Software Manual
Release 10

DEXIS Imaging Suite
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- Interfaces to non-DEXIS sensors and to panoramic X-ray equipment are based on work licensed from the respective manufacturers of the equipment.
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Introduction

Chapter 1

Introduction

1.1 Welcome to DEXIS® Imaging Suite™

Welcome to the exciting world of DEXIS! And thank you for your recent investment in the DEXIS Imaging Suite. We hope you will have an extraordinary experience with our products and services.

Our mission at DEXIS is to develop and support the Digital Radiography community around the world. We seek to build strong partnerships with our doctors and their teams based on long-term, interactive relationships.

Your new DEXIS Imaging Suite was designed from the outset with you, the clinician, in mind. This is your tool. Learn to use it well and it will become an effective aid in your diagnosis, treatment and treatment planning process.

As with all new clinical tools, it is necessary to invest a certain amount of time for practice to become proficient with the DEXIS Imaging Suite.

We highly recommend that you register for in-office training with a certified DEXIS instructor and that you and all of your clinical team set aside 4 to 6 hours to learn the system together. This manual is not intended to serve as a substitute for this training. However, as preparation for the training, we do encourage you to read the manual thoroughly and practice with your equipment safely and carefully for at least one week prior to your training date.
Please note that this manual assumes that new users possess basic computer skills and an understanding of the Windows® operating system. Absent this experience, we highly recommend that you obtain these skills through a computer course, video, or textbook. Your DEXIS representative may be able to suggest (although not endorse) one or more of these computer learning resources.

Unless otherwise stated, in this manual Click refers to a single left mouse-click. Most functions in the DEXIS Imaging Suite require a single left click. Erroneous or impatient double-clicking may cause the program to function improperly. Also, as a general request, please give the program time to start and complete each function before clicking again.

Let’s start your journey into the world of DEXIS Digital X-ray!

1.2 INTENDED USE OF THE DEXIS IMAGING SUITE

The DEXIS Imaging Suite is a software program for general dental and maxillofacial diagnostic imaging. It controls capture, display, enhancement and saving of X-ray digital images from digital imaging systems. It can also handle other types of images acquired by digitizing film with a flat bed scanner, or color images from intra-oral and extra-oral dental cameras.

1.3 CONVENTIONS USED IN THE MANUAL

The following conventions are used to bring the operator’s attention to important information:

| **WARNING** | Alerts the operator that failure to follow the procedure could cause bodily injury or death. |
| **CAUTION** | Alerts the operator that failure to follow the procedure could cause damage to the equipment or cause loss of data. |
| **Important:** | Provides advice for the operator regarding use of the device or a process. |
| **Please note:** | Highlights important or unusual points. |
1.4 What’s New in DEXIS Imaging Suite

DEXIS Imaging Suite combines the great features of both DEXIS 9 and Dentrix Image 5 in an all new imaging software package that retains the look, feel and workflow of DEXIS. DEXIS Imaging Suite contains new features for private practice offices, large networked offices as well as hospitals and universities.

For the first time ever DEXray can now be integrated into 3D equipment manufactured by Imaging Sciences International, such as the i-CAT and Gendex GCXB-500/HD with the optional DEXIS i-CAT Link software. Other major improvements include full motion video recording and playback in the DEXvideo component of DEXimage and the all new DEXcosmetic, an optional module which contains new and powerful tools for cosmetic dentistry.

For large networked practices, DEXIS Imaging Suite contains totally new tools and features for integrating DEXIS into a highly networked environment. The newly redesigned DEXsync™ greatly improves synchronization of images across a network, while the new SQL format image database integrates seamlessly into large practices, hospitals and clinics. DEXIS Imaging Suite also adds a new thumbnail feature that allows DEXIS to pass a full X-ray image to a workstation while simultaneously passing a thumbnail to a server.

The following is a comprehensive list of major new features in DEXIS Imaging Suite.

New Features in DEXray and DEXimage

• New Motion Video Capture in DEXvideo including full video recording and playback to permit capture of those video frames you want.
• Plug and play hardware support that makes adding new hardware easier than ever.
• Built in new support for the latest digital hardware.

New Clinical Modules

• New and exclusive DEXcosmetic Imaging module lets you plan cosmetic procedures.
Chapter 1

- Newly improved DEXimplant module with osseointegration tool.
- Newly updated implant libraries.

3D and Specialty Integration
- Exclusive 3D integration with the i-CAT and Gendex GXCB-500/HD via DEXIS i-CAT Link.
- Integration with OMSVision, EndoVision and PerioVision practice management solutions.

Productivity enhancements
- New image acquisition filters let users permanently set the properties of images acquired from 3rd party hardware.
- New easier to use patient administration module.
- Improved tools for managing your database, DEXsafe and DEXcopy, make storing patient data safe and easy.

New features for hospitals, universities and managed practices
- Newly redesigned DEXcom module for standardized DICOM connectivity between DEXIS and PACS systems.
- All new SQL database format for more comprehensive and secure patient data storage.
- Faster and more powerful network integration with thumbnail support for client server environments.
- All new DEXsync module allows faster and more robust reconciliation of images between databases.
Chapter 2
Installation, Care, and Maintenance

Most telephone calls for assistance received by the DEXIS Customer Care specialists stem from inadequate attention to hardware and software installation.

We recommend that you engage a qualified computer specialist or network technician and develop a permanent relationship for your ongoing computer needs. We understand the prospective of “saving money” by implementing a seemingly more cost-effective solution; however, it is our experience that while this may be true in the short term, such decisions are considerably more expensive in the long run.

After installing and testing your software, hardware and components, we suggest that you take the time to explore the software and read the on-screen manual.

When calling Technical Support for assistance, please make sure that you have access to the computer on which the DEXIS Imaging Suite is used and on which the manual may be displayed. You will be instructed where to find answers and solutions for your particular questions. This allows optimal “over the phone” assistance.

2.1 Hardware Requirements

Our current hardware system requirements are available in the support section on our web site www.dexis.com, from your representative, and from our Customer Care Center. As technology changes, our requirements are updated to reflect such changes. Please consult current DEXIS systems requirements before the purchase of any hardware.

Note that systems meeting only the minimum requirements may fail to deliver a satisfactory experience. Systems with faster processors, more memory, and bigger, faster hard drives will significantly enhance performance.
2.1.1 Operating System Platform

This software has been validated for use on the following members of the Microsoft® Windows® product family of operating systems:

Workstations:
• Windows XP Professional SP3 (32 bit)
• Windows Vista Business SP2 (32 bit)
• Windows 7 Professional, Ultimate, Enterprise, all SP1 (32 and 64 bit)

Servers:
• Windows 2003 Server SP2
• Windows 2008 Server SP2

The software has also been validated for use on Mac OS 10.6 via Parallels 5.

Please note: For Windows 7, the 64-bit option is only available with DEXIS software, DEXIS Platinum sensor, and DEXcam3 camera.

Do not use this software with other versions of Microsoft Windows or on other operating systems that emulate the Windows operating system unless the software has been validated for use on that platform by DEXIS.

Before installing DEXIS Imaging Suite, make sure all the latest Windows updates are installed and the system has been rebooted if necessary.

2.1.2 Caution: Hardware & Software Upgrades

Every change in hardware or software exposes your business to risk. Computers containing patient records are “mission critical.” Careful consideration is required in order to minimize risk before changes are made to any system that is currently in use. Whether the change is to be made to hardware, to the operating system, or to the DEXIS Imaging Suite, you should be prepared to deal with an unexpected outcome including a catastrophic loss of data. For this reason, we offer the following suggestions for use with mission-critical systems:

• Instead of upgrading hardware or the operating system, consider purchasing a new pre-configured system. Computers are amazingly inexpensive today; bringing-up a new system in parallel with an existing system
is a good way to avoid placing the existing system at risk. The existing system will remain productive while the new system is qualified and readied for full service. Consider the new computer as cheap insurance, but it’s even better than insurance because you get to keep it.

- If you must upgrade your existing system, consider purchasing an additional hard drive and making a bootable, literal copy of the existing hard drive. Remove the original hard drive and make the changes to the newer (and probably larger) hard drive. With the original hard drive removed from the computer, it is not at risk and all of your data will be safeguarded. If the new changes are found to be unsatisfactory after a suitable evaluation period, you can always re-install the old hard drive and fully restore your previous environment.

**CAUTION**
Always back-up your data and store it off site. Before assuming that your back-up efforts have been successful, make sure that you understand the backup process and practice the restore process at least once on a test system. Verify that both the operating system and data have been preserved.

### 2.1.3 Diagnostic Imaging

It is in the display of images on the screen that your needs dramatically depart from the needs of ordinary computer users. The quality of image presentation will be important in your selection of a monitor and video card. Carefully evaluate your selection prior to purchase. DEXIS provides the DEX-screen program for this purpose. DEXscreen leads you through a variety of tests that evaluate the quality and settings of the monitor. DEXscreen can be accessed from the installation DVD by clicking **Test your Monitor with DEXscreen**. You can also access it from **Preferences > General** in DEXIS Administration.

DEXscreen is self-explaining and guides you through its menus.

Here are a few things that we have learned after many years of experience:
Chapter 2

- Premium monitors are highly recommended. Your needs are similar to those of a professional image scientist or a commercial photographer, so treat yourself to the best quality.

- If cost is a concern, choose a premium CRT monitor over a low-cost LCD monitor.

- LCD monitors must have a contrast ratio of 400:1 or better. Before purchasing an LCD monitor, test its capability to display all 256 shades of gray accurately.

- When selecting a laptop computer, choose models with LCD screens recommended for use with photographic imaging.

- LCD monitors must be used in native (highest offered) resolution. Since high screen resolution makes text and icons appear small, monitors with high native resolution are often not the best choice.

**CAUTION**

LCD monitors display images accurately only when used in native resolution; therefore do not attempt to enlarge displayed text and icons by lowering the resolution setting.

2.1.4 Special Hardware Requirements

**DEXray**

To acquire images using the DEXray software, the sensor must be connected to the PC on which DEXray is installed.

**DEXimage**

DEXimage requires an image source and a capture device. The quality of the result cannot be better than the quality of the source. Expensive cameras may offer higher resolution still images at low frame rates, while full-motion video cameras may capture dozens of frames per second, but none of them high resolution enough to allow enlargements.

Capture devices may be interfaced directly to boards installed in the back of the computer or to interfaces such as USB. The interface you choose may
affect the performance or usability of the result. Ease of use is also important. A product that requires the user to transfer images from camera to computer in order to send images may be less usable than a product that transfers images in a “hands free” fashion.

Always test your camera installation as a stand-alone device before interfacing to DEXimage.

A foot pedal can be used in DEXimage to start and stop the live video and to capture still pictures. DEXimage can handle foot pedals connected to a serial port and pedals connected to a game port. Some cameras have a capture button that can be used along with a foot pedal.

**DEXscan**

DEXscan requires a scanner. To scan ordinary paper images, such as your signature or office logo, a standard scanner may be used. If you intend to scan X-ray images, a scanner with a transparency adapter is required. Be sure to select a scanner that has an interface that is appropriate for your installation.

### 2.2 Hardware Installation

Please refer to the specific owner’s manuals for information on your computers, printers, scanners, card readers, foot pedals, monitors, and cameras for installation and use. Should you need technical assistance with any of these items, please consult the manufacturer of each specific item.

Again, we highly recommend employing the services of a factory-trained DEXIS engineer or experienced DEXIS installer. We also recommend that you engage a qualified computer specialist or (preferably) a network technician and create a sustainable relationship for your ongoing computer needs.

The following hardware has been qualified with the DEXIS Imaging Suite software:

**Intra-oral Sensors:**
- DENTRIX ImageRayi®
- DEXIS® (Classic Sensor)
Chapter 2

- DEXIS® Platinum sensor
- Gendex GXS-700™
- Gendex VisualiX® GX-S USB
- Gendex VisualiX GX-S HDI USB
- Gendex VisualiX eHD
- Instrumentarium Sigma™
- Instrumentarium Snapshot
- Kodak RVG 6000 (via Kodak Imaging)
- Planmeca Dixi 3
- Progeny™ MPSe
- Progeny Vision DX
- Schick CDR® (USB)
- Sirona XIOS
- Trophy/Kodak (RVG 3, 4 & UI)

X-ray Panoramic/Cephalometric

- Gendex Orthoralix® 8500 DDE
- Gendex Orthoralix 9200 DDE
- Instrumentarium OP200
- Instrumentarium Orthoceph® OC100D
- Instrumentarium Orthopantomograph® OP100D
- Planmeca ProMax
- Planmeca ProOne
- SOREDEX CRANEX® D
- SOREDEX CRANEX Novus
- Sirona ORTHOPHOS 3 DS
- Sirona ORTHOPHOS Plus DS
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- Sirona ORTHOPHOS XG 3
- Sirona ORTHOPHOS XG 5 DS
- Sirona ORTHOPHOS XK PLUS DS
- TWAIN Digital Cephalometric Plug-in
- TWAIN Digital Panoramic Plug-in

Phosphor Plate Scanners
- Air Techniques ScanX® (all models supported)
- DIGORA® Optime (previous name of SOREDEX Optime)
- Dürr VistaScan (all models supported)
- Gendex DenOptix®
- Gendex DenOptix QST®
- Instrumentarium Express
- SOREDEX Optime

Intra-oral Cameras
- Air Techniques SLC USB 2.0
- Air Techniques/Polaris Acclaim® USB
- DEXIS DEXcam™
- DEXIS DEXcam USB-2
- DEXIS DEXcam 3
- DENTRIX® ImageCAM® II USB
- DENTRIX ImagecamHD USB 2.0
- Digital Doc Evolution USB 2.0
- Gendex GXC-300™
- Gendex AcuCam® Concept® IV FWT
- Gendex dCAM
- Gendex eZ1™ USB
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- Progeny™ Vivid USB 2.0
- Sopro 595 USB

2.3 Display Settings Changes

Before installing your DEXIS Imaging Suite, please change your display settings to best view the DEXIS screens.

For Windows XP:

1. Go to Start, then Settings and click Control Panel; double-click the Display icon to open the Display Properties screen; click the Settings tab at the top.
2. Under Colors: Choose True Color (24 bit or 32 bit) if available, otherwise choose High Color (16 bit). Some older, rather slow computers with outdated video capture cards may limit you to 16-bit color.
3. Under Screen Area: Always choose the native (the highest offered) resolution. This is especially important for LCD monitors.
4. Click Apply to apply these settings.

For Windows Vista:

1. Go to Start, click Control Panel; click Appearance and Personalization, click Personalization, then click Display Settings.
2. Under Resolution: Always choose the native (the highest offered) resolution. This is especially important for LCD monitors.
4. Click OK to apply these settings.
For Windows 7:

1. Go to Start, click Control Panel; click Appearance and Personalization, click Adjust Screen Resolution.

2. Under Resolution: Always choose the native (the highest offered) resolution. This is especially important for LCD monitors.

3. Click Advanced Settings, then click the Monitor tab. Under Colors: choose True Color (32 bit).

4. Click OK to apply these settings.

**CAUTION**

LCD monitors display images accurately only when used in native resolution; therefore do not attempt to enlarge displayed text and icons by lowering the resolution setting.

### 2.4 Software Installation

**Please note:** If you purchased your computer through DEXIS, it will be delivered to you pre-loaded with software and initial information. Please go directly to “Installation verification and testing” on page 157.

Otherwise, please use the following instructions to install your new DEXIS Imaging Suite software, then use the verification and testing instructions in “Installation verification and testing” on page 157. Following all the instructions will ensure that your system is fully functional. The system will be taught in the Simulation mode for all hardware not functioning at the time of training.

**Please note:** Your DEXIS system must be completely installed before training can begin.

**CAUTION**

Do not uninstall the older DEXIS version unless requested to do so by DEXIS Technical Support.
2.4.1 Installation Planning

If you plan to run DEXIS Imaging Suite on a stand-alone computer, there is not much to plan and you may proceed to the next section.

If you have a local area network, you need to designate a hard disk of one of the computers to hold the DEXIS data (images and patient data). This server disk needs to be shared so that it can be accessed (with read and write access) from all of the computers that will be running DEXIS Imaging Suite and will thus need to access the data. It has to be given a drive letter on all participating computers. We suggest the drive letter “X” (for X-ray), and will use this letter in subsequent examples, although any other drive letter would be fine.

Important: If these terms are unfamiliar to you, please STOP. DEXIS highly recommends that you contact your network professional before proceeding further.

For a network installation, the following steps have to be performed on all computers on which DEXIS Imaging Suite is to be used. Start with the server, where the DEXIS data will be stored.

2.4.2 Running the Installation Program

To begin the installation, insert the DEXIS Imaging Suite installation DVD into your DVD drive. The DVD is equipped with an Autorun feature and will start on its own. Should the Autorun feature not work with the DVD drive in your computer, you can launch the installation menu manually: Double-click the My Computer icon on your desktop, open the DVD drive by double-clicking its icon, then double-click the DEXmenu icon.

Please note: You need Administrator rights to install software. If user accounts with different rights are installed on your system, please log into an account with Administrator rights before continuing.

Select Language

If your DVD offers the choice, choose English-US, if you reside in the US. All other versions give international tooth numbers that differ from those used in the United States. The Software Installation DVD for distribution in the
Installation, Care, and Maintenance

United States does not offer this choice. You may select other versions on this DVD by clicking International Versions.

Select Software

Click Install DEXIS Imaging Suite to install all the major components of the DEXIS Imaging Suite.

Specify Server or Workstation

Specify the type of installation needed: either Server and Workstation or Workstation.

- Server and Workstation: Computer where the DEXIS data will be stored. Choose this for both server and stand-alone (non-networked) installations.
- Workstation: Other computers that run DEXIS Imaging Suite.

Choose Destination Location

During the installation process you will be asked for the folder into which the software should be installed. Typically you should accept the default folder, which is C:\Program Files\DEXIS. In any event, this must be a folder on a local hard disk, not on a network drive.
Select Data Directory

Next, you will be asked where you would like to store DEXIS data. Typically, this will be C:\DEXIS Imaging Suite\Data for a non-networked computer. On a network, this will be C:\DEXIS Imaging Suite\Data on the server and X:\DEXIS Imaging Suite\Data (or \DEXIS Imaging Suite\Data on any other drive) on the client workstations.

2.4.3 Server and Workstation

Choose an Instance Option

This panel gives two choices: Do you wish to create New SQL Instance or Use Existing SQL Instance? Choose New Instance and click Next.

Enter Instance Name

Enter the Instance Name to be created for SQL Server. Accept the default - DEXIS_DATA - and click Next.

Follow the on-screen directions until DEXIS Imaging Suite is successfully installed.

Configuration of Network Firewall

When installing in network configuration with Windows Firewall, or another firewall, running on the server, firewall exceptions must be created for the SQL Server for the system to run properly.

Please note: If the installation program installs the Microsoft SQL Server Express and you are creating a new instance, the installer will add these exceptions for you. If you are using a previously installed version of SQL Server, an existing SQL instance or are not using Windows Firewall, you must do this manually.

(The following is an excerpt from Article ID: 914277 – July 2, 2010 – Revision 2.0 - http://support.microsoft.com/kb/914277. While this article specifi-
cally references Windows XP Service Pack 2, the solution also applies to Service Pack 3.)

Create exceptions in Windows Firewall

These steps apply to the version of Windows Firewall that is included in Windows XP Service Pack 2 (SP2) and in Windows Server 2003. If you are using a different firewall system, see your firewall documentation for more information.

If you are running a firewall on the computer that is running SQL Server 2005, external connections to SQL Server 2005 will be blocked unless SQL Server 2005 and the SQL Server Browser service can communicate through the firewall. You must create an exception for each instance of SQL Server 2005 that you want to accept remote connections and an exception for the SQL Server Browser service.

