

Version 1.4.8

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.

Symbol	Meaning
<u>_!</u>	Note
	Тір

1.2 Symbols and illustrations

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 2.2.4 Hardware and safety and 2.2.9 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 2.2.3 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 Network and hardware

2.1 Data network

2.1.1 Purpose of connection to data network

Purpose of embedding in the data network is availability of central data stock of DICOM images on several computers and inter-device data exchange by

- sending/receiving DICOM images via DICOM Communication,
- sending/receiving jobs via DICOM Worklist and
- recalling/creating/transferring files as e.g. thumbnails, Worklist files, XML files, license files etc. through enabling Windows in Microsoft networks.

2.1.2 Properties and features required

- Network topology Ethernet
- Star topology
- Min. 100BaseT, but 1000BaseT or more is recommended

2.1.3 Configuration required

- Network protocol TCP/IP
- preferably static IP addresses. If dynamic addresses are used, an accurate name resolution of hostnames in the network is required (usage of DNS or WINS, in exceptions by editing the file "hosts")
- Windows operating systems (see Section 2.2.2.1)
- Windows working groups or domains
- RAID system (RAID1, RAID5 or RAID10) for data

2.1.4 Safety requirements

The PCs and the network must be protected against access of unauthorized persons by necessity of providing username and password. If the network is connected with internet, it must be protected against attacks from internet. Most devices for internet access (DSL router, Fritzbox etc.) already have an internet firewall for network protection. Local firewalls on particular PCs can be additionally activated in order to avoid unwanted communication from inside to outside to internet. However, in this case trouble-free network traffic between stations must not be impeded or completely blocked.

The following services and ports are required:

- image archive port 5678
- image querying at work stations port 104
- automatic capture of images at work stations port 105
- port 2200 on server that provides the Worklist, as well as read and write access to Worklist directory through the network from appropriate stations



- read and write access to further special directories on the server for license, thumbnails, Presentation States and other data if need be

Furthermore, the systems must be protected against malwares by installation of antivirus softwares. Should the above-mentioned ports already be in use, they can be changed. All free ports from 1024 can be used for this.

2.1.5 Other information on communication flow

- Reading and writing license file (folder-enable)
- Writing job files on server (folder-enable)
- Querying job list (Worklist) from server (DICOM Query C–FIND)
- Accessing images from server (DICOM Query Retrieve C-MOVE)
- Sending images to server (DICOM Send C-STORE)
- Querying information on patients, studies and images from server (DICOM Query)
- Reading and writing thumbnails on server (folder-enable)
- Reading and writing Presentation State files on server (folder-enable)
- Poss. exchanging GDT files with third-party systems (folder-enable)
- Poss. receiving and sending out HL7 messages (HL7 protocol)
- Poss. reading and writing the X-ray journal (folder-enable)
- Poss. reading and writing manually recorded patients list (folder-enable)

2.1.6 Possible risks if requirements are not met

- Time delays in cases of emergency because:
 - software does not start (no access to license file)
 - images cannot be queried or are queried only very slowly
- Other possible limitations that do not impact directly:
 - creating jobs impossible
 - querying job list impossible
 - long waiting times (if network is slow or configured inappropriately)

2.2 Hardware

2.2.1 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.



2.2.2 System requirements

2.2.2.1 Supported operating systems

Windows XP, Windows Vista, Windows 7, Windows 8 Windows Server 2003, Windows Server 2008, Windows Server 2012



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".

2.2.2.2 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	Min. 1 GB RAM
Operating system	Windows 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

2.2.2.3 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	Minimum 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	Min. 1 GB RAM
Operating system	Windows 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.

2.2.3 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 22 Archiving).

2.2.4 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.

2.2.5 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.

2.2.6 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.

2.2.7 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.

2.2.8 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- phy Ltd.	Orex	
	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:	video sources from the manufacturer "The Imaging		
	Source" with "WDM Stream C	lass Driver" and DirectShow	
	supported		
Foot switch:	any USB foot switch with two programmable pedals for		
	key combination		
	Foot switch with a serial connection (RS232), here control		
	cables CTS, DSR, DCD and RI are supported (NO switch)		

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 20 Device connections.



2.2.9 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.

2.2.10 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.

2.2.11 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.

2.2.12 Software

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



3 Installation guidelines

3.1 Server guidelines

Process	Page number for information
1. Installation of digipaX	
 Installation of digipaX 	20
2. Installation of image archive(s)	
 Installation of MySQL + MySQL Workbench 	21
 Installation of Conquest 	22
 Commissioning Conquest (AE Title, port, data base init.) 	26
3. Installation of worklist server	
 Installation of worklist server 	23
 Configuration of worklist server 	39
4. Archiving tool + DICOM tool	
 Installation and configuration of backup 	151
 Installation of DICOM editor 	
5. Installation of other tools	
 Installation of Nero 	23
 Installation of software remote control 	
 Installation of tool or image for daily visual inspection 	14
6. digipaX configuration	
 Commissioning digipaX (fill physician's data, enable modules) 	24
 Connecting image archives / DICOM configuration 	29
 Connecting worklist server 	40
 Adjusting caches 	89
 Adjusting X-Ray journal / storage location 	99
 Setting as veterinary version 	108
 GDT connection 	
 Configuration of TurboMed / PDE-TOP / 	45 / 52 /
MediStar / x.concept (DOCConcept) / Quincy /	55 / 57 / 61 /
ALBIS / Duria / KiWi /	63/68/71/
MCS Isynet / ABOMED	73 / 79
 digipaX configuration 	79
 HL7 connection 	89



3.2 Workstation guidelines

Process	Page number for information
1. Installation of digipaX	
 Installation of digipaX 	20
2. Installation of other tools	
 Installation of Nero 	23
 Installation of software remote control 	
 Installation of tool or image for daily visual inspection 	14
3. digipaX configuration	
 Commissioning digipaX (fill physician's data, enable modules) 	24
 Connecting image archives / DICOM configuration 	29
 Connecting worklist server 	40
 Adjusting caches 	89
 Setting as veterinary version 	108
GDT connection	
 Configuration of TurboMed / PDE-TOP / 	45 / 52 /
MediStar / x.concept (DOCConcept) / Quincy /	55 / 57 / 61 /
ALBIS / Duria / KiWi /	63 / 68 / 71 /
MCS Isynet / ABOMED	73 / 79
 digipaX configuration 	79
HL7 connection	89

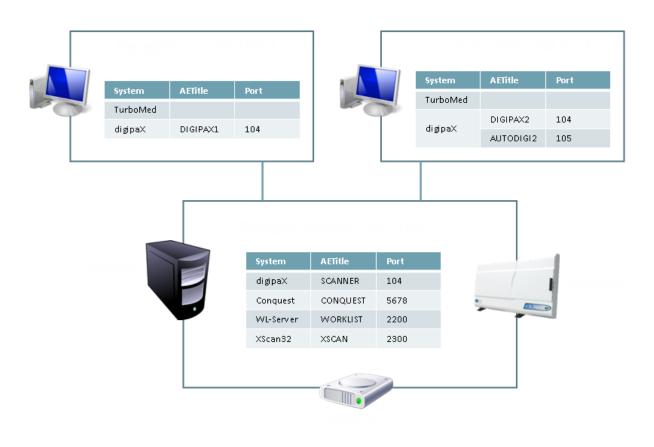
3.3 Completion of overall system

Process	Page number for
	information
1. Routing setup	
 Enabling image receiving in digipaX 	35
Adding ExportConverter in Conquest	35
2. Archiving	
 Configuration of Conquest 	150
 Setting up a backup CD/DVD 	152
 Setting drive monitoring in digipaX 	153
3. Acceptance of system	
 Acceptance testing 	157
 Completing checklist 	157



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.).

All installation programs are started through the tool Xinstall.

(Anwendungen	Informationen
	digipaX	
	Serversysteme	
	MusqL MysqL	
	MySQL GUI Tools	
	Bildarchiv (Conquest)	Klicken Sie auf das zu installierende Softwarepaket.
	orrus orruna	Beim Überfahren der Einträge mit der Maus erhalten Sie hier Informationen zu den Systemen.
	Archivierung	
	Atensicherung	
	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. Install the required components one by one. The necessary settings are described in the next section.

4.1 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).



4.2 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:

MySQL Server Instance Configuration Wizard
MySQL Server Instance Configuration
Configure the MySQL Server 5.1 server instance.
Please select a configuration type.
C Detailed Configuration
Choose this configuration type to create the optimal server
setup for this machine.
Standard Configuration
Use this only on machines that do not already have a MySQL server installation. This will use a general purpose configuration
for the server that can be tuned manually.
< Back Next > Cancel
MySQL Server Instance Configuration Wizard
MySQL Server Instance Configuration
Configure the MySQL Server 5.1 server instance.
Please set the Windows options.
✓ Install As Windows Service
This is the recommended way to run the MySQL server on Windows.
tarrow the second
Service Name: MySQL 🗨
Launch the MySQL Server automatically
✓ Include Bin Directory in Windows PATH
Check this option to include the directory containing Mysus: the server / client executables in the Windows PATH
variable so they can be called from the command line.
Back North Const
< Back Next > Cancel
MySQL Server Instance Configuration Wizard
MySQL Server Instance Configuration
Configure the MySQL Server 5.1 server instance.
Please set the security options.
✓ Modify Security Settings
New root password: **** Enter the root password.
root Confirm: **** Retype the password.
Confirm: **** Retype the password.
Enable root access from remote machines
Create An Anonymous Account This option will create an anonymous account on this server.
Please note that this can lead to an insecure system.
< Back (Next > Cancel

As password, here "root" was used.



MySQL Server Instance Configuration Wizard
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.
Ready to execute
O Prepare configuration
 Write configuration file
 Start service
 Apply security settings
Please press [Execute] to start the configuration.
< Back 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!

4.3 MySQL Workbench

Additionally, the installation of "MySQL Workbench" is recommended. In it, you can establish a database backup (optionally), so that you do not need to recover the database in a slow recovery process from the DICOM images if a system crash occurs. It also includes tools for testing and optimizing the database, which could be used immediately when only needed.

4.4 Conquest

The Conquest (PACS server) is the image archive and absolutely necessary for operating the system.

Install the Conquest files on the target computer (e.g. C:\digipaX\Conquest).



The installation path must not include blank spaces as otherwise you would not be able to log in the Conquest as a service! The Windows program directories usually include a blank space in the path (C:\Program Files) and cannot be used as an installation path. Please keep this in mind at the installation and use the recommended path "C:\digipaX\Conquest" preferably.

4.5 Xadmin

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.

4.6 Worklist server: wlmscpfs

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



Here at this place only the required components are copied on the PC. You still have to configure the worklist server and install it as a service. This operation is described in section 8.

4.7 Backup

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

4.8 DICOM Definition files / 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.

Before the DICOM Editor can be installed the associated Definition Files must be installed.

4.9 Ghostscript

Ghostscript is required for importing the PDF documents with the import module.

4.10 Remote maintenance

For remote maintenance the Teamviewer is used. At the customer's the Quicksupport module is sufficient.

http://www.digipax.de/downloads/TeamViewer/TeamViewerQS_en.exe

4.11 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 18.7 Selection of burning software.



5 Commissioning / general configurations

5.1 digipaX

5.1.1 Configuration of information on practice and physicians

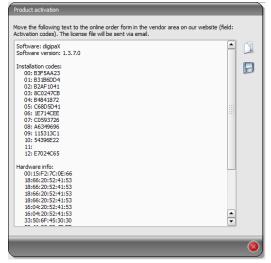
In the configuration on the page "Information on practice and physicians" doctor's name and address are to be put in. If necessary, doctor's or company identification number can be added (for more see Chapter 23 Tips for group medical practices (team practices).

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 ..."



- 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.
- 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 li– cense 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

The MySQL is used as the database for the image archive. There is an additional description "windowsmanual.pdf" (in English only) delivered by the Conquest in the installation directory. The GUI of the Conquest is started by using a connection in the start menu or by executing the file ConquestDICOMServer.exe. At first start-up choose the "Native MySQL driver" as database driver.



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.



ConQuest DICOM server 1.4.16 - CONQUESTS	RV1	
Configuration Installation Maintenance Known DI	COM providers Browse database Server status Query / Move	
This screen contains essential parameter	s for operation of the ConQuest DICOM server.	Save configuration
Local unique name of this DICOM server (app	lication entity, AE) : CONQUESTSRV1	Make mysql database
TCP/IP port to use (other DICOM systems mu:	st know this number) : 5678	Restore original configuration
Local disk directory to store DICOM images :	🖃 c: [system]	
Make directory	C:\	
Enable JPEG(2000) support	Conquest	Install server as NT service
Images on disk are stored: C Uncompressed C NKI compressed C Lossless JPEG C Lossless JP200 C Lossy JP2000 C JPEG or Uncompressed	 data dbase HEAD_EXP_00097038 printer_files 	Uninstall server as NT service
Images on disk are named: C V2 (allows NKI compression)		
DCM (standard format)		Hide the server (as tray icon)
Cleanup disk below: (MB) 0 Cleanup nightly below: (MB) 0		About this server
Below 0 MB, move to:	C:\digipax\conquest\data	Clear the server
✓ Keep Server Alive	Free disk space: 24539 megabyte	Close the server

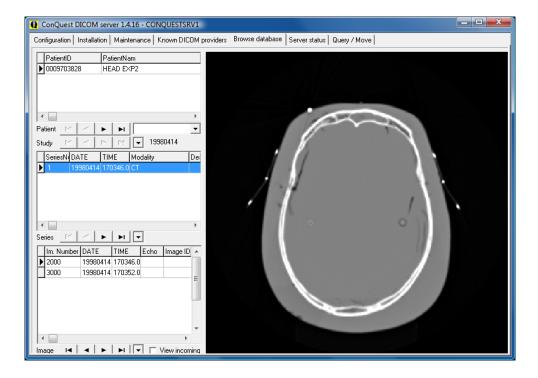
On the installation page, 5 top buttons on the right top-down can be used for proper creating and testing of the database.

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. Follow the following steps for (re-linstalling this program:	Verify TCP/IP installation
In the 'Configuration' page, set the server name; pot 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. Make ODBC data source: defines the connection between a database on disk and the DICOM	(Re)-initialize database
Make UDbL data source: defines the connection between a database on bits, and the ULCUM server. This fails if DDBC or the dBase driver is not installed. This option is not required when using the "DBASEIII without ODBC" driver	Clear worklist database
Verity database installation: Some DDBC 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, instal 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 0K [CONQUESTSRV1] If you can read this, the console communication is 0K [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] This is a very long text output for testing - This is a very long text output for testing - This is a very [CONQUESTSRV1] This is a very long text output for testing - This is a very long text output for testing - This is a very [CONQUESTSRV1] This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long text output for testing - This is a very long - This - This - This - T	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.



5.2.1 Extensions in Conquest

It is recommended to get outright the extensions as described below. For the new installation of Conquest a pre-prepared configuration file "dicom.sql.ext" is installed in the Conquest directory. It contains all extensions described in the following sections. This file is to be just renamed to "dicom.sql" and the original file deleted priorly. It is recommended to create a backup of the original file before deleting.

If the file is edited manually, it is to keep in mind that the last line in each of the sections "*Study*", "*Series*" and "*Image*" is a link back to the upper section and thus it must not be modified. It is also described as a comment in the "dicom.sql".

The last defined element of Study is a link back to Patient

The last defined element of Series is a link back to Study

The last defined element of Image is a link back to Series

After the changes are made the Conquest needs to be robooted and the data base reinitialized.

5.2.1.1 Supporting international character sets and encoding

Supporting the international character sets and encoding when retrieving the archive is controlled through the tag "0008,0005 SpecificCharacterSet". To enable the supporting in the Conquest the file "dicom.sql" in the Conquest directory needs to be extended. For this, a next line must be added to each of the sections "*Patient*" and "*Study*".

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 },	
{ 0x0010, 0x1040, "PatientsAddress", 64, SQL_C_CHAR, DT_STR },	
{ 0x0008, 0x0005, "SpecificCharacterSet", 16, SQL_C_CHAR, DT_STR }	
{ choose, choose, operation	
,	
Study	
{ 0x0020, 0x000d, "StudyInstanceUID", 64, SQL_C_CHAR, DT_UI },	
{ 0x0008, 0x0020, "StudyDate", 8, SQL_C_DATE, DT_DATE },	
{ 0x0008, 0x0030, "Study June", 16, SQL_C_CHAR, DT_TIME },	
{ 0x0020, 0x0010, "Study I'lle, 16, SQL_C_CHAR, DT_STR },	
{ 0x0008, 0x1030, "StudyDescription", 64, SQL_C_CHAR, DT_STR },	
{ 0x0008, 0x1030, "AccessionNumber", 16, SQL_C_CHAR, DT_STR },	
{ 0x0008, 0x0090, "ReferPhysician", 64, SQL_C_CHAR, DT_STR },	
{ 0x0010, 0x1010, "PatientsAge", 16, SQL_C_CHAR, DT_STR },	
{ 0x0010, 0x1010, "PatientsWeight", 16, SQL_C_CHAR, DT_STR },	
{ 0x0008, 0x0061, "StudyModality", 64, SQL_C_CHAR, DT_STR },	
{ 0x0010, 0x0010, "PatientName", 64, SQL_C_CHAR, DT_STR },	
{ 0x0010, 0x0010, "PatientBirthDate", 8, SQL_C_DATE, DT_DATE },	
{ 0x0010, 0x0030, "PatientSintiDate", 8, SQL_C_DATE, DT_DATE }, { 0x0010, 0x0040, "PatientSex", 16, SQL_C_CHAR, DT_STR },	
{ 0x0008, 0x0005, "SpecificCharacterSet", 16, SQL_C_CHAR, DT_STR }, { 0x0010, 0x0020, "PatientID", 64, SQL_C_CHAR, DT_STR }	
(0X0010, 0X0020, Fallellin , 04, SQL_C_CHAR, DI_STR)	

Please keep in mind that the last line in the section "Study" must not be modified. Please refer to chapter 5.2.1.

