multiple values separated by a separator.



Decimal places for any mAs text are incompatible with the DICOM standard and should be activated only when it is actually necessary.

With the "Enter mAs and ms separately" and "Unit for the dose-area product in  $\mu$ Gy\*m<sup>2</sup>" options, the values for the tags are calculated from the input boxes. In such cases, the option "Free text" is not available.

## 11.3 Simulation

The program can be started with the help of the /ds (Device Simulation) parameter to activate the simulation mode. In the simulation mode, there is an additional simulation device for each device type, which can be used for demo or testing purposes. In addition, in the "Scanning" toolbox, under the information specifying the type field, a "Simulate reception of values" button is added. As a result, when you press this button, the system simulates the receipt of new values, just as if they actually were received by the device. In this way, you can check and demonstrate the system.



# 12 X-ray journal

The X-ray journal is activated and deactivated by the license setting.

# 12.1 Entry settings

The X-ray journal uses flexible fields, which can be set by the administrator. For this purpose, there is a special digipaX configuration page. It shows journal entries in a table. In the

first column, the used entries are marked with a check mark. Double clicking on an entry in the table allows for modification of the field to the X-ray journal. A term creates a name in the header of the journal table and it is also used in the mask for the new entries. Some entries can be deactivated. Some fields, such as date and name of the patient, are mandatory fields and can not be deactivated.

Designation:	Optional 1			
use:	🔘 yes		● no	
DICOM tag image:	(0028,0010) - Rows			
DICOM tag order:	(????,????) - L	Inknown Ta	g & Data	3
optional entry:	• yes		$\bigcirc$ no	
	ОК	Can	cel	

## 12.2 New entry

It is possible to paste the values from the DICOM image that was previously received in the background, or from a DICOM worklist job.

To paste the entries from the image, the routing must be correctly set. If you make a new entry in the X-ray journal, you can choose from a list of previously received images and image for which you wish to make a new entry for. In the dialogue for creating a new entry fields are already filled, according to the parameters for the selected image, but only if the image contains the appropriate parameters. Therefore, in the above dialogue, a connection to DICOM tag (image) is made, which contains the required parameters.

The X-ray journal entry may also be done on the order management system. At this time tags from the DICOM worklist job serve as a template for the entry. The connection is defined here, in the configuration using the DICOM tag for the job.

In case it lacks an existing tag which might be pasted to the X-ray journal, you should enter FFFFxFFFF.

There are fields that must be filled by the user and cannot remain empty. For these fields, set the "Entry optional" to "No". The user cannot add a new entry if not all fields are filled. In the standard configuration, there are 3 not yet used entries which are optional for the X-ray journal. They can be freely configured to add additional fields to the journal.

## 12.3 Storage location

The X-ray journal file location in memory can be set freely in the configuration. The place can be chosen so that, for example, the journal is always saved in the backup system or an increased protection by the RAID system is given.



# 12.4 Backup

Each time you start the program after a successful reading of the X-ray journal, a backup copy is created (file: xray.journal.bak). In the event of damage to the original file while saving the journal, you can use it as a backup.

# 12.5 Automatic generating of the journal

Using the Xadmin program, you can create the X-ray journal based on the DICOM files, further information on this topic can be found in the appropriate manual.



# 13 Visually choosing organs

On the "Order Management" configuration page, you can specify settings for the selection of organs in the image while creating worklist jobs. Depending on the specialization, the connected devices and modalities you can install different types of organ tables (Bodies). With the help of the BodyGenX tool (see chapter 14), you can create Bodies for various connected devices.



The standard license includes the use of only one modality due to organ tables. To use other modalities such as fluoroscopy apparatus, additional license is needed. The exception is the veterinary version, because in this case you need one table for all the animal species.

Types that are used are activated with the help of optional fields in front of their names. If several types are activated, they are displayed on various tabs for creating a job.

For a selected type, you can define on the configuration page on the right side of the tree view the details and beam projections. For further detailed instructions for this, refer to the User's Guide, as the user is also able to modify this list to your needs.

For each beam projection you can define up to 3 Procedure Codes. These codes must be separated by semicolon (";"). The Procedure Codes are transmitted on the specific DICOM tags. These tags can be chosen from the drop-down lists of "Procedure Code tags". When defining the Codes as well as selecting the tags defaults of target device must be overtaken or the device must be aligned to them.

The configuration files for different types are located in a subfolder "Body" in the digipaX installation directory. For each type there exists a folder, such as "human" for type "Man". It contains the file "Body2.ini" containing definitions of regions. In [GeneralSettings] you can preset for each type of modality and the station name for the jobs and a small icon. This icon will be displayed on the user interface on the tabs when there are multiple types activated. You can also specify an overlay image to be displayed. This overlay can also be an icon or a description, such as "X-RAY" or "ULTRASOUND".

Example: LocalName=Radiology Image=Body.png Modality=DX Station=STATION1 Symbol=Symbol.png Overlay=Overlay.png





The file "Body2.ini" must be saved when editing in the file format "UTF-8" without BOM (Byte Order Mark). This is not possible with the Windows editors (Notepad & WordPad). It is recommended to use PSPad editor provided on the installation CD. A possibly still existing file "Body.ini" originates from the previous digipaX versions (1.3.4 or older) and is not used anymore. That file will be automatically converted onto "Body2.ini" (UTF-8 without BOM).

The symbol is an image of 64x64 px in PNG, BMP or JPG format. The file "BodyParts.xml" containes definitions of details and beam projections include Procedure Codes. This file can be replaced manually to e.g. upload a completed definition of all Procedure Codes for the specific device type.

It is also possible to set the background image for visual selection of body parts. It will be shown as the background when creating jobs and in the planning tab of the image acquisition module. For this purpose, it is sufficient to copy the image in the PNG format with the filename "background.png" to the "Body" register in the digipaX installation folder. Any resolution can be set; however, it should be adapted to the parameters of the monitor used.



# 14 Body Generator (BodyGenX)

# 14.1 General

The Body Generator (BodyGenX) tool allows you to create and install predefined types for job creation in human and veterinary version, including visual organs and Procedure Codes. Thereby, various specialities (ENT, urology etc.) or various animal species for the veterinary version can be selected in several languages. Moreover, the Procedure Codes for various devices are available and can be transferred into the BodyParts.xml whilst generating as well. Possibly, the Procedure Codes not for all organs and beam projections may be available. Those can be added manually later as described under point 13 Visually choosing organs.



Generated organ tables with the Procedure Codes serve only as templates. Therefore, correctness of the Procedure Codes must be verified before they are put into service.

The program is started by loading BodyGenX.exe in the digipaX installation directory. The language of the program corresponds with the language of the digipaX installation.



# 14.2 Selection and preview

## 14.2.1 Selection of area, subarea and language

After the tool has been loaded, the selection begins on the top left with "Area". The following areas are available: human medicine, veterinary medicine and "Other". Depending on the selection, which was made here, next possible selections are available in the field "Subarea". That means various specialities in the case of human medicine and various animal species in the case of a veterinary version can be selected. In the third field the target language for output data can be selected.

inge:		Sub-range:	Orthopedic		▼ Target language:	German	
ocedure Code 1:	DROC / ProVario	Procedure Code 2:	iCRco Huma	an	Procedure Code 3:	Teleoptic Alph	a
ody part / detail / ray beam	Target language	Procedure Codes	PCodes left	PCodes right	<u> </u>		
- Head	Kopf						
E- Skull	Schädel						
a.p.	AP	P5-000122;Skull, AP;0					
lateral	lateral	P5-000182;Skull, LAT;7	'1				
lateral left	lateral links	and the second second					Head
lateral right	lateral rechts						(Kopf)
p.a.	PA	P5-000101;Skull, PA;0					ALC: NR. CO.
axial	axial	P5-000119;Skull, AP;13					
obl	schräg	:Skull, OBL				/舟1 / 檀	
obl 45° left	schräg 45° links	:Skull, OBL					
obl 45° right	schräg 45° rechts	:Skull, OBL					
Occipital bone	Kopfgelenk						31
a.p.	AP	;Kopfgelenk Dens, AP					1771 (B
p.a.	PA	;Kopfgelenk Dens, PA					
obl	schräg	:Odontoid, OBL				· · · · · · · · · · · · · · · · · · ·	199
Cervical vertebrae	HWS						
2L a.p./lateral	2E AP/lateral	P5-000820					
3L a.p./lateral/obl	3E AP/lateral/schräg	P5-000201				163	Cert
4L a.p./lateral/obl left/obl rig	At 4E AP/lateral/schräg links/schräg r	echts P5-000201				100	N72
a.p.	AP	P6-S00100;C-Spine, AF	2:4				
lateral	lateral	P6-S00101;C-Spine, LA	1:75				
lateral left	lateral links	contraction of the second second				W/A	
- lateral right	lateral rechts					AUX /	
p.a.	PA	:HWS, PA:4				MA .	2.U
oblieft	schräg links	P6-S00102					124
oblight	schräg rechts	P6-S00103				2000	C1/10
Open mouth	mit geöffneten Unterkiefer						
Dens	Dens	;C-Spine, ODN					
C-Spine Special a.p. (Dens)	HWS Spezial AP (Dens)	P6-S00113					
Indination	Inklination	0 000115				Add overlay	😥 Remove overlay
Reclination	Rekination						
Indination/reclination	Inkination/Reklination	P6-S00112				Name and the	
foramina left	foramina links	0 000 112				Name: Orthopädie	
foramina right	foramina rechts						
foramina both sides	foramina beidseitig					Modality:	•
foramina left p.a.	foramina links PA						
foramina right p.a.	foramina rechts PA					Station:	
foramina both sides p.a.	foramina beidseitig PA						
<ul> <li>Neck</li> </ul>	Hals					Symbol:	
a n	AD				<b></b>		

# 14.2.2 Selecting device (Procedure Codes)

The Procedures Codes for up to three devices can be passed into the organ table. Usually please select the requested device beginning from the left. The item selected in BodeGenX must then also be set in digipaX in the configuration of the job management as well as in the device connection.



## 14.3 Main window and preview

After the device has been selected, the corresponding Procedure Code appears in overview window behind the beam projection. If more devices are selected, the Codes are separated with semicolons. Rows marked in red indicate that there is no Procedure Code or the Procedure Code not for all selected devices for this beam projection is available. It is an important issue later for the generating. In the left column the body parts, organs / details and beam projections in the language of the program are shown, in the right column those are displayed already translated into the target language. In the right preview window an image for visual organ selection is displayed. By moving with the mouse over the body, its areas are displayed in the language of the program and in the target language as well.

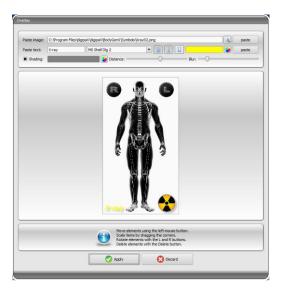
### 14.4 Body2.ini settings

#### 14.4.1 Inserting overlay

For optical shaping of visual organ selection overlays can be inserted, which will be then codisplayed. You may insert any symbols and text.

Click on overlay to add it. Select a symbol and click on "Insert".

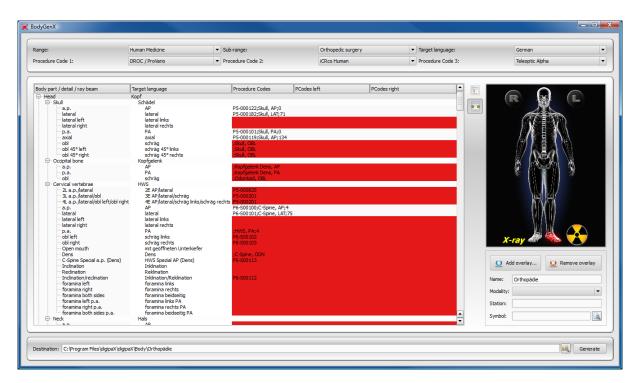
Using the mouse, the symbol is moved to a desired location. In the same way you can insert a text. Using the mouse wheel, text and symbols can be made larger or smaller, rotated with the keys L and R on the keyboard, and deleted by pressing on "Delete" ("Del" key). By pressing on "Apply" the overlay is inserted.





## 14.4.2 Name and other settings

In the field "Name" the name of the type is entered into Body2.ini under LocalName, which will then be displayed in the job management. Moreover, you can predefine settings for a station name and modality. Here you can also select a symbol, which will then be displayed in the tab of the user interface in the digipaX job management.



# 14.5 Output destination and generating

The output destination is by default the Body directory in the digipaX installation directory. However, a different output destination can be entered, e.g. in order to prepare the organ table for another system. After the output destination has been selected, click on "Generate". In most cases a dialogue in the form of questions follows, asking whether items with missing Procedure Codes are also to be applied. Please note that with "No" only the elements will be applied for those a Procedure Code at all selected devices is available. All items marked in red will not be applied. In the destination path the selected folder will then be created and all configuration and image files will be saved in it. This directory can be copied into any digipaX installation.



# 15 DICOM print



DICOM Print is available only when the appropriate module is active.

# 15.1 General configuration

DICOM printers are connected in the same way as the image archives and worklist servers. On the "Administrator :: DICOM / Network" configuration page, you can add a printer to the system. To do this, click on "New ..." in the "Printers" group. Next on the new DICOM printer settings dialogue, (see illustration at right). As usual, you need to provide a name, AE Title, IP and port. The connection should disconnect immediately, so after 0 seconds. The printer type refers to the desired device to be connected. The Printers.cfg file in the installation directory indicates which types of printers are available (see 15.2 Available DICOM printers). With the additional parameters you can customize the printout (see 15.3 Additional print parameters). Also here you can specify the colour, which can

New DICOM connection	
Designation:	DICOM Printer
AE title:	FUJI_PR
Host/IP:	192.168.1.20
Port:	5685
Disconnect:	O never disconnect
	after inactivity of     0 seconds
Type of printer:	FUJI
additional printer parameters:	
Colour:	
Use:	• [yes] O no
0	K Cancel

later be helpful in the case of a choice of many printers. Also, the DICOM systems can be activated and deactivated.