SQL Server 2005 uses an instance ID as part of the path when you install its program files. To create an exception for each instance of SQL Server, you must identify the correct instance ID. To obtain an instance ID, follow these steps:

1. Click Start, point to Programs, point to Microsoft SQL Server 2005, point to Configuration Tools, and then click SQL Server Configuration Manager.

2. In SQL Server Configuration Manager, click the SQL Server Browser service in the right pane, right-click the instance name in the main window, and then click Properties.

3. On the SQL Server Browser Properties page, click the Advanced tab, locate the instance ID in the property list, and then click OK.

To open Windows Firewall, click Start, click Run, type firewall.cpl, and then click OK.

Create an exception for SQL Server 2005 in Windows Firewall

To create an exception for SQL Server 2005 in Windows Firewall, follow these steps:

1. In Windows Firewall, click the Exceptions tab, and then click Add Program.
2. In the Add a Program window, click Browse.

3. Click the C:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\Binn\sqlservr.exe executable program, click Open, and then click OK.

**Please note:** The path may be different depending on where SQL Server 2005 is installed. MSSQL.1 is a placeholder for the instance ID that you obtained in step 3 of the previous procedure.

4. Repeat steps 1 through 3 for each instance of SQL Server 2005 that needs an exception.

**Create an exception for the SQL Server Browser service in Windows Firewall**

To create an exception for the SQL Server Browser service in Windows Firewall, follow these steps:

1. In Windows Firewall, click the Exceptions tab, and then click Add Program.

2. In the Add a Program window, click Browse.

3. Click the C:\Program Files\Microsoft SQL Server\90\Shared\sqlbrowser.exe executable program, click Open, and then click OK.

**Please note:** The path may be different depending on where SQL Server 2005 is installed.

### 2.4.4 Workstation

**Database Server**

1. Browse to and select the Database Server that you are installing to.

2. Specify method of connection: Windows authentication or SQL server authentication. If the latter, type in the Login ID and Password used for connection.

**Please note:** When installing in Windows Workgroup configuration, SQL authentication method must be used instead of Windows authentication.
Installation, Care, and Maintenance

During the installation you might receive several messages telling you that the software being installed did not pass Windows Logo test. In this case, please choose the option Continue/Install Anyway.

Install Additional Software

Install other software only as it applies to your practice and purchased modules. Please call DEXIS Technical Support for assistance.

If this is an upgrade from a previous version, the installation program will automatically upgrade all installed DEXIS components.

2.4.5 Sharing Data Between Disconnected Systems

In some cases two image databases on separate systems need to be maintained, that should contain the same data. For these cases DEXIS provides DEXsync, a program that allows for the synchronization of two image databases. Use DEXsync for the following configurations:

- Two stand-alone laptop computers are used for acquiring X-rays; no office network is installed. You want to look at all X-rays on both laptops.
- A laptop computer is used for acquiring images while it is not connected to the office network.
- You have two separate office networks which should both hold the data of all patients.

**CAUTION**

Please contact DEXIS Technical Support for assistance with the installation of DEXsync. This is especially important if you have existing image databases that need to be restructured. Always back up your image data before starting any restructuring or merging operation.

2.4.6 Adding Initial Information

Once DEXIS Imaging Suite is installed you will find a DEXIS Imaging Suite icon on your desktop.
To initiate the DEXIS Administration program, double-click this icon. A Preference Setting window will appear asking you to select your specialty. Click the appropriate button. You can change this selection later on the General Preferences tab, see “Specialty” on page 25.

Please note: The Specialty Preference Setting is only applicable for the USA version of DEXIS.

Next, a window will appear asking for your practice name. This information must be entered carefully and accurately as it will appear on all printed items. Click OK when done.

Next, you will be asked to enter your telephone number. Type it in and click OK.

Once the telephone number has been entered, the software checks for previous installations of DEXIS and Dentrix software. If DEXIS or Dentrix data is found you will be prompted to import the existing data.

Now, you will be asked to enter a new patient. For setup and test purposes, enter a test patient. Type in a number (such as “1”), a last name (such as “Test”), and a first name (such as “Tim”). Click Done. You will now have full view of the DEXIS Administration screen, and patient’s name, Tim Test, will appear on the screen.

For network systems, this initial information should now be accessible across the network and will not need to be added to each workstation.

Please note: If linked to a practice management program, all patients must be added through your practice management program. However, you may add a test patient directly into DEXIS Administration (see above) to be deleted after testing. Alternatively, you may add a test patient within your practice management program or choose to use an existing patient’s file with which to practice. For systems where the DEXIS Integrator software is an option, instructions for the use of DEXIS-provided links is provided in the appendix.

2.4.7 Obtain Registration Codes

From the DEXIS Administration screen, click the Wrench icon and then click Component Licensing. Call DEXIS Technical Support for registration codes.
Installation, Care, and Maintenance

for your purchased modules. One of our technical representatives will walk you through the process.

When you click the button next to the component name or upon opening a DEXIS module that needs a separate license, you will be asked to register. You may choose Later and this way try the module for 30 days. For a preview of non-registered modules, click Show Introduction to....

Please note: Introductions are not present for all modules. If there is no introduction for the module you are trying to register, the button is not shown.

For network systems, you may obtain registration codes on any one workstation for the entire network.

Should you wish to make changes to your practice name or telephone number you will need to re-register your programs.

Your DEXIS installation is now complete.

2.5 Regular Backups of Image Files

It is extremely important to back up your data on a regular basis as a matter of routine maintenance. DEXIS offers DEXsafe, a one-step feature to copy all or part of your DEXIS data to a specific backup drive. Please see our system requirements for recommendations on devices. Instructions for using DEXsafe are found in “DEXsafe” on page 180.
CHAPTER 2
Chapter 3
The DEXIS Administration Program

The DEXIS Administration program is the starting point for all stand-alone versions of the DEXIS Imaging Suite. All other DEXIS programs (including DEXray, DEXimage, DEXwrite, etc.) are accessed through this program after first selecting a patient or creating a new patient.

In addition, this program is the starting point for setting up various global Preferences or default settings with regard to your office and clinical team members (Providers). Other preferences control the look and feel of the DEXIS Imaging Suite and automate certain frequently used functions.

DEXIS owners who choose to set up their DEXIS programs to interface directly with their practice management programs will use the DEXIS Administration program much less frequently (primarily to set global preferences) as they will select their patients from the equivalent screen in the practice management program.

3.1 DEXIS Administration Screen Overview

To open the DEXIS Administration screen, double-click the DEXIS Imaging Suite icon on your desktop.

You may apply certain Windows functions to this screen. You may size the screen using click-and-drag. You may also use the three buttons in the upper right to minimize the screen (thus sending it to the task bar — click the tab to bring it back up), maximize or restore a screen, or close a screen.

You may also use the following standard Windows functions in any field where text can be entered:

- Toggle between insert and replace modes using the Insert key on the keyboard. Insert mode is the default.
- Move the cursor to the beginning of the line (Home key) and end of the line (End key).
• Copy (Ctrl-C), cut (Ctrl-X), and paste (Ctrl-V) text.

There are icons across the top of the screen for various functions. When entered, a list of patients will appear on the right side of the DEXIS Administration screen. A patient search field, alphabet keys, buttons to access patient information, and Referring Dentists are on the left side of the screen. If entered, patient pictures are visible in this area.

Place your cursor over any of the icons and buttons and a help bubble, called a Tooltip, will appear with information about the function. Often, there is also a keystroke that will execute the function. The Tooltip help feature is available throughout the DEXIS system.

There are up to eight program icons that appear on the upper left area of the DEXIS Administration screen:

<table>
<thead>
<tr>
<th>![Icon]</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Icon]</td>
<td>Intra-oral grayscale image display mode (DEXray)</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Extra-oral grayscale image display mode</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Intra-oral color image display mode (DEXimage)</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Extra-oral color image display mode</td>
</tr>
<tr>
<td>![Icon]</td>
<td>All images in Overview mode</td>
</tr>
<tr>
<td>![Icon]</td>
<td>DEXwrite (can be hidden)</td>
</tr>
<tr>
<td>![Icon]</td>
<td>DEXclaim (can be hidden)</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Close DEXIS Administration</td>
</tr>
</tbody>
</table>

It is possible for you to choose to hide certain icons. See “Component Licensing” on page 41 for details.
Click the DEXIS logo icon on the far right to open the Program Information screen. This screen offers program information and will allow you to access the Context Sensitive Help feature and the DEXIS web site.

The Help Feature

Click Help and your cursor gains a “?” symbol. Now, click a feature or icon and the DEXIS Imaging Suite on-screen manual will open in an Acrobat Reader window to the page where the use of the function is described. You may zoom in on the screen shots to see more detail.

Click DEXIS Web Site to open the site in your browser if you are online.

Click OK to close the Program Information screen.

3.2 Setting General Preferences

The Wrench icon opens Preferences where a variety of information is entered, accessed, and/or changed.

Click General to access and set the following:

Specialty

Selecting one of the specialties will initialize preference settings as mostly used by dentists of the selected specialty. Of course, you may change the individual settings one by one according to your needs, see also “New Patient Preferences” on page 29.

- **General**: Set Startup View to **Mouth**.
- **Perio**: Set Startup View to **Mouth**.
- **Endo**: Set Startup View to **History**.

Mode

The DEXIS Imaging Suite has three operating modes:

- **Standard**
- **DICOM**: includes RIS/PACS services Modality Worklist Query; Query-Retrieve; and Storage.
• DICOM VA/VistA: a restricted DICOM networking client adapted specially to the VistA software of the U.S. Veterans Administration.

Refer to the DEXcom manual for information about running in either of the DICOM modes. The DICOM modes are only enabled after a license has been entered; refer to “Component Licensing” on page 41.

Print/Export System Info

Should you have technical issues, DEXIS Technical Support may ask you to send information about your computer and the DEXIS installation.

These two buttons issue this information. It is either printed or written to a text file on your desktop. The file can be viewed, printed, or sent by e-mail.

DEXscreen Monitor Test

Monitors are crucial system components, see “Diagnostic Imaging” on page 7. By clicking this button you open DEXscreen, the DEXIS monitor test program, that displays various test patterns to help you evaluate the suitability of your monitor and monitor settings.

DEXscreen is self-explaining and guides you through its menus.

Installation Directory

Shows where DEXIS was installed.

3.3 Setting Administration Preferences

Click the Wrench icon to open Preferences, then click Administration to access and set the following:

Hide Patient List

If this option is chosen, the patient list is hidden on the DEXIS Administration screen. The patient list will only show when characters are typed into the Patient text field. You are prompted to exit and restart the DEXIS program for the preference to take effect. Click OK on the dialog. Close and restart DEXIS.
Comm Folder

This is the default folder for importing and exporting images. DEXIS Imaging Suite setup sets it to the subfolder Comm of your data folder. You may want to change it if you frequently exchange images with another program that expects them in a different location.

Smile Library Folder

This is the default folder for Smile Library files. Click *Browse* to change the location, if desired.

Patient ID

Should you wish to give your patients specific numbers, choose *Manual*. DEXIS Imaging Suite will automatically assign a unique number to each patient if you choose *Automatic*. If you use a practice management program we recommend using manual numbering and entering the IDs issued by that software. If your practice management program is linked to DEXIS Imaging Suite, *Manual* must be selected.

DEXIS Imaging Suite defaults to *Automatic* upon installation.

Address Text, Report Text

Place the practice address in *Address Text*. (Note that supplied DEXwrite templates will display up to 5 lines of address text.) Choose *OK* to save or *Cancel* to cancel changes. This information appears on your printouts.

*Report Text* offers a basic letter. Change the letter here for the default — it can be adapted for each printout. The referrer (w/o address), patient, date and provider will merge — no other information is available for merging. The letters created from DEXray, unlike DEXwrite, are not saved and therefore not editable.
**Providers**

Click *Providers* to open the *Providing Dentists* screen and view the list of providers for the practice. A search field is located at the top of the screen. To use the search function, type the first few letters of the provider’s name until the name appears.

To add a new provider, click *New* to open a blank *New Provider* form. Type the provider’s name; DEXIS Imaging Suite will automatically capitalize the first letter of each text field. Use the Tab key to move from one field to the next. Add any other information as desired, including the provider’s practice management number or letters under *Ref. #/Initials*. Individual provider logos for use with DEXwrite can be obtained using the *Acquire Logo* button. Delete the current logo for this provider by clicking *Delete Logo*.

Click *OK* to save or *Cancel* to cancel.

To modify information for an existing provider, search for the name, click the name to highlight the line, and then click *Modify* to open the *Edit Provider* form for that particular provider.

To delete a provider, click the name to highlight the line, then click *Delete*. The provider will no longer show on the list; however, patients attached to this provider will still show the provider’s name on their *Patient Data* screens until another one is selected.

**Signatures and Logos**

These items are used to acquire signatures and the practice logo for use with DEXwrite. Click either button to open the *Picture Acquisition* dialog box, which displays available signatures or logos, respectively.

- Click *New* to browse for and add a new signature or logo file. Various image formats (bmp, jpg, png, and tif) are supported.
- Click *Crop* to enable cropping. Click and drag the rectangle, then click *Crop* a second time to crop the image.
- Click *Rotate* to rotate the image by 90 degree increments.
- Click *Delete* to remove the selected signature or logo.
- Click *Done* to close the dialog box.
You can also access these functions from DEXwrite Preferences; see “Setting DEXwrite Preferences” on page 132.

**New Patient Preferences**

Use the controls to set the initial intra-oral X-ray and color views for new patients: *Mouth* refers to intra-oral images in the mounted view; *History* refers to intra-oral images in chronological order. Use the drop-down list to specify the initial startup view for new patients: DEXray X-ray; DEXray Pano; DEX-image Mouth; DEXimage Front; or Overview. To change the view for an individual patient, see “The Image Archive” on page 77.

**Delete Images Automatically from Recycle Bin**

When images are deleted, they are kept in a DEXIS-specific recycle bin. You can select this option to automatically delete images in this recycle bin and specify the number of days before they are deleted (30 days is the default).

**Empty Recycle Bin**

This option is only available to an administrator.

### 3.4 Setting DEXIS Preferences

Click the *Wrench* icon to open *Preferences*, then click *DEXIS* to access and set the following:

**Single Patient on Screen**

If this option is chosen, all DEXray and DEXimage screens are automatically closed when a new one is opened. Selecting this option is recommended so that images are not entered by mistake into the wrong patient’s file.

**Navigator**

Check the selection box to show the Navigator when an X-ray is enlarged.

**Image Format**

DEXIS Imaging Suite stores the images in one of three image file formats: the proprietary DEXIS format, a compressed format; uncompressed TIFF,
helpful if your practice management program is to directly access the images; or DICOM, a universal digital format for medical and dental imaging being standard in hospital environments. The default and recommended format is DEXIS. When exporting images you still can choose a different format, the DEXIS Imaging Suite will convert the images for you.

**Intra-oral X-ray Size, Extra-oral X-ray Size, Color Image Size**

You can set the sizes of enlarged intra-oral X-rays, extra-oral X-rays, and color images in percent of the screen width. The defaults are 50% for intra-oral X-rays and images, 90% for extra-oral X-rays, 70% for extra-oral color images.

**5 Anterior FMX**

Choose **5 Anterior FMX** to have the screen accommodate 5 anterior images instead of 3 per arch.

**Flipped View**

Choose **Flipped View** to have the patient’s X-rays shown in inside-out view, so that the right images appear on the right side of the screen.

**Limit Shown BW Series**

Check this if you want to limit the number of bitewing series that you want the software to show non-overlapping, then use the spinner to specify the number. Leave the box un-checked if you want to see as many bitewing series as fit. See “Selection and Navigation” on page 52.

**Initials**

You may place initials into this field, which are then proposed when deleting X-rays. This is useful if the system is always being used by the same person. She/he then need not put in the initials each time she/he deletes an X-ray.

**Hide Images Exceeding**

You may enter the number of images to be displayed on the DEXray and DEXimage screens. When the number of images exceeds the entered number, images are hidden by consultation from oldest to newest. Note that all
images from a consultation will be shown, even if the total number of images from that consultation exceeds the number specified. For example, given the following sets of images:

- 4 X-rays from 13 April 2009
- 12 X-rays from 30 September 2008
- 8 X-rays from 1 January 2008

If the Hide Images Exceeding field is set to 1, all images will be hidden except those from the 13 April 2009 consult.

If the Hide Images Exceeding field is set to 10, all images will be shown except those from the 1 January 2008 consult.

To unhide images, click the Archive icon in either the DEXray or DEXimage screen, and select the images to be made visible. See “The Image Archive” on page 77.

**Hide Movies Exceeding**

Refer to “Hide Images Exceeding” on page 30.

**Reset Overview Panel**

Select this to restore the Overview panel to the default arrangement. See “Overview Icon” on page 58.

**DEXray, DEXimage Background Color**

For each type of image, click the colored button to open a color palette, where you can specify the background color.

### 3.5 Setting Data Preferences

Click the Wrench icon to open Preferences, then click Data to access and set the following:

**Patient/Image Data Directory**

This is the default folder for patient and image files. Click Browse to change the location, if desired. For client installations, this is the only Data prefer-
ence that needs to be set as the database settings will be automatically retrieved.

**Remote Computer**
If the data folder is located on a remote network drive, the computer name is shown in the Remote Computer field.

**Edit Advanced Settings**
Check this to enable changes to database properties. These settings will apply to all clients that use the specified data directory.

**Database Server**
The name of the SQL database server, specified during installation.

**Find Servers**
Click this to find and display all computers with SQL databases on the network. A server can be selected in the drop-down list in the Database Server field.

**Database Instance**
The name of the database running on the SQL server, specified during installation.

**Use Windows Authentication**
Check this to utilize the current Windows credentials when connecting to the SQL database.

**User Name, Password**
If Windows Authentication is not used, type the SQL Server User Name and Password used when connecting to the SQL database.

**Verify**
Click *Verify* to connect to and check the configured database. This function is useful for troubleshooting, changing servers, and checking multiple locations.
3.6 Setting X-ray Acquisition Preferences

Click the Wrench icon to open Preferences, then click X-ray Acquisition to access and set the following:

**Intra-oral Device**

Select *No Device* for workstations where X-rays will NOT be taken, *DEXIS* for workstations where X-rays are taken, and *Simulation* to have DEXIS Imaging Suite simulate taking intra-oral X-ray images. Other choices may be available for additionally purchased modules.

**Filters**

The DEXIS Imaging Suite introduces customizable acquisition filters for both intra-oral and extra-oral digital X-ray devices. While DEXIS makes every effort to ensure the default filters are optimized for every device, there are times when the environment calls for the ability to fine-tune how the image is processed to produce a better resulting diagnostic image. These advanced filters give the user the ability to modify the default image processing according to their personal preferences.

Filter settings are stored separately for each device and will not interfere with other digital devices being used on the same computer. The filters can be returned to default at any time.

**CAUTION**

The filter settings you choose will be applied to your radiographs and are irreversible once captured. The use of filters, especially sharpening, can create unwanted and conspicuous edge effects, or increase image noise. It is advisable that you contact DEXIS Technical Support before making changes to the default settings.

For DEXIS Intra-oral devices:

1. Click *Filters*. A Caution message box appears, advising you to contact DEXIS before making changes to the default settings.
2. Click *OK*. A Registration form appears. You must contact DEXIS Customer Care to obtain a registration number before making changes to filter
settings.

**Please note:** Unlike other DEXIS components, there is no 30 day trial for this capability. You can also activate this feature from the Component Licensing pane; refer to “Component Licensing” on page 41.

3. Once you type in the registration number and click *Done* on the Registration dialog, the X-ray Acquisition Filter Options dialog box opens.