Finally, the Conquest needs to be rebooted and the data base re-initialized.



5.2.1.2 Extended patient data for the patient management

Additional columns can be activated in the patient management. These can be used e.g. for the address, telephone number and remarks and quoted at the manual recording patients data. This information will be then saved in the DICOM header on additional tags upon acquiring images. In order that this data can be also stored in the database and shown in the table of patients, an extension of the database layout is necessary. For this, the file "di-com.sql" in Conquest is to be edited. The same course of action applies for both database types (MySQL or DBASE III). In the sections "Patient*" and "*Study*", 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
1
{ 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, "PatientBirthDate", 0, SQL_C_DATE, DT_DATE },
{ 0x0008, 0x00040, "attentisex", 10, SQL_C_CHAR, D1_STR },
{ 0x0010, 0x1000, "OtherPatIDs", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1001, "OtherPatNames", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1040, "PatientsAddress", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x2154, "PatientsTelephoneNumbers", 16, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x0032, "PatientsBirthTime", 16, SQL_C_CHAR, DT_TIME },
{ 0x0010, 0x2160, "EthnicGroup", 16, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x4000, "PatientComments", 254, SQL_C_CHAR, DT_STR }
}
Study
{
{ 0x0020, 0x000d, "StudyInstanceUID", 64, SQL_C_CHAR, DT_UI },
{ 0x0008, 0x0020, "StudyDate", 8, SQL_C_DATE, DT_DATE },
{ 0x0008, 0x0030, "StudyTime", 16, SQL_C_CHAR, DT_TIME },
{ 0x0020, 0x0010, "StudyID", 16, SQL_C_CHAR, DT_STR },
{ 0x0008, 0x1030, "StudyDescription", 64, SQL_C_CHAR, DT_STR },
{ 0x0008, 0x0050, "AccessionNumber", 16, SQL_C_CHAR, DT_STR },
{ 0x0008, 0x0090, "ReferPhysician", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1010, "PatientsAge", 16, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1030, "PatientsWeight", 16, SQL_C_CHAR, DT_STR },
{ 0x0008, 0x0061, "StudyModality", 64, SQL_C_CHAR, DT_MSTR },
{ 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 },
{ 0x0008, 0x0005, "SpecificCharacterSet", 16, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1000, "OtherPatIDs", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1000, "OtherPatibas", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1001, "Other advantes", 64, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x1040, PatientsAddress , 04, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x2134, Patients relephoneNumbers , 16, SQL_C_CHAR, D1_STR }, { 0x0010, 0x0032, "PatientsBirthTime", 16, SQL_C_CHAR, DT_TIME },
{0x0010, 0x2160, "EthnicGroup", 16, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x4000, "PatientComments", 254, SQL_C_CHAR, DT_STR },
{ 0x0010, 0x0020, "PatientID", 64, SQL_C_CHAR, DT_STR }
}

Here too, one should keep in mind that the last row in the section "Study" must not be modified. Please refer to chapter 5.2.1.

Finally the Conquest must be rebooted and the database re-initialized.

Activation and contents of the columns can be set up in the configuration under Administrator/Patient data (see chapter 17.2).



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	I coal settings for query images				
Image preview	oos seulus in user y mages Act tile: [PC1 Part for query images: 104 Timeout: 60 seconds 🗘 Repetitions: 0 🗘				
Baseboard	AL UNCO POI		For For query integes. 104		
Loupe	local settings for automatic image receiving				
Image informations	X activate automatic image receiving A	Title: ALTOPC1		Port for automatic image receivi	ng: 105
Overlay / scout lines		Abro di			
Histogram	local (temporary) data				
Job management	save local patient data File: C:\digip	aX\dininaX\PatientList.xml			
Image acquisition		an fa Shari fa ann an a			
Other	Image archive (PACS) Worklist server	Printer			
Administrator	Designation	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	2 mage area e	Conquintz	and the second sec	*****	,0
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 Test
Denires 💌					
Administrator login	Import E	xport Info			Save
					0

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:	¥ Reading				
	X Writing				
Colour:					
Use:	● yes ○ no				
	OK 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 Mai	ntenance Known DICOM pro	viders Browse data	oase Server status Query	/ Move	
<pre>/* ***********************************</pre>	*	Restore this list			
CONQUESTSRV1	127.0.0.1	5678	un		
DIGIPAX DPCSTORESCP	$\begin{array}{c} 127.0.0.1\\ 127.0.0.1\end{array}$	104 105	un un		
					Hide the server (as tray icon)
					About this server
				~	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 / Patient data.



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 "dicom.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 - CONQUESTS	RV1				
Configuration Installation Maintenance Known DICOM providers Browse database Server status Query / Move					
This screen contains essential paramete Local unique name of this DICOM server (app	·	nQuest DICOM server.		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 T Enable PEG(2000) support Images of disk are stored. C Up compressed C Up compressed C Lossless JPEG C Lossy JPEGO C Lossless JPEG C Lossy JPEGO C Lossless JPEG or Uncompressed Images on disk are named: C V2 (allows NKI compression) C Directory Lossless JPEGO	C:\ C:\ C:\ C:\ C: C:: C:: C:: C:: C:: C	0097038		Install server as NT service Uninstall server as NT service	
CDCM (standard format) Cleanup disk below: (MB) Cleanup nightly below: (MB)				Hide the server (as tray icon) About this server	
Below 0 MB, move to:	C:\digipax\cong	uest\data			
Keep Server Alive	Free disk space:			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 must be replaced with an appropriately 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
                               = IMAGE
ForwardAssociationLevel
ForwardAssociationCloseDelav
                              = 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
                               = STUDY
ForwardAssociationLevel
ForwardAssociationCloseDelav = 5
ForwardAssociationRefreshDelay = 3600
ForwardAssociationRelease
                               = 1
ExportConverters = 2
ExportModality0 = *
ExportConverter0 = forward STUDY to AUTODIGI1
ExportModality1 = *
ExportConverter1 = forward STUDY to AUTODIGI2
ForwardCollectDelay
                                  = 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
                  = CONQUEST
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 with batch file WLSSetup.bat contained in the same directory. Execute this batch file by double click and select "I" to install the service. You can uninstall the service by re-executing the batch file and subsequent selecting the option "R".



Problems with Windows Vista/7/8 and Windows Server 2008:

Full administrator rights are necessary for installation of the batch file. In these operating systems the "user account control" might block in some circumstances accurate performance. In such a case start the command line (cmd.exe) under the admin account (right mouse key and select "Run as administrator"). Navigate in the input window to the path of the batch file (e.g. C:\digipaX\Worklist) and start the batch with the command "wlssetup".

Diverse parameters can be changed by editing the batch. 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)

The service must be uninstalled before editing. Perform the changes in the file, saved them and re-install the service. The AE-Title setting of the worklist is done via digipaX configuration. The worklist server itself has no AE-Title and therefore there is also no need to specify any.

More information on the wlmscpfs.exe server can be obtained from the manual of the server ("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.

The rows in the job list are presented in the colour selectable here. If more job lists are configured, particular lists in the job management can be optically easily distinguished by use of different colours.

Further settings for work with this component can be made on the administration page "Job management".

					Configuration
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 e	ntry when the image has com	1e	
Baseboard	Deactivate check of the communication				
Loupe					
Image informations	Study Instance UID			Source of entry in X-ray journal	
Overlay / scout lines	for all jobs the same UID			Source for the pre-allocation of the fields for a new en	
Histogram	 Tor all jubs the same off. 			 selected work 	rkist job
Job management	 for each job its own unique UID 			received imit	ages
Image acquisition	enter no UID			O no source (a	all entries are empty)
Other				(Only if X-ray journal module activated.)	
Administrator	Visual selection				
License	Types:	Configuration:			
Veterinary surgeon	X Referrals		F	6. 16. 16. A	
DICOM / network	X Standard		4		
Job management		Part of the body / refinement / beam projection	Procedure codes		
GDT		E Head	11100000000000		
HL7		Cccipital bone Cervical vertebrae			
Caches / IPS		🐵 🕱 Skull			
Image acquisition		Crbit Nasal bone			
Device links		Image:			
X-ray journal		X Paranasal sinuses Pyramid			
Patient CD		Pyramid (Schueller/Stenvers)			
Image transfer		Cheek bone Cheek bone Cheek bone (Handle pot)			<u>▲</u>
Other		A Mandible	1		
Log	Tags procedure codes: Requested Pro		Scheduled Procedure		ed Procedure Step Code Value
General	integrate procedure codes in image				
Cache					
DICOM	additional informations				
Image processing	Tag accession number: Accession Num	nber	-		
File import	tag job number: Scheduled Pro	cedure Step ID	▼ Save job number as	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
					8

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:

Job nJob d	sion number umber escription	AccessionNumber ScheduledProcedureStepID ScheduledProcedureStepDescription		(0x0008, (0x0040, (0x0040,	0x0009)
additional informations					
Tag accession number:	Accession Number				
tag job number:	Scheduled Procedure Step ID	•	save job number as Accession Number in the exa	mination	
tag job description:	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 9.1.14.3 "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)
CodeValue ScheduledProcedureStepDescription	(0x0008, 0x0100) (0x0040, 0x0007)



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:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".999") 	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		 for each image (immediately) 				
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 Übersicht Export Impor	rt GDT 2.1
Hyperlink Datei nicht kopieren Datei auf Server kopieren Datei auf Server kopieren und löschen Karteieintrag X Karteieintrag nach Typ	Speicherpfad X TurboMed/Dokumente Anderer X JahrMonat
	Übernehmen OK Abbrechen



9.1.2.4 Showing images of a study (record type 6311)

GDTE	Einstellungen	(J)
Übe	rsicht Export Import	GDT 2.1
Name	Bilder zeigen	Bilder zeigen 🔹
Programm Parameter	X GDT Anbindung 2.1 nutzen C:\digipaX\digipaX\digipax\digipax exe	
i arameter	X Programm aufrufen beim Export Export	Import
	C.\digipaX\digipaX\GDT ▼ digiturb.001	C:\digipaX\dgpaX\GDT vurbdigi.*
	Beim Export aus dem Menü Formular anzeigen X Automatischer Export beim Formularaufruf aus dem Menü	Import nur manuell Beim Import Formular anzeigen
	Beim Export aus der Karteikarte Formular anzeigen X Automatischer Export beim Formularaufruf aus der Karteikarte	
Löschei	n Kopieren <u>N</u> eu <u>M</u> enue	Übernehmen OK Abbrechen

GDT Einstellu	ngen				Cy,
Übersicht	Export	Import	GDT 2.1	<u> </u>	
Satzart 8402 8410 Patientenkennung	02.10 IBM(Standard) CP 437 6311 Pat. Nr.	•	Grösse/Gewicht Dezimalzeichen	Punkt •	
Arztkennungen Ansicht	1 : Dr.med Bei Rücksprung nur Pat.Nr. s	senden	Übernehmen	<u>0</u> K	Abbrechen





9.1.2.5 Creating worklist job (record type 6302)

GDTE	instellungen	2
Über	rsicht Export Import GDT 2.1	
Name	Worklist •	
	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\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	
	X Automatischer Export beim Formularaufruf aus der Karteikarte	
Löscher	Kopieren <u>N</u> eu <u>M</u> enue <u>Übernehmen O</u> K <u>Abbreche</u>	n





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 🛛 Prote	okoll
Ansicht Installation Dienste Verschieder	nes Geräte / System AutoGDT
Automatischer BDT-Import	
GDT Verzeichnis:	active
Kartenkürzel:	Kennfeld: CODE
Automatischer GDT-Import	
GDT Verzeichnis: C:\Programme\digipax\	digipax\GDT 🔽 active
Kartenkürzel:	Kennfeld: CODE
Systemanbindung PDE> Exter	m Extern> PDE
Med+Org	
🗖 MediDok	
Medosys	
✓ Protokollierung BDT/GDT -Import	
Diese Einstellungen beeinflussen die Für weitere Hilfen zu diesem Thema k	

9.1.3.2 Transferring constant data (record type 6301)

🛃 Externe Programme 📃 🗆 🔀	🗐 Externe Programme 📃 🗆 🗙
Eigenschaften BDTout	GDT / BDT - Optionen BDTout
Speichern Abbruch Optionen [BDT/GDT] Details Bezeichnung Idigipax - Stammdaten übermitteln Anwendung C:\Programme\digipax\digipax\digipax exe Startparameter Menue-Eintrag Hintergrund-Programm Bestätigung (nur bei Aufruf aus Menü: EXTRAS) V Menue-Beenden	OK Kommando Stammdaten zum externen Programm übermitteln Satzart '6301' Neue Untersuchung starten Satzart '6302' Daten einer Untersuchung anzeigen Satzart '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\GDT\PDE_DIGI.gdt Import.Verzeichnis C:\Programme\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\digipax\di	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	
Diese Werte gelten beim BDT-Export	
BDT Dateiheader ausgeben [SA 0020 und SA 0022] BDT Satzart 0010 ausgeben [SA 0100] BDT Dauerdiagnosen [SA 6100] BDT Dauermedikamente [SA 61002] BDT Abschluß erzeugen [SA 0021; SA 0023] GDT Benutzer / Arzt in GDT Satz als FK 9901 ausgeben	
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 Kommando
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 '6311'
Startparameter	Kartenkürzel
 Menue-Eintrag ✓ Hintergrund-Programm Bestätigung (nur bei Aufruf aus Menü: EXTRAS) ✓ Menue-Beenden 	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 BDT out	GDT / BDT · Optionen BDTout
Speichern Abbruch Optionen [BDT/GDT] Details Bezeichnung Bezeichnung Bezeichnung [digipax - neuer Worklistauftrag Anwendung [C:\Programme\digipax\digipax\digipax.exe Startparameter //w Menue-Eintrag If intergrund-Programm Bestätigung (nur bei Aufruf aus Menii: EXTRAS)	GDT - Einstellungen Typ (z.B. EKG01)
I Menue-Beenden □Datentransfer C AUS C BDT	GDT-Empfänger DIGIPAX
Verzeichnisse Export/Verzeichnis Dateien für Test sichen Ch/Derzen bil nicht die in ADDIADCODE	
C:\Programme\digipax\digipax\GDT\DIGIPDEgdt <u>c</u> Import-Verzeichnis C:\Programme\digipax\digipax\GDT\PDE_DIGI.gdt <u>c</u>	
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				M
Job management	Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".9 			
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		 for each image (immediately) 		🗆 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):	 automatically (according to mode) 				
Log	,,	 this comment text in answer file: 		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:	 IBM CP 437 (DOS) 		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.

453.	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	and a second sec	Leistung
	c_mtxt_2	Bilder zeigen	Menupunkt 2
	c_gnam_2	Digipax	Geraet
	c_uart_2	122173	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



MS3.	FM_GDT		
Nr	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



igimedi.001 \digipax\dig				
0. 2523 0. 25	ipax\gdt			
:\dıgıpax\dig	ipax\digipax.	exe		
:\rp " efund	Kommentar	Signatur	T konform Werte	
	edidigi.* \\rp " efund 'emdbefund	:\rp " efund Kommentar	:\rp m Antwort GD efund Kommentar Signatur	:\rpAntwort GDT konform afund Kommentar Signatur Werte

MediStar basic settings GDT server

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

MediStar export options GDT server



🛛 GA GDT
Importoptionen
Gerät Digipax Untersuchungsart ALLGOO
Zeilentypen Verweis E Befund Kommentar Signatur Werte Diagnose Fremdbefund Ergebnis Größe/Gew. Verweiseintrag
Untersuchungsart eintragen J Untersuchungsdatum eintragen J
Erste Kommentarzeile anhängen J Datum und Uhrzeit aus Einzelmessung J Leistungsziffern
Zeilentyp EBM GOÄ Sonstige Einstellungen
Zeichensatz DOS Doppelte Einträge vermeiden J
Reihenfolge der Einträge
F1 Hilfe, F2 neu, F3 löschen, F4 duplizieren, F5 Grundeinstellungen

MediStar import options GDT server

9.1.5 Connecting x.concept (DOCConcept)

Connection has been made successfully with the following settings.