## 15.2 Available DICOM printers

In the installation directory there is a configuration file called printers.cfg. In this directory, the entire series of DICOM printers are pre-configured. Because different models are appropriate for different settings and different types of film, you must enter them in the configuration file. The printers.cfg file can be freely edited and add without any additional printers. As a template, existing configured printers can be used. All keys are explained in the upper part of the file. With the help of these explanations and printer manufacturers information (technical data, DICOM Conformance Statement) other devices can also be connected.

## 15.3 Additional print parameters

You can use a number of additional parameters for print. It should be noted that not all printers will have all the DICOM print capabilities.

Details on the significance of the parameters can also be adopted from the DICOM standard, part 3 (BASIC FILM SESSION PRESENTATION MODULE ATTRIBUTES, BASIC FILM BOX PRESEN-TATION MODULE ATTRIBUTES, IMAGE BOX PIXEL PRESENTATION MODULE ATTRIBUTES).



## 15.3.1 Trim (border) options

```
--trim
  set trim on
--no-trim
  set trim off
--default-trim
  use printer default (default)
```

### 15.3.2 Print presentation LUT options

```
--default-plut
do not create presentation LUT (default)
--identity
set IDENTITY presentation LUT shape
--plut [l]ut identifier: string
add LUT 1 to print job
--inverse-plut
render the inverse presentation LUT into the
bitmap of the hardcopy grayscale image
--illumination [v]alue: integer (0..65535)
set illumination to v (in cd/m^2)
--reflection [v]alue: integer (0..65535)
set reflected ambient light to v (in cd/m^2)
```

### 15.3.3 Basic film session options

```
-copies [v]alue: integer (1..100, default: 1)
set number of copies to v
-medium-type [v]alue: string
set medium type to v
-destination [v]alue: string
set film destination to v
-label [v]alue: string
set film session label to v
-priority [v]alue: string
set print priority to v
-owner [v]alue: string
set film session owner ID to v
```

#### 15.3.4 Annotation options

```
--no-annotation
    do not create annotation (default)
-a --annotation [t]ext: string
    create annotation with text [t]
```

+pd	print-date prepend date/time to annotation (default)
-pd	print-no-date do not prepend date/time to annotation
+pn	print-name prepend printer name to annotation (default)
-pn	print-no-name do not prepend printer name to annotation
+pl	print-lighting prepend illumination to annotation (default)
-pl	print-no-lighting do not prepend illumination to annotation

#### 15.3.5 Overlay options

```
+0 --overlay [f]ilename : string, [x] [y] : integer
load overlay data from PBM file f and display at position (x,y)
+0g --ovl-graylevel [v]alue: integer (0..4095)
use overlay gray level v (default: 4095 = white)
```

### 15.3.6 Other print options

```
-1
    --layout [c]olumns [r]ows: integer (default: 1 1)
      use 'STANDARD\c,r' image display format
    --filmsize [v]alue: string
     set film size ID to v
    --magnification [v]alue: string
      set magnification type to v
    --smoothing [v]alue: string
      set smoothing type to v
    --configinfo [v]alue: string
      set configuration information to v
    --resolution [v]alue: string
      set requested resolution ID to v
    --border [v]alue: string
      set border density to v
    --empty-image [v]alue: string
      set empty image density to v
    --max-density [v]alue: string
      set max density to v
    --min-density [v]alue: string
      set min density to v
    --img-polarity [v]alue: string
      set image box polarity to v (NORMAL or REVERSE)
```



--img-request-size [v]alue: string set requested image size to v (width in mm)
--img-magnification [v]alue: string set image box magnification type to v
--img-smoothing [v]alue: string set image box smoothing type to v
--img-configinfo [v]alue: string set image box configuration information to v



# 16 Veterinary version

digipaX system can be used for veterinary purposes. To do this, change the appropriate settings in the "Veterinary medicine" configuration page. Fields which are inactive here are also not available in the creating of a new patient dialogue.

er		Administrato	r :: Veterinary surgeon			
formations about clinic and physician	Veterinary version					
er interface	X Activate veterinary version					
age preview	You can modify this entry with a double	click on the verse in the table. Entries can be deactivated and will be the	n not used in the system.			
seboard	Designation	DICOM tag	Tag element	Position	Level	٦.
ipe age informations			Name	1	Patient	- 1
erlay / scout lines	X Owner Name	(0010,0010) - PatientsName				
enay / scool lines	Owner Birthdate	(????,????) - Unknown Tag & Data				
o management	Owner Sex	(????,????) - Unknown Tag & Data				-14
age acquisition	Owner sex	(rrrr,rrrr) - Unknown Tag & Data				-
her	X Animal Name	(0010,0010) - PatientsName	Surname	1	Patient	
	Species	(0010,0010) - PatientsName	2. name	1	Patient	-
Iministrator			Name affix	1	Patient	-
ense	Race of Animal	(0010,0010) - PatientsName				
terinary surgeon	X Color	(0010,0010) - PatientsName	Title	1	Patient	
COM / network			completed	1	Patient	-
b management	Birthdate of Animal	(0010,0030) - PatientsBirthDate		-		
iπ -	X Sex of Animal	(0010,0040) - PatientsSex	completed	1	Patient	
7 ches / IPS			completed	1	Study	-
age acquisition	X Pedigree	(0008,1040) - InstitutionalDepartmentName	· · ·			
vice links	🗶 Tattoo / Chip	(0010, 1030) - PatientsWeight	completed	1	Study	
ay journal	Breeding number	(????,????) - Unknown Tag & Data				-
tient CD	Breeding number	(recepter) - Unknown Tag & Data				_
age transfer						
her						
0						
neral						
the						
M						
ge processing						
import						
klist						
	<b></b>					
Administrator login	Import	Export Info			Say	ve

The DICOM standard does not provide tags for the different characteristics of animals (e.g. name of the animal and the animal species). Therefore, these features must be placed in other, initially unforeseen, tags for this purpose. Various companies, that provide software with DICOM tags, choose variety of tags for this purpose, and even parts of DICOM tags. If images already exist from other manufacturers or configuration must be adjusted so that digipaX can work with these systems, the tags used in digipaX must be modified according to the tags from other suppliers. In the installation program of the digipaX software, you can now choose preset configurations of tags.

If the cooperation with the systems of other suppliers is not needed, the tags can be selected freely. It should be noted that above all, you must choose the tags for the names of animals and animal species that will be available on the server when searching for C-FIND.

By double clicking on a row in the veterinary configuration table, the entry can be changed. Inactive entries are not used by the system (not all entries can be deactivated – some must be used by the system). If the selected tag is the patient's name (tag type PN), then you can choose whether all or only a part of the tag is to be used. If the selected tag has more entries (multiplicity), you can optionally specify the value's position. The level will be used to determine where on the Query-Retrieve-Level the information will be found. This means that if you select a tag level "series" (e.g. Series Description 0x0008,0x103e), then to determine the information a patient must first be searched for in all studies, and then all the image series, so that the server's response is searched for a specified tag (images are not transferred, but



only database entries). This may lead to a significant system slowdown. Therefore, it is recommended to always use patient level tags or, when necessary, the study level. We do not recommend the series or image level.

For tags that are not available on the server in searching C-FIND (on any of the levels), or for private tags you should provide the patient's level as the level, so as not to send unnecessary queries to the server.

Also, when reading DICOMDIR (patient's CD) there, the system tries to find information about the relevant tags. However, in DICOMDIR there is much less information than in the databases, so most of the information is relatively unused compared to being shown directly.

Viewing the information about the images on the overlay should be modified using selected settings ("About images" configuration page). Alternatively, change to the appropriate modality (modalities) settings which have already been entered, and enter new rows to display the requested information about the animals. Use the same tag settings as in the veterinary medicine configurations.

## 16.1 Adaptation to XScan

The XScan software in the veterinary version uses the following tags for the animals' characteristics:

Description	Tag	Tag element	Position	Level
Owner's name	0010,0010	First name	1	Patient
	(PatientsName)			
Name of animal	0010,0010	Surname	1	Patient
	(PatientsName)			
Animal species	0008,0050	entirely	1	Study
	(AccessionNumber)			
Animal's date of birth	0010,0030	entirely	1	Patient
	(PatientsBirthDate)			
Animal's sex	0010,0040	entirely	1	Patient
	(PatientsSex)			

Observe the comments on the Accession Number tag in section 16.4.



# 16.2 Adaptation to Promis / Hipax

Promis and Hipax software systems use the following settings:

Description	Tag	Tag ele- ment	Position	Level
Owner's name	0010,0010	entirely	1	Patient
	(PatientsName)			
Owner's date of birth	0010,0030	entirely	1	Patient
	(PatientsBirthDate)			
Owner's sex	0010,0040	entirely	1	Patient
	(PatientsSex)			
Name of animal	0008,1030	entirely	1	Study
	(StudyDescription)			
Animal species	0008,0090	entirely	1	Study
	(ReferringPhysiciansName)			
Breed	0021,0040	entirely	1	Patient
	(private)			
Colour	0021,0070	entirely	1	Patient
	(private)			
Animal's date of birth	0008,0020	entirely	1	Study
	(StudyDate)			
Animal's sex	0008,1010	entirely	1	Study
	(StationName)			
Pedigree	0020,0010	entirely	1	Study
	(StudyID)			
Tattoo / Chip	0008,0050	entirely	1	Study
	(AccessionNumber)			

Observe the comments on the Accession Number tag in section 16.4.



# 16.3 Self-defined settings

If compatibility with other systems is necessary, you can make your own settings yourself. We recommend the following definitions:

Description	Tag	Tag element	Position	Level
Owner's name	0010,0010	First name	1	Patient
	(PatientsName)			
Name of animal	0010,0010	Surname	1	Patient
	(PatientsName)			
Animal species	0010,0010	2. name	1	Patient
	(PatientsName)			
Breed	0010,0010	Name affix	1	Patient
	(PatientsName)			
Animal's sex	0010,0040	entirely	1	Patient
	(PatientsSex)			

Features such as owner's date of birth, owner's sex, colour, animal's date of birth, pedigree, tattoo / chip and breeding number should be used only if they are actually needed. First of all, in the 0010.0010 (name of patient) tag, "Title" tag element should be used, and then the appropriate tags from the study level, on which you can skip the actual content in practice. The following tables provide a guide regarding the tags on different levels, which are generally suitable for use and are available on the DICOM server in the standard version of the Conquest system (conquest can accept additional tags to the database with appropriate configurations). When using another PACS, Conformance Statement should be searched for available and appropriate tags.

#### Level Patient:

Tag	Description	Туре	Multiplicity
0010,0020	PatientID	Long String	1
0010,0010	PatientsName	Person Name	1
0010,0030	PatientsBirthDate	Date	1
0010,0040	PatientsSex	Code String	1

#### Level study:

Tag	Description	Туре	Multiplicity
0008,0020	StudyDate	Date	1
0008,0030	StudyTime	Time	1
0020,0010	StudyID	Short String	1
0008,1030	StudyDescription	Long String	1
0008,0050	AccessionNumber	Short String	1
0008,0090	ReferringPhysicianName	Person Name	1



0010,1010	PatientsAge	Age String	1
0010,1030	PatientsWeight	Decimal String	1
0008,0061	ModalitiesInStudy	Code String	1 – n
0008,1010	StationName	Short String	1
0008,1040	InstitutionalDepartmentName	Long String	1

Level Series:

Tag	Description	Туре	Multiplicity
0020,0011	SeriesNumber	Integer String	1
0008,0021	SeriesDate	Date	1
0008,0031	SeriesTime	Time	1
0008,103E	SeriesDescription	Long String	1
0008,0060	Modality	Code String	1
0018,5100	PatientPosition	Code String	1
0018,0010	ContrastBolusAgent	Long String	1
0008,0070	Manufacturer	Long String	1
0008,1090	ManufacturersModelName	Long String	1
0018,0015	BodyPartExamined	Code String	1
0018,1030	ProtocolName	Long String	1

Level Image:

Tag	Description	Туре	Multiplicity
0020,0013	InstanceNumber	Integer String	1
0008,0023	ImageDate	Date	1
0008,0033	ImageTime	Time	1
0018,0086	EchoNumbers	Integer String	1 – n
0008,0022	AquisitionDate	Date	1
0008,0032	AquisitionTime	Time	1
0018,1250	ReceiveCoilName	Short String	1
0020,0012	AquisitionNumber	Integer String	1
0054,0400	ImageID	Short String	1

# 16.4 Adjusting tags in association with worklist

When adjusting tags for veterinary application, special care must be taken that no collision with tags used in the job management or Procedure Codes occurs (see chapter 8.6). If one of the tags that are used there must be compulsorily used for one of the characteristics of the animal, then the other tag in the job management must be configured in another way accordingly.



## 16.5 GDT Field assignment / mapping

When connecting using GDT to the veterinary clinic's management systems, the GDT connection fields should be adjusted. For example, on the 3110 field, patient's sex is transferred. In the veterinary version, this field often is the sex of the animal that is transferred. If and which fields do you need to adjust depend on the clinic's management system. These fields can be modified under GDT configuration / Field assignment (mapping) / Veterinary medicine. See section 9.1.11.3 "Field assignment (mapping)".