For non-DEXIS Intra-oral devices:

1. Click *Filters*. A Caution message box appears, advising you to contact DEXIS before making changes to the default settings.

2. Click *OK*. The X-ray Acquisition Filter Options dialog box opens.

**X-ray Acquisition Filter Options**

- **Equalization:** Use Equalization to convert 16-bit data to 8-bit displayable images by automatically calculating the black and white points on the image. Equalization linearly converts the gray scale portions of the image and attempts to create a balanced image regardless of x-ray source settings. This can be used to bring out the detail in dark areas of an image. Equalization may make it more difficult to see overexposed or underexposed images because the software will attempt to make a true black value as well as a true white value.

  Check *Automatically Apply Equalization*, then use the controls to set *Low Percentage* and *High Percentage* values. Allowed values of each are integer values 1-10.

- **Gamma:** Use Gamma to change the brightness of image pixels, primarily in the mid-range of intensities. Black and white pixels remain unchanged, while pixels that originally have a mid-range brightness value will be changed the most. Higher gamma values make the image appear brighter and lower gamma values make the image appear darker.

  Check *Automatically Apply Gamma*, then use the control to define the *Amount* (0.1-2.0). A Gamma value of 1.0 yields no change in brightness.

- **Sharpen:** Use Sharpen to increase the perceived resolution of the image. It will also increase any noise within the image. It is common to use
sharpness filters on High Contrast images.

Check *Automatically Apply Sharpen*, then use the controls to define *Amount* and *Radius*. Allowed values are 10-300 and 3-50 respectively.

- Smooth: Use Smooth to blur each pixel in the image based on neighborhood pixels. Smoothing is commonly used on high resolution images.

Check *Automatically Apply Smooth*, then use the control to define *Radius*. Allowed values are 3-50.

**X-ray Series**

When taking a series of X-rays, DEXIS Imaging Suite automatically advances from one position to the next once radiation is detected. This method lets you take a series without having to touch the computer in between.

You can use the sequences already in the system or set up your own sequence, up to four in total per computer. To see the three sequences supplied with the DEXIS Imaging Suite, click *X-ray Series*. Please note: For a Full Mouth series, DEXIS Imaging Suite uses a sequence that affords the fewest changes of the holders.

You may edit or overwrite the existing series. However, each group of tooth numbers, such as seen under *Full Mouth 1–3 3–5...*, refers to a certain position on the screen. Click the boxes showing the tooth numbers for each existing series. Use the arrow keys to move through this box and take note of these groups of numbers. It is highly suggested that you use the same groups of tooth numbers to set up your own series sequence to keep your images from overlapping on the screen.

To set up your own series, click in a box under *Name* and give your series a name. Next, under *Teeth*, type a beginning tooth number for each image in your series, then a hyphen, then the ending tooth number, then a space, and so on. The space lets DEXIS Imaging Suite know that you are moving to the next image of your series.

Choose *OK* to save or *Cancel* to cancel.
Chapter 3

Colors
You may assign a certain color to a specific sensor by first choosing the sensor's number from the drop-down box under Intra-oral Device, and then clicking the desired color in Colors. This is helpful if you have multiple sensors in your office: Mark the sensors with different colors and enter the colors here. The sensor selection buttons on the Intra-oral X-ray Capture screen will then show the same colors.

Device Settings
Property page of the selected device.

Extra-oral Device
Click the down arrow to display a list of installed digital panorama equipment. Select the brand to be used, No Device for no pan, or Simulation for simulation mode. If No Device is selected, the acquisition button will not be shown.

Apply Frame Removal
Check this to remove borders from extra-oral X-rays.

Filters
The DEXIS Imaging Suite introduces customizable acquisition filters for both intra-oral and extra-oral digital X-ray devices. While DEXIS makes every effort to ensure the default filters are optimized for every device, there are times when the environment calls for the ability to fine-tune how the image is processed to produce a better resulting diagnostic image. These advanced filters give the user the ability to modify the default image processing according to their personal preferences.

Filter settings are stored separately for each device and will not interfere with other digital devices being used on the same computer. The filters can be returned to default at any time.

CAUTION
The filter settings you choose will be applied to your radiographs and are irreversible once captured. The use of filters, especially sharpening, can create unwanted and conspicu-
ous edge effects, or increase image noise. It is advisable that you contact DEXIS Technical Support before making changes to the default settings.

For Extra-oral devices:

1. Click *Filters*. A Caution message box appears, advising you to contact DEXIS before making changes to the default settings.

2. Click *OK*. The X-ray Acquisition Filter Options dialog box opens. Refer to “X-ray Acquisition Filter Options” on page 34.

**Device Settings**

Property page of the selected device.

**Scanner**

Click the down arrow to display a list of installed scanner drivers. Select the brand to be used, *No Device* for no scanner, or *Simulation* for simulation mode.

**X-ray Cutting**

If enabled, a scanned group of films is saved as multiple single images. If disabled, a scanned group of films is saved as a single image.

**Frame Removal**

- Select No Frame Removal to disable automatic cropping.
- Set to some value between 0 (least) and 5 (most), if the single-film scanner produces black edges or frames. Start with 0, scan a test X-ray, and increase the value if the frame is not reliably removed.

You need to select the scanner before setting this value.

**Flip Scanned Images**

Check this to mirror scanned images around the vertical axis.
Auto-Contrast X-ray Images
Check the selection box to have all X-rays appear in contrast mode when initially shown.

Use Classic ClearVu Mode
Toggles between Classic and Advanced mode. Advanced is usually best suited for all cases: detecting caries and fractures as well as examining bone structures and ligatures. Classic is included for compatibility reasons.

3.7 Setting Video Acquisition Preferences
Click the Wrench icon to open Preferences, then click Video Acquisition to access and set the following:

Primary Device
Use this to specify the primary video capture device. You can also choose Simulation to simulate taking video images.

Button Type
Use the drop-down list to specify the type of button on the primary device: Single Down/Up; Single Down Only; Double Move-Capture; Double Capture-Move.

Secondary Device
Use this to specify the secondary video capture device.

Footswitch
Use this to specify either No Device or, if a footswitch is used, the type of connection (gameport or serial port).

Type
Use the drop-down list to specify the type of button on the footswitch: Single Down/Up; Single Down Only; Double Move-Capture; Double Capture-Move.
Footswitch Settings
Property page of selected device.

Default to Motion Video Capture
Toggles the Video Acquisition toolbar button between opening DEXvideo in Still Capture mode (Live Video Still) and Recording Movie mode (Live Video Motion).

Allow Video Upsizing (Full Screen Video)
Because most cameras default to a 640x480 live video window, this allows you to scale up the size of the live video screen to the resolution of your desktop.

Use VMR9 Rendering
Use advanced video rendering for smoother video capture and optional de-interlacing. Uncheck to use VMR7 for compatibility with old hardware if necessary.

Ignore Still Pin
Default value is on (checked). Do not modify unless instructed to do so by DEXIS Technical Support.

Use Capture Pin for Preview
Default value is on (checked). Do not modify unless instructed to do so by DEXIS Technical Support.

Ignore Camera Holstering
Check this to disable the auto-play feature included with some cameras.

Video Folder
The default folder for video files. Click *Browse* to change the location, if desired.
3.8 **Setting Digital Camera Acquisition Preferences**

Click the Wrench icon to open Preferences, then click Digital Camera Acquisition to access and set the following:

**Camera Type**

Use this to specify no device, the type of digital camera (memory card or TWAIN), or any other TWAIN device on the system (including scanners).

**Memory Card Folder**

This is the default folder for files from the camera’s memory card. Click Browse to change the location, if desired.

**Frame Removal**

Use the drop-down list to specify No Frame Removal or removal of a frame 1-6 pixels in size.

3.9 **Setting Measurements and Implants Preferences**

Click the Wrench icon to open Preferences, then click Measurements and Implants to access and set the following:

**Record Measurements**

Select the results of which type of measurements you want to record as image notes: all types of measurements, canal measurements only, or no measurements at all. Whenever you carry out one of the selected measurements, you will be asked whether to transfer the result to notes, see “Measurement on Images” on page 66.

**Length of Root Canal File (mm)**

Set the proposed length of the file to be displayed in Canal Measurement, see “Endodontic Measurement” on page 68.
3.10 Component Licensing

Click the Wrench icon to open Preferences, then click Component Licensing to open the Component Licensing page. This area shows your practice name and phone number and is the information with which you license the use of DEXIS Imaging Suite. You must obtain a registration code for each of your purchased modules. To obtain a code, go to this screen and call Technical Support. Should you decide to change your practice name or phone number, you will need to re-register. To hide icons for non-purchased modules, right-click the module in the list and choose Hide Component Button.

The Component Licensing page can also be used to activate the Filters feature on the X-ray Acquisition Preferences pane; refer to “Filters” on page 33.

3.11 Entering Patient Data

The patient list is shown on the main DEXIS Administration screen. You may use the scroll bar to the right to search for a patient. The search field for patients is located in the top left side of the main screen. Type the first few letters of the patient’s name until the name is visible. Instead of typing, you may click the letter buttons. To select a patient, click the name; the line then becomes highlighted.

To add a new patient, click New Patient to open a blank New Patient screen. Type a Patient ID number, if applicable. Tab down to the next line. Type the patient’s name; DEXIS Imaging Suite will automatically capitalize the first letter of each text field. Use the Tab key to move from one field to the next. Add any other information as desired.

Specify the provider and/or referring doctor using the appropriate drop-down lists.

Click Select Patient Picture to insert a patient’s picture via scanner or digital camera. This is covered in detail in “Scanning a Picture for Patient Data” on page 115 and “Taking Digital Photographs” on page 93. Delete the current picture for this patient by clicking Delete Patient Picture. Click OK to save or Cancel to cancel.
To modify information for an existing patient, search for the name and then click the name to highlight the line. Click *Modify* to open the Patient Data screen for that particular patient. Tab down to make changes.

Modification of the patient number is a special case: you may freely change the number to one that is not yet given to another patient. You may change the patient number to a number already in use only if the names of both patients are the same.

To delete a patient file, click the name to highlight the line and then click *Delete*. As a security feature, all images must be deleted before the patient file can be deleted.

Once a patient is added or selected (the line will be highlighted), click the appropriate icon to proceed to his or her DEXray, DEXimage, DEXwrite, or DEXclaim screen. A light appears under the DEXray and DEXimage icons if there are images in the programs for this patient. Alternatively, you may double-click the patient’s name to open a screen. While DEXIS Imaging Suite remembers the last screen opened (DEXray, DEXimage or DEXwrite) for each patient, a new patient always opens in the DEXray screen.

**Please note:** If you are using a DEXIS Imaging Suite/practice management link, enter all new patients through your practice management program and NOT on the DEXIS Administration screen. See “The Integrator” on page 173 for more information.

### 3.12 Administrative Tools

**Referring Dentists**

Referring dentists need to be entered and matched to patients if DEXwrite is used to write letters to them. Click *Referring Dentists* to open the *Referring Dentists* screen. A search field is located at the top of the screen. To use the search function, type the first few letters of the referrer’s name until the name is visible.

To add a new referring doctor (or a doctor or company to whom you refer or correspond), click *New* to open a blank *New Referrer* screen. Type the referrer’s name; DEXIS Imaging Suite will automatically capitalize the first letter of each text field. Use the Tab key to move from one field to the next. Add any other information as desired.
Click OK to save or Cancel to cancel.

To modify information for an existing Referring Dentist, search for the name, click the name to highlight the line. Click Modify to open the Edit Re- ferrer screen for this particular individual. Tab down to make changes.

Again, click OK to save or Cancel to cancel.

To delete a Referring Dentist, click the name to highlight the line, then click Delete. The referrer will no longer show on the list, however, patients attached to this referrer will still show the name on their Patient Data screens until another one is selected.

Print Reports

The Print icon allows you to print and export reports containing various data:

Print Patient List

This feature prints a list of patients in alphabetical order with patient num- ber, date of birth, gender, and provider number.

Export Patient List

This feature exports the patient list into a text file. The text file contains one line per patient, with the following tab-separated fields: ID, last name, first name, middle initial, date of birth, gender, and provider.

Print Provider List

This feature prints a list of providers showing the provider name, DEXIS Imaging Suite ID number, and practice management number.

Print Referring Dentists

This feature prints a list of referring dentists showing each doctor's name, address, phone number, and DEXIS Imaging Suite ID number.

Print Activity List

This feature prints a list of patients and images taken for them over a se- lected time period. This list also shows deletions plus initials used for each
deletion. Additionally, it shows the source of each image (i.e., imported, scanned, etc.).

**Export Activity List**

You may also choose to export activity information to a file. This file has one line per activity. The lines contain fields separated by tabulator characters. The format is suited for import into other software such as spreadsheet programs.

**Print Queued Letters**

When you chose to put a DEXwrite letter into the queue for later printing (see “Queue” on page 137), the Print Queued Letters button will appear on the DEXIS Administration screen. The function shows a list of all letters in the queue and enables you to print all letters, to print just selected letters, or to delete letters from the queue.

**Import from Communication Folder or from Temporary Folder**

An additional Import icon will appear in the tool bar in two cases:

- The communication folder (set in Preferences, see “Comm Folder” on page 27) contains images.
- Images are present in the folder used for temporary storage on the local hard disk of newly acquired images.

If you click that icon, a list with information about each image will be shown: file name, date, patient name, and tooth number.

If you double-click an image entry, the respective patient file will be selected. If the patient file does not yet exist, the New Patient screen will appear with all known information already entered. When you now open the DEXray or DEXimage screen for this patient, the Import dialog will show up automatically.

This mechanism allows for the easy transfer of images between locations if the sending dentist A and the receiving dentist B both have a DEXIS system:

1. Dentist A sends X-rays of patient P by e-mail or on a disk to dentist B.
2. Dentist B opens the X-rays with DEXview and selects *Export to DEXIS*. This will put the X-ray into the communication folder of his DEXIS installation.

3. Dentist B selects patient P either manually or by clicking the *Import* icon in DEXIS Administration.

4. Dentist B opens the DEXray screen for patient P; the *Import* dialog shows up automatically and allows him to import the X-ray.

The mechanism also allows for convenient transfer of images between two DEXIS databases on the same network. In this case, the Communication Folder entries of both installations should point to the same folder. X-rays can then be exported from one database, and semi-automatically imported to the same patient in the other database.

### 3.13 Interfacing with Practice Management Programs

Links are available between DEXIS Imaging Suite and most practice management programs (PMPs) on the market that contain chairside modules. These links are in some cases provided by the PMP company based on information from and in cooperation with DEXIS. For other PMPs, DEXIS Imaging Suite has programmed links based on information from the PMP company. Please ask your DEXIS representative what is applicable in your case.

The innovative Integrator™ software represents the next generation in the seamless integration of DEXIS digital imaging software with practice management programs. It is available for all DEXIS provided links. The Integrator displays preview thumbnails of all available radiographic and photographic images in a floating window that is automatically synchronized with the record of the selected patient for immediate one-click access, see “The Integrator” on page 173.

If your PMP does not yet interface with DEXIS, we will be happy to provide the necessary information. It is usually a minor task to implement the link.

If you have a PMP in your office but plan to implement the link only later, you should use Manual Numbering in the DEXIS Administration and use the chart numbers of your PMP as DEXIS Imaging Suite patient IDs. This makes a link easier to implement later on.
Chapter 4
DEXray: X-ray Images

The DEXray program is the main software application for acquiring, storing, displaying and sharing digital X-ray images. It is accessed via the DEXIS Administration program, directly from all the major practice management programs, or from any of the other main DEXIS Imaging Suite programs.

DEXray is a sophisticated piece of software that has been carefully designed and developed to be simple and quick to learn and intuitively easy to use. It is possible to shoot your first X-ray within minutes of initial setup. All unnecessary keystrokes have been eliminated to ensure that attention is focused on the patient, not on the computer, while an X-ray image is being taken. Information about the patient, provider, tooth number, date and exposure settings are automatically captured at the click of the radiation button.

Despite its ease of use, DEXray is enormously powerful in its capabilities. Icons and function buttons enable the user to move, size, enhance, measure, save, and compare images with just a click and/or drag of the mouse.

There are many shortcuts and timesaving tools in DEXray, more than appear in this manual. Typically, there are 2–3 methods for achieving any desired outcome. For users who invest enough time in learning or discovering the shortcuts, tricks, and tools, DEXray will become an invaluable and highly productive addition to the dental practice.

4.1 DEXray Screen Overview

To open the DEXray screen, select a patient on the DEXIS Administration screen and click the DEXray icon. If you use a link to a practice management program, the method for opening the DEXray screen depends on the program in use.

You can apply certain Windows functions to this screen. You can size and move the screen using click-and-drag.
Screen size and position changes are remembered in the DEXIS system. When the screen is changed to a new size, then closed and reopened for the same or another patient, it appears in the same size and position as when last viewed.

You can also use the three buttons in the upper right to minimize the screen (thus sending it to the task bar — click the tab to bring it back up), maximize or restore a screen, or close a screen.

The patient information is shown in the header bar; function icons are located across the top of the main window. Place your cursor on any of the icons and buttons and a help bubble, called a Tooltip, will appear with information about the function. Often, there is also a keystroke that will execute the function. The Tooltip help feature is available throughout the DEXIS Imaging Suite.

The screen is divided into four quadrants. The midline’s teeth numbers appear in the center of the screen distinguishing the location of each quadrant.

The DEXIS Logo icon gives access to program information, Preferences, Help, and DEXIS web site, see “DEXIS Logo Icon” on page 63.

On the right of the DEXray screen is the Presentation Panel, see “Presentation Panel” on page 56.
4.2 Taking Your First Digital X-ray

Select your test patient in DEXIS Administration and click the DEXray icon: the intra-oral screen of the DEXray program will open. You are now ready to take your first digital X-ray image!

**WARNING**

Please do not take your first X-ray on a person! Instead, put the sensor on a counter or table, flat side up; put a metal object on top of it — a key, coin, or your favorite dental instrument; aim the X-ray tube over the object, pointing down and about an inch (2 cm) away.

Press “X” on your keyboard to open the Intra-oral X-ray Acquisition screen — it looks like a tooth chart!

Select a tooth from the chart. Yellow, then green bands will appear on the tooth chart.

Lower the setting by 50% (relative to D speed film), leave the room, and trigger the tube.

Your first digital X-ray will appear on the screen after a few seconds!
4.3 Setting DEXray Preferences

You may access the DEXray preferences in two ways:

- From DEXIS Administration, click the Wrench icon to open Preferences; then click X-ray Acquisition.
- From a patient’s DEXray screen, click the DEXIS logo to open the Program Information screen; select Preferences; then click X-ray Acquisition.

For information about X-ray acquisition preferences see “Setting X-ray Acquisition Preferences” on page 33.

4.4 Taking X-ray Images with Intra-oral Sensors

Please note: This section applies to the acquisition of images with an intra-oral sensor. If you use a phosphor plate scanner, see “DEXpsp-ScanX and DEXpsp-Optime” on page 167.

Click the X-ray capture icon or press “X” on your keyboard. This will open the Intra-oral X-ray screen. If applicable, choose the appropriate sensor from the sensor selection list. This list contains all applicable sensors that are installed on the workstation. The sensor selected remains the default setting until you change it.

Please note: You need to be in the patient’s intra-oral X-ray screen to acquire intra-oral X-rays. If the extra-oral X-ray screen is your current screen, the X-ray capture icon will start acquisition of a pan or ceph instead.

4.4.1 Taking an Individual Image

Click on the desired tooth or range of teeth on the chart, or type the tooth number and press the Enter key. The tooth will be highlighted in blue and green bands will appear (think of this as “green means go”). Also, a message will display, Trigger the X-ray tube.... You have up to 10 minutes to take your image. After 10 minutes, you will receive a timed-out message. If this happens, you need to bring up the Intra-oral X-ray screen again as described above to restart the process. When you re-enter this screen, DEXray remembers the tooth number last chosen. Click Start or press the Enter key to receive your green bands.
Now, position the sensor in the patient’s mouth, position the cone close to the face and expose the sensor as you would with film. Once radiation is detected, the sensor will capture the X-ray and the enlarged image will appear on the screen.