9.1.5.1 digipaX settings

					Configur	ation
User			Administrator :: GDT			
Informations about clinic and physician User interface	Import directory:	C:\digipaX\digipaX\GDT				
Image preview	Export directory:	C:\digipaX\digipaX\GDT				i i i i i i i i i i i i i i i i i i i
Window split	Type of file:	 fixed GDT file extension (".gdt") 	Incremental file extension (".001" - ".999") 🔿 fixed file names		
Baseboard	Import file:	DIGIxxxx.gdt	e.g.: DIGIxxxx.003	import.gdt		
Loupe	Export file:	xxxxDIGL.qdt	e.g.: xxxxDIGI.017	export.gdt		
Image informations Overlay / scout lines	Check interval in seconds:	10	€ ⁻			
Histogram	Readout delay in miliseconds:	0	• •			
Job management	Log:	log content of files	•			
Image acquisition	- org.					
Other	Adapt field allocation (mapping)					
Administrator	K Create GDT answer					
License	GDT answer files can be created for autor	natic acquited images (via this digipax station) a	is well as for the images which have been receive	ed in the background.		
Veterinary surgeon		Image acquisition and image receipt		ther events		
DICOM / network		for each image (immediately)				
Job management		each series Waiting time: 3 minutes		immediately after job	Collect jobs	
GDT		the study Waiting time: 0 minutes	1	A after import of image		
HL7	•	the study Waiting time: U minutes 💌				
Caches / IPS	a	sk user before creating				
Image acquisition Device links	Entry in comment field (6227): • a	sutomatically (according to mode)				
X-ray journal		his comment text in answer file:	IN IN	ew images exist.		
Patient CD		Ittach additional tags in front:				
Image transfer		-				
Patient data		ttach additional tags at back:				₫
Other		sultline if longer than 60 characters				
Log	Characteristics field: Type	of study carried out:	D	IGIPAX1		
General	Set of characters: I	BM CP 437 (DOS)	0	ISO 8859-1 (ANSI)		
Cache	Require an answer in GDT standard: 🕱 n	equire (despite whether a request has been ma	de to this system or not)			
DICOM	Redp	pient ID:	Re	cipient abbreviation: CONC		
Image processing File import	🗆 d	lelete attached physician number				÷
Administrator login	Import	Export Info				Save
						8



9.1.5.2 x.concept configuration

gdt.ini

IWL]
Titel=digipaX Worklist
Exe=C:\digipaX\digipaX\digipax.exe
GDTDatei=c:\digipax\digipax\gdt\DIGICONC.001
TYP=WL
Satzart=6302
UseDos=1
InternePatNr=0
InternePathr=0
[DIGIPM]
Titel=digipaX Pat-CD einlesen
Exe=C:\digipaX\digipaX\digipaX.exe
GDTDatei=c:\digipax\digipax\gdt\DIGICONC.001
TYP=PM
Satzart=6302
UseDos=1
InternePatNr=0
InternePathr=0
[DIGIPAX1]
Titel=digipaX zeigen
Exe=C:\digipaX\digipaX\digipax.exe
GDTDatei=c:\digipax\digipax\gdt\DIGICONC.001
TYP=
Satzart=6311
UseDos=1
UseDos=1 InternePatNr=0
InternePathr=0
[DIGIWD]
Titel=digipaX Wunddokumentation
Exe=C:\digipaX\digipaX\digipaX.exe
GDTDatei=c:\digipax\digipax\gt\DIGICONC.001
TYP=IMP
Satzart=6302
UseDos=1
InternePatNr=0
[DIGIPCD]
Titel=digipaX Pat-CD erstellen
Exe=C:\digipaX\digipaX\digipax.exe
GDTDatei=c:\digipax\digipax\gt\DIGICONC.001
TYP=PCD
Satzart=6311
UseDos=1
InternePatNr=0

Creating new rubric

Datei Bearbeiten Abrechnung S	tatistik Mediz.Inf. Extras Einstellung	gen ixx.service-Manag	er ?				
Patient •				r G			S.
Stammdaten +	Eremdadressen	000					-
Drucken Strg+P Faxen	Medikamente Rubrik	entendaten 1	Patientendaten 2	Patientendaten 3	⊻ersicherte(r)	Abrechnungsdaten	Scheinrijckseite
Nachricht senden	Krankenblatt-Baustein-Editor				Todo-Eintrag		
Laborda <u>t</u> en	Ziffern Faktoren		LBD PT PBG KT HSK	D13 KHE D Z 🗩 -	Alle Entrige	•	
Anmelden als Strg+A	Laborwerte	♦ Eintrag					ð Anw. ð 🔺 🚺
Beenden	Krankenkassen	Pat. in der S	Sprechstunde, caro			A-VSC	Н-ННЕ
	Anwender Betriebsstätten	(gedruckt)				A-VSC	H-HHE
						A-VSC	H-HHE
	A					A-VSC	H-HHE
	Z					A-VSC	H-HHE
	ÜBERWEI	IS				A-VSC	H-HHE

New rubric done

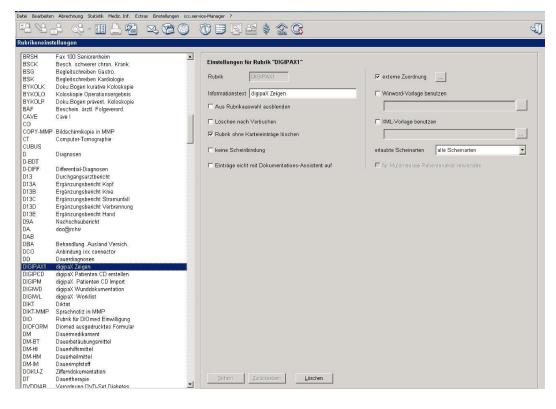
igene Dokumentationsbausteine 💌	Rubrik Name					
Z A	DIGIPAX1 DIGIPAX1	Nome-Rubrik	Versicherte(r) Abrechnungso	iaten	Scheinrückseite	e
ZOSS	Suchpfad des Objekts, das editiert wird	I	Todo-Eintrag			
- 📶 Ü-Sch-SH - 🍘 Überweis	J				<u></u>	4 P
	Informationstext (kein Text für das Krankenblatt)		Ale Enträge 🗸			
	digipaX.Zeigen				ð Anw. ð 🔺	
- 🝘 BG-ABR 🍘 MRT OSG	Text für das Krankenblatt / Informationstext			A-VSC		-
ABLL				A-VSC	H-HHE	
- 🥭 1				A-VSC	H-HHE	
- A DIGIWL - A DIGIPM				A-VSC	H-HHE	
- 4 DIGIPAKI		-		A-VSC	H-HHE	
- AP DIGIPCD				A-VSC	H-HHE	
Krankenblatt-Bausteinfolge				A-VSC		
🖉 Textvariablen				A-VSC		
- 🕼 Ziffernbegründungen	ad	<u> </u>		A-VSC		
🖉 Recalivorgänge 📃				A-VSC		1
eile höher Zeile tiefer Zurück						
	1					



Selecting rubric

			I R 🖴 🖇 🕯	£ G				4
Stammdaten +	Eremdadressen Medikamente							
Drucken Strg+P Bubrik		entendaten 1	Patientenclaten 2	Patientendaten 3	⊻ersicherte(r)	Abrechnungsdaten	Scheinrück:	sete
Nachricht senden Labordaten +	Krankenblatt-Baustein-Editor Ziffern Faktoren	EP AU DW	LBO PT PBG KT HSK	о13 КНЕ <u>р</u> <u>г</u> <u>Р</u> -	Todo-Eintrag Ale Enträge	*		
Anmelden als Strg+A	Laborwerte	*Eintrag					ð Anw. ð	
Beenden	Krankenkassen	Pat. in der 3	Sprechstunde, caro			A-V		
	Anwender Betriebsstätten	(gedruckt)				A-V	SC H-HHE	
	TTT AD					A-V	SC H-HHE	
	A					A-V	SC H-HHE	
	Z					A-V	SC H-HHE	
	ÚBERWE	SIS				A-V	SC H-HHE	1

Assigning rubric



External links

■ Miltwach, 04.07.2012		Eormulare BG:Formulare Patienten-Quittung über EBM-Leistungen				S.
A Dr.med. 👻	Krankenblatt	Kartenlesegeräte Menü Mediz, Inf	2 Patientendaten 3	⊻ersicherte(r)	Abrechnungsdaten	Scheinrückseite
	med.	Toolbar		Todo-Eintrag		
K 15:12 A		Patientensuche Fremdanbindungen	Rubrikenabhängige	Alle Enträge	-	_
K 16:00	atum o Rut	Dokumentations-Assistent	Rubrikerunabhängige		+ Arzt	♦ Anw. ♦ ▲
	04.07.2012 <mark>P</mark> -	Zeitmanagementsystem	Caro		A-VSC	
	BL	To-Do-Listen			A-VSC	
	AE-	Privatliguidation			A-VSC	H-HHE
	A	§G-Abrechnung (R1)			A-VSC	H-HHE
	7	Chefarztabrechnung BG-Chefarztabrechnung (R3)			A-VSC	H-HHE
	ŬE.	Kostenträgerabrechnung			A-VSC	
	В	Kassenbuch			A-VSC	
	т	Statistiken			A-VSC	H-HHE
	D	Labor	•		A-VSC	
		Recall				
	09.07.2012	Konfiguration Nachrichten Konfiguration arriba Konfiguration ixx.servicecenter				



Creating new external link

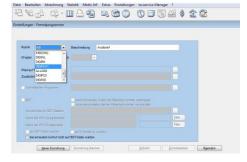
Modulite 0000001 2350 💌	Beschrebung digipak Zeigen
Autorityp	Exe
Programm / Programmbiliiothek	CIDCONCEPTIDE APPSRUNDOT EXE
Brogramm / Programmbblicthek	
grogramm / Programmbiliothek	
grognenn í Frognarnisklichtek Péregeter	Over a Swedy-steamer
	Own z

Configuring calling in general

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🕎 Bestellte Patie	nten 👻	<u>K</u> rankenblatt	Menü Mediz. Inf	Patientendaten 2		Patientendaten 3
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F	07:15	Datum & Rubrik	Dokumentations-Assistent	Rubrikenunabhängige		
F	07:20	25.02.2010 PRAX	Zeitmanagementsystem			
F	07:35	DA	To-Do-Listen			
к	08:15	DAB	1			
F	13:35	0,10	Privatliquidation			
F	15:15	14.09.2010 SH A	BG-Abrechnung (R1) Chefarztabrechnung			
K	15:20	14.05.20100117	BG-Chefarztabrechnung (R3)			
N	10:30		Kostenträgerabrechnung			
			Kassenbuch			
			Statistiken			
		24.01.2011 DA	Labor	•		
		DAB	Recall			
			Konfiguration Nachrichten			
		14.02.2011 PRAX				
		09.09.2011 PRAX	Konfiguration ixx.servicecenter	-		

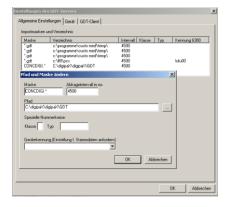
Selecting rubric

Entering calling in general





Polling settings for reverting entry





9.1.6 Connecting Quincy

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

	QUINCY WIN *		Arzt: Dr. med. Karl Rae	and the second s	er ref					_ 🗆 ×
Name		m Gebu	Pflege der Hilfsdaten Abre- urtsdatum Alter	Status Kasse:	61125	Cassenart GO		ne PG Straße		
Abaz	ri, Imer		04.1960 48 Jahre	Mitglied AOK	Baden-Württemb	R / AOK BM/	ξ] μ	Im Gai:	sgraben 17	
Beme	kungen	🖉 Arbeitsplatzein	istellungen						×	
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Menü										
	Ko	mmentar	Programmaufruf	Datenverzeichnis	Anschlußa	t Ke	ennwort Arb	eitsverzeichnis	Übergabedati	ei 📥
1	GUSbox Doku		IShovFinaena		Outineu-Funktion				and l	
2	Nachricht an a	ar Menü	definieren						×	
3	DIGIPAX1			• • •						
4	AMIS Plus	Röntgen	geschlossenen Programmes/	uerates		_ Kennung von QUINCY WIN (4 Buchstaben zur Bildung der Dateinamen)				
5		dennes and the second second			and the second second	- des F rendersen	mms (4 Buchstaben	au Did aa day D		
6		DIGIPAX ob	ligatorisch, dient der Identifika	tion des Anschlusses	DIGI	<u>g</u> des riemoprogra	mins (+ oucristaben	i zui bildung dei b	atemaneni	
7		1	chlossene Gerätesoftware?		I					
8			e Programm kann als Server	und Client arbeiten.	▼ I▼ Aus	Austauschdateien mit einer laufenden Nummer versehen				
9		Aufruf des Fremdpro	gramms mit kompletter Pfadar	ngabe		Sonderoption: dieser Aufruf soll keinen Neubefund auslösen				
10		-	ax\digipax\digipax.exe		- Son	Sonderoption: alle Dateien in den Briefkastenverzeichnissen akzeptieren				
11		Pfad des Verzeichnis	sses für den Datenexport			Sonderoption: abweichender Programmaufruf für Aufruf aus der Kartei				
12		C:\GDT								
13		Pfad des Verzeichni:	sses für den Datenimport		Sonder	Sonderoption: abweichende GDT-Anforderungsdatei bei Aufruf aus Kartei				
14		C:\GDT								
15		Geräte und verfahre	nsspezifische Kennung			NCY WIN wartet bi	is es manuell wieder	aktiviert wird		
16		ALLG00			🗂 bei	Stammdatenüberga	be mehr Information	en (z.B. Kasse) mi	itgeben	
17						il Zeichensatz verv	venden (sonst DOS-	ASCII/OEM)		
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🛃 St	art 🛉 * QL	JINCY WIN* Ar	💥 digipax						💽 « 🗞 🔼	17:00

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.

					Configuration
User 🗅			Administrator :: GDT		
Informations about clinic and physician	Identification				
Image preview	GDT-ID: DIGIPAX		Abbreviation: DIGI		
Baseboard					
Loupe	Communication				
Image informations Overlay / scout lines	Import directory:	C:\GDT			
Overlay / scout ines Histogram	Export directory:	C:\GDT			
Job management					IM
Image acquisition	Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".999" 		
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					
Job management	Adapt field allocation (mapping)				
GDT					
Caches / IPS	Create GDT answer				
Device links	GDT answer files can be created for	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		 for each image (immediately) 			
Other	Moment of creating:	🔿 each series Waiting time: 3 minutes 🚖	1	immediately after job	X Collect jobs
Log	Homent of creating:	examination Waiting time: 10 minutes			
		 If the last job is ready 		after import of image	
General					
Cache		ask user before creating			
DICOM	Entry in comment field (6227):	 automatically (according to mode) 			
Image processing File import		 this comment text in answer file: 	17	ere are new images available	
Workist		add additional tags:		are are non-magaz availablem	
GDT		auu auuruonai tags:			
Print	Characteristics field:	Type of examination carried out:	Al	LG00	
burning CD / DVD	Set of characters:	 IBM CP 437 (DOS) 		ISO 8859-1 (ANSI)	
Devices 💌		@ 10/10/ 0000J	0	100 0000 1 (6400)	T
Administrator login	Import	Export Info			Save
					(0



9.1.7 Connecting ALBIS

9.1.7.1 digipaX settings

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

					Configuratio	a
User			Administrator :: GDT			
Informations about clinic and physician	Identification					_
User interface	GDT-ID: DIGIPAX		Abbreviation: DIGI			
Image preview						
Baseboard Loupe	Communication					
Loupe Image informations	Import directory:	C:\digipaX\digipaX\digipaX\GDT				
Overlay / scout lines	Export directory:	C:\digipaX\digipaX\digipaX\GDT				
Histogram	Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".999")) fixed file names		
Job management	Import file:	DIGIXXXX.gdt	e.g.: DIGIXXXX.003	import.gdt		
Image acquisition	Export file:	-				
Other		xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt		
Administrator	Check interval in seconds:	10	•			
	Readout delay in miliseconds:	0	-			
License	Log:	log content of files				
Veterinary surgeon	Adapt field allocation (mapping)					
DICOM / network Job management	 Hoops new anota and (nopping) 					
GDT	K 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 receive	d in the background.		
Caches / IPS		Image acquisition and image receipt	10	ther events		
Image acquisition		for each image (immediately)				
Device links		each series Waiting time: 3 minutes		immediately after job	X Collect jobs	
X-ray journal	Moment of creating:	O the study Waiting time: 10 minutes				
Patient CD			•	after import of image		
Image transfer		O if the last job is ready				
Other		ask user before creating				
Log	Entry in comment field (6227):	 automatically (according to mode) 				
General		O this comment text in answer file:	Ne	w images exist.		
Cache		add additional tags:				
DICOM	Characteristics field:	The state of the second second				
Image processing	Characteristics held:	Type of study carried out:	AL	LG00		
File import	Set of characters:	 IBM CP 437 (DOS) 		ISO 8859-1 (ANSI)		
Workist	Require an answer in GDT standar	d: require (despite whether a request has been n	nade to this system or not)			
GDT		Redpient ID:		ipient abbreviation:		Ē
Administrator login	Import	Export Info				Save
						8

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								
A Pa				L Statistik Stammdaten Optionen		,				. 1	I F
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==	Tel.: Arbeitother			Alle schließen							
	- Hausarat			- Zuständiger Arzt	✓ 1 20030 / Test, Toni / m / 01.01.200) / AOK Niedersachsen]				
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			HWS: LR/RR	50-0-50 , LN/RN : 25-0-2	25,Kinn-Jugulum-Abstand	5 cm, Reklin					
Η		brief 🖸	nicht definiert								

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



	5					
Patient	Formular Extern Abrechnung Privat IGeL Statistik Stammdaten	Optionen Ansicht ?				9
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		Arbeitsplatz Arztbrief Aufgabenliste				
E		Augenarztmodul Bildvorlagen				
		Biometriedaten CGM ELAT				
		Cordoba CSD Patienten Langzeitstudie DALE-UV				
		DALE-OV Diagnosen DMP-Assist				
		eGK Formulare				
		Geräte Hausbesuchsmodul HZV				
		HZV ifap ifap impfCENTER				
		Impf-doc IQ - Premium				
		Kartelkarte Kassenbuch				
RÖ		Kleine Listen Labor Nachrichten / Kommunikation	Alle Indizes löschen Arbeitsplätze			
		OPS Patientenfenster	Datenbankeditor Datenbanken kopieren			
		Praxisgebühr PraxisTimer	Diagnosen + EBM 2009 +			
		Privatiquidation Programmdatum	Export Externe Programme			
		Regionale Feiertage Röntgenbuch	Freischaltungen			
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2		Scribor Statistik	Korrektur Manuelle Lizenzierung			
		Stempel Terminkalender Verordnungen	Patienten zusammenführen Scan-Software			
		Verorgungsprogramme Wartezimmer	Update VăndG Verax Informationen			
		Zeitintervale	Verzeichnisse			
Externe	Programme einbinden	Wartung •	Verzeichnisse externer Programme			08.2012

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

	tient Formular Extern Abre	chnung Privat IGeL	Statistik Stammd	aten Optionen Ansi	tht 7									
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Upon expiry of the external program use period, it is also necessary to contact ALBIS.