									Configuration
User 🖾 📥		Administrator :: GDT							
Informations about clinic and physician	Identification	entification							
Image preview	GDT-ID: DIGIPAX1					Abbreviation: DIGI			
Baseboard Loupe									
Image informations	Communication								
Overlay / scout lines	Import directory:		C:\digipaX\dig	igipaX\GDT					
Histogram	Export directory:		C:\digipaX\di	igipaX\GDT					
Job management	Type of file:		fixed GDT	file extension (".gdt")	<ul> <li>incremental file e</li> </ul>	xtension (".001" - ".999")	fixed file names		
Image acquisition Other	Import file:		DIGIxxxx.gdt		e.g.: DIGIxxxx.003		import.gdt		
	Export file:		xxxxDIGI.gdt		e.g.: xxxxDIGI.017		export.gdt		
Administrator	Check interval in seconds:		60		-				
License	Readout delay in miliseconds:		0		-				
Veterinary surgeon	Log:		log conten	nt of files					
DICOM / network	Adapt field allocation (mag	mina)							
Job management GDT	Patient data	ppn gy							
Caches / IPS	Patient number:	3000	N	lame affix:	3100	Name:	3101	Name:	3102
Device links	Date of birth:	3103		itte:	3104	Insurant number:	3105	Place of residence:	3102
X-ray journal	Street:	3107		Sender:	3110	Date of record:	6200		5100
Image transfer		5107		actives.	5110	bute of record.	0200		
Other	Control system								
Log	Job number:	0	3	lob description:	0	Station name:	0	Modality:	0
General	Veterinary surgeon								
Cache	Owner's last name:	3201	0	Owner`s first name:	3202	Owner's name affix:	3200	Owner's title:	3204
DICOM	Owner's date of birth:	3203	0	Owner`s gender:	3210	Animal name:	3101	Animal species:	3100
Image processing File import	Breed:	3102	c	Color of animal:	3104	Animal's date of birth:	3103	Animal's gender:	3110
Worklist	Pedigree:	3106	Ta	fattoo / chip:	3105				
GDT									Set up GDT standard fields
Print									
burning CD / DVD	Create GDT answer								
Administrator login	Import	E	xport	Info					Save
Frank iso and Register	anged to re			2					Juic
		_	_						(Receiption of the second s
									<u> </u>

These settings are effective only with an active veterinary version and partially annulled settings for patient data. The place of residence is taken in accordance with settings from the patient data, if it exists.

#### 16.6 Viewer

Settings for the veterinary version are stored in the vet.ini file. Along with burning the patient's CD (DVD), they are transferred to the viewer. Thus, the viewer uses the same settings. Change of the settings in the digipaX viewer is not possible.

## 16.7 Vetinf connection

Vetinf can operate with transferred files both with fixed GDT, as well as incremental file extensions. You can also freely choose the import and export path, and the GDT fields have the flexibility to be adjusted, with a few exceptions. Vetinf supports "Send a request to the PACS," and "Request data from PACS." Additional request of patient's CD, or image import is not possible. A specific important feature is the Ventif **job number**, which is transmitted via the **GDT 8480** field. The job number can also be transferred to the image. Then it is possible to load the exact image using GDT. Field 8402 (specific for the characteristic map device) is used to transfer modalities, and the field 8410 (TEST-IDENT) is to transfer the AE Title. Therefore, when creating a job, loading digipaX with the "WL" option via GDT 8402 or 8410



fields cannot be applied. digipaX must be loaded by "digipax.exe /w". The following settings have been tested on Vetinf 17.06 version. Incremental file extensions were used. For tags settings, the standard settings were used (see chapter 16 Veterinary version). The "Tag for the access number for the job work list" is a tag which stores the Ventif job number in the image (default = 0008,0050).

## 16.7.1 digipaX settings

#### 16.7.1.1 GDT settings and field assignment (mapping)

Another specific feature is that Ventif always sends the GDT file to the recipient ID "PACS". This recipient ID must be entered into digipaX, so that digipaX can accept the GDT.

									Configuration	
User						Administrator :: GDT				
Informations about clinic and physician		Identification								
Image preview		GDT-ID: PACS				Abbreviation: DIGI				
laseboard										
oupe		Communication								
mage informations Iverlay / scout lines		Import directory:		C:\digipaX\digipaX\GDT						
stogram		Export directory:		C:\digipaX\digipaX\GDT						
ob management		Type of file:		<ul> <li>fixed GDT file extension (".gdt")</li> </ul>	increment	al file extension (".001" - ".999")	Rved file names			
nage acquisition		Import file:		DIGIxxxx.gdt	e.g.: DIGIxxx		import.gdt			
ther		Export file:		xxxxDIGI.gdt	-	2				
dministrator	-				e.g.: xxxxDIG	al.017	export.gdt			
uniinistrator		Check interval in seconds:		60	÷					
tense		Readout delay in miliseconds		0	•					
eterinary surgeon		Log:		log content of files						
ICOM / network ob management		Adapt field allocation (ma	(nninn)							
ion management IDT		Patient data								
L7		Patient number:	3000	Name affix:	3100	Name:	3101	Name:	3102	
aches / IPS		Date of birth:	3103	Title:	3104	Insurant number:	3105	Place of residence:	3106	
evice links				Gender:				Place of residence:	3106	
atient's CD		Street:	3107	Gender:	3110	Date of record:	6200			
-ray journal		Control system								
mage transfer		Job number:	8480	Job description:	8411	Station name:	8410	Modality:	8402	
Other		Veterinary surgeon								
og										
ieneral		Owner's last name:	3201	Owner's first name:	3202	Owner's name affix:	0	Owner's title:	3204	
ache		Owner's date of birth:	0	Owner's gender:	0	Animal name:	3101	Animal species:	3100	
ICOM		Breed:	3102	Color of animal:	3104	Animal's date of birth:	3103	Animal's gender:	3110	
mage processing		Pedigree:	3108	Tattoo / chip:	6340					
ile import									Set up GDT stand	
Vorklist									per up GDT stand	aro neids

#### The returned response from GDT is either **after the job**:

Veterinary surgeon	Create GDT answer		
DICOM / network	GDT answer files can be created f	or automatic acquited images (via this digipax station) as well as for the images which have been r	eceived in the background.
Job management		Timage acquisition and image receipt	other events
GDT		for each image (immediately)	
HL7		each series Waiting time: 3 minutes	X immediately after job X Collect jobs
Caches / IPS	Moment of creating:		
Device links		O examination Waiting time: 10 minutes	after import of image
Patient's CD		O if the last job is ready	
X-ray journal		ask user before creating	
Image transfer			
Other	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>	
Log		<ul> <li>this comment text in answer file:</li> </ul>	There are new images available
		add additional tags:	
General	Characteristics field:	Type of examination carried out:	ALLGOO
Cache	Characteristics field:	Type of examination carried out:	ALLGOO
DICOM	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>	<ul> <li>ISO 8859-1 (ANSI)</li> </ul>
Image processing File import	Require an answer in GDT standa	d: require (despite whether a request has been made to this system or not)	
Worklist		Recipient ID: VETINE	Recipient abbreviation: VETX
GDT A		delete attached physician number	•
Administrator login	Import	Export Info	Save
			3

or after downloading the image:



License			
Veterinary surgeon	Create GDT answer		
DICOM / network	GDT answer files can be created	or automatic acquited images (via this digipax station) as well as for the images which have been re	eceived in the background.
Job management		K Image acquisition and image receipt	other events
GDT		<ul> <li>for each image (immediately)</li> </ul>	
HL7			immediately after job
Caches / IPS	Moment of creating:	each series Waiting time: 3 minutes	
Device links		examination Waiting time: 10 minutes *	after import of image
Patient's CD		<ul> <li>if the last job is ready</li> </ul>	
X-ray journal			
Image transfer		ask user before creating	
Other	Entry in comment field (6227):	<ul> <li>automatically (according to mode)</li> </ul>	
		this comment text in answer file:	There are new images available
Log		add additional tags:	
General		uuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu	
Cache	Characteristics field:	Type of examination carried out:	ALLG00
DICOM	Set of characters:	<ul> <li>IBM CP 437 (DOS)</li> </ul>	<ul> <li>ISO 8859-1 (ANSI)</li> </ul>
Image processing			
File import	Require an answer in GDT standa	rd: require (despite whether a request has been made to this system or not)	
Worklist		Recipient ID: VETINE	Recipient abbreviation: VETX
GDT T		delete attached physician number	A
HI7			
Administrator login	Import	Export Info	Save
			(3)

If the job sending station and receiving station are the same, digipaX must be loaded using the "/w" option. If images are not received at the job sending station, you can set in the configuration so that it is not the ordering station that responds, but the receiving station. In this case, on the receiving station the option "Request GDT response" must be activated and the recipient's abbreviation provided.

#### 16.7.1.2 Job management

					Config	juration
User			Administrator ::	Job management		
Informations about clinic and physician	Job management / worklist					
User interface	X Automatically update job list		Update inte	erval in seconds:		10
Image preview	Delete jobs automatically		Delete jobs	after:		10 hours
Window split	Show the column with number of re	eceived images and mark with the colour the list entr				
Baseboard	Deactivate check of the communication		,			
Loupe		,				
Image informations	Study Instance UID			Source of entry in X-ray journal		
Overlay / scout lines	8 C 11 1 1 1 1 1			Source for the pre-allocation of the field	s for a new entry in X-ray journal:	
Histogram	<ul> <li>for all jobs the same UID</li> </ul>				selected worklist job	
Job management	<ul> <li>for each job its own unique UID</li> </ul>				) received images	
Image acquisition	O enter no UID				no source (all entries are empty)	
Other				(Only if X-ray journal module activated.)		
Administrator	Visual selection					
License	Types:	Configuration:				
Veterinary surgeon	X Cat X Dog		1	e ne ne 🔺 🚽		
DICOM / network	X Swine		4			
Job management		Part of the body / refinement / beam projection	Procedure codes	PCodes left	PCodes right	
GDT		🕀 Head				
HL7		Kul     Skul     Skul     Skul     Skul				<u></u>
Caches / IPS		Frontal sinus				
Image acquisition		Nasal bone     Paranasal sinuses				
Device links		Image:				
X-ray journal		Pyramid     Cheek bone				
Patient CD		X Mandible				
Image transfer		Temporomandibular joint     Teeth				
Other		Colors				<b>•</b>
Log	Tags procedure codes: Requested Pro		Scheduled Procedure :		Scheduled Procedure Step Code Value	
General	integrate procedure codes in image			oup couch caring		
Cache						
DICOM	additional informations					
Image processing	Tag accession number: Accession Num	nber	•			
File import	tag job number: Scheduled Pro	cedure Step ID	<ul> <li>Save job number as</li> </ul>	s Accession Number in the study		
Worklist	tag job description: Scheduled Pro	cedure Step Description	Use job description	as study description		
Administrator login	Import	Export Info				Save

Here "Additional information" must be activated. There are the tags set, for which the worklist jobs will have the Vetinf job number sent and a description of the Ventif job. These settings must be identical at all stations, which use the worklist or GDT. In this way you can use preset tags, if they are still available, and not already used by the transmission of Procedure Codes.



# 16.7.2 Vetinf settings

The GDT settings are under Extras/Diagnostic Equipment/GDT. There you set the import and export paths and program parameters.

Vetabc/Vetabc Plus	VetScar	n/VetscanHM5	VetScan VS2	Spotchem	Reflovet+	KoneLab 20	Abacus j.vet3/
pocH-100iV Diff	F	DC <u>3</u> 500i/4000i	VetTest	8008	VetLab-IDEXX	EKG	GDT
						Auftr	rag an das PAC
Pfad: C:\d	igipaX	\digipaX\G	DT				
Datei:	fest:	DIGIVETX	C Ifd.N	r.	GDT-Kennur	ngssatz:	6302
Extension:	G fest:		(€ Ifd.N	r.	Zuo	rdnung GDT-Datensätze	2
PACS: C:	\digip	aX\digipax	\digipax	.exe			
						Antwort	om PACS an F
Pfad: C·\d	1 1 X	) di min a X) C	DI			7 4167011 1	
Datei:	• fest:	\digipaX\G VETXDIGI		-	GDT-Kennur	neestz.	6310
Extension:	fest:	VEIXDIGI	€ Ifd.N			rdnung GDT-Datensätze	0310
	1001.		10 110.11			-	
						Anforderung	PC an das PAC
		\digipaX\G					<u>a</u>
Datei:	fest:	DIGIVETX			GDT-Kennur	0	6311
Extension:	G fest:		Ifd.N		Zuo	rdnung GDT-Datensätze	<i>a</i>
Viewer: C:	\digip	aX\digipax	\digipax	.exe			- 3
Polling in sec:		5 🔽 GDT	aktiv	GDT bei Kunde	enaufruf		
(pacsgdt.exe)			allasmain	e GDT-Parameter		speid	chern 📝 😒

In the "General GDT parameters" section in case of Vetinf content fields in GDT content (record types) are set. Moreover, you can set initial settings for modalities, AE Titles and study description.

Tierdaten:	Platzhalter:	Auswahl:
Tierart (03)		3100=Tierart 030000
Name (06)		3101=Name des Tieres 060000 3102=Rasse 040000
Rasse (04)		3103=Geburtsdatum 070000 3104=Farbe 220000
Geburtstag (07)		3104=Farbe 220000 3105=EU-Ausweis/Lebensnummer 230000
Geschlecht (05)		3106=Halter Wohnort PZWO00 3107=Halter Strasse ST0000
		3108=Stammbaum 320000
Ohrmarke/Täto (08)		3109=frei 000000 3110=Geschlecht 050000
Farbe (22)		
EU-Pass (23)		Halter Wohnort PZWO0
Chip-Nummer (24)		Ü <u>b</u> ernehmen
Zusatz KT (3x)	Bild-ID (27)	Vorschaubild-Verzeichnis (28)
Besitzerdaten:	Tier-ID (25)	Modalität: (CR,CT,etc.)
Name Halter (NH)		CR 🖌 🎺 😼
Vorname (VN)		AE-Title: (auslösende Software)
Titel (TH)		SCANNER -
Postleitzahl (PZ)		Studienbeschreibung:
Ort (WO)		Untersuchung (CR)
Strasse (ST)		speichern 🖌 🔽 🔤 zurück 🚽

With "Record types assignment" requested GDT fields are selected.