4.4.2 Repeating an X-ray

If you want to take an X-ray of a tooth (or range of teeth) for which you already have an X-ray, enlarge the existing X-ray then click Repeat X-ray in the Navigator box or press “Y” on your keyboard. This will open the Intra-oral X-ray screen with the tooth selected and automatically prepared to take another X-ray.

4.4.3 Taking a Series of Images

From the Intra-oral X-ray screen, choose the desired series. The first range of teeth programmed into the series will be highlighted. Now, position the sensor in the patient’s mouth to X-ray the highlighted teeth and expose the sensor. Once radiation is detected, a thumbnail (preview) of the image will appear on the Intra-oral X-ray screen. DEXray will highlight the next image area and will show green; your computer is ready to receive the next X-ray of the series.

Please note: It is not uncommon for the thumbnail to appear upside down. Remember, it is only a preview.

If you are not satisfied with your image you can use the Back button on the lower right of the screen to retake the image. If you want to skip forward to a different image area, use the Next button. Please note: You will not need to return to the computer for the duration of the series unless you want to retake or skip areas.

When the series is complete, the X-rays will appear as if in a mount. That is, DEXray will automatically mount your images for you.

For programming your own series, see “X-ray Series” on page 35.

4.4.4 One Tooth Series

Endodontists often have the need to take several X-rays of the same tooth. You can do that without touching the computer in between by selecting One
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*Tooth Series* when taking the first X-ray. If this button is selected, the software will automatically prepare the sensor to take the next X-ray as soon as one has been taken and is shown on the screen. You cancel out of this loop by clicking *Cancel* or by closing the DEXray program.

**Please note:** Since the sensor is always prepared to take the next X-ray, do not remove the sensor while in *One Tooth Series* mode.

### 4.5 Image Management Tools

You may control all functions in the DEXIS Imaging Suite by mouse-click or keyboard, which ever is more convenient for you. The Tooltip bubbles will give a short description and keystroke for each item. There is a complete listing of keystrokes in “Keyboard Use and Shortcuts” on page 161.

#### 4.5.1 Selection and Navigation

All X-ray images have a tooth number, date, and close button in the image’s title bar. To select a specific image, click on the body of the image (the actual X-ray part of the image). To select a different image, click on that image. You may also navigate between images with the arrow keys.

You can move the small images by clicking the title bar (the mouse cursor will become a hook) and dragging to the desired location. This location will be remembered and the image will come up in the same spot the next time you open DEXray. But there is always a “home” position determined by the tooth number, see “Home Icon” on page 61.

You may also move dialog boxes, such as the Navigator, on the screen using this function.

If you have images with the same tooth number, the newest image will be “mounted” on top of the previous image with the previous image’s title bar visible. Click the title bar to bring the previous image forward.

If you have multiple series of bitewing X-rays of different consultation dates, these series will be laid out on the screen without overlapping as long as they fit between the periapical X-rays. With the usual screen format, three horizontal bitewing series or two vertical bitewing series are laid out this way. If you want more series to be visible, you can resize the main win-
dow to give it a higher and narrower format. You may limit the number of bitewing series spread out this way in DEXIS Preferences. See “Limit Shown BW Series” on page 30.

Enlarging an Image

To enlarge the selected image, click once on the body of the image or press the Enter key. The title bar on an enlarged image contains the following information and functions: Image tooth number, Image date, Image parameters, and Clean, Tack (Pin), Maximize and Close buttons.

To reduce the image, click the “x” in the upper right corner of the title bar or press the Enter key. Once an image is enlarged, you may click on another image to have it appear enlarged. There is no need to reduce the first image.

The enlarged image may be moved by clicking the title bar and dragging to the desired location. It may be resized by dragging at a side or corner; the aspect ratio will be maintained.

Full Screen View

Double-click on any selected standard-sized or enlarged image to initiate a full screen view of the image. You may also click the Maximize button on the enlarged image’s title bar. Non-visible portions are scrolled into the screen when you move the mouse to the edge. Double-click again or press Enter to return to the enlarged image.

Image Parameters

A bar appears at the bottom of all enlarged images. In this bar the image’s security status shows in a footnote:

- **DEXray by DEXIS**: Original DEXIS image, not modified.
- **Original**: Other original, unmodified image.
- **DEXray by DEXIS — Enhanced**: Original DEXIS image, contrast and brightness are adjusted or a filter is active.
- **Enhanced**: Other original image, contrast and brightness are adjusted or a filter is active.
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- **Scanned**: Image scanned into DEXIS Imaging Suite; alteration of the scanned original cannot be excluded.

- **Derived**: Image has been computed, e.g. by subtracting two images.

- **Imported**: Image coming from non-DEXIS software; alteration cannot be excluded.

See also “X-ray Image Security” on page 89.

More image parameters, which may be helpful for technical support, are displayed if you click the space between the date and the tack of an enlarged image.

**Changing Brightness and Contrast**

To change the brightness and contrast of an enlarged image, click and drag on the body of the image. Up for lighter, down for darker, left for less contrast and right for more contrast. You may also use the arrow keys to change contrast and brightness. The changed setting will be visible until changed again; however, you may always return an image to its original settings using the Home icon, see “Home Icon” on page 61.

**Changing Tooth Number and Date, Mirroring**

You may change the tooth number or numbers of an image by enlarging the image and clicking the current tooth numbers. The Tooth box (a tooth chart) appears. Click the tooth or teeth highlighted in blue. This will deselect the unwanted numbers. Now, click the appropriate tooth or teeth. You may also choose primary tooth numbers. The new number(s) will appear in a box in the lower left.

Click **OK** to save.

The image will be repositioned on the screen and show the new numbers in the upper left.

You cannot change the date of a captured X-ray image. The date showing on your computer when the image is captured becomes the date encrypted into the image, see “X-ray Image Security” on page 89. To change the date of a scanned or imported image, click the tooth number to bring up the Tooth box. It bears an additional date field, which can be edited.
If an X-ray has been inadvertently scanned from the wrong side, or if some external equipment delivered a mirrored image, you may flip it back by clicking Mirror in the Tooth Number box. Images mirrored this way are marked Mirrored to avoid confusion.

Tacking an Image

An enlarged image may be tacked or pinned to the screen by clicking the tack button located on the right side of the title bar. An image tacked to the screen will remain in position when you enlarge another image or when you switch from intra-oral to extra-oral screen or vice versa. You may move a tacked image as you would any other image. When you have multiple images tacked or enlarged, the Home function will arrange them proportionally on the screen without overlapping, see “Home Icon” on page 61.

Clean Button

Click on the box to the left of the tack to hide objects placed on the images, such as drawn lines and implant models.

The Navigator

When an image is enlarged, a panel opens to the right of the image. If in mouth view, this Navigator panel shows all images taken on the same date as thumbnails relative to their position on the DEXray screen. If in history view, it shows all visible images as thumbnails. You may click on a thumbnail to display the enlarged image.

Check the box to the left of Next after and DEXray will automatically advance through the images for this date. To turn this slide show feature off, deselect the box. The slide show feature allows an interval of 3 to 30 seconds between images, i.e., the amount of time before the next image appears.

You may take another X-ray of the area shown on the enlarged image by clicking Repeat X-ray or by pressing “Y” on your keyboard, see “Repeating an X-ray” on page 51.

If the Add ClearVu button is selected, enlarged images are shown side by side in two modes: standard mode and ClearVu, see “ClearVu Icon” on page 61.
You may choose to clear the screen of all but the selected image by clicking Clean or pressing “L” on your keyboard. Click the button or press “L” again to deselect the function.

You may move among the images using the Prev (for previous) button, or Backspace on your keyboard, and the Next button, or Space on your keyboard.

Click Compare to compare two images. See “The Compare Function” on page 86 for a full description of this tool.

You may hide the Navigator for an image by clicking Done. Turn off Navigator entirely in DEXIS Preferences, see “Navigator” on page 29.

**Presentation Panel**

The Presentation Panel is located on the right side of the screen. You can drag images into this area from the any DEXray or DEXimage screen whether displayed singly or in Overview mode (see “Overview Icon” on page 58).

This action allows you to choose images for presentation to patients or compiling to export images for communications with colleagues, study clubs, or insurance.
The Presentation Panel can be resized and closed by shifting its left edge. When closed, this edge shows a button; clicking the button opens the Presentation Panel in standard size.

When you click in the Presentation Panel, it becomes active denoted by a yellow outline. The function icons then relate to the Presentation Panel instead of the main screen, and the DEXIS Toolbar shows only the icons available for use with the images on the panel. The Navigator also functions with these selected images. When you enlarge an image of the Presentation Panel all images not on the Presentation Panel are hidden.

When you close the patient while images are on the Presentation Panel, a popup dialog asks whether you want to keep the contents of the panel for later use.

### 4.5.2 DEXray Screen Icons

An icon will turn gold when initiated. For example, when on the intra-oral screen the Tooth icon is highlighted. When a function icon is chosen or an appropriate key is pressed on the keyboard, the selected image will automatically enlarge and the function box will open next to the image. In addition, many icons will allow you to drag an image to them thereby opening
their function. Click again on the icon or corresponding keystroke to terminate its function.

In addition, DEXIS will apply the current function to another image once you click on that image. There is no need to close the current function and image to work on a newly chosen image.

Please remember, the Tooltip is available for help. The corresponding keystroke will show in the help bubble.

**DEXray Intra-oral and Extra-oral Icons**

Click the *Tooth* icon or press “A” to switch to the DEXray intra-oral images screen.

Click the *Head* icon or press “D” to switch to the DEXray extra-oral images screen.

A light under an icon signals that there are images for this patient in the corresponding section.

**Please note:** By dragging an image to one of these icons, it will be moved to the corresponding screen.

**DEXimage Intra-oral and Extra-oral Icons**

Click the *Wand* icon or press “I” to switch to the DEXimage intra-oral images screen.

Click the *Camera* icon or press “F” to switch to the DEXimage extra-oral images screen.

A light under either icon signals that there are images for this patient in DEXimage.

**Overview Icon**

Click this icon or press “O” to see all four DEXIS screens (DEXray intra-oral and extra-oral, DEXimage intra-oral and extra-oral) for this patient. You may also activate the Overview mode by deselecting the icon of a single screen (intra-oral or extra-oral).

You can shift the divider bars thus resizing or closing departmental screens. When closed, the departmental screen becomes a button. Clicking
the button opens the screen in standard size. Changes to the divider bars are remembered between sessions.

A screen is considered active when outlined in yellow. The thumbnail images on any screen may be enlarged. Navigator’s Clean function hides all other thumbnails on the departmental screens. You may apply the Toolbar’s image enhancement tools to any enlarged image.

You may drag and drop thumbnail images from one screen to another.

Deselecting the Overview icon will return you to the original single screen. Double-clicking any of the four departmental screens will close the Overview mode and open that single screen.

**Zoom Icon**

Use the Zoom or Magnifier Icon to magnify a portion of the selected image. You may also press “Z” (for zoom) to initiate its function.

The portion visible in the *bird’s eye frame* can be changed by clicking to a different spot or by holding down the left mouse button and moving to another area on the image. The *bird’s eye frame* is closed when the Magnifier function or the selected image is closed.
To magnify the entire image, see “Full Screen View” on page 53. Once in Full Screen mode, the \textit{bird's eye frame} remains in function, magnifying the already magnified image by another step.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image}
\caption{Example image for magnification and feature icons.}
\end{figure}

\textbf{Spotlight Icon}
This icon allows you to show an area of the image in maximized contrast. To initiate the function, click the icon or press “S” (for spotlight). The area around the cursor is displayed in maximized contrast. Left-click to suspend the spotlight cursor over the current area; the spotlight area is retained until the function is closed.

\textbf{Measurement Icon}
The \textit{Measurement} tool is primarily used for endodontic and implant measuring on X-rays, although distances on photographic images may be measured if the image shows objects of known size which may be used for calibration. See “Measurement on Images” on page 66.

\textbf{Notes Icon}
This \textit{Annotation} icon will allow you attach text, alerts, and voice notes to images. It will also allow you to draw on an image. To initiate the function,
click the icon or press “T” (for text) or drag an image to the icon. You may also access notes by right-clicking the screen, and then choosing an annotation function. See “Image Annotations” on page 74.

**Enhancement Icon**

Click the *Enhancement* icon or press “E” to open the *Image Enhancement* box to adjust brightness and contrast of the selected image and to apply different filters. See “Image Enhancement” on page 64.

**ClearVu Icon**

The ClearVu or *Eye* icon is a shortcut to the ClearVu mode. Two modes are available and can be specified in *Preferences: Classic and Advanced*, see “Use Classic ClearVu Mode” on page 38. As discussed under Enhancements, click the *ClearVu* icon or press “U” on your keyboard to use the ClearVu function. This mode clarifies and sharpens the image. Click and drag in the center of the image or use the arrow keys to change brightness and contrast. Click again on the *ClearVu* icon or press “U” to turn the feature off.

**Rotate Icon**

Although DEXIS Imaging Suite orients captured X-rays automatically, a different orientation may be preferred. In this case the image (standard and enlarged) may be rotated using the *Rotate* icon. You can also press “R” on your keyboard or drag the image to the icon to rotate it in 90-degree increments.

**Home Icon**

The *Home* function is activated by clicking the *Home* icon, by pressing “B” (for back) on your keyboard, or by dragging the image to the icon.

There are 3 sub-functions of the *Home* icon:

1. Return the contrast of an enlarged image to standard settings. The function toggles between neutral setting and contrast setting.

2. Standard images that have been moved from their original position are placed back by clicking the Home icon when no image is enlarged.
3. Tack one or more images to the screen using the Tack in the upper right corner of an enlarged image. Click the Home icon. The images appear enlarged and proportionately sized without overlapping.

**Archive Icon**

The Archive icon allows access to the patient’s entire image history. It also allows to switch between mouth view and history view. See “The Image Archive” on page 77.

**Import Icon**

Click the Import icon or press “<” on your keyboard to open the Import Images screen. See “Communications: Import” on page 84.

**Export Icon**

Click the Export icon or press “>” on your keyboard to open the Export Images screen. Alternatively, you may drag an image to the Export icon to open the Export Images screen. See “Communications: Export and E-mail” on page 80.

**Print Icon**

Click the Print icon, or press “P” on your keyboard to open the Windows Print Dialog. This dialog allows you to select a different printer and to access the printer settings. When you have selected the printer, the DEXIS Print dialog is shown, see “Communications: Printing from DEXray or DEX-image” on page 78.

**Quit Icon**

Click the “X” icon, press “Q” (for quit) on your keyboard, or click the “x” in the upper right corner of the screen to leave the patient’s DEXray screen.

**X-ray Capture Icon**

Click the X-ray Capture icon or press “X” on your keyboard to open the Intra-oral X-ray Capture screen in preparation for capturing images, see “Taking X-ray Images with Intra-oral Sensors” on page 50.
Scanner Icon
Click the Scanner icon or press “C” on your keyboard to open the scanner software in preparation for scanning X-rays, see “Scanning X-ray Films” on page 111.

DEXimplant Icon
Click the DEXimplant icon or press “N” to open DEXimplant. See “DEXimplant: Implant Planning and Monitoring” on page 117.

DEXwrite Icon
Click the DEXwrite icon or press “W” on your keyboard to open the DEXwrite program for the selected patient, see “DEXwrite: Chairside Report Generator” on page 131.

DEXclaim Icon
Click the DEXclaim icon or press “L” on your keyboard to open the DEXclaim program for the selected patient, see “DEXclaim: Images as Claim Attachments” on page 151.

Please note: DEXclaim is only applicable for dentists residing in the USA.

3D Icon
The DEXIS i-CAT Link optional module integrates i-CAT based cone beam CT systems into the DEXIS Imaging Suite. If this module has been installed, click the 3D icon to schedule a patient for X-ray acquisition with the 3D device. The patient name and other known information will be automatically transferred to the acquisition workstation. See “DEXIS i-CAT Link” on page 170.

DEXIS Logo Icon
Click the DEXIS Logo icon or press “I” on your keyboard to obtain program information, the Preferences button and these two additional features:

Help: Click this button and your cursor gains a “?” Now, click an item on the DEXray screen and the manual will open in Acrobat Reader to the page that describes that item’s function.
DEXIS Web Site: Click this button to open the DEXIS web site in your browser.

Click OK to close the Program Information screen.

4.5.3 Image Enhancement

Click the Enhancement icon or press “E” to use different display modes.

Please note: These modes do not alter the original image files; they instead extract different information from the image files and emphasize the display to aid in your diagnosis. A mode that aids in diagnosis for one condition may not with another condition. Please inspect the modes thoroughly and experiment with them; you may always return the image to its original settings using the Home icon, see “Home Icon” on page 61.

The top of the Enhancement dialog box shows a histogram of the selected image and a curve showing the current contrast and brightness setting. You may manipulate this curve by clicking and dragging at the two crosses.

Contrast

This mode displays the image in a more contrasted way. This mode was designed to help in cavity detection. The keystroke for this feature is “C”.

Neutral

This feature will restore the image back to its neutral settings. The keystroke for this feature is “T” (for take back).
Invert

*Invert* or the keystroke “I” displays the image in negative mode. Click and drag in the center of the image or use the arrow keys to change brightness and contrast. Click again to turn off Invert.

**Please note:** You may combine *Invert* with *ClearVu* and *Invert* with *Color*.

ClearVu

This mode clarifies and sharpens the image. Click *ClearVu*, or press “U” on your keyboard, to use the ClearVu function. When *Classic* ClearVu mode is selected in Preferences (see “Setting DEXray Preferences” on page 50), ClearVu resets the brightness and contrast to neutral; to change, click and drag in the center of the image or use the arrow keys. Click *ClearVu* again or press “U” to turn the feature off. This mode is remembered between sessions. This means that if you leave it turned on, images will always appear in ClearVu mode until you turn it off.

**Please note:** When *ClearVu* is switched on, the small images on the screen will also be shown with a ClearVu filter applied.

Darker

This mode compensates for density differences on the image and is highly recommended for bitewing images. Click and drag in the center of the image or use the arrow keys to change brightness and contrast. Click again on *Darker* to turn the feature off. This mode is remembered between sessions. This means that if you leave it turned on, images will always appear “darkened” until you go back and turn it off.

Color

This mode colorizes the image. Click and drag in the center of the image or use the arrow keys to change the colors. Click again on *Color* to turn the feature off.
Chapter 4

Relief
This mode gives a 3D appearance to X-ray images by using a topological emboss filter. The Relief mode emphasizes small density differences which may be especially helpful when communicating with people not used to reading X-ray images.

4.5.4 Measurement on Images
The Measurement tool is primarily used for endodontic and implant measuring, although any area on an image may be measured, e.g., a periodontal defect or overhanging margin.

Note that measurements (distance, angle, and canal measurements) are stored as annotations and can be accessed and managed using the Annotation tool.

General Distance Measuring
To begin, enhance the image to its optimum contrast. If desired, enlarge the image by resizing. Click the Measurement icon or press “M” on your keyboard. This opens the Calibration/Measurement dialog box.
Grid

Check Show Grid. This displays a millimeter grid on intra-oral images (centimeter grid for panoramic and cephalometric images). This grid, of course, is in relation to the sensor and does not take into account the foreshortening or elongation of an image.