	ALB.		
Pa	atient	nt Formular Extern Abrechnung Privat IGeL Statistik Stammdaten Optionen Ansicht ?	
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Link	3		
	3		
Ξ			Externe Programme
E			Menüleinträge:
			Löschen Tiefer Abbruch
			Befeht Ubergebedøteren
			Belefit ALBIS
E	5		Menixib Die Freischaltung für <einfügen externer="" genehmigen="" programme=""> für 85 Wr. ((x/ \w.), 37446000 lauft n.3 Tagen aust</einfügen>
			Arbeis D. h. de freigeschaltete Funktion stellt in State and the state of the state
R			Status: Bitte nehmen Sie Kontakt zu Ihrem ALBIS Verbriebs- und Servicepartner auf. 000
R	U		Aufür
			Datebeeching (EIN)
			Aktion bei eineuter Valderung Nicht übernehmen
9	8		

Creating a job:

tenüeinträge:				
Digipax	A	Einfügen	Höher	OK
Import PatCD imp		Löschen	Tiefer	Abbruch
				Hilfe
Befehl: Befehlszeile: Menütext: Parameter: Arbeitsverz. (\$VERZ): Karteikartenkürzet:	C:\digipaX\digip Digipax C:\digipaX\digip C:\digipaX\digip	aX\albis\ste	BDT (7/92) C BDT (2/94) C BDT (Mix) C	GDT 6301 Office-Dokument GDT 6302 Diabetes BDT 2.0 GDT 6301 + 6302 ALLE00
Statuszeilentext: Ausführung: 16 Bit		Patient aktiv	Allergologie, allge ateibezeichnung C:\digipaX\digipa>	(\$AUS):
Windows- Programm	Togrammen	n schließen	Nickgabe Ohne © BDT, Dateibezeichnung C:\digipaX\digipa\ Aktion bei erneuter	(\$EIN):
			Neuen Eintrag erz	eugen 🔻

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):

tenüeinträge:		1	1	
Digipax mport	<u>^</u>	Einfügen	Höher	OK
PatCD imp		Löschen	Tiefer	Abbruch
	-			Hilfe
Befehl: Befehlszeile: Menütext:	C:\digipaX\digip Import	aX\albis\sta	BDT (7/92) C BDT (2/94) C	GDT 6301 Office-Dokument GDT 6302 Diabetes BDT 2.0
Parameter: Arbeitsverz. (\$VERZ): Karteikartenkürzel: Statuszeilentext: Ausführung:		aX\ Patient aktiv		GDT 6301 + 6302 IMP • mein (\$AUS):
16 Bit Windows- Programm	Programmend Datenbanker	n schließen	ückgabe Ohne ● BDT, Dateibezeichnung C:\digipaX\digipa} uktion bei emeuter 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:

Menüeinträge:				
Digipax Import	*	Einfügen	Höher	OK
PatCD imp		Löschen	Tiefer	Abbruch
	*			Hilfe
Befehl:			İberqabedateien Aufruf C Ohne C	GDT 6301
Befehlszeile:	C:\digipaX\digip	baX\Albis\sta		Office-Dokument
Menütext:	PatCD imp		C BDT (2/94) •	
Parameter:				Diabetes BDT 2.0 GDT 6301 + 6302
Arbeitsverz. (\$VERZ):	C:\digipaX\digip	aX\		
Karteikartenkürzel:	cdimp		Untersuchungsart: Allergologie, allge	PM 💌
Statuszeilentext:	1		Dateibezeichnung ((\$4) IS)
Ausführung:		Patient aktiv	C:\digipaX\digipa>	
16 Bit Windows-	Programmen		Rückgabe	
Programm	🔲 Datenbanker		C Ohne 🖲 BDT/	
			Dateibezeichnung	
			C:\digipaX\digipa>	
			Aktion bei erneuter	Validierung:
			Neuen Eintrag erz	eugen 💌

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:

Jser			Administrator :: GDT		
informations about clinic and physician mage preview Baseboard	Import directory: Export directory:	C:\digipaX\digipaX\GDT \\Server001\C\befund\GDT			
oupe image informations Dverlay / scout lines listogram do management	Type of file: Import file: Export file: Check interval in seconds:	fixed GDT file extension (".gdt") DIGI2000x.gdt x00xDIGI.gdt 10	Incremental file extension (".001" - ".999") e.g.: DIGDxxxc.003 e.g.: xxxxDIGL.017	O fixed file names (import.gdt (export.gdt	
mage acquisition Other	Readout delay in miliseconds: Log:	0 log content of files	÷		
dministrator icense	Adapt field allocation (mapping)				

GDT configuration on a digipaX workstation

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Configuration of the worklist job in Duria



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3	xxx3000	8	Patie	enten Ni	r.					Ja	Nein
5	xxx3101	8	Nachr	name						Ja	Nein
6	xxx3102	8	Vorna	ame						Ja	Nein
7	xxx3103	8	Gebur	rtsdatu	n					Ja	Nein
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Row configuration for creating a worklist job (6302)

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Row configuration to display images (6311)



	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	ок√
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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.

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Frau Manfred Tes	tmann, Wolfsburg *12.00.1954, 55 Jahre
	0 Dauer-Diagnoten
	K Kein Arzt - Barmenia
■ 3/2010 29.07.2010 G G	Untersuchung ALLG00 vom 29.07.2010 - LWS
	CDT - Untersuchungsergebnis
	Geanterpolnis Datali :
	Datum: 29.07.2010 🔟 Ulrzeit: 17:11:46 Geräte-ID: DIGIPACO Art der Untersuchung: ALLG00
	Diagnose:
	Befund
	Feendbehard:
	Konmentar: LWS
	Ergebris:
	Dateiarchiv.
	Signatur:
	Testiener Messelatum TestID Bezeichnung ProbeniD Ergebnis Einheit Normwerte Ergebnis
	Iest anzeigen Untersuchung am Gerät anzeigen Abbrechen
	Bilder/Dokumente zeigen GDT 6311
Alle Schgine 🗖 📜 Ka	rtei
29.07.2010	17:26
	nte u 🔁 Cr\dgpax\/dgpa 🔁 Si\Kind Kiwi 📄 Si\Kind Kiwi 📔 🕮 Unbenannt - Paint 🗌 🗮 Acronis Badup 🎽 Doterbank-Utility 💭 KIND Prastis-ED 🗙 dgpax

				onfiguration	
User	Administrator :: GDT				
Informations about clnic and physician Image preview Baseboard Loupe Image informations	Import directory: Export directory: Type of file: Import file:	C:\GDT C:\GDT fixed GDT file extension (".gdt")	97) ○ fixed file names		
Overlay / scout lines Histogram Job management Image acquisition Other	Export file: Check interval in seconds: Readout delay in miliseconds: Log:	xxxxxD(cl_gdt e.g.; xxxxD(cl_017 10 0 0 0 10	export.gdt		
Administrator	Adapt field alecation (mapping) Cataget GOT answer Cot answer				
Job management Corte (JPS Device Intis X-ray purnal Image transfer Other	Moment of creating:	O for each image (immediately)	other events Kimmedately after job At Collect jobs after import of image		
Log (C) General Cache DICOM		automatically (according to mode) this comment text in answer file: add additional tags:	There are new images available		
Image processing File import			ALLG00		
Worklist GDT Print burning CD / DVD Peerkees	Require an answer in GDT standard:	require (despite whether a request has been made to this system or not)	ecpient abbreviation: KIWI	[
Administrator login	Import	Export Info		Save	
				8	



GDT-Konfiguration					
Allgemein Schnittstellen					
Schnittstellenbezeichnung:	DigiPacs				
Basiseinstellungen spezielle Einstellungen					
WSID:	0 🚖 (WSID = 0 -> Einstellung gilt für alle WS)				
Exportdatei (KiWi-> Gerät, Beispiel: Satzart 6302)					
Zeichensatz:	Standard 💌				
Verzeichnis:	C:\gdt	9			
Dateiname:	digikiwi.gdt				
Importdatei (Gerät -> KiWi, Beispiel: Satzart 6310)					
Zeichensatz:	Standard 💌				
Verzeichnis:	C:\gdt	-			
Dateiname:	kiwidigi.gdt				
Kennfeld:	ALLG00				
🕂 Schnittstelle <u>e</u> infügen	Schnittstelle jöschen	Abbrechen			

GDT-Konfiguration	×
Allgemein Schnittstellen	
Schnittstellenbezeichnung:	DigiPacs
Basiseinstellungen spezielle	Einstellungen
Schnittstelle:	 Aktiv 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:	
Anzeige am Gerät:	l'C:\digipaX\digipaX Demo\digipax.exe'' 🔒
🗣 Schnittstelle <u>e</u> infügen 👌	🖉 Schnittstelle jöschen 🛛 🔚 Speichern 🛛 🗶 Abbrechen



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

 $I: \backslash GDT \backslash AP05$

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	3DT-ID: DIGIPAX1 Abbreviation: DIGI								
Baseboard										
Loupe	Communication									
Image informations	Import directory:	I:\GDT\AP01								
Overlay / scout lines										
Histogram Job management	Export directory:	I:\GDT								
Image acquisition	Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".999") fixed file names						
Other	Import file:	DIGIxxxx.gdt	e.g.: DIGIXXXX.003	import.gdt						
000	Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt						
Administrator	Check interval in seconds:	5	•							
License	Readout delay in miliseconds:	0	•							
Veterinary surgeon	Log:	log content of files								
DICOM / network	-									
Job management	Adapt field allocation (mapping)									
GDT										
Caches / IPS	Create GDT answer									
Device links	GDT answer files can be created f	or 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	0	ther events						
Image transfer		for each image (immediately)								
Other		each series Waiting time: 3 minutes		immediately after job	Collect jobs					
Log	Moment of creating:	examination Waiting time: 10 minutes								
LOG				after import of image						
General		If the last job is ready								
Cache		ask user before creating								
DICOM	Entry in comment field (6227):	automatically (according to mode)								
Image processing	croy in connect tied (0227):	 automatically (according to mode) this comment text in answer file: 								
File import Worklist				nere are new images available						
GDT		add additional tags:								
Print	Characteristics field:	Type of examination carried out:	AL	1.G00						
					A					
burning CD / DVD	Set of characters:	 IBM CP 437 (DOS) 	0	ISO 8859-1 (ANSI)	▲ ▼					
Administrator login	Import	Export Info			Save					
					8					
<u></u>					/					

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-



2

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 Arbeitsplatz	OnlineNummer: 1 Arbeitsplatz: 1 Aktiv 🔽 ASCII-Format
Suchwort: Pat-CD	Suchwort: Zeigen
Beschreibung:	Beschreibung:
Export Dateiname: I:\GDT\AP01\digityp.001	Export Dateiname: [I:\GDT\AP01\digityp.001
Vorlage: [I:\WINACS\VORLAGE\patcd.tpl >> Bearbeiten	Vorlage: I:\\/INACS\VORLAGE\zeigen.tpl >> Bearbeiten
Programmdatei: >>	Programmdater >>
Typ: Textdatei (ASCII)	Typ: Textdatei (ASCII)
Datei überschreiben 💌 🗖 Scheinaktivierung	Dateityp: Datei überschreiben 🔽 🗖 Scheinaktivierung
	- Import
Dateiname: testen	Dateiname: testen
Vorlage: >> Bearbeiten	Vorlage: >> Bearbeiten
Typ: Textdatei (ASCII)	Typ: Textdatei (ASCII)
🔽 immer löschen	🔽 immer löschen
Q + Im DK Abbrechen Übernehmen Hilfe	Q → Image: Dispersion of the second secon
PRege - Onlineverwaltung Direktsuche: Worklist Onlines Online Online Online Arbeitsplatz. Arbeitsplatz. Arbeitsplatz. Arbeitsplatz.	Si Pflege - Onlineverwaltung X Direktsuche: Rückantwot Onlines
Direktsuche: Worklist Onlines Online Atbeitsplatz 1 PAtiv F ASCII-Format	Direktsuche: Rückantwott Onlines
Direktsuche: Worklist Onlines Onlines Onlines Onlines Direktsuche: Asbeitsplatz 1 Aktiv Asbeitsplatz 1 Asbeitsplatz 1 Asbeitsplatz 1 Aktiv Asbeitsplatz 1 Asbeitsplatz 1 Aktiv Asbeitsplatz 1 Asb	Direktsuche: Rückantwort Onlines Onlines Online Online Online Online Suchwort: Fückantwort Beschreibung Export Dateiname Vorlage Frogrammdstei Typ: Textdatei (ASCII) Scheinaktivierung Import Interchreiben Timpit
Direktsuche: Worklist Onlines Onlines Onlines Onlines Direktsuche: Atbeitsplatz 1 Atbeitsplatz 1 Aktiv ASCII-Format Suchwork Worklist Beschreibung Export Dateiname: [\\SDT\APQ1\\dgisyp.001 Vorlage [\\WINACSWORLASE\worklist tpl Programmdate:	Direktsuche: Rückantwort Onlines Online Online OnlineNummer: 5 Aubeitsplatz 5 Suchwort: Rückantwort Beschreibung Dateiname: >> Pogrammdatei: >> Typ: Textdatei (ASCII) Dateilige: Scheinaktivierung Import Textdatei (ASCII) Dateilige: >> Import Textdatei (ASCII) Dateiname: I:\GDT\visyndigi*
Diriektsuche: Worklist Onlines Onlines Onlines Onlines Onlines Diriektsuche: Arbeitsplatz 1 Arbe	Direktsuche: Rückantwott Onlines Onlines Online Online Online Suchwott Direktwinner: S Suchwott Rückantwott Beschreibung S Export Dateiname: Vologe >> Pogrammdatei >> Typ: Textdatei (ASCII) Dateityp: Datei überschreiben Import Scheinaktivierung Import Listor Scheinaktivierung Volage: I-MORT Volage: I-MORT Beatbeiten >>
Direktsuche: Worklist Onlines Onlines Onlines Onlines Direktsuche: Atbeitsplatz 1 Atbeitsplatz 1 Aktiv ASCII-Format Suchwork Worklist Beschreibung Export Dateiname: [\\SDT\APQ1\\dgisyp.001 Vorlage [\\WINACSWORLASE\worklist tpl Programmdate:	Direktsuche: Rückantwott Onlines Onlines Online Online Online Suchwott; Suchwott; Rückantwott Beschreibung Suchwott; Dateiname; >> Vorlage; >> Plogrammdate; >> Datelpp: Dateitiderschreiben Dateitiderschreiben Cheinaktivierung Import Dateitanzer: Vorlage; Itesten Vorlage; >> Bescheiten >> Programmdate; >> Typ: Textdatei (ASCII) Dateinger: Itesten Vorlage; Itesten
Diriektsuche: Worklist Onlines Onlines Onlines Onlines Onlines Diriektsuche: Arbeitsplatz 1 Arbe	Direktsuche: Rückantwott Onlines Onlines Online Online Online Suchwott Direktwinner: S Suchwott Rückantwott Beschreibung S Export Dateiname: Vologe >> Pogrammdatei >> Typ: Textdatei (ASCII) Dateityp: Datei überschreiben Import Scheinaktivierung Import Listor Scheinaktivierung Volage: I-MORT Volage: I-MORT Beatbeiten >>
Direktsuche: Worklist Onlines Onlines Onlines Onlines Onlines Online OnlineNummer: 1 Arbeitsplatz: 1 Arbeitsplatz: 1 Arbeitsplatz: 1 Aktiv ASCII-Format Suchwort: Worklist Beschreibung Export Dateiname: [+\GDT\AP01\dgi:yp.001 Vorlage: [+\WINACS\VORLAGE\worklist.tpl Programmdate: Typ: Textdate: (ASCII) Typ: Textdate: (ASCII) Dateiname: Vorlage: >>> Bearbeiten Typ: Textdate: (ASCII) Typ: Textdate: (ASCII) Typ: Textdate: (ASCII) Typ: Textdate: (ASCII)	Direktsuche: Rückantwott Onlines Onlines Online Online Online Suchwott; Suchwott; Rückantwott Beschreibung Suchwott; Dateiname; >> Vorlage; >> Plogrammdate; >> Datelpp: Dateitiderschreiben Dateitiderschreiben Cheinaktivierung Import Dateitanzer: Vorlage; Itesten Vorlage; >> Bescheiten >> Programmdate; >> Typ: Textdatei (ASCII) Dateinger: Itesten Vorlage; Itesten



To be able to re-call the images with double click at the revertive entry 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".