## Creating job:

and the second	
erfügbar:	ausgwählt:
219=Überweiser 220=Untersucher	9206=verwendeter Zeichensatz     9218=Version GDT
220=Untersucher 200=U-Datum	8000=Satzidentifikation
200-0-Datum 201=U-Zeit	8100-Satzidentinkaton
205=frei 000000	8315=GDT ID des Empfängers
221=Fremdbefund	8316=GDT ID des Einfligers
227=Studie	8402=Modalität
228=Testbezeichnung	8410=AE-Title
302=frei 000000	8411=Studie
305=frei 000000	8480=Auftragsnummer
325=Bildkennung	3000=Tier/Haiter ID
330=frei 000000	3100=Tierart 030000
331=frei 000000	(x) 3101=Name des Tieres 060000
332=frei 000000	3102=Rasse 040000
333=frei 000000	3103=Geburtsdatum 070000
334=frei 000000	3104=Farbe 220000
335=frei 000000	3105=EU-Ausweis/Lebensnummer 230000
336=frei 000000	<ul> <li>3106=Halter Wohnort PZWO00</li> </ul>
337=frei 000000	3107=Haiter Strasse ST0000
338=frei 000000 339=frei 000000	3108=Stammbaum 320000 3110=Geschlecht 050000
339=frei 000000 340=Chip/Transp/Ohrmark/Täto 240800	3100-Geschiect 050000 3201=Halter Nachname NH0000
340=Chip/Transp/Onrmark/Tato 240800 341=frei 000000	3201=Haiter Vacname VN0000
342=frei 000000	3202-Halter Viname VN0000
343=frei 000000	6209–U-Datum
344=frei 000000	6201=L-Zeit
345=frei 000000	6340=Chip/Transp/Ohrmark/Täto 240800 -
000=Satzidentifikation	

## Returned response:

	Pflichtsätze: 8000, 8100, 3000, 8480	
verfügbar: 4219=Überweiser 4220=Untersucher	ausgwählt: 9206=verwendeter Zeichensatz 9218=Version GDT	·
6200=U-Datum           6201=U-Datum           6201=U-Zait           6201=U-Zait           6201=U-Zait           6201=U-Zait           6227=Studie           6228=Testbezeichnung           6305=frei 00000           6305=frei 00000           6335=frei 00000           6341=frei 00000           6341=frei 00000           6345=frei 00000	8000=Satzidentifikation 8100=Satzilage 8315=GDT ID des Empfängers 8318=GDT ID des Senders 84402=Modalität 8410=AE-Trife 6410=AE-Trife 6480=Auftragsnummer 3000=Tier/Haiter ID 3100=Tierant 03000 3100=Tierant 03000 3102=Rasse 040000 3102=Rasse 040000 3103=Geburdsatum 070000 3105=EU-Ausweis/Lebensnummer 230000 3105=Haiter Wohnort P2WO00 3105=Haiter Wohnort P2WO00 3105=Ceschick 1050000 3101=Geschick 1050000 3201=Haiter Nachname NH0000 3204=Haiter Titel TH0000	



### Request for data:

00=Tierart 030000 01=Name des Tieres 060000 02=Rasse 040000
03=Geburtsdatum 070000 04=Farbe 220000 05=EU-Ausweis/Lebensnummer 230000 01=Halter Nachname NH0000 02=Halter Voname VN0000 04=Halter Titel TH0000 00=U-Datum 25=Bildkennung

Complete GDT settings are in the file XX in the YY Vetinf directory in the [GDT Interface] section. This section with the applied settings in this example can be downloaded in the downloads area on the <u>www.digipax.eu</u> site.



# 17 Other configurations

## 17.1 Automatic determination of the next patient ID

If this option on the "Admin / Others" configuration page is active, then when creating the patient manually, the patient's ID is given automatically. During this, the archive is searched and the nearest highest number is selected from the highest ID. When this option is disabled, you must manually assign a unique ID.

## 17.2 Delete function

This functionality is described in chapter 25.1 "Launching and configuration of the delete function for the users".

## 17.3 Easy Report

Easy Reports can be automatically stored as text files in other systems. Therefor you have to define a directory.

With this option, the user can easily open an image or a series, enter text into input field for Easy Report and as soon as image/series is closed again, the Report is automatically stored in a text file in the configured directory without the need for saving it separately as a DICOM file in the archive.

The Report is automatically shown again at the next image/series request and can be also modified at this point. Allocation between the image and text file occurs at that through SOPInstanceUID of the image or through SeriesInstanceUID in case of CT and MRT series. The text file receives this ID (e.g. 1.2.840.10008.5.1.4.1.1.1.txt) as filename.

If the text file is deleted from the directory, the Report will be no more shown too.

If an image is opened on several monitors at the same time and Easy Report is available on these monitors, the text can be then entered into input fields of the initially opened image only. The field of another image is then write-protected.

# 17.4 System tray icon

In order to have digipaX active permanently, you can activate this option on the "Administrator / Others" configuration page, which after ending (red X) minimizes digipaX to the system tray as an icon. This is also the default setting.

When the application is minimized to the System Tray, images are still received in the background, the cache is monitored and the "awakening" by GDT is faster than restarting the program. Through the context menu of system tray, you can re-open the main window, or close the application.

If by clicking on the red X to close the application at the same time you press one of the Shift or Ctrl controls keys, then the application will actually closed completely.

The computer can be normally shut down or restarted without closing digipaX. In such a case, digipaX is properly closed during the shutdown process.



## 17.5 Automatic start

Also on the "Administrator / Others" configuration page, you can activate the option to automatically start. With this, digipaX starts automatically with Windows and will be found on the system tray. When the desktop icon is double-clicked or it is loaded by another system (GDT), only the window is activated, which allows a faster "start". You can choose whether the patent's data is to be initiated at this time, and whether during the automatic loading process the digipaX logo is to be shown.

## 17.6 Patient's CD auto-start

In the installation directory there is file "dpview.ini". This file is copied to patients' CDs, if "Integrate browser" option is set. In this file, on the line "StartQuestion = true" resp. "StartQuestion = false", you can set whether the user will be prompted when you insert the CD, or whether you want to launch the browser. If "true", then the user will be prompted, and if "false", the browser will run automatically without asking the user. This setting must be set manually in the file with an editor.

# 17.7 Disabling CD/DVD AutoPlay

In order that the Windows dialog box does not appear permanently when inserting data medium in the disc burning driver, the Windows AutoPlay function can be disabled in the local group policies.

## 17.7.1 Windows XP

Through "Start", then "Execute" with the "qpedit.msc" command the Local Group Policies are opened.

In the subdirectory "\Computer configuration\Administrative templates\System" open "Disable AutoPlay" and set on "Activated/All drives".

le Action View Help			
Local Computer Policy	System		
Windows Settings	Turn off Autoplay	Setting	State
Administrative Templates     Windows Components	Display Properties	User Profiles     Scripts	
🕢 🔄 System 🗩 🦳 Network	Requirements: At least Microsoft Windows 2000	Logon     Disk Quotas	
💭 Printers	Description: Turns off the Autoplay feature.	Net Logon     Group Policy	
Grim Settings     Grim Windows Settings     Grim Windows Settings     Grim Administrative Templates	Autoplay begins reading from a drive as soon as you insert media in the drive. As a result, the setup file of programs and the music on audio media start immediately.	Renote Assistance     System Restore     Gerore Reporting     Windows File Protection     Windows File Protection	
	By default, Autoplay is disabled on removable drives, such as the floppy disk drive (but not the CD-ROM drive), and on network drives.	Windows The Service     Windows The Service     Internet Communication Management     Stributed COM     Kestrictopetmally unsafe HTML Help functions to specified folders	Not configured
	If you enable this setting, you can also disable Autoplay on CD-ROM drives or disable Autoplay on all drives.	Do not display Manage Your Server page at logon Display Shutdown Event Tracker Activate Shutdown Event Tracker System State Data feature	Not configured Not configured Not configured
	This setting disables Autoplay on additional types of drives. You cannot use this setting to enable Autoplay on drives on which it is disabled by default.	P Enable Persistent Time Stamp Specify Windows installation file location Specify Windows Service Pack installation file location Remove Boot / Shutdown / Logon / Logoff status messages	Not configured Not configured Not configured Not configured
	Note: This setting appears in both the Computer Configuration and User Configuration folders. If the settings conflict, the setting in Computer	Verbose vs normal status messages Restrict these programs from being launched from Help Turn off Autoplay	Not configured Not configured Not configured
	Configuration takes precedence over the setting in User Configuration.	Con not automatically encrypt files moved to encrypted folders	Not configured Not configured
	Note: This setting does not prevent Autoplay for music CDs.	Allow Distributed Link Tracking clients to use domain resources Do not turn off system power after a Windows system shutdown Turn off Windows Update device driver search prompt	Not configured Not configured Not configured
		and include a service of the applied of the other other of the other	rior connight cu
	Extended Standard		

Turn off Autoplay Properties
Setting Explain
🗃 Turn off Autoplay
<ul> <li>Not <u>Configured</u></li> <li>⊙ Enabled</li> <li>○ Deabled</li> </ul>
Turn off Autoplay on: All drives
Supported on: At least Microsoft Windows 2000 Previous Setting Next Setting
OK Cancel Apply



## 17.7.2 Windows Vista/7

Through "Start", then "Execute" or through "Start", "All programs / Accessories / Prompt" with the "qpedit.msc" command the Local Group Policies are opened. In the subdirectory "\Computer Configuration \ Administrative Templates \ Windows Components \ AutoPlay Policies" open the entry "Disable AutoPlay" and set on "Activated/All drives.

E Lokaler Gruppenrichtlinien-Editor				
Datei Aktion Ansicht ?				
I Richtlinien für Lokaler Computer	📄 📔 Richtlinien für die automatische	Wiedergabe		
a 👫 Computerkonfiguration				
Softwareeinstellungen	Autoplay deaktivieren	Einstellung	Status	
Windows-Einstellungen		Autoplay deaktivieren	Nicht konfiguriert	Eigenschaften von Autoplay deaktivieren
A dministrative Vorlagen	Eigenschaften anzeigen	E Kein Kontrollkästchen "Vorgang immer durchführen" festlegen	Nicht konfiguriert	
Drucker	1	E AutoAusführen-Standardverhalten	Nicht konfiguriert	Einstellung Erklärung
Netzwerk	Anforderungen: Mindestens Microsoft Windows	. AutoRasiamen standardventaten	Nicht Köningunen	
System	2000			Autoplay deaktivieren
Systemsteuerung				
a 🛄 Windows-Komponenten	Beschreibung:			
ActiveX-Installerdienst	Deaktiviert die automatische			Nicht konfiguriert
Anwendungskompatibilität	Wiedergabe.			Aktiviert
Audiorecorder	Mit diesem Feature werden			
Aufgabenplanung	Datenträger sofort nach dem			© <u>D</u> eaktiviert
Benutzerschnittstelle f ür Anmeldeinformation	Einlegen in ein Laufwerk gelesen.			Autoplay deaktivieren auf: Alle Laufwerke
BitLocker-Laufwerkverschlüsselung	Setupdateien von Programmen			Autopiay deakuvicien aut. Ale Laurwerke
Desktopfenster-Manager	werden sofort gestartet und			
Digitalschlie ßfach	Audiomedien sofort wiedergegeben.	1		
Ereignisanzeige	wiedergegeben.			
Ereignisprotokolldienst	Bei Versionen vor Windows XP SP2			
Ereignisweiterleitung	ist die automatische Wiedergabe			
Internet Explorer	auf Wechsellaufwerken, z. B.			
Internetinformationsdienste	Diskettenlaufwerken (nicht aber CD-ROM-Laufwerken), und auf			
Jugendschutz	Netzlaufwerken deaktiviert.			
NetMeeting				
Netzwerkprojektor	Seit Windows XP SP2 kann die			
Onlineunterstützung	automatische Wiedergabe auch			Unterstützt auf: Mindestens Microsoft Windows 2000
Optionen f ür das Herunterfahren	auf Wechsellaufwerken, einschließlich ZIP-Laufwerken und			
Präsentationseinstellungen	einigen USB-			Vorherige Einstellung Nächste Einstellung
Programm zur Verbesserung der Benutzerfreu	Massenspeichergeräten,			
Richtlinien f ür die automatische Wiedergabe	verwendet werden.			OK Abbrechen Obernehme
RSS-Feeds				
Sicherheitscenter	Wenn Sie diese Einstellung aktivieren, kann die automatische			
Sicherungskopie	Wiedergabe auch auf CD-ROM-			
Smartcard	und Wechsellaufwerken oder			
Spiel-Explorer	generell auf allen Laufwerken			
Suche	deaktiviert werden.			
Tablet PC	a state the second			
Terminaldienste	Diese Einstellung deaktiviert die automatische Wiedergabe auf			
Videoimport	uniteren Laufundhunge Cie	•		
4	Enweitert Standard			

Changes will be effective only after Windows reboot and they apply to all users of that computer. For computers that are members of Windows domain, the domain policies are binding. If other settings were done there, the settings done here are ineffective. In such a case, the group policies of the domain must be adjusted on the domain controller.

## 17.8 Selection of burning software

In the configuration, you can set under the "Administrator/Patient's CD," whether for burning patients' CDs/DVDs you want to use the built-in burning engine or Nero. To use Nero, Nero must be installed. The installation is described under point 4.7 Nero.

## 17.9 Burning robot

digipaX can support a connection to a burning robot. With the help of the robot, patients' CDs can be burned and printed automatically. Settings for the burning robot can be found in the configuration under "Administrator/Patient's CD." digipaX uses only devices shown in the drop-down list on "Burning robot type". A detailed description of the connecting and configuring is provided in the additional document designed for this purpose. The burning software choice described in chapter 17.8 has no impact on the use of the burning robot.

## 17.10 Area of application settings

In the 1.2.4 version, all the settings for each user are stored separately. From version 1.2.5, you can choose in the administrator (Others) settings, if the settings are to apply to all users or only for the current/logged in user. By default, with a new installation the option to all



users is applied. When updating an older version, the option for the current user is still used - but it can be changed manually.

# 17.11 Label print

Templates, background images and graphics for printing labels can be found in the digipaX installation directory "Label print". Each template can be transferred to other stations simply by copying the "Label print" folders.



# 18 Program parameters list

The following table provides a list of possible parameters that can be passed to digipaX, and their meaning. Parameters can be passed in the following forms:  $/p \ p \ r -p$ .