Distance

Select the Measurement tab, then click Distance. Click the image at your start point. You can continue the measurement by adding additional points as necessary, DEXIS Imaging Suite will add each subsequent distance to the previous one. These multiple points allow you to follow the shape of anatomical structures. You may use Delete on your keyboard to delete points beginning with the last one entered. You may also drag points (shown as crosses) and insert new points by clicking and dragging on segments to conform to shapes once your final measurement is obtained. The total distance is shown next to the Distance button. When you then select the Record Measurement box, the distance line remains on the image. The distance appears in a tooltip on the image when you left-click the line.

To delete saved measuring lines, right-click the line. The Notes screen will open with Line/Polygon selected. Delete as described in “Image Annotations” on page 74.

Click Distance again to start a new measurement.

Please note: Uncalibrated measurement is only possible on images with known resolution. If you want to measure on imported, scanned, or photographic images, you can measure only by comparing to known lengths (calibrated measurement). Calibrated measurement also compensates for projection errors and is therefore always more accurate than uncalibrated measurement. See “Calibrated Measurement” on page 70.

Measuring Angles

Select the Measurement tab, then click the Angle button. Click the image at your start point. Add two additional points for the desired angle. The angle is shown next to the Angle button. You may use Delete on your keyboard to delete points beginning with the last one entered. You may also drag points (shown as crosses) and insert new points by clicking and dragging seg-
Endodontic Measurement

Initial Measuring with the Distance Feature

To obtain the initial lengths of the canals before files are set, you need to use the general distance measurement as described on page 67. Click the image at a starting point where the rubber stopper would contact the tooth. Using multiple clicks, follow the shape of this first canal. Click Record Measurement. Next, measure the remaining canals in the same fashion. Since this measurement is not calibrated, take into account that the canal(s) may be shown elongated, i.e., the actual canal length might be shorter than the measurement suggests.

Canal Feature

The Canal Measurement compensates for projection errors by calibrating the measurement with the known length of the endodontic file. To use this feature, the image must show the entire tooth and the initial file(s) must be set.
Select the Canal tab, and change the number of canals if applicable. Click the Site boxes to change or give the canal an abbreviated name that refers to its location.

Adjust the file lengths in all the Depth boxes by using the up and down arrows or by typing the number in the box. These distances, from the rubber stoppers (or handles) to the end of the files, are known values. The software will need to know these lengths to calibrate the remaining information to compensate for possible image elongation or foreshortening.

The default length of 20mm may be changed in Preferences > Measurements and Implants.

**Measuring with the Canal Feature**

Starting with the canal whose site box is highlighted in gold, return to your image. The Canal function needs three clicks: Click the beginning of the file where the rubber stopper touches the tooth, then click the end of the file, and then click the apex. The software will automatically insert a fourth point to make the line a smooth curve and also to make it follow the shape of the canal. You may drag the points to further adjust them.
The measurement dialog box shows the distance between your end-of-file point and the apex point and the entire length of this canal (the sum of the file length and the remaining distance).

**Saving Information**

You can be prompted to save measurements by selecting options in Preferences > Measurements and Implants > Record Measurements. After taking your measurement and upon clicking Done, if you did not click the Record Measurement box, a message will appear asking how you wish to save the measurement. Choose Graph+Value to save the line with its bubble display of information. Choose Value Only to have the measurement appear in the title bar. Right-click the measurement line to edit information within the Notes screen.

**Calibrated Measurement**

The Calibration feature provides a more general method to compensate for projection errors by comparing to known lengths. It is most often used by the implant community. To calibrate, there must be an object of known length entirely visible on the image. Also, the area to be measured must be along the same axis as this known object. Examples of such known objects are radiographic balls, the thread of an implant, or the length of a directional post being placed prior to placing the actual implant.

Three calibration procedures are supported by the DEXIS Imaging Suite:

- **Quick Calibration** allows you to enter one known length, then immediately proceed to measurement. This is the preferred method during surgery.

- **Line Calibration** with other objects allows you to enter more than one known length, e.g. length and diameter of a placed implant. Click Line Calibration on the Calibration/Measurement dialog box’s Calibration tab.

- **Calibration with Radiographic Balls** allows you to enter one or more radiographic balls. This is the preferred method during implant planning on panoramic X-rays. On the Calibration/Measurement dialog box’s Calibration tab, click Ball Calibration (manual) or Ball Finder (automatic).
Quick Calibration

Open Measurement and click Quick Calibration. Click one end of the known length, then click the other end. An Attention box will open and the approximate length of the object will be shown.

You will be asked to Please enter the true length of the distance to replace the shown distance. If these distances are the same, your image is not foreshortened or elongated. If not, enter the true distance and click OK.

Now, measure along the same axis using the techniques for Distance; you may use multiple clicks. The new measurement will compensate for any foreshortening or elongation. It will appear in red on the image and in the measurement box under Distance in mm.

**WARNING**

The calibration only compensates correctly for any foreshortening or elongation if the known distance used for calibration is along the same axis as the measured distance.

Record and edit Quick Calibration information as described in “Endodontic Measurement” on page 68.
Line Calibration

This technique uses other objects of known dimensions, e.g., placed implants, to calibrate the X-ray.

To enter the known dimension, open the radiograph and click the DEXimplant icon or the Measurement icon. Select Calibrate, then Line Calibration.

You now mark a known length by clicking one end of the known length, then clicking the other. A popup dialog will be shown that displays an estimated length (based on pixel size or previously entered calibration lengths) and allows you to enter the true dimensions.

When object dimensions have been entered, this information is used for measurements on the X-ray and for automatically adjusting the sizes of implants positioned on the X-ray. If more than one known length is entered, the software determines which one is best used for calibration. This determination takes into account the distance between the known length and the measurement or implant and the difference in direction.

Once entered, the calibration lengths are stored in the image file and are thus available for later use even after exporting and importing the image.

You may delete any entered length by clicking onto it and dragging it out of the image window holding down the left mouse button.

Click to select a different tab, or click Done to close calibration mode.

Calibration with Radiographic Balls

This technique uses radiographic marking balls embedded in a plastic template prior to radiographic examination of the patient. These marking balls will be visible on the radiographic image. The technique is designed to be used on panoramic X-rays, and is most often used in conjunction with implant planning (see “DEXimplant: Implant Planning and Monitoring” on page 117).

WARNING

Do not use radiographic balls to calibrate intra-oral X-rays, as inaccurate measurements may result.
To enter the dimensions of the radiographic balls, open the radiograph and click the *DEXimplant* icon or the *Measurement* icon. Select the *Calibrate* tab, then click *Ball Finder (automatic)*. You will now be asked to click on a ball, and the software will find its outline and ask for the diameter. If you have several balls in the X-ray, click one ball after the other.

In some cases the software might not find the outline of the ball. This is especially the case if the ball is adjacent to a crown or filling. In this case you should click *Ball Calibration (manual)*. Click one side of a ball of known diameter, then click the other side to draw a circle. Once the circle has been drawn around the ball, enter the diameter of the ball into the message box and click *OK*.

When the outlines and diameters of the radiographic balls have been entered, this information is used for measurements on the X-ray and for automatically adjusting the sizes of implants positioned on the X-ray. If several balls are present, the dimension of the ball nearest to the measurement or placed implant is used for the calibration.

**Please note:** Depending on your panoramic X-ray machine, a single radiographic ball might be enough to calibrate the whole X-ray, or several may be needed to get the right adjustment in all places.

Once entered, the radiographic ball outlines are stored in the image file and are available for later use even after exporting and importing the image.

You may delete any entered ball outline by clicking the center of the ball and dragging it out of the image window while holding down the left mouse button.

Click *Done* to close calibration mode.

**Bone Density Measurement**

The radiographic density of the X-rayed material directly relates to the gray level of the resulting image. If you click *Density* then drag a rectangle on the image, the median density of the selected area will be shown as percentage:

- 0% = black = lowest density
- 100% = white = highest density
The values shown relate to the original image and are not modified by changing brightness or contrast.

**4.5.5 Image Annotations**

The *Annotation* icon allows you attach text, alerts, and voice notes to images. It also allows you to draw on an image. To initiate the function, click the icon or press “T” (for text) or drag an image to the icon. You may also access notes by right-clicking within an image, and then choosing an annotation function.

**Image Title Note**

To attach text, select *Image Title Note* on the annotation screen. Next, type text in the text box or click *Diagnosis and Conditions* to open the *Select a Diagnosis or Condition* screen that displays categories of conditions and diagnoses from which to choose.

- If you have existing text attached to an image you will be asked to choose *Append to Note* in order to add additional text or to eliminate your current note by choosing *New Diagnosis*.
- For each category, you may add, edit or replace the text by typing into the appropriate field. Click the selection box to the left of the diagnosis or condition to select it.
- If you edit or add a new diagnosis or condition, you will be asked if you wish to permanently save it.
- Click *OK* to save your changes to the list of diagnoses and conditions or *Cancel* to cancel.
- Once all selections are made or text is typed, click *Done* to save or *Cancel* to cancel.

The last line of text or the last diagnosis chosen appears on the title bar of the image as space permits.

To remove a note, open the function and select *Image Title Note*; click *Delete* at the bottom of the *Notes* screen, and click *Done* to save.
Alert

To enter an Alert referring to a specific region on the X-ray, open the Notes function and then select Alert.

- Click and drag to draw a box around the area of concern. Select a color and a pen that determines the thickness of the lines.
- Again, you may type text here, or pick from the list as described in the previous section. Alternatively you may omit text.
- Click Done to save or Cancel to discard the changes.

If you entered a message it will appear when you click into the box.

To place additional Alerts on the same image, click New and add your Alert as previously described.

Edit Alert boxes and attached text by opening the Notes function and selecting Alert or by right-clicking into the box. When the Notes screen is open, only the selected box will be shown in color, other boxes will turn gray.

Use the Next button to scroll through all Alerts attached to this image. Once your desired Alert box is selected, it will turn colored and the text is visible. Edit your text or click Delete to delete the Alert entirely. Click Done to save your changes.

Free-Hand Drawing and Line/Polygon Drawing

Select either tool to draw on an image. Next, choose your color and pen or line thickness.

- Free-hand allows for free-hand drawing: a new curve is started when you press the left mouse button; it is continued as long as you hold the button down; it is ended when you release the button.
- Line/Polygon will deliver a straight line with each mouse click.

You may attach text to drawings and polygons by typing it into the provided box, or by selecting from the Select a Diagnosis or Condition screen. This text will appear when you click on an item while the Annotation tool is not open.
Once drawn, save your item by clicking *Done* or click *Undo* to delete drawn curves or polygon segments, one at a time. *Delete* deletes the whole item. You may draw several items on an image by using the *New* button. In this case, your previous drawing will appear in gray. Use the *Next* button to scroll through the drawings attached to the image.

You may change previously saved drawings or attached text by either opening the Notes tool and selecting *Free-hand Drawing* or *Line/Polygon*, or by right-clicking the item you want to modify.

**Voice Note**

To attach a voice note to an image you must have a sound card and microphone attached to your computer.

To start, click *Voice Note*. This opens the *Message Recorder*. There are buttons for rewind, record, play, stop, and fast-forward.

- To record, click the *Record* button (circle symbol) or press “R” on your keyboard.
- After recording the message, click the *Stop* button (square symbol) or press “S” on your keyboard.
- Click *Done* to save.

Musical notes will appear in the upper left corner of the image to the right of the tooth number(s). Click on these musical notes to play the sound attachment. Alternatively, you can re-open the Voice Notes function and click the *Play* button (single forward arrow symbol) or press “P” on your keyboard.

To stop, click the *Stop* button (square symbol) or press “S” on your keyboard. In addition, rewind by clicking the *Rewind* button (double-arrows to the left) or press “B” on your keyboard; fast-forward by clicking the *Forward* button (double arrows to the right) or press “F” on your keyboard. To delete the voice note, click *Erase*.

When adding to a previous sound note, you have several options:

- Use the *Forward* button to “wind the tape” to the end before recording. This will append the new recording to the end of the existing recording.
• Start recording without moving to the end. This will insert the newer recording before the existing recording.
• Erase the existing recording and begin again.

4.5.6 The Image Archive

The Archive icon allows access to the patient’s entire image history. Equate this feature to searching through a patient’s chart to choose which films are to be placed on the view box for the current procedure. To “file” an image or to place it in the archive, close a standard-sized image using the “x” or drag it to the icon and a box will open asking you to Archive or Delete. Choose Archive and the image will be placed in the archive.

A light under the icon signals that there are hidden images. Access them by clicking the icon.

Archive Screen Overview

Click the Archive icon or press “H” for a “history” of images for the patient to open the Visible Images screen.

Visible Images refers to the images that are currently visible on the screen. Again, this may be changed for every patient and every procedure.

All images are listed in the center area by tooth numbers and dates. A small selection box is located next to each. This part of the screen is set up in quadrants — UR, UL, LR, LL and bitewing area in the center.

There is also an area that resembles a tooth chart. Teeth in blue with a black outline have images that are visible on the current X-ray screen. Teeth in gray with a gold outline have images that are currently archived or hidden so they are not visible on the current X-ray screen. Teeth in gray with a black outline have no images.

Choosing Visible Images

You may choose to hide all the images by clicking the Hide All button in the upper left of the screen or to show all the images by clicking Show All.

You may pick images taken on a certain date by using the drop-down arrow next to Show Consultation of and clicking the desired date. You may pick
images taken since a certain date by using the drop-down arrow next to Show Images Since and clicking the desired date. When the date(s) are chosen, the image selection buttons for those specific images are checked.

You may click on the image selection box to select and deselect individual images. For help in identification, when the cursor moves over an image selection box, a preview of that image will appear in the Preview Panel, on the right of the Archive dialog. You may also use the Tab and arrow keys to scroll for previews.

In addition, you may click on the actual image on the X-ray screen to select or deselect the image. For help in identification, the selected image on the X-ray screen has its box highlighted in Archive.

To view your selected images in a mounted format, click Mouth on the lower left of the screen. If you want to view your selected images in chronological order, click History. The History view is helpful when performing a procedure for one tooth or area, such as endodontics. Once this view is chosen and you return to the X-ray screen, all captured images will also appear in chronological order.

After making your selections, click Done to see only the requested images in the requested view.

DEXray allows you to see all images for a certain tooth or area from different dates. For example, if a patient has pain on tooth #1, open Archive, click Hide all and click Tooth #1 on the tooth chart. Next, choose the desired view and then Done. All images that include tooth #1 will appear on the screen in the view you selected.

### 4.5.7 Communications: Printing from DEXray or DEXimage

Before printing from DEXray, please verify that your printer functions outside the DEXIS Imaging Suite.

**Please note:** For optimal results images should be enhanced prior to printing.

Click the Print icon, or press “P” on your keyboard, to open the Windows Print dialog. This dialog allows you to select a different printer and to access the printer settings. You may also open the Windows Print menu by dragging an image to the Print icon.
Print Dialog Overview

From the Windows Print dialog, choose OK to open the DEXIS Print Images dialog. You will notice that this screen is similar to the Archive screen. All visible images are listed in the center section by tooth numbers and dates. A small selection box is located next to each. In addition, this part of the screen is set up in quadrants — UR, UL, LR, LL and bitewing area in the center.

You may select none or all images for printing. You may choose images taken on a certain date by using the drop-down arrow next to Print Consultation of, and clicking the desired date. You may choose images taken since a certain date by using the drop-down arrow next to Print Images Since and clicking the desired date.

When the date(s) are chosen, the image selection boxes for those specific images are checked.

You may click on the image selection box to select and deselect the images for print. For help in identification, when the cursor moves over an image selection box, a preview of that image will appear in the Preview Panel, on the right of the Print dialog.

In addition, you may click on the actual image on the X-ray screen to select and deselect the image for print. For help in identification, the selected image on the X-ray screen has its box highlighted.

When you are finished selecting the images, choose to print the images with the notes attached to it, with drawings included, and/or print in ClearVu.

Choose a Print Format

- Standard Printing for 6 images per page.
- Print Enlarged for 2 images per page.
- Full Mouth to print images in landscape or horizontally on the paper similar to a full mouth mount.
- Report to add the images to the standard report. The text of the standard report can be modified in Administration Preferences; the text of an individual report can be modified before printing. In the report the referring dentist, patient, date, and provider information will be merged. Arrow
down to change the text as needed; you are changing it for this patient only. Now, choose Done to start printing. Please remember, the letter will not be saved in DEXIS Imaging Suite nor can you change font or layout. Only DEXwrite offers this feature, as well as other merging and format possibilities.

Once you choose one of these functions, the information will be sent to the printer.

Add to Printout will allow you to print additional images on the last page printed for this patient. This feature is for standard sized images given only with the Standard Printing button. It can be used to add an intra-oral camera image to a previously printed intra-oral X-ray to the same page. After the initial print, insert the paper, choose your images and choose Add to Printout.

4.5.8 Communications: Export and E-mail

Click the Export icon or press “v” on your keyboard to open the Export Images screen. Alternatively, you may drag an image to the Export icon to open the Export Images screen.

Choose a Destination:

- **To:** The area to where images will transfer appears in a box on the upper left marked To. You may type a destination folder into this box or use the down arrow to browse for a destination.
- **Floppy Disk** to copy images to a floppy disk.
- **Hard Disk** to copy images within your own system.
- **CD-ROM** to send images to the Windows directory where images are staged for burning CD-ROMs electronically.
- **Desktop** to send images to the Windows Desktop.
- **E-mail** to send images electronically.

Choose a Format

- **DEXIS** to move images within your own DEXIS system or to send to colleagues with DEXIS or DEXview.
• **TIFF (.TIF) or JPEG (.JPG)** to export images for use by other software programs. These formats are generally accepted by word processing and graphics software programs.

• **DICOM** is for colleagues who have DICOM-compliant software. DICOM is a universal digital format for medical and dental images. The image carries patient information and the date on which the image was taken. Dentists with DICOM-compliant software from different suppliers should be able to exchange X-rays along with the medical information attached to them.

### Include Drawings and Implants, Export in ClearVu

If you export in **TIFF (.TIF) or JPEG (.JPG)** format, you may additionally request to have the ClearVu filtering applied to the exported X-rays, and you may request to **Include Drawings and Implants**. These choices are not available for exports in DEXIS and DICOM formats because the recipient of these images can apply ClearVu filtering and can choose to display or hide implants and drawings.

### Choose Images

You may choose to **Export None or All** images. You may choose images taken on a certain date by using the drop-down arrow next to **Export Consultation of** and then clicking the desired date. You may choose images taken since a certain date by using the drop-down arrow next to **Export Since** and then clicking the desired date. When the date(s) are chosen, the image selection boxes for those specific images are automatically checked.

You may click on the image selection box to select and deselect the images for export. For help in identification, when the cursor moves over an image selection box, a preview of that image will appear in the **Preview Panel**, on the right of the Export dialog. You may also use the arrow keys to scroll for previews.

In addition, you may click on the actual image on the X-ray screen to select and deselect the image for export.

When you drag an image to the Export icon, that image is automatically selected.
For help in identification, the selected image on the X-ray screen has its box highlighted in Export Images screen.

Send Images and/or DEXview:

- **Export FMX as one image** combines the selected images in mouth order into one image file. Choose this option if you want send a bitewing series of full mouth series as one compact file to a colleague who does not have the DEXIS software.

- **Export images + DEXview** to export images and the DEXview program.

- **Export installable DEXview** to export only the DEXview program for installation on a different computer.

- **Export Images** to move images within your system, to send images to colleagues who use DEXIS or to send images to colleagues who have previously installed DEXview.

Click *Cancel* to cancel the export process.

Once you make your selection and the export is accomplished, the *Export Images* screen will close.

**DEXview**

DEXview is a helpful program that allows your colleagues to view, enhance and save DEXIS images without installing the full DEXIS Imaging Suite. DEXview runs on any Windows computer. You may freely distribute DEXview. Two versions are available:

- You can export **Images + DEXview** onto a disk. The receiving dentist opens the disk by double-clicking *My Computer*, then double-clicking the appropriate drive. She/he then opens DEXview by double-clicking it. DEXview will show the images on the disk.