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🗉 🛄 dbo.IFFeld		23	Röntgen	8000	RÔ	0	Röntgen	@ao DigiPAXzeigen	False			KRABLMEMO		
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ImageListPictures	8 -											\sim	(Name) Datenbankname	WINACS
dbo.Images		261	FREI_OPBEZ	100099	OPBEZ	0	Operation		False				Servername	wilkecs w2k3
		262	FREI_OPOPE	100101	OPOPE	0	Operateur		False				Abfrage-Design	
do.importkonrigspake do.importKonrigTab		263	FREI_OPASS	100098	OPASS	0	OP-Assistenz		False				Abfrageparameter	
dbo.ImportNDTDatei	3 F	264	FREI_OPNAR	100100	OPNAR	0	Anästhesie		False				Alle Spalten ausgel	
dbo.ImportProtokol	3 F	265	FREI OPLAGE	100108	OPLAGE	0	Lagerung		False				DISTINCT-Werte	
dbo.ISoftCCPBefehle	3 -	266	-	100097	OPAN	0	Anasthesist		False				GROUP BY-Erweite	
🗉 🛄 dbo.IsyDokuMandantModul	3 -	2012 N.C.	FREI_OPAN										E Oberste Angabe	Nein
🗉 🛄 dbo.IsyDokuModule		267	FREI_OPBLUT	100109	OPBLUT	0	Blutsperre		False				SQL-Kommentar	
I dbo.KaBuKassenbuch		268	DCDMPTEDMPI	48200	DCDMP	0	indikationsüberg	@AO DCDMP	False			KRABLMEMO	Zieltabelie	
🗄 🔄 dbo.KaBuKassenbuchMandanb		269	DCDMPEHKS	48220	DCDMP	0	Früherkennung	@AO DCDMP	False			KRABLMEMO	1	
dbo.KaBuKassenbuecher dbo.KaBuKategorien	8 I T	270	DCDMP201	48240	DCDMP	0	Früherkennung	(@AO DCDMP	False			KRABLMEMO		
	8 -	271	FREI CHIRO	100110	CHIRO	0	Chirotherapie		False					
dbo.KaBuKategorienMandante	3 -		120 Dec - CLO (00000)	71000		0	Workflow		False					
🗉 🛄 dbo.Kartenleser		272	ISYDOKUMA		MAKRO									
🛞 🛄 dbo.KasseSammelstellen	8 L	273	ABKLQ	70300	ABKLQ	0	Rechnung §116b		False					
🖅 🛄 dbo.KategorieAuswahl		274	ABKS	70400	ABKS	0	Gutschrift/Storn		False					
I dbo.KBVPrúfnummer		275	ABKFS	70500	ABKFS	0	Fallstorno §116b		False					
I dbo.Kennziffern	3 F	276	LAN	9600	LAN	0	Laborauftrag		False					
dbo.KennziffernDetail dbo.KISEventLog	3 I-	277	HeiRezSSST	2090	R	0	Rezept für Stim		False					
do.kisEvent.og do.kisFall	11-													
doo.kisFallesuche		278	PIALQ	70600	PIALQ	0	Rechnung §118		False					
dbo.kISFalBesucheProt	3	279	PIAS	70700	PIAS	0	Gutschrift/Storn		False					
dbo.kISFalDiagnosen		280	PIAFS	70800	PIAFS	0	Fallstorno §118		False					
🗉 🛅 dbo.KISFalHistorie		281	SPZLQ	71100	SPZLQ	0	Rechnung §119		False					
I dbo.KISFalinformation		282	SPZS	71200	SPZ5	0	Gutschrift/Storn		False					
Image:		283	SPZFS	71300	SPZES	0	Fallstorno §119		Fake					
dbo.KISImportListe	- III													
dbo.KissFallChangeLog dbo.KissFallChangeLog dbo.KisStationMapping	8 -	284	SMS	9700	SMS	0	SMS		False					
dbo.KtDistationmapping dbo.KKDiagnosenSort		285	DIKT	12100	DIKT	0	Diktat		False					
dbo.KKMedikamentenSort	1	286	FREI_PACS	100111	PACS	0	DigPAX	@ao DigiPAXzeigen	False			KRABLMEMO		
dbo.KKWerkzeugToolbar	*	18.81	MAL	NULL	ARRI	MAL	NULL	ARRI	NERL	NULL	ARRI	ALR1		
dbo.KKWerkzeugToolbarButtor dbo.KlinikMenu													GROUP BY-Erweite	rung

9.1.10.3 Image server configuration

					Configuration	
User	•		Administrator :: GDT			
Informations about clinic and physician	Identification					
User interface	GDT-ID: DIGIPAX1		Abbreviation: DIGI			
Image preview					· · · · · · · · · · · · · · · · · · ·	
Baseboard	Communication					
Loupe Image informations	Import directory:	C:\digipaX\digipaX\GDT				
Overlay / scout lines	Export directory:	I:\GDT				
Histogram						
Job management	Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".9 			
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	0				
Job management						
GDT		14 Create GDT answer				
HL7	GDT answer files can be created	d for automatic acquited images (via this digipax station) as well as for the images which have been received in the background.				
Caches / IPS Image acquisition		X Image acquisition and image receipt		other events		
Image acquisition Device links		 for each image (immediately) 		immediately after job	Collect jobs	
X-ray journal	Moment of creating:	🔿 each series Waiting time: 3 minutes 👘				
Patient CD		the study Waiting time: 0 minutes ≑		X after import of image		
Image transfer		ask user before creating				
Other		ask user before creating				
-	Entry in comment field (6227):	 automatically (according to mode) 				
Log		 this comment text in answer file: 		New images exist.		
General		add additional tags:				
Cache	Characteristics field:	Type of study carried out:		ALLGOD		
DICOM						
Image processing	Set of characters:	IBM CP 437 (DOS)		ISO 8859-1 (ANSI)		
File import	Require an answer in GDT stand	lard: 🕱 require (despite whether a request has been	made to this system or not)			
Worklist		Recipient ID:		Recipient abbreviation: ISYP		
GDT	-	delete attached physician number				
Administrator login	Import	Export Info			Save	
					<pre></pre>	

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
MICS-ISYNET I Lizv (6.80.17) - SQL Version 2 2 Dotel Bearbeiten Anscht Potent Terminmenöper Labor Auswertung Extras 5 2 29 29 20 6 6 6 7 20 10 6 6 6 7 20 10 6 6 7 20 10 10 10 10 10 10 10 10 10 10 10 10 10	stem Fenster Hille	6 X /1979 Alter: 32 Jahre; M]
		Syriste (LP)
Cave:		Syliste (LP)
A CONTRACTOR OF		
Allgemein Sglektiv 3. Diagnoser		×
Datum: Kategorie: Direktsuche: Worklist	-	
08.06.2011 Konsultationsbe		
Datum Kategorie _ Online		
08.06.2011 KBEM OnlineNummer: 1 Arbeits	platz: 1 Aktiv	ASCII-Format
29.03.2010 GKS Suchwort Worklist		
KBEM Beschreibung		
24.08.2004 AKTAM Export		
Dateiname: I:\GDT\AP01\digiisyp.001		
Vorlage: I:\WINACS\VORLAGE\worklist.tpl		>> Bearbeiten
L Programmdatei:		»»
L Typ: Textdatei (ASCII)		
PKS PKS	cheinaktivierung	
Dateiname:		testen
Vorlage:		>> Bearbeiten
Typ: Testdatei (ASCII)		
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	dung 1 🖺 (134) Testmann, Otto 32J 4M 6T N/	N 151
🖉 Start 🚠 🌌 🍃 🕼 🚺		DE 🖈 🍽 🐜 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]
**** 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" ERG000 "ERGO" ERG001 "ERG0" LUFU00 "LUFU"
BDM00 "BDM01 "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]
[@btr.3FIND+(4,0220),0,233]
**** 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]
1999 Altrack times to Verickle MENO
**** 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
'*** 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 Connecting ABOMED

9.1.11.1 ABOMED configuration

The settings for ABOMED must be performed on each local computer. ABOMED works solely on the network drive Z: and supports only file and directory names with max. 8 characters + 3 characters for file extension as it was with the old DOS file system (example: TEXTFILE.TXT).

Call up the configuration by using the Z I P keys. On the page 3 there are settings for the GDT interface. A separate directory for the GDT file transfer must be established for each PC.

SYSTEMPARAMETER (1)	Stöckle	□ □ □ □ □ □ □ □ □ □
3.0 PARAMETER ZUR ZAHLUNG		Seite 3/4 a
Übernahme der Rechnungs- daten in die Buchhaltung : At	GDT Einstellungen	
 3.1 PARAMETER FÜR DIE MAHNUNG Mahnung 1. Mahnung nach Rechnungsdruc 2. Mahnung nach 1. Mahndatum 3. Mahnung nach 2. Mahndatum 	ALS-Kurzel ABND Verzeichniss Gerste-Kurzel DIGI Zeichensatz ANSI T GOT-Verzeichnis Zi-bioonedigdt/pC-VAC11 Datemane (Gerate-Kurzel-ALS-Kurzel-Alsochaählende Nr > Modus 6502-Neue Untersuchung anfordem	V Adv Teste: Alt + G
3.2 PARAMETER FÜR IFAP-INDEX / ME ifap-PraxisCENTER inst. auf u ifap-version Browser für DOS-/Windowsbetrin GDT-Schnittstelle	Programm Auftur Specifiern 20. DOS : Einstellungen	Abbrechen
F1-Hilfe F2-Tasten B [:]	ild↓/Bild† F10-s	ichern Esc -Ende

9.1.11.2 digipaX configuration

For each PC a corresponding directory must be established in the digipaX. Incremental file extensions are used. A revertive entry is not supported at present.

User			Administrator :: GDT		
Informations about clinic and physician	Identification				
User interface	GDT-ID: DIGI		Abbreviation: DIGI		
Image preview	donaba bidi		Hou enadors (DIGI		
Vindow split	Communication				
aseboard	Import directory:	Z:\abomed\GDT\PC-MALT			
oupe					
mage informations	Export directory:	C:\digipaX\digipaX\GDT			
iverlay / scout lines istogram	Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (".001" - ".999") 	fixed file names	
iotogram iob management	Import file:	DIGIscos.gdt	e.g.: DIGDxxxx.003	import.gdt	
mage acquisition	Export file:	xxxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt	
Other	Check interval in seconds:	10	•		
	Readout delay in miliseconds:	0	•		
dministrator	Log:	log content of files			
cense					
eterinary surgeon	Adapt field allocation (mapping))			
ICOM / network					
ob management	Create GDT answer				
SDT					
HL7					
Caches / IPS					
mage acquisition					
Device links					
-ray journal					
atient CD					
mage transfer					
Patient data					
ther					
og	8				
Seneral					
ache					
ICOM					
mage processing	÷.				
le import	Ū				
Administrator login	Import	Export Info			Save



9.1.12 Connecting M1

9.1.12.1 M1 configuration

For M1 a path for the exchange directory must be configured in the registry.

SRS Labs	Name	Тур	Daten	
TrendMicro	ab (Standard)	REG_SZ	(Wert nicht festgelegt)	
Waves Audio	ab AutoWarte	REG_SZ	1	
Wow6432Node	ab BDT	REG_SZ	1	
🛛 🍶 Adobe	ab CheckListe	REG SZ	î	
ASUS	ab Colormode	REG_SZ	256	
G CG	ab Database	REG_SZ	Oracle	
- Classes	ab DBPath	REG_SZ	M:\COMPUMED\M1\ORANT\DB_M1	
Clients	ab Fenstertitel	REG_SZ	COMPUMED M1	
	ab GOTINIPATH	REG SZ	C:\digipaX\digipaX\GDT\	
COMPONED	ab Informer	REG_SZ	1	
MI	ab KVK-Leser	REG_SZ	Gemplus GCR 550	
Compuware	20 KVK-Schnittstelle		COM2:9600.E.8.1	
CyberLink	Ab L&L-Template	REG_SZ	.\project\formular\template.lbl	
digipax	ab LastUpdate	REG_SZ	17.4.1	
intel	ab NoCheck	REG_SZ	0	
Khronos	ProgramPathU9		M:\COMPUMED\M1	
Lake	ab Rechner	REG_SZ REG_SZ	Client	
Microsoft	ab Save		Client 1	
Mozilla		REG_SZ		
MozillaPlugins	ab) Testpage	REG_SZ	.\project\formular\testpage.lbl	
Nektra				
Nuance				
DDBC =				
Policies				
QM-Assist				
🛛 🍌 Realtek				
🛛 🍌 Realtek Semiconductor Corp.				
TrendMicro				
VSTEM				
Y_USERS				
Y_CURRENT_CONFIG				

Two configuration files are required in this path. The first one is a GDT configuration file of M1. Any name can be chosen for this file. The GDT parameters are set in the file. Example:.digipax_gdt.ini:

```
[Allgemein]
Prog = C:\digipaX\digipaX\digipax.exe
XDTART = GDT
XDTVER = 2.0
DATKEN = DIGI
EXTENS = GDT
BCKDAT = DEF
[Modi]
Modus001 = Anzeigen
Modus002 = Auftrag
[Modus002]
OutVerz = C:\digipaX\digipaX\GDT\
InVerz = C:\digipaX\digipaX\GDT\
InVerz = C:\digipaX\digipaX\GDT\
[Modus002]
OutVerz = C:\digipaX\digipaX\GDT\
InVerz = C:\digipaX\digipaX\GDT\
[Funk001]
Funk001 = Worklist
[Funk001]
Kennung = ALLG00
Modus002 = 6302
[6301]
Felder = 8000;8100;9218;3000;3101;3102;3103;3110
[6310]
Felder = 8000;8100;9218;3000;3101;3102;3103;3110
[6311]
Felder = 8000;8100;9218;3000;3101;3102;3103;3110;8410
```

The other one is the "mlgeraet.ini" file, in which reference is made to configuration file and the program switch in M1 is defined. Example mlgeraet.ini:

[Allgemein] Geraet001=digipax_gdt.ini;digipaX



9.1.12.2 digipaX configuration

User			Administrator :: GDT		
Informations about clinic and physician	GD1-ID: DIGIPAX		Abbreviation: DIGI		
User interface					
Image preview	Communication				
Window split	Import directory:	C:\Program Files\digipaX\digipaX\GDT			6
Baseboard	Export directory:	C:\Program Files\digipaX\digipaX\GDT			
Loupe	Type of file:	fixed GDT file extension (".gdt")	incremental file extension (".001" - ".999")	fixed file names	
Image informations					
Overlay / scout lines	Import file:	DIGIxxxx.gdt	e.g.: DIGboox.003	import.gdt	
Histogram	Export file:	xxxxDIGL.gdt	e.g.: xxxxDIGI.017	export.gdt	
Job management	Check interval in seconds:	10	\$		
Image acquisition Other	. Readout delay in miliseconds:	0	\$		
Other	Log:	log content of files			
Administrator					
License	Adapt field allocation (mapping)				
License Veterinary surgeon					
DICOM / network	Create GDT answer				
Job management	GDT answer files can be created	for automatic acquited images (via this digipax station)) as well as for the images which have been receiver	d in the background.	
GDT		X Image acquisition and image receipt	ot	her events	
HL7		 for each image (immediately) 		immediately after job Collect jobs	
Caches / IPS	Moment of creating:	🔿 each series Waiting time: 3 minutes 🚖		Collect jobs	
Image acquisition		the study Waiting time: 10 minutes	×	after import of image	
Device links					
X-ray journal		 ask user before creating 			
Patient CD	Entry in comment field (6227):	 automatically (according to mode) 			
Image transfer		this comment text in answer file:	Net	v images exist.	
Patient data		add additional tags:		n moges control	
Other		auu auditumai tags:			
Log	Characteristics field:	Type of study carried out:	ALL	.G00	
General	Set of characters:	 IBM CP 437 (DOS) 		ISO 8859-1 (ANSI)	
Cache	Require an enswer in GDT stands	rd: 🗙 require (despite whether a request has been n	marke to this sustem or not)		
DICOM		Recipient ID:		pient abbreviation: CMED	
Image processing		delete attached physician number	Red	percaboreviation: (CHED)	
Fleimport	*	delete attached physician number			
					-
Administrator login	Import	Export Info			Save

9.1.13 Connecting Apple Tomedo

Connection to Tomedo has been made successfully with the following settings.

9.1.13.1 Tomedo settings

Röntgen	Exporteinstellungen	GDT-Version: 03.00
CD einlesen		DIGIPAX1
		tomedo
		tomedo
	/Users/AnmOG1/tomedo/GDT	+ - DIGI2TOM.gdt
	Eporttyp CDT : CDT-Definition	
	Standardfelder 6302 – Untersuchung anfordern	Eigene
	DICO - Dicom ‡	
	;	
		GDT-Felder
	Version Patientennummer Namenszus Titel Nachname Vorname Geburt Geschlecht Untersuchung	
	Titel Nachname Vorname Geburt	tag Dateilänge Empfänger Sender Version
	Titel Nachname Vorname Geburt	tag Dateilänge Empfänger Sender Version Patientenn



0	GDT-Export	
Röntgen	Exporteinstellungen	GDT-Version: 03.00
CD einlesen		DIGIPAX1
		TOMEDO
		TOMEDO
	/Users/AnmOG1/tomedo/GDT	+ - DIGI2TOM.gdt
	Eporttyp GDT +	
	GDT-Definition Standardfelder Eigene	
	6311 – Daten einer Untersuchung anzeigen ‡	
	DICO - Dicom ‡	
	÷	
	Satzart Dateilänge Empfänger Sender	GDT-Felder
	Version Patientennummer Namenszusatz Titel Nachname Vorname Geburtstag	Satzart
	Geschlecht Wohnort Strasse Untersuchung	Dateilänge Empfänger
	Untersuchungsdatum AbnahmeDatum AbnahmeZeit	Sender
		Version
		Patientenn
	re	set
	Button	
	✓ Button zur Auswahl in Tagesliste	
	✓ Button zur Auswahl in Kartei	
	_	
		Speichern
+ – kopieren Alle löschen		
		Abbrechen OK



9.1.13.2 digipaX settings

GDT directory set in Tomedo is enabled, afterwards embedded in Windows as network drive and used for digipaX as GDT directory.

	-			Administrator :: G	DT	
mations about clinic and physician		Import directory:				
nterface			w:\			
preview		Export directory:	W:\			
w split savd		Type of file:	 fixed GDT file extension (".gdt") 	 incremental file extension (". 	001" - ".999") 🔿 fixed file names	
oard		Import file:	DIGIxxxx.gdt	e.g.: DIGIxxxx.003	import.gdt	
informations		Export file:	xxxxDIGI.gdt	e.g.: xxxxDIGI.017	export.gdt	
v / scout lines		Check interval in seconds:	10	-		
am		Readout delay in miliseconds:	0	•		
nagement		Log:	log content of files			
acquisition						
		Adapt field allocation (mapping)				
istrator		X Create GDT answer				
		GDT answer files can be created f	or automatic acquited images (via this digipax station) as well as for the images which have	been received in the background.	
ary surgeon			Image acquisition and image receipt		other events	
1 / network			O for each image (immediately)		X immediately after job X Collect jobs	
nanagement		Moment of creating:	O each series Waiting time: 3 minutes		Immediately after job A Collect jobs	
			the study Waiting time: 10 minutes +		X after import of image	
es / IPS						
a quisition			ask user before creating			
inks		Entry in comment field (6227):	 automatically (according to mode) 			
journal			O this comment text in answer file:		New images exist.	
tCD			attach additional tags in front:			
transfer			attach additional tags at back:			
it data						
			multiine if longer than 60 characters			
	0	Characteristics field:	Type of study carried out:		DPAX	
a	-	Set of characters:	IBM CP 437 (DOS)		 ISO 8859-1 (ANSI) 	
-		Require an answer in GDT standar	rd: 🗙 require (despite whether a request has been r	nade to this system or not)		
4			Redpient ID:		Recipient abbreviation: ZTOM	
processing			delete attached physician number			
port						
Administrator login		Import	Export Info		[*****	Save
the second se					Learne	

9.1.14 Additional digipaX GDT settings

					Configuration
User			Administrator :: GDT		
Informations about clinic and physician User interface Image preview Window split	Import directory: Export directory: Type of file:	C:\Program Files\dgipaX\dgipaX\dgipaX\GDT C:\Program Files\dgipaX\dgipaX\dgipaX\GDT fixed GDT file extension (".gdt")	incremental file extension (".001" - ".5	9997) 🔿 fixed file names	
Baseboard Loupe Image informations Overlay / scout lines Histogram	Import file: Export file: Check interval in seconds: Readout delay in milseconds:	DIGIscoor.gdt xooxDIGI.gdt 10 0	e.g.: DIGExxxx.003 e.g.: xxxxDIGL.017	Import.gdt export.gdt	
Job management Jange acylistion Other Administrator	Log: Adapt field allocation (mapping)	I log content of files	an well as for the income which have been a		
License LiPS Caches LiPS	Moment of creating:	or automate acquiston and image recept O for each image acquisition and image recept O for each image (mmediately) @ each series Walting time: [] minutes @ O the study Waiting time: [] minutes @ ask user before creating	as wel as for the integes which have been rec	other events	ect jobs
Image acquision Everce links Xray journal Patient CD Image transfer Patient data Other	Entry in comment field (6227):	automatically (according to mode) this comment text in answer file: x attach additional tags in front: x (attach additional tags at back:) x multime if longer than 60 characters		(New Images exist: (Referring ReferringPhysicianaName, Date StudyDate, (Modality Modality)	Time AcquisitonTime) d
Log	Characteristics field:	Type of study carried out:		(X-RAY	
General Cache DICOM Image processing File imoort	Set of characters: Require an answer in GDT standar	IBM CP 437 (DOS) ISW CP 437 (DOS) ISW require (despite whether a request has been m Recipient ID: ADDR-ID delete attached physician number		ISO 8859-1 (ANSI) Recipient abbreviation: ADDR	
Administrator login	Import	Export Info			Save
					(

9.1.14.1 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).