Parameter	Meaning	Description
/w	Worklist	Create a new job, even when the image receiving mod- ule (GDT) is active. Usually it is assumed that a new study is required as opposed to being received directly at the station.
		Do not use together with /i.
/i	Import	Loading the importing component, also when the im- age reception module (GDT) is active. Usually it is as- sumed that a new study is required as opposed to be- ing received directly at the station. Do not use together with a /w.
/pm	Patient Man- agement	Loading patient management when a new study is re- quested by the GDT. In this way, for example, patient's CD can be imported, and even follow up with filing the record card entry. Do not use together with /w or /i.
/pcd	Patient's CD	Executing the patient's CD component after selecting a patient (GDT interface with record type 6311). In this way you can start burning the patient's CD directly in the patient management.
/a <password></password>	Admin	Automatically login as an administrator. Manual log- ging in with providing a password is no longer neces- sary. For "password" please use the set password. <b>Warning: Do not use it with a client!</b>
/ds	Device Simula- tion	Activation of the simulation module for receiving the image. Additional devices are then available only for simulation. Additional buttons in the toolbox for re-ceiving an image to simulate the reception of values.
/systray	System Tray	Running the application in the system tray – thus only as a symbol on the right side of the taskbar.
/noinit	No Init	Without initiating patient data when you start it in the system tray. Only with the /systray option.
/nologo	No Logo	Without showing the start up logo when starting in the system tray. Only with the /systray option.
/mp	Multi-Patient- Module	Activation of the multi-patient module for this session. The image receiving module, alternatively is deacti- vated for this session. This makes it possible to burn a few patients' CDs on the receiving station.
/ami	Allow Multiple	With this option launching of several digipaX instances



	Instances	is possible.
/pid <patien-< td=""><td>Patient-ID</td><td>Patient with appropriate patient-ID is loaded after pro-</td></patien-<>	Patient-ID	Patient with appropriate patient-ID is loaded after pro-
tID>		gram startup (example: /pid 12345)
/study	Study	Study with appropriate StudyInstanceUID is loaded after
<studyuid></studyuid>		program startup (example: /study 1.2.345.0.123)



# **19 Device connections**

Particular devices are activated by activating the group and then by selecting the device. Most devices require accompanying software that must be previously installed and set up. The pre-defined program paths and parameters correspond to the ordinary default settings or, if necessary, they must be adjusted accordingly.

Procedure Codes for different devices may be transferred to the their softwares. The system supports up to 3 devices. For transfer, a separate tag in the worklist job for each Procedure Code is used. The set tag must also be additionally adapted in the job management (see also section 8.4 Procedure Codes).

## 19.1 Scanner connections (CR-Reader)

### 19.1.1 Connecting iCRco

The following CR-Readers of this manufacturer are supported: iCR-1000, iCR-2600, iCR-3600. Installed XScan32 software and existing iscan.exe program are the prerequisites. crProc.icr and crProc.ini files are read from the set image path and imported. If necessary, further files can also be imported from this transfer folder (then, the filenames are: crProc.icr/ini, cr1Proc.icr/ini, cr2Proc.icr/ini etc.). Progressive image after image processing is recommended.

Scan program:	C:\XScan32\iscan.exe
Image path: (import):	C:\XScan32\import
Name of manufacturer:	iCRco
Name of model:	iCRxxxx

The options "Forward patient data and job description" and "Transfer Procedure Codes" are usually activated at the time. You must select a tag for Procedure Codes.

Due to XScan software it is possible that port 104 is already occupied and it cannot be used for image search. In this case, the port must be changed in the digipaX (configuration site "DICOM / Network" -> Port for image search). You can select any port from 1024, i.e. 2300. Care has to be taken that this port is also to be entered properly in Conquest ("Known DI-COM Providers").

### 19.1.2 Orex connection

The following device is supported: PcCR 1417 ACL4 System. Properly installed software for the device is a prerequisite.

Scan program:	C:\WINDOWS\scanner_interface.exe
Image path: (import):	C:\Orex
Name of manufacturer:	Orex
Filename of image file:	Orex.raw
Configuration file (INI):	C:\WINDOWS\Digident.ini



It may be necessary to adjust the path for image import and the name of image file in the Orex configuration.

## 19.1.3 Connecting Kodak PoC 360

The following device is supported: Kodak PoC 360 (in the meantime Carestream POINT-OF-CARE CR 360 System).

Properly installed "Kodak QC" software for the device is a prerequisite.

Scan program: C:\Program Files\Kodak\KodakQC\PoC 360\GenRAD\Bin\KodakQC.exeProgram parameters:C:\Program Files\Kodak\KodakQC\Images\RTImagesName of manufacturer:KodakName of model:PoC 360

In order to avoid overflow of the harddisk storage capacity the RAW data in the  $...KodakQC\Images\RTImages$  and  $.KodakQC\Images\RTImages\Ar$  directories is deleted after acquisition of each image.

Setting mode determines which mode the Reader will be driven in. For a Single Mode, a tag for transfer of Procedure Codes must be determined. Kodak software configuration can be accessed via "Kodak Setup".

## 19.1.4 Connecting Carestream Vita

The following device is supported: Carestream Vita. The product Carestream Classic can be integrated as a Standalone System using DICOM in-

terface, but not through a direct interface.

Properly installed software for the device is a prerequisite.

Scan program: C:\Program Files\Carestream\CarestreamCR\GenRAD\Bin\KodakQC.exeProgram parameters:C:\Program Files\Carestream\CarestreamCR\Images\RTImagesName of manufacturer:CarestreamName of model:Vita LE

As the RAW in case of Kodak, the data in directories respective "..\Carestream\CarestreamCR\Images\RTImages" and "...\Carestream\CarestreamCR\Images\RTImages\Ar" is deleted after each image acquisition in order to prevent data overflow.

These settings are the same as in the case of Kodak system. Procedure Codes of Kodak are also used. Setting mode determines which mode the Reader will be driven in. For a Single Mode, a tag for transfer of Procedure Codes must be determined. Carestream software configuration can be accessed via "Carestream Setup".



## 19.1.5 Connecting DICOM scanner

This (virtual) scanner can be used when no direct connection to the device is possible as i.e. Proscan. In this case, the images are acquired regardless of digipaX and must be then transmitted manually to the import directory in order to be imported from there to the system. For this purpose, a path to the import directory must be set and, if necessary, a filter for the file ending of images.

Image path: (import):C:\ImportImport filter (filename):\*.dcm

## **19.2 Detector connections**

### 19.2.1 Connecting Teleoptic Alpha 4600

The following device is supported: Alpha 4600.

Properly installed software (SDK) to the device is a prerequisite. It must also be set in that manner that the file AlphaDR\_Image.dcm is created in the specified image path.

Scan program: C:\Program Files\Teleoptic\AlphaPlusEUControl.SDK\Client\APGUI.exeImage path: (import): C:\Program Files\Teleoptic\AlphaPlusEUControl.SDK\Server\Win32Name of manufacturer:TeleopticName of model:Teleoptic Alpha 4600

Procedure Codes can also be transferred for Alpha 4600. in order to do that the option must be activated and the tag selected.

#### 19.2.2 Connecting Xcan detector

The following device is supported: XCAN DR-System. Properly installed software to the device is a prerequisite.

Scan program:	C:\Program Files\X-Ray Scanner System\XR_Scan.exe
Program parameters:	C:\Program Files\X-Ray Scanner System\Images\dx.tif
Image path: (import):	C:\Program Files\X-Ray Scanner System\Images
Name of manufacturer:	XCAN AG

Optionally, the values "Body Part Examined" and "View Position" can be read from "dx.ini" and inserted and saved as an image description. This is reasonable, for example, when you work without job management, where this data would be taken over from the jobs as a rule.

First, a directory for image import must be created. In doing so, the path can be chosen freely. If a different path is set, it must also be adjusted in the "Program parameters". The filename "dx.tif" **must not** be changed.

Acquisition parameters can also be transmitted through Xcan detector, if the detector is connected to a suitable measuring device. The values will be adopted automatically when



they are transferred by the detector in the "dx.ini" file. The unit of transferred dose area product is "dGy\*cm<sup>2</sup>".

## 19.3 Generator connections

The generator values can optionally be provided for manual creating the X-ray journal entries. For this purpose, an appropriate option must be activated.

## 19.3.1 Connecting GENESIS 50 RFT / DT

The following devices are supported: GENESIS 50 RFT / GENESIS DT. Connection of the device with the computer via RS232 interface is a prerequisite.

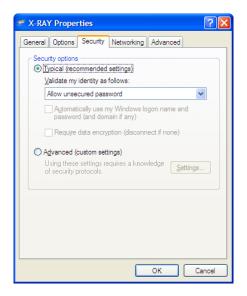
Connection to the generator GENESIS 50 RFT is established by COM-Port (RS232). New connection must be created for setup.

- 19.3.1.1 Creating network connection via RS232 (Windows XP)
  - Assistant for new connections
    - Setup extended connection
    - o Establish connection directly with another computer
    - o Guest
    - Enter name of another computer (e.g. X-RAY)
    - Select the appropriate connection (e.g. COM1)
    - o Complete
  - Connection properties
    - General: check COM1 (must be selected)
      - Configure
        - Baud rate: 38400
    - o Options:

eneral Options Security Network	ing Advanced
Dialing options	20
Prompt for name and password,	-
Include Windows logon domain	
Redialing options	
<u>R</u> edial attempts:	0
Time between redial attempts:	1 second 🗸
Idle time before hanging up:	never 🗸
Redial if line is dropped	



• Safety: typical (recommended setting); Allow unsafe password



- $\circ$  Network
  - PPP
    - TCP/IP properties:
      - o Obtain IP automatically
      - Extended: Deactivate "Use standard gateway for remote network"
- Activate Save the password If needed, activate temporarily the option "Retrieve name, password, certificate etc." and then create the connection

Connect X-RA	Y ?X	
P		
<u>U</u> ser name:	edv1	
<u>P</u> assword:	[To change the saved password, click here]	
<ul> <li>✓ Save this user name and password for the following users:</li> <li>○ Me only</li> <li>⊙ Anyone who uses this computer</li> </ul>		
Connect	Cancel Properties Help	

 Verifying connection, if it can be created and then disconnected by connection context menu without showing the dialog boxes.



#### 19.3.1.2 Creating network connection via RS232 (Windows Vista / Windows 7)

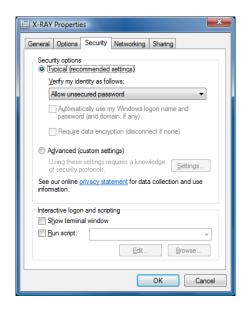
Installation of a "communication cable between two computers" may be necessary for Windows Vista or Windows 7.

- System control panel / hardware
  - Select hardware manually from the list...
  - o Modems
  - Activate selection of the modem (no automatic identification)
  - Communication cable between two computers
  - Select the appropriate connection (e.g. COM1)
  - o Complete
- System control panel / network and sharing centre
  - Setup connection or network
  - Setup dial-up connection
  - Dial-in number=0; User name=edv1; Password=edv1
  - Activate Save this password
  - Give the connection name X-RAY
  - Activate Allow other users, ...
- Connection properties
  - General: check COM1 (must be selected)
    - Configure
      - Baud rate: 38400
      - Call number can be deleted
      - Deactivate Use dial-up rules
  - o Options:

General Options Security Network	king Sharing
Dialing options Display progress while connect Prompt for name and password Include Windows logon domain Prompt for phone number	, certificate, etc.
Redialing options <u>R</u> edial attempts: Time between redial attempts:	0 r
Idle time before hanging up:	never
Redial if line is dropped  PPP Settings	
TTT County	



• Safety: typical (recommended setting): Allow unsafe password



- o Network
  - Deactivate all except of TCP/IPv4
    - TCP/IP properties:
      - Obtain IP automatically
      - Extended: deactivate "Use standard gateway for remote network"
- Activate Save the password

if needed, activate temporarily the option "Retrieve name, password, certificate etc." and then create the connection

Connect X-RAY	
User name:	
Password:	[To change the saved password, click here]
	user name and password for the following users: y s who uses this computer
Dial	Cancel (Properties) Help

 Verifying connection, if it can be created and then disconnected by connection context menu without showing the dialog boxes.



#### 19.3.1.3 digipaX settings

On the configuration page "Device connections" in the digipaX the generator connection is to be activated. Select "GENESIS 50 RFT" as the generator type in the drop-down menu. If the connection to the generator was not automatically established in a different manner, it

must be created by digipaX first. Activate the option "Connect and disconnect automatically" and enter the selected name for connection (X-RAY).

The following settings are recommended by the manufacturer:

Hostname / IP	10.10.10.10
User name	edv1
Password	edv1
Directory	pub

Update interval indicates in how many seconds the new values are to be searched for (standard: 10 seconds).

#### 19.3.1.4 Sending Procedure Codes

Using this connection, it is also possible to send the procedure codes for the generator. For procedure codes, it is necessary to select the tag, which has also been set for the generator codes in the job management. Moreover, the organ chart for job creation must contain the codes for this device.

#### 19.3.1.5 Adjusting X-ray journal settings

The dose area product (DAP) is transferred by the device in mGy\*cm<sup>2</sup>. dGy\*cm<sup>2</sup> m is a default setting in the X-ray journal. Therefore, the designation of that field in the X-ray journal should be adapted to mGy\*cm<sup>2</sup>. No conversions are done (see 12 X-ray journal).

#### 19.3.2 ProVario connection

Filename:	C:\Provario\Database\dose.txt
Update interval:	10 seconds

When using Procedure Codes for ProVario, the tag for them cannot be changed. The tag "Requested Procedure ID" is always used. If Procedure Codes are additionally to be transferred from other devices (scanner), care should be taken to use a different tag for these devices.

### **19.4 Dosimeter connections**

### 19.4.1 Connecting KermaX

The following device is supported: Wellhöfer/Pehamed KermaX (IDP/SDP). Proper connection of the device to a RS232 interface (COM1 to COM10) is a necessary condition.