- You can send **Installable DEXview** by disk or e-mail. This is a setup program which, when executed, installs DEXview as the software for opening DEXIS images with the file extension .DEX. After DEXview has been installed, your colleagues can open any DEXIS image files by double-clicking them. DEXview will open and show the images. Once your colleague installs DEXview, you need only send images.
Please note: Some e-mail servers may not accept executable files, and e-mails may be returned. The DEXview setup program can be downloaded from the DEXIS website at www.dexis.com, under the Support link.

Now, each time an image file is opened, your colleague will be able to view the image, use ClearVu, change the contrast using click and drag, use Home, Rotate, and Mirror functions, and use the arrows to scroll through the images on the disk.

Information such as implants, alerts, and graphic objects is displayed. Click on an object to display its attached text. All objects can be hidden by clicking the Notes icon.

In addition, the images may be saved to a file in various formats by using the Export icon. Please let your colleagues know that Tooltip is available for help throughout the screen.

Move Images to the Correct Patient

The Export function may be used to move an image that was taken on the wrong patient’s screen. By choosing Hard Disk, selecting images and then choosing Export Images, the images move to the DEXIS Communication Folder ready to be imported into the correct patient’s screen, see “Communications: Import” on page 84.

CAUTION

These images are not removed from the incorrect file; they are simply copied. The images will need to be deleted from the incorrect file.

Send a Set of X-rays on Removable Media

To send a set of X-rays to a colleague who does not have DEXIS, choose Floppy Disk or CD-ROM and DEXIS format and then select the desired images. Now choose to Export Images + DEXview, to send the images with DEXview. Your colleague simply needs to open the disk and double-click on DEXview to view the images.
E-mail Images

Choose E-mail and the appropriate format and then select images. Either add the recipient’s e-mail address to the “to” field, or add it later to the message in your e-mail program. Now, choose Export Installable DEXview to send only the viewer, or Export Images to send only the images. For security reasons you may not send images and DEXview together. Once the screen closes, your e-mail program will open with a new message created with the X-rays attached. Send the message as you would any other e-mail message.

Place Images Directly Into Word Processing Programs

There are two ways to copy an image to a word-processing program such as Word or WordPerfect, or into other programs accepting images such as PowerPoint.

- Enlarge and enhance the desired image. Next, hold down the Ctrl key and press the “C” key. Now, open your word-processing program and hold down the Ctrl key and press the “V” key or use the Paste icon. The image will appear on the document ready for sizing.

- Enlarge and enhance the desired image. Hold the Ctrl key down and drag and drop the thumbnail image into another application (e.g. a Word or PowerPoint page).

In either case, the image will retain its current shape and enhancement.

4.5.9 Communications: Import

Click the Import icon or press “<” on your keyboard to open the Import Images screen.

Choose a Source

- Floppy Disk to import images from a floppy disk.

- Hard Disk to import images within your own system, typically from the DEXIS Communication Folder.

- CD-ROM selects images on the first installed CD-ROM drive.

- Desktop selects images on the Windows Desktop.
• **Recycle Bin** selects images in the recycle bin.

• **From:** The area from where images will transfer appears in this text box. You may change the location by typing; going up one level; or by clicking *Browse*.

Images contained in the selected folder are listed: file name; patient name; tooth number(s), if applicable; date; note attached to the image, if applicable.

For help in identification, when an image is selected, a preview of that image will appear in the *Preview Panel*, on the right of the Import dialog. You may also use the arrow keys to scroll for previews.

To import the file, select the desired file and click *Import Selected*, double-click the file, or arrow to the file and press the *Enter* key.

To select multiple files for import at one time, hold down the *Ctrl* key on the keyboard and select each file to be imported. To select a range of files, hold down the *Shift* key and select the first and last file in the range. Click *Import Selected*.

**Please note:** If importing an image with a different patient name, you will receive a warning message and will need to choose *Yes* to import or *No* to cancel the process.

**Get from Clipboard**

After the desired image is placed onto the Windows Clipboard from another program, open the patient’s screen and the *Import Images* screen. Click *Get from Clipboard* and click *Done*. This image will now appear on the patient’s screen.

**Import from Patient’s Screen**

If you know the patient’s name whose images are stored on a disk, select the patient’s proper screen, insert the disk into the appropriate drive and import that patient’s images following the import directions as described in the previous section.
Import from Outside DEXIS

Open a disk containing images outside DEXIS Imaging Suite. Or, open an e-mail attachment of an image.

After opening an image in DEXview you may send it to the DEXIS Imaging Suite by clicking the Export icon on the DEXview screen. Scroll through the images using the arrows and export all desired images in this manner.

Now, open DEXIS Administration. Click the Import icon. This icon will only be visible if images are waiting to be imported. Highlight an image and click Select Patient. DEXIS Imaging Suite will choose a patient with the same name or, if none is found, will open a new Patient Data screen. Add the appropriate information and click Done to save.

If a new Patient Data screen appears but you wish to choose a patient on record, click Cancel to return to the patient list.

Proceed to the patient’s screen and import the images as previously described. Only images appropriate to that particular screen will appear for import.

Please note: The Import screen will automatically open should there be any outstanding image of the selected patient stored in the communication folder or in the folder used for temporary storage of newly acquired images. See “Import from Communication Folder or from Temporary Folder” on page 44 for more details.

4.5.10 The Compare Function

Compare allows for the comparison of two images either side-by-side or overlaid in different modes to ascertain their differences. It was designed in response to requests from the research community; however, all DEXIS owners have the opportunity to use this function.

Select your first image, usually the newer of the two. Click Compare in the Navigator box (see “The Navigator” on page 55) to open the X-ray Comparison box. The software will show the selected image and an older one of the same tooth next to each other. The Comparison box gives you the choice to select a different image to compare to by listing all images in the Second Image drop-down list. You can now select one of the four comparison tools: Show Side-by-Side, Colored Addition, Subtraction, Red-Green Stereo.
Show Side-by-Side

This is the default mode. It shows the two images next to each other and proportional in size.

Choose one of the remaining tools, and the images are overlaid with the selected tool applied.

Aligning Images

Since two images will rarely be captured using the exact same angle or position, it will be necessary to align the two using the following methods — the active function will be shown through the shape of the mouse cursor:

- Click and drag in the center of the image to reposition the entire second image on top of the first.
- Stretch the second image horizontally by clicking and dragging on the side or vertical margins of the image.
- Stretch the second image vertically by clicking and dragging on the top or bottom or horizontal margins of the image.
- Rotate the second image by clicking and dragging in a corner of the image.

Alternatively, you may use the spinners and “0” buttons in the upper part of the X-ray Comparison box:

**Horizontal Shift**: move the second image to the left (-) or right (+).

**Vertical Shift**: move the second image down (-) and up (+).

**Rotation**: rotate the second image counter-clockwise (-) or clockwise (+).

**Horizontal Stretch**: shrink (-) or stretch (+) the second image horizontally.

**Vertical Stretch**: shrink (-) or stretch (+) the second image vertically.

Click the “0” button to return the function to the original value.

The *Weight* tool shifts the appearance of one image over the other.
Colored Addition

The goal of Colored Addition is to have areas of common density appear gray and the non-common areas in green or magenta. The color areas are changes in density from the first X-ray to the next.

Once your images are aligned, use the Weight scale if necessary. By moving the sliding bar to the left the second image (in green) becomes more visible or has more weight. Move the bar to the right and the first image (in magenta) becomes more visible or has more weight. By moving the bar to balance the weight, gray areas (common densities) appear.

On the combined, aligned image, magenta areas are areas of greater density on the first image while green areas are areas of greater density on the second image.

Subtraction

The goal of Subtraction is to have areas of common density appear gray and the non-common areas in light or dark. The light and dark areas are changes in density from the first X-ray to the next.

Once your images are aligned, use the Weight scale if necessary. By moving the sliding bar to the left the second image (in green) becomes more visible or has more weight. Move the bar to the right and the first image (in magenta) becomes more visible or has more weight. By moving the bar to balance the weight, gray areas (common densities) appear. The second image is subtracted from the first one, which means that if you give more weight to the second one, the resulting image will appear negative.

On the combined, aligned image, lighter areas are areas of greater density on the first image and darker areas are areas of greater density on the second image.

Red-Green Stereo

The goal of Stereo is to achieve a 3-D appearance. Choose two images for the same area that were taken at slightly different angles (8 degrees or less). When viewed with 3-D glasses (red-green lenses), the combined image appears in 3-D. The Weight tool can also be used to enhance the 3-D image.
Invert Logic

Use *Invert Logic* to reverse the properties of the compared images; i.e., have the second image take over the role of the first one and vice versa.

Save

You may save the combined images as an additional image by choosing *Save*. The new image will have the current date and the parameter “Comparison: (date of first image) vs. (date of second image)”. When using *Color Addition* and *Stereo* the saved, combined images will appear on the X-ray screen and print in color. The security bar will show *Derived*.

### 4.6 X-ray Image Security

Beginning with video imaging, there has always been a concern about the medical/legal aspects of the image. Can the image be altered? And if so, will it be acceptable in a court of law?

It is common knowledge that any form of digital image can be changed in a commonly available image-processing program. However, DEXIS images have a built-in Digital Signature feature. When an X-ray is captured and stored to disk, a code is computed from the image using encryption methods. This “digital signature” is stored together with the image and compared when the image is loaded. Three cases are distinguished and displayed:

1. The digital signature matches the image contents. The image is labeled *Original*.
2. The digital signature does not match the image contents. The image has been tampered with; it will be labeled *Modified*.
3. There is no digital signature present. The image has been imported into DEXIS from elsewhere. The software cannot decide whether it is original or modified. This image will be labeled *Imported*.

### 4.7 Working with Panoramic and Cephalometric Images

DEXIS Imaging Suite allows for the capture and storage of panoramic and cephalometric images in the extra-oral DEXray screen. You may digitally
capture images, see “DEXpan” on page 169, or scan standard film, see “DEXscan: Scanned Images” on page 111 to place them into this screen. Once there, images are available for use with the Image Management Tools.

Please refer to the Image Management Tools for the Intra-oral screen section (“Image Management Tools” on page 52). Since the majority of the icons and functions are the same for both screens, only the differences are listed here:

- There is not a Canal function (or related functions) under Measurement.
- Since all images are displayed in chronological order, there isn’t a choice of Mouth or History view in Archive.
- The X-ray capture button functions only if digital panoramic equipment is installed or if Simulation is chosen in X-ray Acquisition Preferences.
- Due of the size and shape of panoramic and cephalometric images, the images always print in landscape when Standard Printing, Print Enlarged, or Full Mouth is chosen. Diagnosis and ClearVu are options. Add to Printout and Report are not available.
Chapter 5

DEXimage: Photographic Images

The DEXimage program is the main software application for acquiring, storing, displaying, and sharing light-based digital photographic images.

DEXimage is an important adjunct program to the DEXray program. Simply stated, DEXimage is to light-based images what DEXray is to X-ray images.

DEXimage works with two principal types of photographic equipment: Extra-oral Digital Cameras and Intra-oral Video Cameras and variations thereof. DEXimage displays both still and video images in both color and monochrome.

Like DEXray, DEXimage is also a sophisticated piece of software that has been carefully designed and developed to be easy and quick to learn and intuitively easy to use. Icons and function buttons enable the user to move, size, enhance, measure, save, and compare images with just a click and/or drag of the mouse.

5.1 DEXimage Screen Overview

You may open DEXimage from the DEXIS Administration screen or a patient’s DEXray screen by clicking the DEXimage icon on either screen. Practice management programs may contain a direct link to DEXimage, but typically you need to access DEXimage through DEXray if you are linked.

You can apply certain Windows functions to this screen. You can size and move the screen using click-and-drag.

Screen size and position changes are remembered in the DEXIS Imaging Suite. When the screen is changed to a new size, then closed and reopened for the same or another patient, it appears in the same size and position as when last viewed.
You can also use the three buttons in the upper right to minimize the screen (thus sending it to the task bar — click the tab to bring it back up), maximize or restore a screen, or close a screen.

The patient information is shown in the header bar; function icons are located across the top of the main window. Place your cursor on any of the icons and buttons and a help bubble, called a Tooltip, appears with information about the function. Often, there is also a keystroke that will execute the function. The Tooltip help feature is available throughout the DEXIS Imaging Suite. Many of the functions in DEXimage are equivalent to the corresponding functions in the DEXray program. In these cases we will refer to their description in the DEXray chapter.

The DEXIS Logo icon gives access to program information, Preferences, Help, and the DEXIS web site.

On the right of the DEXimage screen is the Presentation Panel.

Like DEXray, DEXimage contains separate screens for intra-oral images that may be positioned according to tooth numbers, and for extra-oral images that do not require tooth numbers. In contrast to DEXray, you may decide to place all your photographic images on the extra-oral screen by setting the
default accordingly. If you do that, all images will be placed in chronological order, and you need not give tooth numbers to your intra-oral images.

5.2 Setting DEXimage Preferences

You may access the DEXimage preferences in two ways:

- From DEXIS Administration, click the Wrench icon to open Preferences; click Video Acquisition and/or Digital Camera Acquisition.
- From a patient’s DEXimage screen, click the DEXIS logo to open the Program Information screen; select Preferences, click Video Acquisition and/or Digital Camera Acquisition.

For information about DEXimage preferences see “Setting Video Acquisition Preferences” on page 38 and “Setting Digital Camera Acquisition Preferences” on page 40.

5.3 Taking Digital Photographs

The Camera (USB) icon on the DEXimage screen is used to acquire digital photographs from a still image digital camera or from a scanner.

There are two paths to acquire photographs from a digital camera; which one you use depends on the camera model.

- Most modern digital cameras store images on memory cards. The pictures are transferred to the computer through a card reader that allows the memory card to appear as a disk drive. Card readers may be connected via USB or have adapters that fit into the PC card slot. Some cameras have built-in card readers that support the same path.
- Some cameras and practically all scanners support the TWAIN interface, which allows applications to launch the camera/scanner software and request pictures from it.

Please note: Before attempting to use your digital camera with DEXIS, please install your camera’s software (if applicable) and test its function outside DEXIS.
5.3.1 Memory Card with Card Reader

Choose your patient and open DEXimage. Verify that the Digital Camera is set to Memory Card in Digital Camera Acquisition Preferences.

Insert the memory card into the reader or connect the camera if it has a built-in reader.

Click the Camera (USB) icon to open the Picture Acquisition box to view the images stored on your memory card. Click on the picture. You may now Rotate or Crop the picture before choosing Select or dragging it to the DEXimage screen. You may also Delete the picture from the memory card.

If a picture is to be placed onto the intra-oral screen, you will be prompted to assign a tooth number.

5.3.2 TWAIN Interface

Choose your patient and open DEXimage. Verify that the digital camera is set to the model you use in Digital Camera Acquisition Preferences. This may be a TWAIN compatible camera or a scanner. Connect your camera or scanner.
Click the Camera (USB) icon to open your camera/scanner software. In the case of a digital camera, it will show you thumbnails for all images stored in the camera and you can select from them. When you close the scanner/camera software the selected images will be shown in Picture Acquisition box. Click on a picture. You may now Rotate or Crop the picture before choosing Select or dragging it to the DEXimage screen.

If a picture is placed onto the intra-oral screen, you will be prompted to assign a tooth number.

5.3.3 Patient Picture

You may acquire a patient’s picture on one of the paths as described above to be shown on the DEXIS Administration screen once the patient is selected. When in place, this picture becomes a helpful identifier and is also an image option in DEXwrite. To acquire a patient’s picture, click Select Patient Picture on the New Patient or Edit Patient screen (from DEXIS Administration) to open the Picture Acquisition box.

5.4 Taking Intra-oral Video Images using DEXvideo

DEXvideo allows you to capture images using an intra-oral camera. DEXvideo starts automatically when you start the computer. You do not have to select a patient before opening the DEXvideo screen.

To capture images from DEXvideo, specify the Primary Device on Preferences > Video Acquisition. See “Setting Video Acquisition Preferences” on page 38.

There are two choices:

• Live Video Still to capture still images from a video camera.

• Live Video Motion to record and save video (and capture stills from the video, if desired).

Please note: The storage of video files (as avi files) can require as much as 500 MB per 30 seconds of video! Because of this, video recording will automatically stop after 15 minutes. Because of the disk space required, consider whether movies really need to be saved.
To open the DEXvideo screen:

- If you have a DEXcam3, take the camera off the holder.
- For any other camera with supported button or foot pedal, press the button or foot pedal.
- Click the taskbar icon.
- Click the Record icon within DEXimage or press “V” (for video) on your keyboard.

The DEXvideo screen can be moved and resized using the mouse. DEXvideo will retain the size and position the next time it is opened.

When you right-click the DEXvideo system tray icon, the DEXvideo menu opens:

- Live Video Still: opens the DEXvideo screen to capture images.
- Live Video Motion: opens the DEXvideo screen to record video.
- Move to Home Position: moves the DEXvideo screen to a standard position and resizes it to the size set in Preferences.
- Preferences: Opens Video Acquisition Preferences. See “Setting Video Acquisition Preferences” on page 38.
- Exit: closes the DEXvideo program.

5.4.1 Live Video Still

To access Live Video Still:

1. In Video Acquisition Preferences, un-check Default to Motion Capture Video.
2. In DEXimage, click the Video icon or press “V”. The Live Video window opens in record still images mode:
Pause, Play
Toggles between pause and play (view video in real time).

Save Image
Click to save the current view in the image preview panel on the right. The image can be saved to the patient file when the Live Video window is closed.

Switch to Full Motion Acquisition
Click to switch to Live Video Motion mode.

Please note: You can also switch video modes by right clicking the DEX-video icon in the system tray and choosing either Live Video Still or Live Video Motion.

5.4.2 Live Video Motion
To access Live Video Motion:
1. In Video Acquisition Preferences, check Default to Motion Capture Video.
2. In DEXimage, click the Video icon or press “V”. The Live Video window opens in record video mode:

![Live Video Window]

**Record, Stop Recording**
Toggles between Recording and Stop Recording video.

**Save Image**
Click to save the current view in the image/movie preview panel on the right. The image can be saved to the patient file when the Live Video window is closed.

**Rewind, Previous Frame**
Click to rewind the movie or move to the previous frame.

**Pause, Play**
Toggles between pausing and playing the recorded video.

**Next Frame, Fast Forward**
Click to move to the next frame or fast forward the movie.
Switch to Still Acquisition

Click to switch to Live Video Still mode.

Do not ask to save movies

- Default is selected (gold).
- If not selected, recorded video is saved and represented by a thumbnail in the image/movie preview panel on the right. The Assign Movie dialog opens when the video window is closed:

Click *Select* to assign to the current patient (saved with date/time stamp), or click *Discard*. Note the playback buttons that allow you to re-view the movie before making a decision.

**Please note:** You can also switch video modes by right clicking the DEX-video icon in the system tray and choosing either Live Video Still or Live Video Motion.
5.4.3 ADDITIONAL SETTINGS

Mirror

Use the Mirror setting to compensate should your camera capture in reverse. A simple test: Capture an image of printed material. If the print appears backwards, then all captured images will be reversed.

Please note: You are choosing a default setting. You will have the option to change Mirror in the DEXvideo screen and on the actual DEXimage screen for any given picture as well.

Preferences

If the live video does not appear on the DEXvideo screen or is of poor quality, click the Wrench icon in the upper right corner to open the adjustments screen of your video capture hardware. The options may vary depending on the capture card and its driver.

Important settings are:

- The Video Source needs to be set to the connector your camera is connected to, usually either Composite or S-Video.
- The Video Standard needs to be set to the standard of the camera, usually NTSC in the US.