9.1.14.2 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).

9.1.14.3 Field assignment (mapping)

9.1.14.3.1 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.

9.1.14.3.2 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.

9.1.14.3.3 Veterinary area

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



9.1.14.3.4 Standard fields

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

9.1.14.4 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.

9.1.14.4.1 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 directory, 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 "O". 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.

9.1.14.4.2 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.

ption: (Reffering: %1, Date: %2, T	ime: %3)				
lue 1: DICOM tag: (0008,0090) - Re	eferringPhysiciansName	1	Tag element: com	pleted 💌	Position: 1
lue 2: DICOM tag: (0008,0020) - St	udyDate	2	Tag element: com	pleted 💌	Position: 1
lue 3: DICOM tag: (0008,0030) - St	udyTime	*	Tag element: com	pleted 💌	Position: 1
mark:					
		OK Car	ncel		

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 / Image acquisition" you can specify whether the beam projections are to be included in the description of the study.

If the comment field contains too many characters (long study descriptions), it can occur that the clinic management system cuts off the last characters. However, the comment field can be divided into several lines if the clinic management system supports this feature. Then, several lines are generated automatically, where each line contains up to 60 characters. For this feature, this option must be activated.

9.1.14.4.3 Characteristic field

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



9.1.14.4.4 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.

9.1.14.4.5 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).

9.1.14.4.6 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.

9.1.15 Activities control system digipaX

9.1.15.1 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 $_{\rm w}, -w$ " as opposed to $_{\rm w}, -i$ "). This parameter determines the losing of the worklist or import component.

GDT record type	Action
6301:	 Patient management start
Send constant data	• 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
6302:	Here also the patient gets selected or created locally
Request new study	• 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).
	 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.
	 If the "/i" parameter was passed, at this time the



	 import component is loaded. If the "/pm" parameter was passed, at this time the patient management module is loaded.
6311: Show study data	 Here as well the patient inocute is loaded. Here as well the patient is selected or created locally. 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. The first study image is displayed (if a study date has been passed and such study with this date has been found). If the "/pcd" parameter was passed, at this time the patient is selected and the module for creating the patient's CD is loaded.

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

9.1.15.2 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.
РМ	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.

9.1.16 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 / Patient data" 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.

9.1.17 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 archived 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 dinc and physician User interface Image preview Baseboard Loupe Image Informations Overlay / scout lines Histogram Job management Image acquisition Other Administrators Ucense Veterivary surgeon DICOM / network Job management Gor HJ7 Caches / IPS Image acquisition Dexice linis Xray gurnal Patent CD Image acquisition Dexice linis Xray gurnal Patent CD Image transfer Other Com	Administrator :: HL7 General Identification: Segment separator: HL7 Standard <0x00> (Mndows <0x00><0x0A> (Lex <0x0A>) Set of dharacters: System Tmeeoid for sending: ID seconds: (on quurbit: Log message protocol Configuration file: Chigipaol/slapaol/sL2.7ml Inconting messages Parti: 2755 Response: Response: Send HL7 response Post: 275.0 Response: Send HL7 response Post: 272.0.1 Port: 21110 Mode: Maring time: (on muutes in) (on muutes in)	rebod
Cache DICOM Image processing File mont Worklat GDT A V		
Administrator login	Import Export Info	Save
		8

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)

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 " $^{^{(1)}}$).

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
                    = Medical notes
MedicalAlerts
PreMedication
                      = Premedication
ReferringPhysician = Referring physician
RequestingPhysician = Requesting physician
PerformingPhysician = Performing physician
InstitutionName
                    = Institution
PatientLocation = Patient's place of residence
PatientHistory = Patient history/indication
                = Remarks
Comments
AccessionNumber = Accession number
StudyInstanceUID = Study ID
ProcedureCode1 = Procedure Code 1
ProcedureCode2 = Procedure Code 2
ProcedureCode3 = Procedure Code 3
ActionType = Action type
RISTD
              = 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.

;Table for sex [Sex]	
;female F=F	
;male M=M	
;other O=O	
;unknown ;U=	
;Table for priority [Priority]	
;promptly S=STAT	
;high A=HIGH P=HIGH C=HIGH	
;normal 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 is 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)