19.4.1.1Default settingsInterface:COM1



Update interval:	10 seconds
Threshold value:	0,00 µGy*m²
Reset:	activated

#### 19.4.1.2 Connecting the device

The device shall be connected with the PC through one of COM-Ports 1 to 10 according to manufacturer's information (RS232). The settings for serial interface (Baud rate, parity etc.) do not need explicitly to be used. They will be set automatically implicitly by digipaX.

#### 19.4.1.3 Device configuration

First, select the desired COM port in the configuration. The connection can be checked by pressing the "Device Info" button when the device is turned on. If errors occur while retrieving data, the port may be changed.

Update interval indicates in how many seconds the new values are to be searched for (standard: 10 seconds).

While shaking the device may show minor deviations. Therefore, you can specify the threshold value for retrieving values in the configuration. If the shakes that may lead to deviations are in principle excluded, then the preset 0.0 can be retained – any value greater than 0 will then be accepted as a new measurement result. If, however, slight deviations can occur, it is recommended to rise the threshold value slightly. The two tables below show the pointers for their assignment.

X-ray	ray Dose area product (Priority)		Surface dose
	[cGy x cm <sup>2</sup> ]	[mGy]	[mGy]
Skull ap/pa	110	3,7	5,0
Skull lat	100	2,3	3,0
Thorax pa	20	0,21	0,3
Thorax lat	100	1,1	1,5
Thoracic spine ap	220	5,2	7,0
Thoracic spine lat	320	9,0	12
Lumbar spine ap	320	7,4	10
Lumbar spine lat	800	22	30
Pelvis ap	500	7,0	10
Abdomen	550	7,0	10
Mammography	-	-	10
(cc and mlo)			

# Diagnostic reference levels for X-rays of adults

(Source: Bundesamt für Strahlenschutz)

Type of study	Age	Dose area product
		(Priority)



		[cGy x cm <sup>2</sup> ]
Thorax ap/pa	Premature babies (ca. 1000 g)	0,3
	Premature babies (ca. 3000 g)	0,8
	$10 \pm 2$ months	2
	5 $\pm$ 2 years	3
	$10 \pm 2$ years	4
Thorax lateral	$5 \pm 2$ years	7
	$10 \pm 2$ years	8
Abdomen ap/pa	$10 \pm 2$ months	25
	$5 \pm 2$ years	50
	$10 \pm 2$ years	60
Pelvis ap	$5 \pm 2$ years	25
	$10 \pm 2$ years	30
Skull ap	$10 \pm 2$ months	30
	$5 \pm 2$ years	40
Skull lateral	$10 \pm 2$ months	30
	$5 \pm 2$ years	30
Miction cystourology	Premature babies (ca. 3000 g)	60
	$10 \pm 2$ months	90
	$5 \pm 2$ years	120
	$10 \pm 2$ years	240

Diagnostic reference levels for paediatric X-rays (Source: Bundesamt für Strahlenschutz)

For thoracic X-rays of premature babies the threshold value is to be set to a maximum of 0,3  $\mu$ Gy\*m<sup>2</sup> (this is the equivalent of 0.3 cGy\*m<sup>2</sup>). If, however, no thoracic X-rays of children but only those of adult patients will be done, the safer threshold value of 10 or 15  $\mu$ Gy\*m<sup>2</sup> is possible. With this setting, receiving new values "accidentally" should not take place.

Usually, the values are reset immediately after their receipt by the device. If a longer displaying of the values on the device is needed, the option "Reset" can be deactivated. After receipt of a new value the system will then wait as long as the user prompts on his own the reset of the values by pressing the RESET button on the device. On that point, the values will still be retrieved until the 0 value for the dose is delivered. Then subsequently the values greater than 0 are again evaluated. Reset of the displayed values might be done just before the next acquisition, thus a shorter update interval is recommended, so as not to miss the 0.

### 19.4.1.4 Errors

### What to do if a wrong value has been read anyhow?

Provided that the receipt of the value has been noticed immediately, the new job created as the result of that can be rejected on the spot. However, this usually does not happen.

All acquisitions can be performed further on irrespective of a redundant value.

In such case, values must be assigned manually to the appropriate image.

The received values can also be gathered entirely from the list of backups so that they are properly assigned and can be transferred to the appropriate images.



Should receiving of "wrong" values occur more often and the threshold value cannot be raised any higher, it is recommended to disconnect the device from the system and to enter the values manually.

### 19.4.1.5 Adjusting digipaX

The device displays DAP in  $\mu$ Gy\*m<sup>2</sup>. Therefore it is recommended to adjust this unit also in the digipaX. The unit can be activated on the configuration page, Admin / Others (dGy\*m<sup>2</sup> is the default setting because it is the value used in the DICOM standard). The value entered resp. shown on the memory card in the digipaX is automatically converted and stored in the "dGy\*m<sup>2</sup>" unit in the DICOM Header.

## 19.4.2 Dosimeter values for entry in X-ray journal

If entries in X-ray journal are made not directly at the image acquiring station but manually, e.g. In the job management or via image reception, dosimeter values can be made available optionally through an additional table of values in the dialog box for data recording.

It is to be noted that the values are converted to "dGy\*m<sup>2</sup>" upon receipt to be in conformity with DICOM standard. Hence designation of the appropriate field in the X-ray journal is to be be checked and adjusted accordingly if needed.

## 19.5 Connecting acquisition of image series

## 19.5.1 Importing graphics

With use of graphics import the devices can be connected, that acquire the images or image series independently and store them in a directory. Pixel graphics, RAW images or DICOM images can be processed. The directory is monitored by digipaX and imports image data after the adjustable waiting time.

Image path:	the path where the image data are stored
Delay:	waiting time until the import starts after receipt of the last image
Filter image files:	filter for filenames which are to be imported
Sorting:	sorting by filename or timestamp (change) of the file
Filter deletion:	filter for files, which are to be deleted from the directory after import
Error message:	shows error message when a file cannot be deleted,
	because it is still blocked by another application

Format: Format of imported data

0

o DICO	M:	DICOM images	
--------	----	--------------	--

- Standard pixel graphics: JPEG, BMP or TIFF
  - RAW format: only 8-bit greyscale is supported
    - Image width: width in pixel of RAW data
    - Image height: height in pixel of RAW data

## 19.6 Connecting video sources

By means of the frame grabber module video sources such as video converters, ultrasound devices or fluoroscopic X-ray units can be connected. Generally, all devices can be con-



nected that have "WDM Stream Class Driver" (suitable for Windows version used) and support DirectShow. The operating systems Windows XP SP2 or higher, Windows Vista and Windows 7 all from version Professional or Business with 32 bit and 64 bit are supported. Moreover, DirectX9.0c or higher must be installed. A foot switch can be used for control. The foot switch must have two pedals for which the "F5" and "F9" keys can be programmed. An example for device is DFG/USB2pro Video-to-USB converter of Imaging Source and as foot switch the USB Double Foot Switch II of Scythe.

## 19.7 Connecting burning robots

The settings for connecting a burning robot can be found in the configuration under Admin / Patient CD.

## 19.7.1 Connecting Epson Disc Producer PP-100/PP-100N

The burning robot is either connected via USB to the server or added via network interface to a network.

Burning jobs are forwarded from individual digipaX stations through shared folder on the server. The software of Epson burning robot takes over the execution of jobs and provides the tools for their control. This can be effected by means of PP-100N model from each station using the browser.

#### 19.7.1.1 Installation

The following software systems are to be installed on the server (or at any other station, e.g. reception desk):

- Total Disc Maker (full)
- TD Bridge

Both systems are included in the delivery. Install the systems following the guides of the manufacturer.

The software "Total Disc Maker" is a generic interface for using the device. Using the software "TD Bridge" other applications, as the digipaX software in this case, can forward burning and printing jobs to the system.

### 19.7.1.2 Configuration

### 19.7.1.2.1 Total Disc Maker

Start the application "EPSON Total Disc Setup" in order to get to the configuration of the PP-100N model. Select the device and subsequently the function "Start Total Disc Net Administrator". A standard browser with a Login mask opens. This configuration is to be called-up at each workplace through the shown address (URL). While calling this site the first time, you will be asked to register as Admin. After you have successfully logged in, you can access to the settings of the device.

The device got two so-called staplers for blank disks. They can be filled with various types of media (CD, DVD or DVD-DL). The types used are determined in the configuration.



While creating a patient CD in the digipaX, the medium type is indicated and while burning, the appropriate stapler is automatically accessed.



### 19.7.1.2.2 TD Bridge

You reach these configurations calling-up the program "EPSON TD Bridge Environment Settings". The "Monitoring folder" selected here, and so the folder through which the jobs and data are exchanged, shall be shared in the network, so that all other users are able to write in it.

Additionally, set in the configuration the option "TD Bridge Startup Type" on "Automatic (when starting PC/service)". In this way, after computer boot all is ready for use of the device with the digipaX.

P EPSON TD Bridge Environment Settings	~
General PP-100/PP-100N PP-100AP	
Monitoring Folder	
C:\EPSON\TDBridge\Orders Browse	
TD Bridge Startup Type	- 1
Automatic (when starting PC/service)	
✓ Start Total Disc Monitor minimized	
⊂ Default output device	_
PP-100N 1	
Default output stacker in standard mode	
Stacker4	
Print Setting	_
Label Type	
CD/DVD Label	
	- 11
	_
OK Abbre	chen

#### 19.7.1.2.3 digipaX

Burning robot				
Burning robot type:	EPSON Disc Prod	EPSON Disc Producer PP-100 / PP-100N		
	Monitoring Folder Device name:	C: EPSON/TDBridge \Orders		
Burning robot settings:	Writing speed:	12	•	
banning robot settangs.	Compare:	Compare summary (recommended)		
	Job name:	Patient's name (ASCII characters only)		
		Computer name + time stamp		

On the configuration page "Admin / Patient-CD" you define the necessary settings for proper use of the device with the digipaX.

First select the Epson Disc Producer as type of burner. Enter the same **Monitoring Folder** as in the settings for TD Bridge resp. folder shared in the network.

If you use more devices you can specify the target device for this station, indicating the **name of the device**. Leave this box blank if you have registered only one device in the net-work.

Specify burning speed that will be used in the setting **Writing speed**.

It is recommended to activate the option **Match** in order to discover errors in burning process. In the case of error an incorrect image will be printed on the disk and the disk will be automatically re-produced.

In the burning job management the jobs are listed with the **job names**. It is recommended to activate the option "Patient name" here so that it is easily recognized in the list of jobs, which patient-CDs will be burned. A serial number is added to each job, because the job names must be unique. However, the job names must be converted into ASCII codes, which is not always possible with character codes set in some systems. In such case the coming up job names are no longer read easily and it is recommended to change to option "Computer name + timestamp".



#### 19.7.1.2.4 Printer

Size of printable space is to be set in the print settings of the EPSON DiscProducer. In order to do this, call up the dialog box "Print properties" from the context menu of the printer "EPSON PP-100"/"EPSON PP-100N". Select "User-defined" as the label size. A dialog box for setup of circle diameter opens. Set "digipaX" as the name and specify inner and outer diameter in millimetres x 10. Confirm with OK and subsequently select "digipaX" as the label size.

👝 Druckeinstellungen	für EPSON PP-100NPRN	Includes and	×
Haupteinstellungen	Utility		
	Zufuhrstapler ([)	Stapler 1 CD-R 🗸 🗸	Tintenstand
0	Ausgabestapler ( <u>0</u> )	Stapler 4 -	
4	Etikettentyp	CD/DVD-Etikett 🗸	
Standard Außenseite:1160 Innere :450	Moduseinstellung	Schnell	
Farbanpassung Foto-realistisch Versionsinformation	Etikettengröße ( <u>S)</u> Exemplare		ungszeit(D) 0 🚔 sec skyorschau
		OK Abbrechen Ob	emehmen Hilfe



## 19.7.2 Connecting PRIMERA Disc Publisher

Burning robots are connected via USB to the server.

Through an enabled folder on the server burning orders are transmitted from particular digipaX stations. Software of the PRIMERA burning robot undertakes processing of the orders.

The following models are supported: Bravo XRP, Bravo XR, Bravo II, Bravo Pro, Bravo SE, Bravo Pro Xi and Bravo 4100.

#### 19.7.2.1 Installation

The following software systems are to be installed on the server (or at any other station, e.g. reception desk):

- driver
- PTBurnService
- PTPublisher

The installation begins with the driver CD delivered by the manufacturer. Insert the CD and execute the steps up to and including "Printer setup".

🤐 Disc Publisher SE Installation	
Disc Publ	ISRIET DE
Deutsch ·	Drucker einrichten
Willkommen	😵 Windows Security
System prüfen	S Windows can't verify the publisher of this driver software
Drucker einrichten	Don't install this driver software You should check your manufacturer's website for updated driver software
Installation SureThing	the should kink, you minute sum is instant in dyawe when some inter- for you drive. Install this driver software answay
Installation PTPublisher	<ul> <li>gradial time universi soluvate anyway</li> <li>Coly insufficient software from other sources may harm your computer or theat information.</li> </ul>
Registration	(w) See getable
Fertig	t
	Installieren Gie den Duckarterber Kilchen Gie auf "Installieren Gie den Treber" under Duckarteiber auf dem Comparise zur aufallieren Wihrender Frahernstallieren wird eine Medunge zurebrieren das Windows diesen Treiber nicht verifizieren kann. Klicken Sie auf Software totzdem installieren ' um die Installation abzuschlieseen.
Benutzerspezifische Inst	Treiberinstallation
PRIMERA TECHNOLOGY, INC.	<b>\$</b>

Next, PTBurnService and PTPublisher are to be installed. These are provided on the digipaX homepage in the download area. Versions of both programs must harmonize with each other. On the CD PTPublisher is delivered only, however, it might be that it has another version and does not work with the PTBurnService provided on the homepage.

Optionally, SureThing can be installed. This is a software delivered by the manufacturer for editing CD labels, however, it is not to be used for the labels on patient CDs.