- The Video Format should be set to Full. It needs to be reduced to Half if the full format causes speed issues or other problems.

### 5.4.4 Capturing Images

Left-click the Pause icon or anywhere outside the icons to freeze an image. Left-click again to return to live video.

You may also use the space bar to start and stop the video, and the “T” key (for take) to save the image.
As you acquire an image, it will appear as a thumbnail on the *Preview Panel*. Click the individual thumbnail to enlarge.

Once the image is satisfactory, click the *Archive* icon or right-click anywhere outside the icons to save it. Images are saved to a folder. The next time DEX-image is started, the *Picture Acquisition* box is displayed. You can store the images by dragging them over to DEXimage, double-clicking the image, or clicking *Select* on the *Picture Acquisition* box. You can also crop and rotate images before saving them to DEXimage, or delete images, using the corresponding buttons on the *Picture Acquisition* box. To close the *Picture Acquisition* box, click *Done*. If you have not saved all pictures, a dialog will prompt you to confirm that you want to flush the remaining pictures. If you
close the *Picture Acquisition* box using the “X” icon, the box will continue to appear when you open DEXimage until the images are dispatched.

On the DEXvideo screen, if you exit with the “X” icon, the captured images will appear in the *Picture Acquisition* box when the DEXimage screen is opened.

**Please note:** You can unplug the camera at any time. If you unplug the camera while the DEXvideo screen is open, the screen will close automatically.

When capturing images on the intra-oral screen, you will be asked to choose tooth numbers for captured images.

### 5.4.5 Viewing and managing saved movies

When a movie is saved with a patient, a thumbnail with a date/time stamp is displayed on the patient's DEXimage screen:
Click to open the video in a player window:

- Use the navigation buttons to play, pause, rewind, and step through the video frame by frame.
- Use the Save button to save an image from the video. The image is saved to the patient file and the Assign Teeth dialog opens.
- To delete a video from a patient, simply drag the thumbnail to the archive icon, then select Archive (saved and still consumes disk space), Delete, or Cancel.

5.4.6 Simulation Mode

DEXimage has sample images within the program that can be captured, thus simulating the process of camera image capture. To capture the sample images, open Preferences and choose Simulation under Video Acquisition Preferences > Primary Device; see “Setting Video Acquisition Preferences” on page 38.

Upon returning to the DEXimage screen, open the DEXvideo screen. Since there is no camera attached to your computer, you will not see any live video. However, as with live video, click the Archive icon to Save the simulated images.

Exit with the “X” icon. The simulated images will appear on the DEXimage screen.
5.4.7 Foot Pedal or Wand Capture

DEXimage supports foot pedals connected to the serial or game port. Presence of a foot pedal and the port number need to be set in Video Acquisition Preferences, see page 38. Some intra-oral cameras have buttons to start, stop and capture images. Ask DEXIS Technical Support if these buttons are supported.

- Foot pedal capture: Step down once and quickly release to freeze the video. Step down again and quickly release to restart it. Having frozen the video, you can step down again and hold the pedal for about 1 second to save the image.

- Wand capture (if supported): Press the capture button on the wand to freeze the video. Press it again to restart. Having frozen the video, double-click the capture button to save the image.

Quad Feature

If your camera has a quad feature, please be aware that the four images will appear as one on the DEXimage screen. Since you may assign tooth numbers to images, we suggest that you turn off the quad feature.

5.5 Image Management Tools

You may control all functions in the DEXIS Imaging Suite by mouse-click or keyboard, whichever is more convenient for you. The Tooltip bubbles will give a short description and keystroke of each item. There is a complete listing of keystrokes in “Keyboard Use and Shortcuts” on page 161.

Many of the functions in DEXimage are equivalent to the corresponding functions in the DEXray program. In these cases we will refer to their descriptions in the DEXray chapter.

5.5.1 Selection and Navigation

See DEXray, “Selection and Navigation” on page 52.
5.5.2 DEXimage Screen Icons

An icon will turn gold when initiated. For example, the “tooth” icon is highlighted when on the intra-oral screen. When a function icon is chosen or the appropriate key pressed on the keyboard, the selected image will automatically enlarge and the function box will open next to the image. In addition, many icons will allow you to drag an image to them thereby opening their function. Click again on the icon or corresponding keystroke to terminate its function.

DEXIS Imaging Suite will apply the current function to another image once you click on that image. There is no need to close the current function and image in order to begin working with a newly chosen image.

Please remember that the Tooltip is available for help. The corresponding keystroke will show in the help bubble.

DEXray Intra-oral and Extra-oral Icons

Click the Tooth icon or press “A” to switch to the DEXray intra-oral images screen.

Click the Head icon or press “D” to switch to the DEXray extra-oral images screen.

A light under an icon signals that there are images for this patient in the corresponding section.

If you drag an image to one of these icons, it will be moved to the corresponding screen.

DEXimage Intra-oral and Extra-oral Icons

Click the Wand icon or press “I” to switch to the DEXimage intra-oral images screen.

Click the Camera icon or press “F” to switch to the DEXimage extra-oral images screen.

A light under either icon signals that there are images for this patient in DEXimage.
Overview Icon

Click the Overview icon to see all four DEXIS Imaging Suite screens (DEXray intra-oral and extra-oral, DEXimage intra-oral and extra-oral) for this patient. See DEXray: “Overview Icon” on page 58 for details.

Zoom Icon

Use the Zoom or Magnifier icon to magnify a portion of the selected image. You may also press “Z” (for zoom) to initiate its function.

The portion visible in the bird’s eye frame can be changed by clicking to a different spot or by holding down the left mouse button and moving to another area on the image. The bird’s eye frame is closed when the Magnifier function or the selected image is closed.

To magnify the entire image, see “Full Screen View” on page 53. Once in Full Screen mode, the bird’s eye frame remains in function, magnifying the already magnified image by another step.

Spotlight Icon

This icon allows you to show an area of the image in maximized contrast. To initiate the function, click the icon or press “S” (for spotlight). The area around the cursor is displayed in maximized contrast. Left-click to suspend the spotlight cursor over the current area; the spotlit area is retained until the function is closed.

Measurement Icon

The Measurement tool is primarily used for endodontic and implant measuring on X-rays, although distances on photographic images may be measured if the image shows objects of known size which may be used for calibration. See “Measurement on Images” on page 66.

Notes Icon

This icon will allow you to attach text (notes, diagnoses or comments), drawings (free-hand and polygons), and voice notes to an image. See “Image Annotations” on page 74.
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**Enhancement Icon**
Click the *Enhancement* icon or press “E” to open the *Image Enhancement* box to adjust brightness and contrast of the selected image.

The top of the Enhancement dialog box shows a histogram of the selected image and a curve showing the current contrast and brightness setting. You may manipulate this line by clicking and dragging at the two crosses.

The functions *Contrast*, *Neutral*, and *Invert* can operate on color images and on grayscale images (X-rays). The functions *Color*, *ClearVu*, and *Relief* only work on grayscale images (X-rays). See “Image Enhancement” on page 64 for details.

**Mirror Icon**
Click the *Mirror* icon or press “U” (for U-turn) on your keyboard to flip the image horizontally or mirror your image.

**Rotate Icon**
The image (standard and enlarged) may be rotated using the *Rotate* icon. You can also press “R” on your keyboard or drag the image to the icon to rotate it in 90-degree increments.

**Home Icon**
The *Home* function is activated by clicking the *Home* icon, by pressing “B” (for back) on your keyboard or by dragging the image to the icon. See DEXray “Home Icon” on page 61.

**Archive Icon**
The *Archive* icon allows access to the patient’s entire image history. See “The Image Archive” on page 77.

**Import Icon**
Click the *Import* icon or press “<” on your keyboard to open the *Import Images* screen. See “Communications: Import” on page 84.
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Export Icon

Click the Export icon or press “x” on your keyboard to open the Export Images screen. Alternatively, you may drag an image to the Export icon to open the Export Images screen. See “Communications: Export and E-mail” on page 80.

Print Icon

Click the Print icon, or press “P” on your keyboard to open the Windows Print Dialog. This dialog allows you to select a different printer and to access the printer settings. You may also open the Windows Print menu by dragging an image to the Print icon. From the Windows Print dialog, choose OK to open the DEXIS Print dialog. See “Communications: Printing from DEXray or DEXimage” on page 78.

Quit Icon

Click the Quit icon, press “Q” on your keyboard, or click the “x” in the upper right corner of the screen to leave the patient’s DEXimage screen.

Live Video Icon

Click the Live Video icon, or press “V” (for video) on your keyboard to open the Live Video screen in preparation for capturing images with an intra-oral camera. See “Taking Intra-oral Video Images using DEXvideo” on page 95.

Camera (USB) Icon

Click the Camera (USB) icon or press “C” on your keyboard to load images from your digital camera, see “Taking Digital Photographs” on page 93. You may also use this icon to open the scanner software to scan a picture into DEXimage.

DEXcosmetic Icon

Click the DEXcosmetic icon to open DEXcosmetic. See “DEXcosmetic: Cosmetic Imaging” on page 123.
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DEXwrite Icon
Click the DEXwrite icon or press “W” on your keyboard to open the DEXwrite program, see “DEXwrite: Chairside Report Generator” on page 131.

DEXclaim Icon
Click the DEXclaim icon or press “L” on your keyboard to open the DEXclaim program for the selected patient, see “DEXclaim: Images as Claim Attachments” on page 151.

Please note: DEXclaim is only applicable for dentists residing in the USA.

3D Icon
The DEXIS i-CAT Link optional module integrates i-CAT based cone beam CT systems into the DEXIS Imaging Suite. If this module has been installed, click the 3D icon to schedule a patient for X-ray acquisition with the 3D device. The patient name and other known information will be automatically transferred to the acquisition workstation. See “DEXIS i-CAT Link” on page 170.

DEXIS Logo Icon
Click the DEXIS Logo icon or click “I” on your keyboard to obtain program information, the Preferences button and these two additional features:

Help: Click this button and your cursor gains a “?” Now, click on an item on the DEXimage screen and the manual will open in Acrobat Reader to the page that describes that item’s function.

DEXIS Web Site: Click this button to open the DEXIS web site in your browser.

Click OK to close the Program Information screen.
Chapter 6

DEXscan: Scanned Images

The DEXscan program is an important software application for scanning film- or paper-based X-ray and photographic images.

DEXscan is an invaluable tool for incorporating historic images or images supplied from another source into either DEXray or DEXimage. Most commonly, it is used by offices wishing to convert their historic film-based patient X-rays (both intra-oral and extra-oral) into a digital format for comparison with later X-ray images.

A particularly special feature of DEXscan when scanning intra-oral X-rays is the ability to place many X-ray films on a flatbed scanner; the software will separate them automatically and will optionally assign tooth numbers based on the position of the film on the scanner.

6.1 Scanning X-ray Films

DEXscan owners may scan standard intra-oral and extra-oral films into DEXray. Once the film becomes a digital image, it is available for Image Management Tool functions. This includes the ability to print them instead of copying them with duplicating film and traditional processing with chemicals.

Although your scanned images will not have the same high resolution as images captured with your DEXIS sensor, they will be available for toolbar use.

Please note: Before attempting to scan, please verify that your scanner meets the DEXIS Imaging Suite systems requirements, see “Hardware Requirements” on page 5. In addition, verify that your scanner’s software is installed, and test its function outside the DEXIS Imaging Suite. You must have a transparency adapter to scan X-ray film.
6.1.1 Intra-oral with Flatbed Scanner

Open a patient’s DEXray intra-oral screen. Open X-ray Acquisition Preferences and choose your scanner software under Scanner. Click OK.

Remove the films from the mount (if applicable) and place the intra-oral films on the scanner bed bubble side down.

Leave a ¼ inch (6 mm) space between and around each film. DEXIS will “cut” around each film.

Click the Scanner icon to open the scanner software.

When the scanner software opens, choose the following settings: Transmissive, Grayscale or B/W Photo, 300 DPI and 100%. Depending on your particular scanner software, you may achieve better results using RGB or Color Photo instead of Grayscale setting. We encourage you to explore your scanner’s options.

Click Preview to show the placement of the films on the scanner bed. Adjust the scan area, i.e., draw a box around the entire area to be scanned using click and drag. Again, allow ¼ inch (6 mm) around the outermost edges of the films. Click Scan to send the information to DEXray.

When the scan is complete, the scanning software will close. Each image will appear along with the Assign Teeth dialog.

Automatic Assignment of Tooth Numbers

If you scan a series of X-rays (FMX or bitewing series), place the films on the scanner as you would like them to appear in mounted view on the screen.
The rest position of the scanning bar should be at the top side or at the left side of the X-rays. Leave a ¼ inch (6 mm) space between and around each X-ray.

After having scanned the series and having cut out the individual images, the software will show the Assign Teeth dialog. Move the images on the Assign Teeth dialog to approximately the proper places, and click Auto Number. When you click Done, the teeth numbers are assigned to the images and the images are arranged in the proper places on the DEXray screen. See “Assigning Tooth Numbers” on page 168 for more information on the Assign Teeth dialog.

6.1.2 Intra-oral with Single-Film Scanner

If you want to use a single-film scanner to scan intra-oral X-rays one at a time you need to switch the automatic separation of X-rays off. Go to X-ray Acquisition Preferences, select your scanner software under Scanner, and then disable X-ray Cutting; see “X-ray Cutting” on page 37.

Open a patient’s DEXray intra-oral screen. Click the Scanner icon to open the scanner software.

When the scanner software opens, choose the following settings: Transmissive, Grayscale or B/W Photo, 300 DPI. Depending on your particular scanner software, in some cases you may achieve better results using RGB or Color Photo instead of Grayscale setting. We encourage you to explore your scanner’s options. Insert the X-ray film into the scanner and start the scanning process.

When the scan is complete, the scanning software will close. The image will become visible along with the Assign Teeth dialog. Assign a tooth number
Chapter 6

or numbers and a date (the actual date the film was taken), see “Assigning Tooth Numbers” on page 168.

6.1.3 Extra-oral

Open a patient’s DEXray extra-oral screen. Open X-ray Acquisition Preferences and choose your scanner software under Scanner. Click OK.

Click the Scanner icon to open the scanner software.

When the scanner software opens, place the panoramic or cephalometric film face down on the scanner bed.

Choose the following settings: Transmissive, Grayscale or B/W Photo, 150 DPI, and 100%. Depending on your particular scanner software, in some cases you may achieve better results using RGB or Color Photo instead of Grayscale setting. We encourage you to explore your scanner’s options.

Click Preview to show the placement of the film on the scanner bed. Adjust the scan area, i.e., draw a box around the entire area to be scanned using click and drag. Click Scan to send the information to DEXray.

When the scan is complete, the scanner software will close. The film image will appear enlarged on the DEXray screen. Click on the number in the upper left corner to open the Number/Date box. Assign a date to the image.

6.2 Scan a Photo into DEXimage

Photos can be scanned into DEXimage and stored there with captured or imported pictures. Once the film becomes a digital image, it is available for Image Management Tool functions.

Please note: Before attempting to scan, please install your scanner’s software and test its function outside DEXIS, see “Installation verification and testing” on page 157.

Choose your patient and open DEXimage intra-oral or extra-oral screen, whichever is applicable. Now open Digital Camera Acquisition Preferences and choose your scanner software under Camera Type; we are essentially using the scanner as a camera. Click OK.

Click the Camera (USB) icon to open the scanner software.
When the scanner software opens, place the photo face down on the scanner bed. Choose the following settings: Reflective, True Color, 300 DPI and 100%.

Click Preview to show the placement of the photo on the scanner bed. Adjust the scan area, i.e., draw a box around the part of the photo to be sent to DEXIS using click and drag. Click Scan to send the information to DEXIS Imaging Suite.

When the scan is complete, the scanning software will close and a Picture Acquisition box will appear.

Click on the picture. You may now Rotate or Crop the picture before choosing Select or dragging it to the DEXimage screen. You may also Delete the picture and begin again.

If a picture is scanned into the intra-oral screen, assign a tooth number or numbers once it appears on the DEXimage screen.

6.3 Scanning a Picture for Patient Data

A patient’s picture appears on the DEXIS Administration screen. Once in place, this picture becomes a helpful identifier and is also an image option in DEXwrite. You may scan a patient’s picture into DEXIS Patient Data without having any additional modules such as DEXwrite or DEXscan.

Please note: Before attempting to scan, please install your scanner’s software and test its function outside DEXIS, see “Installation verification and testing” on page 157.

Open DEXIS Administration and click the Wrench icon to open Preferences. Click Digital Camera Acquisition, then choose your scanner software under Camera Type; we are essentially using the scanner as a camera. Click OK.

Click on the patient’s name and then click Modify Patient Data to open the Edit Patient screen. Click Select Patient Picture to open the scanner software.

When the scanner software opens, place the photo face down on the scanner bed. Choose the following settings: Reflective, True Color, 300 DPI, and 100%.
Chapter 6

Click *Preview* to show the placement of the photo on the scanner bed. Adjust the scan area, i.e., draw a box around the part of the photo to be sent to DEXIS using click and drag. Click *Scan* to send the information to DEXIS. When the scan is complete, the scanning software will close and a *Picture Acquisition* box will appear.

Click on the picture. You may now *Rotate* or *Crop* the picture before choosing *Select* or dragging it to DEXIS Administration. You may also *Delete* the picture and begin again.

6.4 Scanning a Signature or Logo

DEXwrite owners may use images of scanned signatures and logos in DEXwrite letters. Please refer to “Signatures and Logos” on page 28, and “Setting DEXwrite Preferences” on page 132.

**Please note:** Unlike earlier versions of DEXIS software, the DEXIS Imaging Suite does not support the scanning of signatures and logos from within the program. Please scan these items and save the images to your hard drive before acquiring them for use in DEXIS Imaging Suite.
7.1 Introduction

Proper treatment planning as well as the selection of the proper implant length and diameter are crucial to the long-term success of the implant and restoration. The use of digital X-rays and the DEXimplant planning software greatly aids in this process.

Before an implant can be selected the anatomical foundation available to receive the implant must be carefully assessed. Several steps should be taken to complete the evaluation:

- Clinical evaluation of the oral cavity can provide important information about the health of the soft tissue at the proposed implant site.

- The bony foundation and ridge need to be clinically analyzed to ensure the presence of proper dimension and amount of bone for implant placement. The proper amount of bone should be present at the buccal and lingual aspects of the implant following placement. During the planning phase, it is useful to measure the existing bone foundation.

- The vertical height of the bone is best determined radiographically with a panoramic X-ray. The panoramic X-ray also shows existing teeth and — when properly calibrated — can be used to measure distances. It may well serve as a basis for placement planning and as a communication tool. DEXimplant supports implant planning on panoramic X-rays.

- It is recommended that based on these planning steps, a surgical guide is constructed to aid in proper location and orientation of the implants in conjunction with the desired prosthetic results. Another panoramic X-ray, taken with the surgical guide equipped with steel pins in place, should be taken to compare the initial plan with the foreseen result of the surgery. The measurement tools of the DEXray software will help you in this evaluation procedure.
Once the implants are placed, the healing process has to be evaluated from time to time by taking periapical X-rays. The DEXbone tool that comes with DEXimplant emphasizes osseointegration and eventual bone loss around implants.

**WARNING**

Disclaimer: The DEXimplant planning and monitoring tool is a general aid to dentists working with dental implants. DEXimplant is not intended to give precise measurements and is not able to be calibrated with extreme accuracy.

Professional dental experience and judgment combined with supplementary tools and techniques are essential to the reliable, safe and successful placement of dental implants.

DEXIS, LLC cannot be responsible for personal injuries incurred or liabilities or claims in connection therewith if DEXimplant is used inconsistently with the foregoing.