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)
MSH|1|4(hD)=FixValue(h10
; Process Type
MSH|1|11(PT)=FixValue(P)
; Order Type (RE - observations to follow)
ORC|1|1(ID)=FixValue(RE)
; Result Status (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)
; Technician
OBR | 1 | 34 (CM) = DcmTag (0008 | 1070)
```



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 de-scription

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

If automatic hang-up of the current study is activated in the user settings, the newly acquired images are automatically hung up in the viewer if the option "Activate image viewer" is here used.

The option "Clear acquisition assistant box" causes that this box is cleared after each saved study. This is handy if several assistants work at one acquiring station (e.g. joint practices that share one acquiring station).

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 , μGy^*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 μ Gy*m²" 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.

Entry definition	
Designation:	Optional 1
use:	🔾 yes 💿 no
DICOM tag image:	(0028,0010) - Rows
DICOM tag order:	(????,????) - Unknown Tag & Data
optional entry:	• yes O no
	OK Cancel

When pregnancy status is used, a query dialog box is

displayed while recording data but only if the patient is female aged between 10 and 60 years and there is no information on pregnancy status in the data (job or image) so far. The stated pregnancy status is saved max. 24 hours or until reboot of digipaX software, so that the status for this patient is not inquired again in this time span. If the dialog box is closed without giving information on pregnancy status, the status is regarded as not inquired or not answered – so unknown – and will be inquired again if needed.

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.



It is also possible to apply values from a DICOM image that was previously received in the background. Routing must be set up properly in order to do this. Entries can be created automatically or manually.

<u>Manually</u>: if the user creates a new entry in the X-ray journal, he or she can prior to this select the image from a list of received images, for which the new entry is to be created. The fields in the dialog box for acquisition of the new entry are already completed accordingly to the values of the selected image provided that the values are contained in the image. Therefore a connection to DICOM tag (image) is established that contains the required value. <u>Automatically</u>: entries for received images can be also made automatically in the background. The option for this feature must be activated. It should be noted that all required details must already exist in the image and no entry will be made, even for mandatory fields, if there is a lack of data in the image.

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.

The X-ray journal is edited on one station only, but, as an option, it can be viewed on other stations. For this purpose a path to the X-ray journal must be set by enabling or through the network drive. The checkmark "read only" must be activated on these stations.

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.

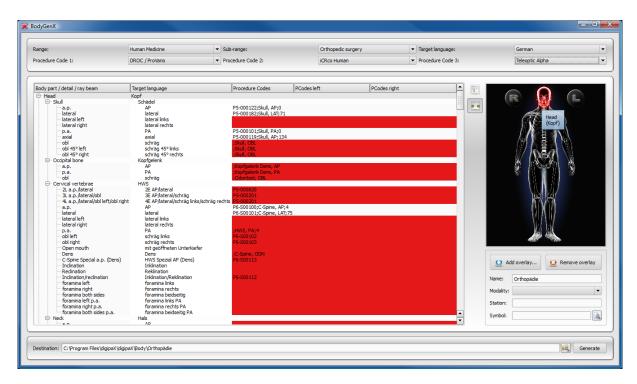
The program is started by loading BodyGenX.exe in the digipaX installation directory. The language of the program corresponds with the language of the digipaX installation.



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.



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.

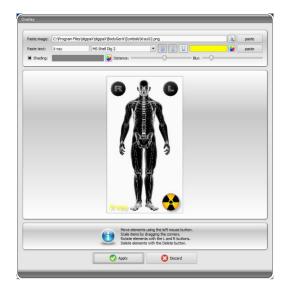
14.4 Body2.ini settings

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.

inge:	Human Medicine	 Sub-range: 	Orthopedic su	gery	 Target language: 	German	
ocedure Code 1:	DROC / ProVario	Procedure Code 2:	iCRco Human		Procedure Code 3:	Teleoptic Alpha	·
ody part / detail / ray beam	Target language	Procedure Codes	PCodes left	PCodes right			
Head	Kopf					R SS L	
🕀 Skull	Schädel						
a.p.	AP	P5-000122;Skull, AP;0			iii 💽		
lateral	lateral	P5-000182;Skull, LAT;7	1				
lateral left	lateral links					(今日本語のなり	
 lateral right 	lateral rechts						
p.a.	PA	P5-000101;Skull, PA;0					
axial	axial	P5-000119;Skull, AP;13	34				
obl	schräg	;Skull, OBL					
- obl 45° left	schräg 45° links	;Skull, OBL					
obl 45° right	schräg 45° rechts	;Skull, OBL					
Occipital bone	Kopfgelenk						
a.p.	AP	;Kopfgelenk Dens, AP					
- p.a.	PA	;Kopfgelenk Dens, PA ;Odontoid, OBL					
obl	schräg	;Odontoid, OBL					
Cervical vertebrae	HWS						
···· 2L a.p./lateral	2E AP/lateral	P5-000820					
3L a.p./lateral/obl	3E AP/lateral/schräg	P5-000201				[92] [CQ/	
4L a.p./lateral/obl left/obl right	t 4E AP/lateral/schräg links/schrä AP					D AVA M	
- a.p.	lateral	P6-S00100;C-Spine, AF	7,4				
lateral		P6-S00101;C-Spine, LA	AT; 75				
···· lateral left	lateral links					VIII VIII	
···· lateral right	lateral rechts						
p.a. obl left	PA	;HWS, PA;4 P6-S00102					
	schräg links					X-ray 🛷 \infty 💛	
obl right Open mouth	schräg rechts mit geöffneten Unterkiefer	P6-S00103					
Dens	Dens	;C-Spine, ODN					
	HWS Spezial AP (Dens)	P6-S00113					
Indination	Inkination	10.300113				Add overlay Add overlay	rlay
Reclination	Reklination						
Indination/reclination	Inkination/Reklination	P6-S00112				Name: Orthopädie	
foramina left	foramina links	10000112				Name: Orthopädie	
foramina right	foramina rechts					Modality:	
foramina both sides	foramina beidseitig					Modality:	
foramina left p.a.	foramina links PA					a	_
foramina right p.a.	foramina rechts PA					Station:	
foramina both sides p.a.	foramina beidseitig PA						
Neck	Hals					Symbol:	
	AD						

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

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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 Supported 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	\bigcirc no	
OK Cancel			

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

15.2 Supported 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 [1]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.

		Administrator :: Veterinary surgeon							
mations about clinic and physician	Veterinary version								
interface ge preview	 Activate veterinary version 								
board	You can modify this entry with a double	eclick on the verse in the table. Entries can be deactivated and will be the	n not used in the system.						
e	Designation	DICOM tag	Tag element	Position	Level				
e informations	X Owner Name	(0010,0010) - PatientsName	Name	1	Patient				
lay / scout lines	Owner Birthdate	(????,????) - Unknown Tag & Data				- 6			
ogram									
nanagement ge acquisition	Owner Sex	(????,????) - Unknown Tag & Data							
r acquistori	X Animal Name	(0010,0010) - PatientsName	Surname	1	Patient				
ninistrator	C Species	(0010,0010) - PatientsName	2. name	1	Patient	_			
ise	Race of Animal	(0010,0010) - PatientsName	Name affix	1	Patient				
rinary surgeon DM / network	X Color	(0010,0010) - PatientsName	Title	1	Patient				
nanagement	Birthdate of Animal	(0010,0030) - PatientsBirthDate	completed	1	Patient				
	X Sex of Animal	(0010,0040) - PatientsSex	completed	1	Patient				
es / IPS	X Pedigree	(0008, 1040) - InstitutionalDepartmentName	completed	1	Study				
e acquisition ce links	X Tattoo / Chip	(0010,1030) - PatientsWeight	completed	1	Study				
y journal ent CD	Breeding number	(????,????) - Unknown Tag & Data							
e transfer						_			
ye u di ishei K									
	0								
eral									
ne									
M									
je processing mport									
dist									
ub.									
	•								
Administrator login	Import	Export Info				ave			
Administrator login	Import	Export Into			58	ive			

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 9.1.14.3 "Field assignment (mapping)".

								Configuration
lser 🗅				A	Administrator :: GDT			
nformations about clinic and physician	Identification							
mage preview	GDT-ID: DIGIPAX1				Abbreviation: DIGI			
laseboard								
oupe	Communication							
nage informations	Import directory:		C:\digipaX\digipaX\GDT					
verlay / scout lines istogram	Export directory:							
stogram ob management			C:\digipaX\digipaX\GDT					<u> </u>
nage acquisition	Type of file:		fixed GDT file extension (".gdt")			fixed file names		
ther	Import file:		DIGIxxxx.gdt	e.g.: DIGIxxxx.	.003	import.gdt		
	Export file:		xxxxDIGI.gdt	e.g.: xxxxDIGI.	.017	export.gdt		
dministrator 🙆	Check interval in seconds:		60	•				
cense	Readout delay in milisecond	s:	0	\$				
terinary surgeon	Log:		log content of files					
COM / network								
management	Adapt field allocation (m	apping)						
r	Patient data							
ches / IPS	Patient number:	3000	Name affix:	3100	Name:	3101	Name:	3102
evice links	Date of birth:	3103	Title:	3104	Insurant number:	3105	Place of residence:	3106
ray journal	Street:	3107	Gender:	3110	Date of record:	6200		
age transfer		5107	ochoci.	5110	bute offection.	0200		
her	Control system							
g D	Job number:	0	Job description:	0	Station name:	0	Modality:	0
neral	Veterinary surgeon							
the	Owner's last name:	3201	Owner's first name:	3202	Owner's name affix:	3200	Owner's title:	3204
СОМ	Owner's date of birth:	3203	Owner's gender:	3210	Animal name:	3101	Animal species:	3100
age processing	Breed:	3102	Color of animal:		Animal 's date of birth:		Animal's gender:	3110
e import				3104	Animai is date of birth:	3103	Animai s genoer:	3110
orklist	Pedigree:	3106	Tattoo / chip:	3105				
т								Set up GDT standard fields
t								
ning CD / DVD	X Create GDT answer							
vines 💌								
Administrator login	Import	Evo	ort Info					Save

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 Connecting Vetinf

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					
Baseboard											
oupe nage informations		Communication									
verlay / scout lines		Import directory:		C:\digipaX\digipaX\GDT							
istogram		Export directory:		C:\digipaX\digipaX\GDT							
ob management				 fixed GDT file extension (".qdt") 		file extension (".001" - ".999")	fixed file names				
nage acquisition		Import file:		DIGIxxxx.gdt	e.g.: DIGIxxxx		import.gdt				
Other		Export file:		xxxxDIGI.gdt	e.g.: xxxxDIGI						
administrator	0				e.g.: xxxxDIGL	.017	export.gdt				
		Check interval in seconds:		60	÷						
cense		Readout delay in milisecond	s:								
eterinary surgeon ICOM / network		Log:		log content of files							
DOM / network bb management		Adapt field allocation (m	apping)								
DT		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		Street:	3103	Gender:	3110	Date of record:	6200	Place of residence.	5100		
atient's CD			3107	Gender:	3110	Date of record:	6200				
-ray journal		Control system									
nage transfer ither		Job number:	8480	Job description:	8411	Station name:	8410	Modality:	8402		
uner		Veterinary surgeon									
og		Owner's last name:	3201	Owner's first name:	3202	Owner's name affix:	0	Owner's title:	3204		
eneral											
iche		Owner's date of birth:	0	Owner's gender:	0	Animal name:	3101	Animal species:	3100		
COM		Breed:	3102	Color of animal:	3104	Animal`s date of birth:	3103	Animal`s gender:	3110		
nage processing		Pedigree:	3108	Tattoo / chip:	6340						
ile import									Set up GDT standard fields		
/orklist											

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

Veterinary surgeon	X Create GDT an	swer	
DICOM / network	GDT answer files	an be created for automatic acquited images (via this digipax station) as well as for the images which have been	received in the background.
Job management		Image acquisition and image receipt	other events
GDT		O for each image (immediately)	
HL7			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		 If the last job is ready 	
X-ray journal		ask user before creating	
Image transfer			
Other	Entry in comment	field (6227): automatically (according to mode) 	
Log		 this comment text in answer file: 	There are new images available
LOG		add additional tags:	
General			
Cache	Characteristics fie	d: Type of examination carried out:	ALLGOO
DICOM	Set of characters	 IBM OP 437 (DOS) 	 ISO 8859-1 (ANSI)
Image processing File import	Require an answe	r in GDT standard: require (despite whether a request has been made to this system or not)	
Worklist		Recipient ID: VETINE	Recipient abbreviation: VETX
	n	delete attached physician number	
GDT HI 7	-	delete attached physician number	
Administrator login	Import	Export Info	Save
			۵)

or after downloading the image:



License Veterinary surgeon		X Create GDT answer			_
DICOM / network		GDT answer files can be create	d for automatic acquited images (via this digipax station) as well as for the i	mages which have been received in the background.	
Job management			Image acquisition and image receipt	other events	
GDT			o for each image (immediately)		
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			 if the last job is ready 		
X-ray journal			ask user before creating		
Image transfer					8
Other		Entry in comment field (6227):	 automatically (according to mode) 		
Log	0		O this comment text in answer file:	There are new images available	
Log			add additional tags:		
General					<u> </u>
Cache		Characteristics field:	Type of examination carried out:	ALLGOD	
DICOM		Set of characters:	 IBM CP 437 (DOS) 	 ISO 8859-1 (ANSI) 	
Image processing		Boguiro ao anguar in CDT stan	dard: require (despite whether a request has been made to this system	ar aat	
File import		Require all allower in doit starii			
Worklist			Recipient ID: VETINF	Recipient abbreviation: VETX	
GDT	÷		delete attached physician number		
HI 7					
Administrator login		Import	Export Info	Save	
					(

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.

(Config	Iration
User			Administrator ::	Job management			
Informations about clinic and physician	Job management / worklist						
User interface	X Automatically update job list		Update inte	rval in seconds:			10
Image preview	Delete jobs automatically		Delete jobs				10 hours
Window split		received images and mark with the colour the list en					
Baseboard	Deactivate check of the communic						
Loupe							
Image informations	Study Instance UID			Source of entry in X-ra	ay journal		
Overlay / scout lines	 for all jobs the same UID 			Source for the pre-alloc	cation of the fields for a new entry in 3		
Histogram Job management					 selected worklist ju 	b	
Job management Image acquisition	 for each job its own unique UID 				 received images 		
Other	enter no UID				 no source (all entri 	ies are empty)	
				(Only if X-ray journal m	odule activated.)		
Administrator	Visual selection						
License	Types:	Configuration:					
Veterinary surgeon	X Cat X Dog		F	DL TOL TON			
DICOM / network	X Dog X Swine		L,		TV		
Job management		Part of the body / refinement / beam projection	Procedure codes		PCodes left	PCodes right	A
GDT		🕀 Head					
HL7		Kull Tympanic bullae					
Caches / IPS		Frontal sinus					
Image acquisition		Nasal bone Paranasal sinuses					
Device links		X Nasal cavity Pyramid					
X-ray journal Patient CD		Cheek bone					
Image transfer		X Mandible Temporomandibular joint					
Patient data		🐵 🕱 Teeth					÷
Other		I Color					
	Tags procedure codes: Requested Pr	rocedure ID	Scheduled Procedure	Step Code Meaning	 Scheduled Proc 	edure Step Code Value	-
Log	integrate procedure codes in imag	jes					
General	additional informations						
Cache	Tag accession number: Accession Nu	-					
DICOM	-		•				
Image processing		ocedure Step ID		s Accession Number in the s	study		
File import	tag job description: Scheduled Pro	ocedure Step Description	 Use job description 	as study description			
Administrator login	Import	Export Info					Save
				_		_	
							· · · · · · · · · · · · · · · · · · ·
5a							

16.7.1.2 Job management

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	VetScan	/VetscanHM5 V	etScan VS2	Spotchem	Reflovet+	KoneLab 20	Abacus j.vet3/ve
pocH-100iV Diff	F	DC <u>3</u> 500i/4000i	VetTest §	008	VetLab-IDEXX	EKG	GDT
						Auftr	ag an das PACS
Pfad: C:\di	gipaX	\digipaX\GD	Т				
Datei:	fest:	DIGIVETX	C Ifd.Ni		GDT-Kennung	issatz:	6302
Extension:	fest:		Ifd.Ni		Zuoro	nung GDT-Datensätze	2
PACS: C:\	digipa	aX\digipax\	digipax	.exe			
						Antwort v	om PACS an PC
Pfad: C:\di	gipaX	\digipaX\GD	Т				•
	fest:	VETXDIGI	C Ifd.N		GDT-Kennung	issatz:	6310
Extension:	fest:		Ifd.Nr	:	Zuoro	nung GDT-Datensätze	2
						Anforderung F	PC an das PACS
Pfad: C:\di	gipaX	\digipaX\GD	Т				3
Datei:	fest:	DIGIVETX	C Ifd.Nr		GDT-Kennung	jssatz:	6311
Extension:	fest:		Ifd.Ni	<u>.</u>	Zuoro	nung GDT-Datensätze	2
Viewer: C: \	digipa	aX\digipax\	digipax	.exe			3
Polling in sec:		5 🔽 GDT a	ktiv 🗔	GDT bei Kunde	angufruf		
(pacsgdt.exe)				e GDT-Parameter		speic	hern 📝 🗐

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.

ig GDT-Datensätze		
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)		3105=EU-Ausweis/Lebensnummer 230000
Geschlecht (05)		3106=Halter Wohnort PZWO00 3107=Halter Strasse ST0000
Ohrmarke/Täto (08)		3108=Stammbaum 320000 3109=frei 000000
Farbe (22)		3110=Geschlecht 050000
EU-Pass (23)		Halter Wohnort PZW000
Chip-Nummer (24)		Übernehmen
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 🖌 Vorschau 🍃 zurück 🕏

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



Creating job:

verfügbar:		ausgwählt:	
4219=Überweiser 4220=Ubrersucher 6200=U-Datum 6201=U-Dzeit 6205=frei 000000 6221=Fremdbefund 6222=Studie 6228=Testbezeichnung 6302=frei 000000 6330=frei 000000 6330=frei 000000 6333=frei 000000 6335=frei 000000 6335=frei 000000 6335=frei 000000 6335=frei 000000 6340=frei 000000 6341=frei 000000 6341=frei 000000 6341=frei 000000 6342=frei 000000 6342=frei 000000 6342=frei 000000 6343=frei 000000 6343=frei 000000 6343=frei 000000 6343=frei 000000 6343=frei 000000 6343=frei 000000 6343=frei 000000 6343=frei 000000 6345=frei 000000 6345	• (*)	9208-verwendeter Zeichensatz 9218-Version GDT 9000-Satzidentifikation 9100-Satzidentifikation 9100-Satzidentifikation 910-Satzidentifikation 91315-GDT ID des Empfängers 8316-GDT ID des Senders 8402-Modalität 8410-ALTirdgsnummer 9000-Tier/Halter ID 9100-Tier/Halter JD 9100-Tier/Halter JD 9100-Tier/Halter Strasse 040000 9103-Geburtsdatum 070000 9105-EU-Ausweis/Lebensnummer 230000 9105-EU-Ausweis/Lebensnummer 230000 9105-EU-Ausweis/Lebensnummer 230000 9105-EU-Ausweis/Lebensnummer 230000 9105-EU-Ausweis/Lebensnummer 230000 9105-EU-Ausweis/Lebensnummer 00000 9201-Halter Nachamer NH0000 9202-Halter Vonname VN0000 9202-Halter Vonname VN0000 9202-Halter Nachamer NH0000 9201-Latiter 9201-Latiter 9201-Latiter 9201-Latiter 9201-Latiter 9201-Latiter 9201-Latiter	

Returned response:

	Pflichtsätze: 8000, 8100, 3000, 8480
Verfügbar: 4219=Überweiser 4220=Uhtersucher 6200=U-Datum 6201=U-Zeit 6205=Trei 000000 6221=Frembefund 6227=Studie 6228=Testbezeichnung 6305=frei 000000 6333=frei 000000 6333=frei 000000 6333=frei 000000 6333=frei 000000 6333=frei 000000 6333=frei 000000 6333=frei 000000 6333=frei 000000 6334=frei 000000 6344=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000 6345=frei 000000	Pflichtsätze: 8000, 8100, 3000, 8480 ausgwählt: 9208-version GDT 8000-Satzidentifikation 8106-Satzidentifikation 8010-Satzidentifikation 8010-Satzidentifikation 8016-Satzidentifikation 8016-Satzidage 8315-GDT ID des Empfängers 8316-GDT ID des Senders 8402-Modalität 8402-Modalität 8411-Studie 8402-Modalität 8402-Modalität 8402-Modalität 8402-Modalität 8402-Modalität 8402-Modalität 8411-Studie 8440-Auftragsnummer 3000-Tier/Halter ID 3103-Rase 040000 3103-Geburdsatum 070000 3103-Falter Strasse ST0000 3104-Falter Wohnort PZW000 3204-Halter Vorname VN0000 3204-Halter Titel TH0000
8000=Satzidentifikation	Eingaben speichern 🥢 🗐



Request for data:

verfügbar: 4219-Überweiser 4220-Untersucher 6200-U-Datum 6201-U-Zait	•	ausgwählt: 9206=verwendeter Zeichensatz	
4220=Untersucher 6200=U-Datum	^	9206=verwendeter Zeichensatz	
i=205=frai 00000 6221=Fremdbefund 6227=Studie 6227=Studie 6302-frai 6302=frai 000000 6305=frai 000000 6305=frai 000000 6335=Bildkenung 6330=frai 6330=frai 000000 6333=frai 000000 6333=frai 000000 6335=frai 000000 6334=frai 000000 6335=frai 000000 6334=frai 000000 6340=Chip/Transp/Ohrmark/Täto 240800 6341=frai 000000 6343=frai 000000 6343=frai 000000 6343=frai 000000 6343=frai 000000 6343=frai 000000 6343=frai	« »» =	9218-Version GDT 8000=Satziange 8100=Satziange 8315=GDT ID des Empfängers 8316=GDT ID des Senders 8402=Modalität 8400=Norman 3100=Tier/Halter ID 3100=Tier/Halter No000 3201=Halter Vachname NH0000 3204=Halter TheIT H0000 2200=U-Datum 6325=Bildkennung	
8000=Satzidentifikation	•	Eingaben speichern	S.

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.

16.8 Connecting Vetera

Connection has been made successfully with the following settings.

er 🛛					Administrator :: GDT				
formations about clinic and physician	Identification								-
er interface	GDT-ID: DIGIPAX	GDT-ID: DIGIPAX			Abbreviation: DIGI				
age preview									
ndow split seboard	Communication								
upe	Import directory:		C:\dgpaX\dgpaX\GDT						6
age informations	Export directory:		C:\digipaX\digipaX\GDT						Ϊø
erlay / scout lines	Type of file:		 fixed GDT file extension (".gdt") 	· incremen	ntal file extension (".001" - ".999")	fixed file names			
togram	Import file:		DIGIxxxx.gdt			import.gdt			-
management	Export file:		xxxxDIGI.gdt			export.odt			
ge acquisition	Check interval in seconds:		10			export.gdt			
her	Readout delay in miliseconds:		0	÷					
ministrator 🛛		16:							
ense	Log:		log content of files						
erinary surgeon	X Adapt field allocation (m	apping)							
OM / network	Patient data								
management	Patient number:	3000	Name affix:	0	Name:	0	Name:	0	
r -	Date of birth:	0	Title:	0	Insurant number:	0	Place of residence:	3206	-
·	Street:	3207	Sex	0	Date of record:	0	FIGLE OF FEADERCE.	3200	
thes / IPS		3207	Sex	0	Date of record:	0			
ge acquisition	Control system								
vice links	Job number:	0	Job description:	0	Station name:	0	Modality:	0	
ay journal ient CD	Veterinary surgeon								
ige transfer	Owner's last name:						a construction of the second sec		
ient data		3201	Owner's first name:	3202	Owner's name affix:	0	Owner's title:	0	_
er .	Owner's date of birth:	0	Owner's sex:	0	Animal name:	3101	Animal species:	3100	
-	Breed:	3102	Color of animal:	3104	Animal's date of birth:	3103	Animal's sex:	3110	
	Pedigree:	0	Tattoo / chip:	3125	Breeding number:	3124			
veral								Set up GDT standard	field
he									-
OM	Create GDT answer								
ge processing import									
Administrator login	Import		Export Info					Save	

For Vetera, two ready-made configuration files are available accordingly to mapping settings shown in the image and Worklist calling in download area under <u>www.digipax.eu</u>. Settings of paths for GDT and program calling must be adjusted in Vetera accordingly.



17 Configuration card for patient data

17.1 Patient-ID

Building next patient-ID always as a new one

With this option the patient-ID is always automatically built as a new one, regardless of whether the data is delivered per GDT, HL7 or the patient data is recorded manually. The ID is always built as the last name-first name-date of birth.

Adding identifier to the patient-ID

For forwarding the patient-ID via GDT, HL7 or manual quotation of the patient-ID you can specify whether an identifier is to be added to the patient-ID. This may be required e.g. in joint practices with data separation where, for example, one router forwards images with "Patient-ID-001" to the archive A and images with "Patient-ID-002" to the archive B.

Adding GDT abbreviation to the patient-ID

A GDT abbreviation of the surgery management program will be attached to the patient–ID. This is necessary for data separation when various surgery management programs are used in one joint practice on the same computers and the jobs are to be forwarded to digipaX. A corresponding GDT abbreviation is then attached to the patient–ID, e.g. to the ID 12345 an abbreviation MEDI will be attached by the GDT file DIGIMED.gdt of Medistar and to the ID 56789 an abbreviation QUIN by the GDT file DIGIQUIN.gdt of Quincy. The IDs would then read 12345–MEDI and 567890–QUIN. If it is configurable in the surgery management system, digits can be used instead of letters. The GDT file of Medistar could then read DIDI0001.gdt instead of DIGIMEDI.gdt and the GDT file of Quincy DIGI0002.gdt instead of DIGIQUIN.gdt. However, this is only necessary if no letters are wanted in the patient–ID as the IDs are saved with a corresponding attachment in the DICOM header of the images.

Identification of the patient

This setting specifies whether e.g. the first and last name, date of birth and patient-ID or only the patient-ID is to be used for an unambiguous identification when calling the patient via GDT.

Building next ID automatically

With this option the patient-ID is assigned automatically when creating patient data manually. The archive is retrieved at that and the next higher number than the highest ID is selected. If this option is non active, an unambiguous ID must be assigned manually.

17.2 Additional fields

Additional fields can be activated for additional information on patients. These fields are then available at the manual recording of the patient data and can be shown as additional columns in the patient management. The columns can be shown and hidden with the right click on the head of the table. When acquiring the image this information is saved in the



DICOM header. In order to be able to use these fields the data base scheme of the archive needs to be extended (see chapter 5.2.1.2).



18 Other configurations

18.1 Delete function

This functionality is described in chapter 26.1 "Launching and configuration of the delete function for the users".

18.2 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.

18.3 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.

18.4 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.



With the setting of initializing delay the auto boot of digipaX can be delayed e.g. to wait for start of the Windows and network services.

18.5 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.

18.6 Disabling CD/DVD AutoPlay

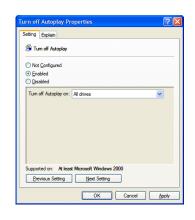
In order that the Windows dialog box does not appear permanently when inserting data medium in the disc burning driver, the Windows AutoPlay function can be disabled in the local group policies.

18.6.1 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 "Dis-able AutoPlay" and set on "Activated/All drives".

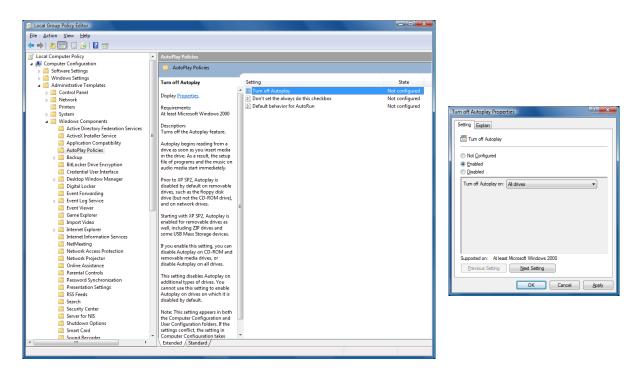
Action View Help			
Local Computer Policy	System		
Computer Configuration Software Settings			
Windows Settings	Turn off Autoplay	Setting	State
Administrative Templates		User Profiles	
Generation Windows Components	Display Properties	Scripts	
🛞 🔄 System	Requirements:	Logon	
Network	At least Microsoft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





18.6.2 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.



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

18.7 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 4.11 Nero.

18.8 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 18.7 has no impact on the use of the burning robot.



18.9 Specials

Activating checkbox "Specials" activates an additional feature in the dialog box for patient CDs.

Thereby, the data of patient CD are copied into a target directory and can optionally undergo further processing by an external program. This can be necessary if e.g. special drives or special data storage media are used.

- Caption: Under this indication a function appears in the dialog box for creation of patient CDs
- Target directory:
 - A directory which the data of the patient CD is copied into
- Clean up target directory priorly: All data in the target directory are priorly deleted (no overwriting of existing data is possible, this means that no new data can by copied if data of the previous patient CD is still contained in the target directory)
- Program to be called up: This program is called up after data is copied (e.g. a special batch file that processes data subsequently)
- Attach disc name as a parameter: The disc name from the dialog box for patient CD is transferred as a parameter upon program start-up.

18.10 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.

18.11 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.



19 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-	Loading patient management when a new study is re-
	agement	quested by the GDT. In this way, for example, patient's
		CD can be imported, and even follow up with a rever-
		tive entry in the record card. 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< <i>password</i> >	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.
		Warning: Do not use it with a client!
/ds	Device Simula-	Activation of the simulation module for receiving the
	tion	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-	Activation of the multi-patient module for this session.
	Module	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)



20 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 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).



Thorough staff training in details of using Procedure Codes is necessary. Depending on used devices resp. systems possible control means are to be pointed out that are available for checking transfer of the correct Codes (e.g. displaying clear text message for verification of chosen system settings). The user must check accuracy of the settings prior to each image acquisition process by this system. If settings are incorrect, please check Procedure Code and contact your system administrator if need be.

20.1 Scanner connections (CR-Reader)

20.1.1 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").



20.1.2 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.

20.1.3 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.exe			
Program parameters:	C:\Program Files\Kodak\KodakQC\Images\RTImages		
Name of manufacturer:	Kodak		
Name 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".

20.1.4 Connecting Carestream Vita

The following device is supported: Carestream Vita.

The product Carestream Classic can be integrated as a Standalone System using DICOM interface, 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 in the case of Kodak, the RAW data in respective directories "...\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".

20.1.5 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:\Import Import filter (filename): *.dcm

20.2 Detector connections

20.2.1 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.

20.2.2 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*cm²".

20.3 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.

20.3.1 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.

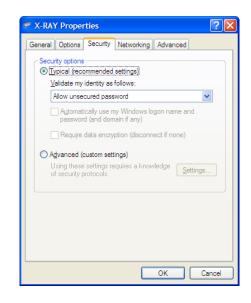
20.3.1.1 Creating network connection via RS232 (Windows XP)

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



X-RAY	/ Proper	ties			? 🛛
General	Options	Security	Networking	Advanced	
	rompt for n		connecting password, cert n domain	ificate, etc.	
Redia	ling option	s			
Redial attempts:			0	*	
Time between redial attempts:		npts:	1 second	~	
Idle time before hanging up:		ip:	never	~	
Redial if line is dropped					
				ок	Cancel

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



- o Network
 - PPP
 - 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-RA	r ? 🛛	
R		
<u>U</u> sername:	edv1	
<u>P</u> assword:	[To change the saved password, click here]	
Save this user name and password for the following users: Me o <u>nly</u> Anyone who uses this computer		
Connect	Cancel Properties Help	

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

20.3.1.2 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
 - \circ 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
 - \circ $\;$ 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:



I X-RAY Properties			
General Options Security Networkin	ng Sharing		
Dialing options Display progress while connecting; Prompt for name and password, certificate, etc. Include Windows logon domain Prompt for phone number			
Redialing options			
<u>R</u> edial attempts:	0		
Time between redial attempts: 1 second			
Idle time before hanging up:			
Idle threshold:			
Redial if line is dropped			
PPP Settings			
(OK Cancel		

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

X-RAY Properties			
General Options Security Networking Sharing			
Security options (Typical (recommended settings)) 			
Verify my identity as follows:			
Allow unsecured password			
 Automatically use my Windows logon name and password (and domain, if any) 			
Require data encryption (disconnect if none)			
Using these settings requires a knowledge <u>Settings</u>			
See our online <u>privacy statement</u> for data collection and use information.			
Interactive logon and scripting			
Show terminal window			
🔲 <u>R</u> un script:			
<u>E</u> dit <u>B</u> rowse			
OK Cancel]		

- \circ 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	
<u>U</u> ser name:	edv1
<u>P</u> assword:	[To change the saved password, click here]
	iser name and password for the following users:
⊘ Me o <u>nh</u>	who uses this computer Cancel Properties Help

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

20.3.1.3 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).

20.3.1.4 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.

20.3.1.5 Adjusting X-ray journal settings

The dose area product (DAP) is transferred by the device in mGy*cm². dGy*cm² 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*cm². No conversions are done (see 12 X-ray journal).



20.3.2 ProVario connection

Filename:	$C: \ \ C: \ \ \ C: \ \ \ \ \ \ \ \ \ \ \$
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.

20.4 Dosimeter connections

20.4.1 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.

20.4.1.1 Default settings

Interface:	COM1
Update interval:	10 seconds
Threshold value:	0,00 µGy*m²
Reset:	activated

20.4.1.2 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.

20.4.1.3 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	Dose area product	Incident dose	Surface dose
	(Priority)		
	[cGy x cm ²]	[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 cm²]
Thorax ap/pa	Premature babies (ca. 1000 g)	0,3
	Premature babies (ca. 3000 g)	0,8
	10 ± 2 months	2
	5 \pm 2 years	3
	10 ± 2 years	4
Thorax lateral	5 ± 2 years	7
	10 ± 2 years	8
Abdomen ap/pa	10 ± 2 months	25
	5 \pm 2 years	50
	10 ± 2 years	60
Pelvis ap	5 ± 2 years	25
	10 ± 2 years	30
Skull ap	10 ± 2 months	30
	5 ± 2 years	40
Skull lateral	10 ± 2 months	30
	5 ± 2 years	30
Miction cystourology	Premature babies (ca. 3000 g)	60
	10 ± 2 months	90
	5 ± 2 years	120
	10 ± 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 μ Gy*m² (this is the equivalent of 0.3 cGy*m²). 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 μ Gy*m² 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.

20.4.1.4 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.

20.4.1.5 Adjusting digipaX

The device displays DAP in μ Gy*m². Therefore it is recommended to adjust this unit also in the digipaX. The unit can be activated on the configuration page, Admin / Others (dGy*m² 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*m²" unit in the DICOM Header.

20.4.2 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*m²" 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.

20.5 Connecting foot switches

When using the frame grabber module, foot switches can be used to control the functions "Start/Stop Livebild" and "Snapshot" as well as "Acquisition of image series".

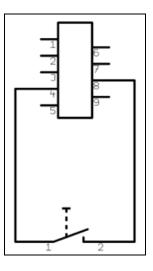


Foot switches that simulate keypress on the keyboard (F5, F9) do not need to be specially configured in the digipaX. The keys to be controlled are set by the corresponding software. Moreover, there are foot switches with RS232 interface (COM port) supported that switch one of the control cables CTS, DSR, DCD or RI per pedal. The cables must be open (signal 0) and close only after pushing the pedal (signal 1). There must be a pedal connected for each function. Individual foot switches or one foot switch with a number of pedals can be used to various COM ports. For cable allocation to the devices in use please refer to the related documentation. The allocation can also be tested with the "Test control cable" in the configuration.

Foot switch type:	RS232					
	X Start live image	Interface:	COM1	•	Control wires test	
		Control wires:	CTS	•	COM1 👻	Start / Stop
	Acquire snapshot / image series	Interface:	COM1	· ·		
		Control wires:	CTS	-	COM port dosed CTS: 1 DSR: 1 DCD: 0 RI: 0	
					CTS: 1 DSR: 1 DCD: 0 RI: 0	
					CTS: 1 DSR: 1 DCD: 0 RI: 0 CTS: 0 DSR: 0 DCD: 0 RI: 0	
					CTS: 0 DSR: 0 DCD: 0 RI: 0 COM port open and initialized	

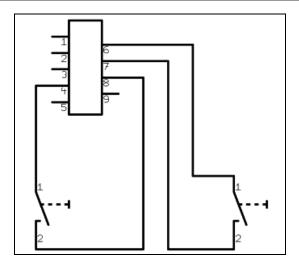
For that, select the COM port which the switch is connected to and start the test by pressing "Start/Stop". Four supported cables with related status are shown behind it. They all must be 0 when the pedals are not pushed. When a pedal is pushed and the cable connected to this pedal closes, the status changes from 0 over to 1. The pedals in the left part for live image and snapshot can be configured according to the cable allocation.

Example: schematic of one pedal



Example: schematic of two pedals





20.6 Connecting acquisition of image series

20.6.1 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	DICOM:		DICOM images
0	Standard pixe	l graphics:	JPEG, BMP or TIFF
0	RAW format:		only 8-bit greyscale is supported
	•	Image width:	width in pixel of RAW data

Image height: height in pixel of RAW data

20.7 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. There are frame grabbers/converters of the manufacturer "The Imaging Source" supported (e.g. DFG/USB2pro Video-to-ISB converter). They must 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.



For video transmission and acquisitions acoustic signal tones can be played. These signal tones signalize that e.g. an image acquisition occurred. This function is used for control when the user does not have the monitor in view. For that, the PC must be equipped for sound playback (sound card, loudspeakers etc.).

For control foot switches with USB connections or serial interfaces (RS232) can be used. The foot switches with USB connections must have two pedals for which the "F5" and "F9" keys can be programmed. An example device for the USB connection is the USB Double Foot Switch II of Scythe.

Foot switches with serial connections must be devices that close the control cable by pushing them (NO switch) - see also section 20.5 Connecting foot switches.

20.8 Connecting burning robots

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

20.8.1 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.

20.8.1.1 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.

20.8.1.2 Configuration

20.8.1.2.1 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.

20.8.1.2.2 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.

👩 EPSON	TD Bridge Environment Settings
General	PP-100/PP-100N PP-100AP
	pring Folder EPSON\TDBridge\Orders Browse
	EPSON\TDBridge\Orders Browse
TD Bri	dge Startup Type
Auto	omatic (when starting PC/service)
	rt Total Disc Monitor minimized
PP-1	100N 1 -
	It output stacker in standard mode ker4
	Setting
	Type DVD Label
	OK Abbrechen

20.8.1.2.3 digipaX

Burning robot												
Burning robot type:	EPSON Disc Proc	EPSON Disc Producer PP-100 / PP-100N										
	Monitoring Folder	: C: \EPSON\TDBridge\Orders										
	Device name:											
Burning robot settings:	Writing speed:	12										
barning robot actungs.	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".

20.8.1.2.4 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	Indiana Talan -	×
🔝 Haupteinstellungen	Utility		
			Tintenstand
	Zufuhrstapler (])	Stapler 1 CD-R 🗸 🗸 🗸	
0	Ausgabestapler (<u>0</u>)	Stapler 4 👻	
4	Etikettentyp	CD/DVD-Etikett 🗸	
	Moduseinstellung		
	Farbe (<u>C)</u> Schwarz (<u>B</u>)	
	Qualität	Schnell	
Standard Außenseite:1160 Innere :450	☑ <u>H</u> ohe Geschwindig	1 2 keit Farbeinstellungen	
Farbanpassung	Etikettengröße (<u>S</u>)	Standard Trockadur	ngszeit(<u>D)</u> 0 🚔 sec
Foto-realistisch Versionsinformation	Exemplare	1 Druck	vorschau
		OK Abbrechen Obe	ernehmen Hilfe

20.8.2 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.

20.8.2.1 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	lisher SE
Deutsch · · · · · · · · · · · · · · · · · · ·	Drucker einrichten Image: Status Security Image: Status Security </th
Drucker einrichten Installation SureThing Installation PTPublisher Registration Fertig	Perri hard after orbitari Media dala yara mutaka saha mutaka saha mutaka saha mutaka Media dala yara mutaka saha mutaka saha mutaka saha mutaka Media dala yara mutaka saha mutaka saha mutaka saha mutaka Media dala yara mutaka saha saha saha saha saha saha saha s
Benutzerspezifische Inst	Treiberinstallation

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.

20.8.2.2 Configuration

20.8.2.2.1 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.

20.8.2.2.2 digipaX

Burning robot		
Burning robot type:	Primera Disc Pub	lisher / Bravo
	Monitoring Folder	: C:\PTBurnJobs
	Device name:	
Burning robot settings:	Writing speed:	12
burning robot settings.	Compare:	Compare summary (recommended)
	Job name:	Patient's name (ASCII characters only)
		O 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.



21 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: \ E: $
MAGDevice1	= F: Images 1
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.".



22 Archiving

22.1 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.

22.2 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:\digipaXIMySQL_Backup.spl
set database1=conquest1
set database3=
mysqldumphost=%hostname%user=%username%password=%password%port=%port%databases "%database1%" "databse2" > %backup_file%
endlocal

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 Delete the task if it is not scheduled to run again. Stop the task if it runs for: Delete the task if it runs for: Stop the ta
Bun: C:\digipaX\MySQL_Backup bat	Schedule Task: Start time: Weekly V 12:00 PM C Adyanced	Ide Time
Start in: C:\digipaX Comments:	Schedule Task Week(s) on: Mon Sat	injuite(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 17 Fri	Power Management
☐ Run only if logged on ✓ Enabled (scheduled task runs at specified time)	Show multiple schedules.	Stop the task if battery mode begins.
OK Cancel Apply	OK Cancel Apply	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

22.3 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 22.2 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 22.5 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.

22.4 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.

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0		Ja	nuar	2000			•	G			Mai	2013			٢	
м	lo	Di	Mi	Do	Fr	Sa	So		Мо	Di	Mi	Do	Fr	Sa	So	
		28	29	30	31	1	2	18	29	30	1	2	3	4	5	
1 3		4 11	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	
		18	19	20	21	22	23	20	20	21	22	23	24	25	26	
4 2	4	25	26	27	28	29	30	22	27	28	29	30	31	1	2	
5 3	1	1	2	3	4	5	6	23	3	4	5	6	7	8	9	
Gearch opti	ons															
File name:	*.*															
Directory:	C:\d	igipaX)	(Conq	uest\D	ata											
Burning opt	tions															
Drive:	HL	DT-ST	DVDR	AM GS	A-H44	N				_					•	
	Burr	ing sp	eed:	4X (60	ю к	•					3	Ched	k data	after b	urning	
Disk name:	31	05_20	13													
													Search	and bu	rn	

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.

22.5 Monitoring the capacity status of the archive

22.5.1 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).

22.5.2 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.



23 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.

23.1 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.

23.2 Adding physician identification tag to the patient ID

23.2.1 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.

23.2.2 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.



23.3 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."

The following settings are to be made in the file dicom.ini of the router with an own archive:

Configuration of forwarding and/or converter programs to export DICOM slices
ForwardAssociationLevel= IMAGEForwardAssociationCloseDelay= 5ForwardAssociationRefreshDelay= 3600ForwardAssociationRelease= 1
ExportConverters= 3ExportModality0= *ExportFilter0= ImagePat LIKE '%-1'ExportConverter0= forward to CONQUEST1ExportModality1= *ExportFilter1= ImagePat LIKE '%-2'ExportConverter1= forward to CONQUEST2ExportModality2= *ExportFilter2= ImagePat NOT LIKE '%-1' AND ImagePat NOT LIKE '%-2'ExportConverter2= forward to CONQUEST3
ForwardCollectDelay= 600MaximumExportRetries= 0MaximumDelayedFetchForwardRetries= 0

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



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 images incoming by the router are saved in this DICOM archive too. This provides additional safety because a copy of the images comes automatically to existence though requires obviously more storage capacity. If you want to limit the storage capacity requirements needed additionally or to avoid router overflow, you will need to determine a threshold value from which the cache is emptied. For this purpose the value in the dicom.ini must be adjusted accordingly:

```
MAGDeviceThreshhold = 1024
```



This value is a size of free storage space in MB that must not be undershot. The least used patients are always deleted if the remaining free space comes under this value.

The other possibility is limitation of time over that the files remain saved in the router and regular cleaning of the router and removing all files older than 30 days.

There are the "Tools for deleting older files from the archive (delage)" in the Downloads under <u>http://www.digipax.de/downloads/Others/delage32.zip</u> available for this operation. The course of action is described in a separate document that can be requested at digipaX.

23.4 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."

24 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.

24.1 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.



24.2 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.

24.3 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".



25 System commissioning

25.1 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.

25.2 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.

26 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.

26.1 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.



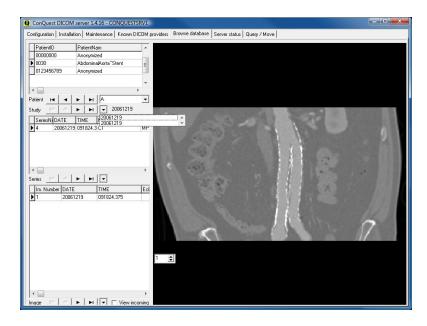
It is also necessary to establish the deletion procedure password, which must be entered by the user for activation of the delete function.



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.

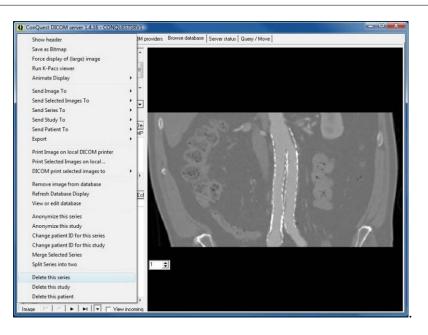
26.2 Change of patient data in Conquest

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".





26.2.1 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.

26.2.2 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".

26.2.3 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.

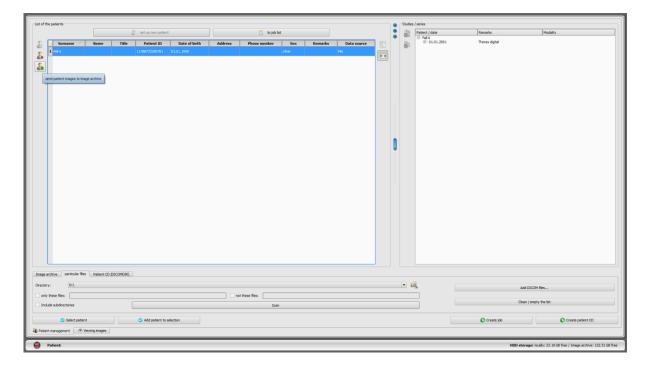


Confirm	
?	Delete this image from database (not from disk) ? 0030\1.2.826.0.1.3680043.2.135.734437.43181328.7.1323779946.640.11_0004_000001_13237799460001.dcm

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.

26.2.4 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	\$
	Gender:	other	masculine	-
	Accession Number:	11788772290708	11788772290708	
al on all off		🙎 data current patient		
	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.

26.3 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.

26.3.1 Change 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.

26.4 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:\Failed) can be deleted.

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



27 Others

27.1 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.

27.2 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\<Username>\AppData\Roaming



27.3 Splash screen on program startup

An own user-defined image can be displayed on program startup. The image must be in PNG format, have filename "splash.png" and be copied to the digipaX installation directory. The image will be displayed 1to1 in the original pixel size on the program startup.

27.4 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.

27.5 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/



28 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 Arno-Nitzsche-Str. 45 04277 Leipzig GERMANY

The product is CE marked: CE 0494

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