After the installation is completed, reboot the computer. Leave at that PRIMERA on and connected. After reboot drive of the device will be installed automatically.



#### 19.7.2.2 Configuration

#### 19.7.2.2.1 Monitoring Folder

During the installation, a transfer folder for data is set up and configured in the software of the device. The default path is "C:\PTBurnJobs". This path can be changed. To do this, the line "LocalPath=C:\PTBurnJobs\" in section "SHARED FOLDER" of "PTSETUP.INI" of the PTBurnService must be adjusted accordingly. This file is in the directory "C:\Program Files\Primera Technology\PTBurnService". After a change is implemented, the service "PTBurnService" must be rebooted. In order that the other digipaX stations in the network can use Primera, the folder must be enabled with write permissions, so that those stations can store the jobs there.

Further settings for PRIMERA software are not required.

#### 19.7.2.2.2 digipaX

Burning robot		
Burning robot type:	Primera Disc Publisher / Bravo	
Burning robot settings:	Monitoring Folder: Device name: Writing speed: Compare:	C:\PTBurnJobs
	Job name:	Patient's name (ASCII characters only)     Computer name + time stamp

On the configuration page "Administrator / Patient CD" the settings required for proper use of the device with digipaX are defined.

First, select Primera Disc Publisher as a burner type. On the station, on that the device is connected, enter the same **Monitoring Folder** as in the settings of PTSETUP.INI. On the other stations select a network path for enabling (e.g. \\SERVER\PTBurnJobs).

If you use several devices, you can indicate a target device for this station by indicating the **Device name**. Leave this field blank if only one device is used.

With the setting **Write speed** you define burning speed to be used.

It is recommended to activate the option **Compare** in order to detect errors in burning process. If error occurs, a wrong image will be printed on the disc and a new disc will be automatically produced.

In the job management of burning orders these are listed by **Order name**. it is advisable to activate the option "Patient name" here, so that you can easily recognize in the job list (file list) which patient CDs are to be burned. In addition, always a serial number is yet attached, as job names must be unique. However, job names must be converted into ASCII characters which can be impossible for some defined character sets in the system. In this case, result-ing job names are no more good readable and it is recommended to switch over to option "Computer name + timestamp.



# 20 Image archive with multiple disks

For larger data resources you can use multiple disks to save the image data to. The disks settings are configured in the dicom.ini file in the Conquest system. This procedure is illus-trated in the following example:

# Configuration of disk(s) to	store images
MAGDeviceThreshhold	= 0
MAGDevices	= 2
MAGDevice0	$= E: \ Images0 \$
MAGDevice1	= F:  Images1
NightlyCleanThreshhold	= 0
NightlyMoveThreshhold	= 0
NightlyMoveTarget	= 0

When the E disk is full, new images are automatically archived to the F disk. With digipaX the difference is unnoticeable, from which disk the images are downloaded from.



Do not use values for MAGDeviceThreshhold and NightlyCleanThreshhold because they remove the images, when the hard disk is full! These values must always be set to 0!

With the usage of the values for NightlyMoveThreshhold, images can be transmitted at night at 2:00 from the MAGDevice0 to NightlyMoveTarget, when the free memory space on the disk falls below the specified value in MB. Value for NightlyMoveTarget may be, for example, "MAG1.".



# 21 Archiving

# 21.1 General



The image archive data must be stored on a RAID system to guarantee data security. Every day, data should be protected on a separate disk, and once a week or every 14 days is to write new data to a CD or DVD.

Archiving of images is done by mirroring all incoming objects on a second and even a third data media. For this purpose, USB drives with appropriate size are suitable for this. The NTFS file system must be set on them (typically FAT32).

The method described in this manual uses the "robocopy.exe" tool for data mirroring capabilities of image archives. You can also use a different solution, such as special software used for backing up.

In addition, once a week or every 14 days, you should archive image data on CD/DVD manually.

## 21.2 Securing MySQL database



Just the backup copy of the MySQL database, without archived images is useless! Therefore, you must immediately secure the images.

As a rule, securing the MySQL database is not strictly necessary, because it contains only references to the actual data (images). In the case of data loss in the system, it is sufficient to restore the image archive and create a new database in the Conquest using the "(Re) initiate the database" button. However, the duration of creating a new database will depend on the system performance and the amount of data, from several seconds to several hours. To secure the database use the MySQL mysqldump.exe tool. With the help of a batch file and the Windows task scheduler, you can program periodic database backups.



Here a template for the batch file: MySQL\_Backup.bat:

@echo off setlocal
set hostname=localhost set username=root
set password=root set port=3306
set backup_file=C:\digipaX\MySQL_Backup.spl
set database1=conquest1 set database2=conquest2
set database3= mysqldumphost=%hostname%user=%username%password=%password%port=%port%databases "%database1%" "databse2" > %backup_file%
endiocal

Here, only the variables listed as a "set" have to be adjusted to the current system. Then you must add a new task to the task scheduler and select the batch file as the application, and set the desired schedule and extended settings for this task.

MySQL_Backup	MySQL_Backup	? 🔀 MySQL_Backup ? 🗙
Task Schedule Settings Security	Task Schedule Settings Security	Task Schedule Settings Security
C:\WINDOWS\Tasks\MySQL_Backup.job	At 12:00 PM every Fri of every week, starting 5/7/2012	Scheduled Task Completed  Scheduled Task Completed  Delete the task if it is not scheduled to run again.  Stop the task if it runs for.  Stop the task if it runs for.  Scheduled to run again.
Bun: C:\dgipaX:MySQL_Backup.bat	Schedule Task: Start time: Weekly V 12:00 PM C Adyanced	Ide Time
Start in: C:\digipaX	Schedule Task Weekly	minute(s) If the computer has not been idle that long, retry for up to:
	Tue Sun	Stop the task if the computer geases to be idle.
Ryn as: PC1\Administrator Set password	☐ Thu ☑ Fri	Power Management
☐ Run only # logged on ✓ Enabled (scheduled task runs at specified time)	Show multiple schedules.	Stop the task if battery mode begins.
OK Cancel Apply	OK Cancel Ap	OK Cancel Apply

After a system crash, you first must restore Conquest, restore the backup database on the MySQL server and upload the images from the last backup created before the failure, back to the archive. Restoring the database can be done with the help of MySQL-Workbench, or through the command line, e.g.:

mysql --user=root --password=root <MySQL\_Backup.spl

## 21.3 Mirroring archive data

To perform data mirroring of the Conquest DICOM server, you can use "robocopy.exe". Since Windows Vista, this tool is already a component of the operating system. For Windows 2000/XP this utility is also found on the digipaX installation CD in the "Tools" directory. Mirroring of the Conquest data directory "data" is performed. For this purpose, empty "Data" directory is created on the destination data medium. To make a mirror image of the data,



e.g. "C/digipaX" to "E/backup" the following command must be executed on the command line:

robocopy C:\digipaX\Conquest\data E:\Backup\data /mir

The details of the path to other systems are to be adjusted accordingly (the drive that the mirroring is to be saved on). To automate the mirroring you need to create a task in the task scheduler as described above in Section 21.2 Securing MySQL database. These tasks can also be combined, simply by adding the command line to the local batch file. The destination drive must be properly controlled in digipaX (footer bar – see 21.5 Monitor-ing the capacity status of the archive).

Through this configuration all incoming data are additionally secured on the selected drive and eventually also deleted when data deleting follows in Conquest. The folder structure is thereby the same as for original data.

## 21.4 Software "Datensicherung"

With the help of the software "Datensicherung", which is also available from digipaX, you can search and automatically burn files to CD / DVD based on specified dates. It is required that the software "Nero" is installed on the same computer.

	Dat	ເອດ	sicl	າອດ	ับดง	J		)							0
Period last securi from:	ng: 01	.01.20	00 -	28.05	.2013			to:							
0		Jar	uar_	2000			٢	G			Mai	2013			0
N	lo	Di	Mi	Do	Fr	Sa	So		Мо	Di	Mi	Do	Fr	Sa	So
			29	30	31	1	2	18	29	30	1	2	3	4	5
1		· · ·	5 12	6 13	7 14	8 15	9 16	19 20	6 13	7 14	8 15	9 16	10 17	11 18	12 19
			19	20	21	22	23	20	20	21	22	23	24	25	26
		25	26	27	28	29	30	22	27	28	29	30	31	1	2
5 5	1	1	2	3	4	5	6	23	3	4	5	6	7	8	9
earch opt	ons														
File name:	*.*														
Directory:	C:\d	igipaX\	Conqu	est\Da	ata										
Burning op															
Drive:		DT-ST I													•
	Burn	ing spe	ed:	4X (60	0 K	•					3	Ched	k data	after b	urning
Disk name	31	_05_20	13												
												r			
													Search	and bu	rn
ersion: 1.4													-		

The selected date is used to find files (from, to) and the type of files, directory, the burner and the name of the CD / DVD. Settings are saved automatically and you do not have to enter them again. The end date becomes the start date next time the program starts. The ending date is always the current date.



Therefore, to this tag no further images should be added (in other cases, selected as the end date, the date for the previous day)!



For the appropriate drive, insert a blank data media and using the "Search and burn" change the display. Files are searched and automatically secured on one or more data media (with-out directory structure). At the end, a message appears on successful completion of burning, or in case of an error – an error message.

It is recommended to automatically start the program using the Windows task scheduler. Respective to the influx of data and the used media (CD/DVD) you can set the backups every week or every 14 days.

## 21.5 Monitoring the capacity status of the archive

## 21.5.1 digipaX

On the "Footer bar" configuration page, you can indicate any 3 disks to be checked. You can then permanently monitor, e.g. the local memory free space, the image archive memory free space, and free space on an external drive for data backups. As a prefix you should provide the usable description which is to be later displayed in the footer bar in front the free space on the disk. The critical value is the amount which is designed to show the user a warning. When the free disk space falls below the critical size determined for the drive, the message is sent to the user (once per session), so you can contact your system administrator or supplier for more memory. When the actual free memory will decrease to less than twice the size of the critical value, the display turns red, but a message does not yet appear. The user has a possibility to communicate with the system administrator for a sufficiently long time. When the disk no longer has available space, a warning message is sent (once per session).

### 21.5.2 Quick-Drive-Info

On the installation CD is a small tool, "Quick-Info-Drive," which can also be used to monitor the drives. Even if digipaX system is not installed on all computers, it should still be possible to monitor the status of available disk space. For this purpose, you can install this tool on those computers. To install the tool, simply copy the file GDI.EXE to the target computer and run it. Using the context menu (right mouse click in the window – not on the frame) you can select "Options ...". The possible settings are self explanatory. The tool runs on Windows. On the "Disks" configuration page, you can double click on an entry to adjust its settings. Specify the critical value. The display, depending on the settings, becomes red for example when the critical value is exceeded. Alternatively, you must first share the drives using the "Connect network drive ..." (under the drive context menu). In this way, from any workstation, you can check both the free space in the archives memory, as well as the free space of mirrored records memory.



# 22 Tips for group medical practices (team practices)

In the following sections guides are provided on the configuration of the systems for medical group practices, when a single apparatus for imaging is used, but the data are stored in separate archives.

## 22.1 General rules of conduct

It is recommended to use a PACS server as a router that transmit incoming DICOM images to various archives. For transferring, an identification tag is sent (ID number, e.g. physician number or company number), which is added to the patient ID. At the receiving station, the DICOM router is given as the archive target.

## 22.2 Adding physician identification tag to the patient ID

## 22.2.1 Without GDT

In the "Administrator / Others" configuration page, you can add any identification to each patient ID. Neither the number nor the option activation can be subsequently changed.

## 22.2.2 With GDT

In some clinic management systems, such as TurboMed, you can specify in the GDT device configuration, that the GDT export files will have the physician ID added to the patient's number.

t   GDT 2.1		
Grösse/Gewicht Dezimalzeichen	Punkt •	
		Grösse/Gewicht

Additionally, you can also here use the same options as described in section above, without connecting the GDT. Thanks to this, the number is also added in patients created directly in digipaX. The number must match the physician's number set in the clinic management system.



# 22.3 DICOM router configuration

At the imaging station, e.g. the X-ray apparatus, as the archive destination the Conquest server is given, which functions as a router. It should be given an appropriate AE Title, such as "DCMROUTER."

In the dicom.ini file, the following router settings should be made:

# Configuration of routing	
ExportConverters = 3	
ExportModality0 = *	
ExportFilter0 = Ir	nagePat LIKE '%-1'
ExportConverter0 = fc	rward to CONQUEST1
ExportModality1 = *	
ExportFilter1 = Ir	nagePat LIKE '%-2'
ExportConverter1 = fo	rward to CONQUEST2
ExportModality2 = *	·
. ,	nagePat NOT LIKE '%-1' AND ImagePat NOT LIKE '%-2'
•	rward to CONQUEST3

Connections used for AE Titles must be given in the "Known DICOM providers" card in Conquest.



Conquest Archive, which is used as a router, cannot use the DBASE database, it can only be based on a MySQL database, otherwise the SQL-Statement "ImagePat NOT LIKE '%-1' AND ImagePat NOT LIKE '%-2'" will not work properly.

Each image sent to the archive is checked. If the patient ID ends in "-1", the image is transferred to the archive CONQUEST1. If the ID ends in "-2", it is transferred to CONQUEST2. All other images, which indicate an error, as it was not possible to use any assignment of ID, are transferred to CONQUEST3. When the images are lost, you need to load the CONQUEST3 archive, and from there manually send them to the appropriate archive. The values "-1" and "-2" should be adapted to the actual number used by the physician as well as the AE Title and target archives.

All the images sent through the router are also stored, including Router-DICOM archive. This has the advantage of automatically creating a copy of the image. However, a threshold must also be set so that the router archive does not overfill:

```
MAGDeviceThreshhold = 1024
```

This value is the amount of free memory space in MB that cannot be exceeded. The patients which are rarely used are always removed, when the memory free space exceeds this value.

## 22.4 Tips for worklist

If the receiving station system supports the downloading of worklist jobs from different worklist servers, you should also use separate worklist servers as opposed to the same server with different AE Titles (see Chapter 8 DICOM worklist).



If the receiving system supports only the retrieval of jobs from one server, for example Xscan, then you would have to always choose between the two lists of jobs, which is very inconvenient and uncomfortable. Here, it is recommended to use a common worklist and use different station names, if no station name is to be used as a filter on the receiving station. When creating jobs for list 1, understandable station names should be used, for example, "PHYSICIAN1" and for list 2, "PHYSICIAN2." If the system receives all jobs, they are displayed without filtering. In the case of physician 1's system, as a filter for worklist jobs, enter the station name "PHYSICIAN1", so that only his/her jobs are received. In the case of a physician 2, it should appropriately be entered, "PHYSICIAN2."

# 23 Transferring the image

This module is used to transmit to its own archive an image, that for example has been received from an external device. To use this, you must activate the "Image transfer" license module. With the activation of this module, it will automatically grant the license and start another modality (see chapter 13 Visually choosing organs) to set up special jobs for referrals.

## 23.1 Receiving the image

Activate in the configuration under sending the image automatically, receiving the image and the AE Title and port of the receiving station. These settings must also be set for the other side (remote PACS, which sends images). Next, you should establish the local or a directory which is not found on the network, where the received images will be saved. Once this is done, the image reception is active.



Important: The image receiving only works when digipaX is running and the station is ready for receiving. Stations, which for example receive images at night, cannot go into standby or sleep. There must also be carried out control over effective transmission on the transmitting station.

## 23.2 Image Acquisition

Image acquisition may not necessarily be on the receiving station, but it can also be done by one of the other digipaX stations. To do this you must activate the appropriate station by the option "Notify the user" and set the path to which the receiving station stores the images on. The transmitting station checks the directory and notifies the user when the images are sent, using a symbol on the footer bar. The waiting time can be freely selected and it's the time the system waits for after the arrival of the last image. In this way, the user is informed of the arrival of the series after receiving the last image. Zero minutes means immediately after the first image.

# 23.3 Customization of the worklist

To integrate images into your own archives is necessary to adjust patient data (in particular patients ID). This is achieved best by creating the worklist jobs. With this, each time the patient is transferred, a job is created on the worklist. To do this, use a separate name for the station, even if the orders are generated for its own modalities.



Before importing, digipaX checks each received patient, whether a job exists for him/her on the worklist. It compares the first and last name, as well as the date of birth. By default the entire worklist is checked. By entering "Station (AE Title)" you can filter your list search by the specified work station names. Optionally, jobs can be automatically deleted after imported images are found. To do this, activate the check "Automatically delete worklist jobs".



# 24 System commissioning

# 24.1 Acceptance testing

After completing all the work related to installation and configuration, you should carry out an acceptance test. A separate document exists for the acceptance test.

In the acceptance test, the entire process in practice is checked, from creating a job to viewing of the completed image. The test should confirm proper operation of the workflow. If necessary, this document can also be signed and given to the client as a confirmation of its proper operation.

# 24.2 Checklist

Based on the checklist, which is also available separately, you should check that you have fulfilled all the conditions necessary for proper usage of the system.

You should check and mark all the points of the checklist. Upon request, this document can also be signed and given to the client.

# 25 Image assignment correction

If the image has been mistakenly assigned to the incorrect patient, this can be corrected in some various ways. It is necessary to change the appropriate tags in the DICOM image. This can be done in several ways. In digipaX, it is possible to turn on and configure the delete function. This function allows the user to export images and then delete them and import them again with new patient data.

Another possibility is to manage the data directly in the DICOM header, using the Conquest and the DICOM editor, which is to be done by the administrator.

## 25.1 Launching and configuration of the delete function for the users



Delete function for the users works only if Conquest DICOM server from Version 1.4.1.4 is used. Other image archives are not supported.

The delete function is to be activated at the configuration, in the Administrator/Other tab. It is recommended that this function is activated only on one station, preferably the one, which acquires images. It is necessary to enter the backup folder name. This folder will be used for storage of backups of all images removed from the archive. The folder location should be the same as that of the archived data (e.g. RAID), and it should be secured regularly. Images will remain saved in the backup folder, and they can be deleted from this location only manually (if necessary). Upon each deletion procedure, images are moved to a separate subfolder with date and time. For information purposes, a text file is always saved along with each image (info.txt). It is used to store the user data and the reason for removal of the image. The user must provide this information in order to activate data deletion.



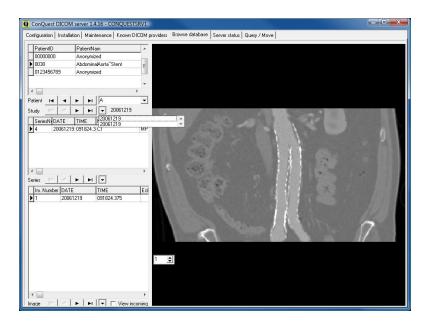
It is also necessary to establish the deletion procedure password, which must be entered by the user for activation of the delete function.



Images should be deleted only by selected and properly trained persons, who are also familiar with the appropriate chapter of the User's Guide. The deletion pass-word should be disclosed only to these persons.

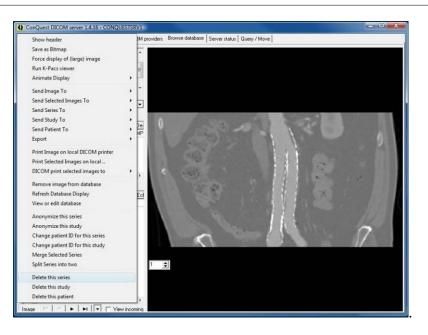
# 25.2 Change of patient data in Conquest

In the Conquest the patients can be selected directly under "Browse database" or from the drop-down list. With the input into the field it can be filtered by name or ID. In the middle and bottom part various studies of the patient and the series contained therein are shown, if more of them exist. You can also change between them with the local drop-down lists or arrow keys.



The single functions can be recalled there for each patient over the context menu with the right mouse key. Thereby the single images will show in the preview. Images from a size of 4096 KB are standardly not shown. It can be enforced with "Force display of (large) image". To present larger images automatically, the value "LargeFileSizeKB = 4096" must be increased in the "dicom.ini".





# 25.2.1 Change of patient ID

If there is a patient with several patient IDs in the archive, it is possible in the Conquest to change the ID. Mark the patient whose ID should be changed and select in the context menu "Change patient ID for this study", enter the desired ID and confirm with "ok". Possibly there are more studies under that ID. Then the procedure must be repeated for the other studies until all they have the same ID.

25.2.2 Deleting series, study or complete patient



NOTE! All deleting procedures are immediately effective and cannot be undone. The images are thereby deleted from the hard disk and from the database. Hence it is necessary to secure data prior to deleting!

A patient is simply deleted with "Delete this patient". Thereby all studies, series and images of this patient are deleted. To delete a single study, it must be first selected from the dropdown list and then removed with "Delete this study". Thereby only this study with all therein contained series and images is deleted. According to the same principle a series under a study is deleted. First select a series in the bottom part and then delete with "Delete this series".

## 25.2.3 Deleting single images

Deleting single images is not provided in the Conquest. Except of CT or MRT series, most often each image is in its own series, so that it can be deleted simply by deleting the series. To delete a single image within a series is a little bit more complicated. Initially the image must be found and selected, so that it can be seen in the preview. Using "Remove image from database" the image is deleted from the database but not from the archive.

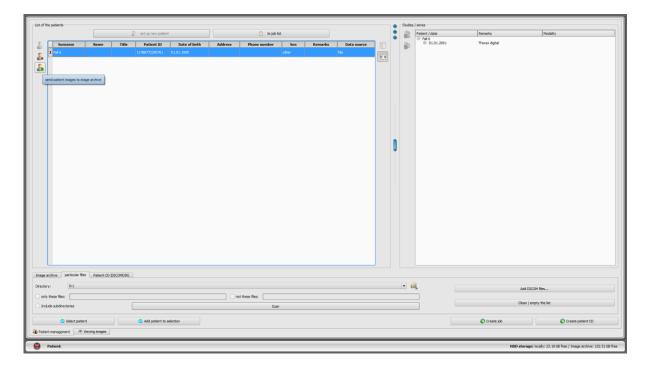


Confirm	
?	Delete this image from database (not from disk) ? 0030\1.2.826.0.1.3680043.2.135.734437.43181328.7.1323779946.640.11_0004_000001_13237799460001.dcm

An image file shown in the message must be now deleted manually from the archive directory structure. If the image is deleted only from the database, it would be again recorded in the database by eventually rebuild of the database of the archive.

## 25.2.4 Assigning false assigned images to appropriate patient

Initially false assigned images must be exported. Export the images e.g. to a drive "C:\Failures". It can be done in the digipaX by export functions or directly in the Conquest too. Thereafter those images must be deleted from the archive. Finally the images must be again imported and assigned thereby to appropriate patient. Reboot the digipaX and open the appropriate patient and then go back to the patient management. Select using the component Single files the exported images that should be assigned to the patient. With the switch "Send patient images to image archive " the import dialogue is opening.



Press in the dialogue a switch "Data current patient", to apply data of the already opened patient.



atients	Data adjustment			
¥ Fall 6,		stored data	Target data	
	Patient ID:	11788772290701	123456790	
	Title:			
	Name:		Max	
	Surname:	Fall 6	Mustermann	
	Date of birth:	01.01.1900	01.01.2000	٥
	Gender:	other	masculine	-
	Accession Number:	11788772290708	11788772290708	
all on all off			🙎 data current p	patient
	Perform import			
	Perform import			

With "Perform import" they are then assigned to the desired patient and afterwards can be recalled with the appropriate patient in the archive. Subsequently the exported images can be again deleted.

## 25.3 Change of patient data with DICOM tag editor

DICOM Tag Editor provides another possibility for adjusting patient data.

Incorrectly assigned images should be found in Conquest, backup copy saved and deleted from the archive. Eventually, you must also remove the files from the backup to (external) drive. These files should be edited in the DICOM tags editor. Using drag & drop, add all the patient's files back to the Conquest, which now has properly assigned images.

## 25.2.1Change of patient data in DICOM tag editor

On the installation CD you can find the "DCM Editor" program, which can be used for this purpose. However, you can also use any other program to edit the DICOM tags. "DCM Editor" you must install and run.

Backed up and improperly assigned files should be opened in an editor and the following tags modified:

Tag	Tag name	Meaning
0010,0010	Patients Name	Enter the name of the appropriate patient,
		Syntax:
		Last name/First name/2. First name/Title/Suffix
0010,0020	Patients ID	Enter the ID of the correct patient
0010,0030	Patients Birth Date	Patient's date of birth
0010,0040	Patients Sex	Sex of the patient,
		enter the appropriate letter:
		M – male
		F – female
		O – other
0020,000d	Study Instance UID	UID study of a patient to which you want to add this
		picture (or series)
		<u>or</u>
		create a new study number (UID) by adding addi-



tional digits (e.g. "1" or ".1")

Save the changed file.

This procedure must be repeated for all files assigned incorrectly.

## 25.4 Sending changed files to the archive

All changed files can be sent back the Conquest image archive with the help of drag & drop. In this way, the images are properly saved in the database.

Next, check the appropriate assignment in digipaX.

The temporary files (in C:\Fehler) can be deleted.

Files are saved automatically the next time you save a backup.



# 26 Others

# 26.1 Log

In the configuration, you can view the current session's process, divided into subgroups. In the log subfolder in the installation directory, the log files are written respectively for groups (e.g. dicom.log). When closing the session, they are automatically deleted. In case of system failure, these files are retained and when you restart the application they are located in the subfolders for error analysis.

In the installation directory the global.log file is written, which is constantly continued by all sessions.



The global.log file is never cleaned or removed. Over time it becomes very large. If necessary, you can save it in the backup, then delete it (or just rename it).

In case of problems, you can activate a detailed reading of the log (the log configuration page) for more log entries.

## 26.2 Saving settings

The digipaX system settings are stored in the following locations. when "Save the settings for: all users" installation path at the digipaX.ini

when "Save the settings for: current users" at the registry at HKEY\_CURRENT\_USER\Software\digipaX\digipaX

Furthermore, when working, the following path is used (e.g. saving presets, user-defined texts):

C:\Documents and Settings\<Username>\Application Data\digipaX\digipaX



The folder "Application Data" is a hidden folder. The option "Show all files and folders" need to be activated in Windows Explorer folder options.



Under Windows Vista and Windows Server 2008, Windows 7 and Windows 8 this path is:

 $Users \backslash < Username > \backslash App Data \backslash Roaming$ 

# 26.3 Transferring configurations

After logging into digipaX as administrator, you can use in the configuration the "Export ..." and "Import ..." buttons, so that all or part of the configurations are saved to the INI file, or



are read from it. With the exception of the veterinary version settings (vet.ini) and tags for the image information (display.xml), which are archived in the specified files in the installation directory and can be exchanged between stations by a separately copying them.

## 26.4 Internet addresses

Conquest: <u>http://www.xs4all.nl/~ingenium/dicom.html</u> <u>http://www.image-systems.biz/forum/viewforum.php?f=33</u>

OFFIS-Tools DCMTK: http://dicom.offis.de/dcmtk.php.de http://forum.dcmtk.org/



# 27 Administrator password

To log into the configuration page and to choose another license file at the startup of the program as well as to call up the license viewer, please provide the following (pre-defined) password:

digi4admin

The system here distinguishes between uppercase and lowercase letters. Password can be changed on the configuration page under Administrator / Other.

The software can be started with the program parameter /a password (e.g. /a digi4admin), so that administrator rights are immediately given without having to log on. This option should be activated only during the administration or maintenance works.

The password is used to protect the software from unauthorized and erroneously settings changes. It should therefore be provided only to the persons responsible for managing the system.

If you lose your password, digipaX can reset it and set a new password.



Product: digipaX

Manufacturer: digipaX GmbH Bitterfelder Str. 12 04129 Leipzig GERMANY

The product is CE marked: CE 0494

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