### 7.2 Accessing DEXimplant

The DEXimplant and DEXbone tools are integrated into the DEXray software and are thus available for a thirty-day trial period when DEXray is installed.

To use DEXimplant beyond the trial period, call DEXIS Technical Support for information on how to obtain the registration code.

To open DEXimplant, click the **DEXimplant** icon in the DEXray software.

### 7.3 Implant Planning with DEXimplant

The planning procedure supported by DEXimplant consists of the following steps:

- Take a panoramic X-ray with radiographic balls; calibrate the X-ray resolution by designating the radiographic balls of known diameter.
- Select implant models and sizes.
- Position the implants on the X-ray, rotate them and move them.
- Print the panoramic X-ray with implants positioned; add a list of implants used.
7.3.1 Calibration with Radiographic Balls

Accurate knowledge of the dimensions on the radiograph is a necessary precondition for the selection of the appropriate implant length and diameter. Since panoramic X-rays vary in magnification and never show the anatomical structures in actual size, the dimensions have to be calibrated by comparing them to the dimensions of a known object. Radiographic balls of known diameter (usually 5mm) have proven most useful and are especially supported by DEXimplant.

See “Calibration with Radiographic Balls” on page 72 for a description of this method.

Calibration with other objects, as described in “Bone Density Measurement” on page 73, is also possible, but cannot give the same accurate result as the radiographic balls method. We therefore highly recommend using radiographic balls of at least 5mm diameter.

7.3.2 The Implant Library

Open the DEXimplant tool by clicking its icon or by pressing “N” on the keyboard.

Select the DEXimplant tab to display the Implant Library. Click the down arrow to select the manufacturer; available models are displayed. Click to select the model you want, which is previewed in the area below the list. DEXIS provides templates for implants of most of the major manufacturers. If you do not find your particular model, select Generic or a model that is similar, or notify DEXIS and provide the necessary information (product catalog and/or clear radiographic overlay template). We at DEXIS will do our best to complete the catalog.

7.3.3 Placing Implants

Select an implant in the catalog and click on the enlarged X-ray to place it. The implant will be automatically rotated up or down when placed on the mandible or maxilla. It will be shown in the right size and as distorted as the nearest radiographic ball is. But be aware: the size can only be as accurate as the entered outline of the radiographic ball and as the panoramic X-ray itself.
Chapter 7

The implant placed on the X-ray is outlined and surrounded by a 1.5 mm safety margin. This margin is the minimum distance you should consider from the implant to adjacent vital structures.

Once you placed the implant you can:

- Move it by clicking into the center of the implant, then dragging it while holding the mouse button down.
- Rotate it by clicking at either end of the implant and moving the mouse to the right or to the left while holding the mouse button down.
- Remove it by clicking in the center of the implant and dragging it out of the image window.
- Replace it with a different model or size by dragging a different implant from the library onto it.

The performed action is indicated by the form of the mouse cursor: A cross with four arrows indicates movement, while an arrow-tipped bow indicates rotation. Fine, pixel-by-pixel movements can be achieved by pressing the arrow keys on the keyboard while the mouse cursor is placed over the implant.

The manufacturer, model, and size of a placed implant is shown in a help bubble when you move the mouse over it and wait a moment. When DEX-implant is closed, you may click on the implant to obtain information about it.

Implant placements are stored in the image files so that they are available after exporting and importing the image provided the implant library is present on the importing computer.

Placed implants are also shown by DEXview, the DEXIS image viewer.

7.3.4 Printing the Plan

Click the Print icon and select the image containing placed implants. Implants placed on the image will be printed with it. Select Add Notes to print a list of the placed implants (manufacturers, models, and sizes) below the image. See “Communications: Printing from DEXray or DEXimage” on page 78.
Alternatively you may print the image with placed implants in DEXwrite (see “Generating DEXwrite Reports” on page 140).

7.3.5 Communication with Colleagues

Consider sending images as files via disk or e-mail if you are sharing the treatment plan with another clinician. If your recipient is a DEXIS owner, the image file is sufficient to send. If your recipient is not a DEXIS owner, send with DEXview and the image can be opened. Not only will your implant models be visible, but the recipient will also have the ability to change contrast and use ClearVu to gain more information.

7.4 Osseointegration Monitoring with DEXbone

The DEXbone tool helps in examining the bone around implants by emphasizing possible bone loss or bad integration of the implant. DEXbone uses sophisticated image processing techniques to find the special patterns produced by bone defects around implants.

7.4.1 Selecting the Region to be Examined

Take a periapical X-ray of the implant to be examined. Enlarge the X-ray and open DEXimplant by clicking its icon or by pressing “N”. Now drag a rectangle around the area to be examined by clicking one corner and dragging the mouse while holding the left mouse button down. Do this for one side of the implant at a time; drag the rectangle so that about half of the implant and about the same amount of bone is contained. The DEXbone window will open showing the selected region enlarged. After some computation the DEXbone information will be shown.

CAUTION

DEXbone shows meaningful information only if the thread of an implant is visible inside the drawn rectangle. DEXbone works best if the implant is perpendicular on the radiograph.
7.4.2 Reading the DEXbone Information

DEXbone will show the following information:

- The edge of the implant is shown as a white line. This serves as a confirmation that the software has successfully detected the implant. If this information is not shown correctly, the other information is meaningless. In this case, close the DEXbone window and select the region differently.

- Areas of suspected bone loss are shown in black. The size of the black spot directly relates to the size of the suspected defect.

- At the side of the DEXbone window, black rectangles indicate the severity of the suspected bone defect. Each rectangle relates to a shown bone loss area next to it. The wider the rectangle, the more severe the suspected bone defect.

7.4.3 Looking into Detail

Left-click a shown bone defect and the area will be shown in a separate window in enlarged and contrast optimized fashion. This window will be shown as long as you hold the left mouse button down. You may “tack” it for permanent display by additionally clicking the right mouse button.
CHAPTER 8
DEXcosmetic: Cosmetic Imaging

The DEXcosmetic component is designed to demonstrate “before and after” images. DEXcosmetic tools enable you to show patients the projected results of restorative, orthodontic, and aesthetic procedures before the procedure is performed. The results of bridges, crowns, veneers, and implants can be demonstrated. The Whiten tool uses artificial intelligence to automatically find the teeth in the mouth and allows you to simulate bleaching.

8.1 DEXcosmetic Tools

The DEXcosmetic imaging module includes the following tools:

- Before/After
- Clone
- Copy/Reshape
- Pull
- Whiten
- Blend
- Smile Library
- Quick Save
- Save and Exit

Click to select one of the tools (Before/After, Clone, etc.). Click Quick Save to save your work without closing DEXcosmetic. Click Save and Exit to save the image and exit the DEXcosmetic module.
8.1.1 Before/After

The Before/After tool copies a selected portion of an image and duplicates the selection either side by side (horizontally) or top and bottom (vertically). This tool can be used to create an image that has two copies of a patient’s smile on the monitor, one that the simulation is performed upon and one that is the original patient’s smile allowing the simulation results to be compared to the patient’s original smile.

Please note: We suggest you use this tool prior to whitening a patient’s smile.

To use the Before/After tool:

1. In either intra-oral or extra-oral color image display mode, select the image you wish to duplicate and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.
2. Click Before/After. The Before and After dialog box opens with the selected image displayed.
3. Click either Top and Bottom or Side by Side. A blue mask appears on the image. Masked areas will be removed from the final duplicated image.
4. Adjust the mask by dragging individual boundaries, or by dragging the colored (unmasked) area.
5. Click Finished when you are satisfied with the mask. The duplicated image is displayed in the main DEXIS window.

8.1.2 Clone

The Clone tool duplicates a section of the image by selecting a point over an area that you wish to create a copy of on a different area of the image. This tool can be helpful for fixing chipped or missing tooth/teeth.

To use the Clone tool:

1. In either intra-oral or extra-oral color image display mode, select the image you wish to work with and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.
2. Click Clone. The Clone dialog box opens with the selected image displayed.
3. Select one of the following:
   - Clone from Original - drawing from the original image.
   - Clone from Current - drawing from the already-cloned area.
   - Erase - return the area to the original.

4. Select a brush shape (Circle; Diamond; Horizontal Line; Vertical Line) and use the slider to set the brush size.

5. Right click in the image to set the clone point, then click and drag to draw. The tool duplicates the area designated by the blue X.

6. Click *Finished* when you are satisfied with the results.

### 8.1.3 Copy/Reshape

The Copy/Reshape tool duplicates and/or reshapess a selected region of the image. This tool can be helpful for fixing the missing tooth/teeth (implant/bridge) and/or closing a diastema.

To use the Copy/Reshape tool:

1. In either intra-oral or extra-oral color image display mode, select the image you wish to work with and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.

2. Click *Copy/Reshape*. The Copy/Reshape dialog box opens with the selected image displayed.

3. Select one of the following to define the object you wish to work with:
   - Define Area w/ Rectangle - click and drag to create a rectangle, then click to place the mask.
   - Define Area w/ Polygon - each click creates a line segment; right click to finish the polygon and place the mask.
   - Add to/Remove from Area by Drawing - specify Circle, Diamond, Horizontal Line, or Vertical Line, and use slider to adjust brush size.

4. Once the area is properly defined (i.e. the mask is satisfactory) click Copy/Reshape.

5. Use tools to manipulate the selected object:
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- Cut (specify Circle, Diamond, Horizontal Line, or Vertical Line, and use slider to adjust brush size) - click to remove parts of the object.
- UnCut (specify Circle, Diamond, Horizontal Line, or Vertical Line, and use slider to adjust brush size) - click to restore parts of the object.
- Flip/Mirror - use handles to flip or mirror the object.
- Move/Size/Rotate - click and drag to move the object; drag on boundaries to resize the object; drag on corners to rotate the object.
- Rotate 3D - click, then use handles to rotate the object. Object can also be rotated from the center.
- Adjust Object Color/Sharpness (Adjust Object Color/Sharpness dialog opens: Adjust Smooth (Radius); Sharpen (Amount); Manual Color Balance (Hue, Saturation, and Brightness); and Brightness/Contrast (Brightness, Contrast)

6. Click Finished when you are satisfied with the results.

8.1.4 Pull

The Pull tool drags color from a location on the image by drawing, helpful for repairing chips and removing stains from teeth.

To use the Pull tool:

1. In either intra-oral or extra-oral color image display mode, select the image you wish to work with and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.

2. Click Pull. The Pull dialog box opens with the selected image displayed.

3. With Pull selected, select a brush shape, use the slider to set the brush size, then click and drag to “pull” color/texture from one area to another.

4. Select Erase or right click to remove the “pulled” overlay.

5. Click Finished when you are satisfied with the results.
8.1.5 Whiten

The Whiten tool changes the color and opacity of teeth and/or smiles, helpful for simulating bleaching and/or veneers.

To use the Whiten tool:

1. In either intra-oral or extra-oral color image display mode, select the image you wish to work with and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.

2. Click Whiten. The Whiten Smile dialog box opens with the selected image displayed. A rectangle drawing tool is displayed on top of the image.

3. Click and drag to draw a rectangle around the smile. When the mouse button is released, teeth are auto-detected and overlaid with a mask (aka “whitening gel”).

4. Adjust the distribution of the mask or whitening gel using these tools:
   - Use the Auto-Detect slider to change the sensitivity of auto-detection.
   - Click Touch-Up, then use the selected brush (diamond, circle, etc.) to apply or remove the mask manually.
   - Right-click to toggle between adding and removing the mask.

5. When you are satisfied with the distribution of the mask/whitening gel, click Whiten, then choose one of the following:
   - Add/Remove White
   - Add/Remove White+B (plus blue)
• Add/Remove White+B-R (plus blue, minus red; default)
• Add/Remove Yellow
• Add/Remove Red
• Add/Remove Blue

6. Use the Whiten slider to apply the desired color combination to the areas covered by the mask/whitening gel.

7. Click Finished when you are satisfied with the result.

8.1.6 BLEND

The Blend tool will feather/soften edges on the image by drawing, helpful for removing imperfections in the image, or for blending the results of other imaging tool operations.

To use the Blend tool:

1. In either intra-oral or extra-oral color image display mode, select the image you wish to work with and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.

2. Click Blend. The Blend dialog box opens with the selected image displayed.

3. With Blend selected, select a brush shape and size, then click and drag within the image to soften sharp edges and transitions. The degree of blending can be adjusted using the Blend/Erase slider.

4. Select Erase or right click to remove the blended effect.

5. Click Finished when you are satisfied with the result.

8.1.7 SMILE LIBRARY

The Smile Library tool allows objects to be loaded from a database on to the image, helpful for simulating crowns, full mouth restorations, implants, bridges, dentures.

To use the Smile Library tool:
1. In either intra-oral or extra-oral color image display mode, select the image you wish to work with and open DEXcosmetic by clicking the icon or pressing “K.” The DEXcosmetic dialog box opens.

2. Click Smile Library. The Smile Library dialog box opens with the selected image displayed.

3. If desired, select one of the following to define the area you wish to work with:
   - Define Area w/ Rectangle - click and drag to create a rectangle, then click to place the mask.
   - Define Area w/ Polygon - each click creates a line segment; right click to finish the polygon and place the mask.
   - Add to/Remove from Area by Drawing - specify Circle, Diamond, Horizontal Line, or Vertical Line, and use slider to adjust brush size.

4. Click Load Smile. The Load Smile Object dialog box opens. It displays available crowns and smiles. Use tabs/arrows to view all possible objects.

5. Select the object you wish to add and click OK. The object appears superimposed on the image.

6. Use tools to manipulate the added object:
   - Cut (specify Circle, Diamond, Horizontal Line, or Vertical Line, and use slider to adjust brush size) - click to remove parts of the object.
   - UnCut (specify Circle, Diamond, Horizontal Line, or Vertical Line, and use slider to adjust brush size) - click to restore parts of the object.
   - Flip/Mirror - use handles to flip or mirror the object.
   - Move/Size/Rotate - click and drag to move the object; drag on boundaries to resize the object; drag on corners to rotate the object.
   - Rotate 3D - click, then use handles to rotate the object. Object can also be rotated from the center.
   - Adjust Object Color/Sharpness (Adjust Object Color/Sharpness dialog opens: Adjust Smooth (Radius); Sharpen (Amount); Manual Color Balance (Hue, Saturation, and Brightness); and Brightness/Contrast (Brightness, Contrast)
7. Click *Finished* when you are satisfied with the result.

### 8.1.8 Common Toolbar buttons

All DEXcosmetic tools have common toolbar buttons.

<table>
<thead>
<tr>
<th>Button</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Start Over" /></td>
<td>Return to the last saved version of the image.</td>
</tr>
<tr>
<td><img src="image" alt="Undo" /></td>
<td>Undo the last action.</td>
</tr>
<tr>
<td><img src="image" alt="Redo" /></td>
<td>Redo the last action.</td>
</tr>
<tr>
<td><img src="image" alt="Restore" /></td>
<td>Return to the original image.</td>
</tr>
<tr>
<td><img src="image" alt="Zoom In" /></td>
<td>Increase magnification in steps.</td>
</tr>
<tr>
<td><img src="image" alt="Zoom Out" /></td>
<td>Decrease magnification in steps.</td>
</tr>
<tr>
<td><img src="image" alt="Exit" /></td>
<td>Close the current function. Unsaved changes will be lost.</td>
</tr>
</tbody>
</table>
Chapter 9
DEXwrite: Chairside Report Generator

DEXwrite allows you to create reports, letters, and other types of documents directly from the DEXIS Imaging Suite. Items such as patient, practice and provider data merge into letters and reports automatically. DEXwrite is specifically designed to work in harmony with DEXray, DEXimage and DEXscan. You can create a marketing letter, insurance report, referral letter or any type of correspondence you may need during your day from either the operational or front office computers.

It is suggested that you review the material contained within the DEXwrite portion of the manual before beginning your first letter or report so that you can maximize your benefits and avoid frustrations.

Once DEXwrite is installed (see “Software Installation” on page 13), you can start the program from the DEXIS Administration screen by first selecting the patient and then clicking the DEXwrite icon. Alternatively, you may open DEXwrite from within DEXray or DEXimage either by clicking the DEXwrite icon or by dragging an image onto the DEXwrite icon. In the latter case, the image will automatically be placed on the default report.

9.1 DEXwrite Screen Overview

The patient information appears at the top of the screen. The Default Report is the one that is now visible; it appears each time DEXwrite is opened. The name of this Default Report appears below the patient information. There is a drop-down arrow to the right of it. When clicked, the report library appears.
There are function buttons to the right of the shown report and an Image Selection box to the left.

### 9.2 Setting DEXwrite Preferences

Open DEXwrite Preferences by clicking the DEXIS logo in the upper right corner of the DEXwrite screen, then clicking Preferences.

- Click *Spellcheck Options* to select your particular options. This set of options functions in the same way as your word processing spellchecker.
- Click *Spell Dictionaries* to edit your spellchecker dictionary. This feature functions in the same way as your word processing dictionary; however, it also contains numerous dental/medical terms.
• Click **Signatures** to acquire a new signature. The **Picture Acquisition** dialog box opens. Refer to “Signatures and Logos” on page 28 for more information.

For information on using signatures in DEXwrite documents, refer to “Sign” on page 136.

• Click **Logos** to acquire a new practice logo. The **Picture Acquisition** dialog box opens. Refer to “Signatures and Logos” on page 28 for more information.

• **Printer Queue** refers to the folder where queued reports are held. The default queue location is a subfolder in the DEXIS data folder (C:\DEXIS Imaging Suite\Data\Queue). You may change this location to your desktop folder or to the desktop of some other computer. If you do this, you will see the queued reports as icons on the desktop. You can then print them by dragging them onto a printer icon or delete them by dragging them to the recycle bin.

**Please note:** We suggest that you use the default settings unless you are skilled in the use of Windows and with the creation of folders and icons.

• **Print Mode:** DEXwrite prints reports by writing them to a PDF file and by launching Adobe Acrobat Reader. This program “reads and prints” DEXwrite reports.

  • Choose **Hidden** (the default setting) to hide Acrobat Reader entirely.
  
  • Choose **Visible** to have Acrobat Reader print the reports and at the same time show them on the screen.

  • Choose **Open Only** to view the report in the Acrobat Reader screen and print only from the Acrobat Reader screen. This selection gives you the most control but requires an additional step and slows down the printing process.

  • When the **Align Frames** box is checked frames will automatically be aligned when created or moved to a grid of 5 screen pixels in both directions. This makes it easier to obtain straight margins and to have pictures well aligned and of the same size.
• Check *Print ClearVu* if you want DEXwrite to print all X-rays in ClearVu mode (sharpened) regardless of the settings for individual frames. This box is checked by default if printing in ClearVu mode is selected in DEXray.

• Click *Done* to save any changes.

### 9.3 Generating Your First DEXwrite Report

Open a patient that has X-ray images in DEXray and click the *DEXwrite* icon; the DEXwrite program will open.

In the *Image Selection* box double-click the X-ray image to send it to the report. Click on the spots where you want to modify text and type in any changes. Click *Print* to print the report.

You now have your first DEXwrite report!

### 9.4 Report Management Tools

There are two components to DEXwrite: *Report Creation* and *Templates Construction*.

• *Report Creation* is accomplished using existing templates.

• *Templates Construction* is the process by which you design templates that have specific components to meet your needs.

Each component has specific tools and functions.

The following describes the tools and functions for Report Creation:

#### 9.4.1 Default Report

The report that is visible upon opening DEXwrite is called the *Default Report*. You will notice that the report appears with the appropriate patient and practice data already merged. This default can be changed in Templates Management discussed later in this section of the manual. In the example, we have chosen the Prostho Interim Report as our Default Report.
9.4.2 Report Library

To select a different report, open the Report Library. Click the down-arrow next to the name of the current report at the top of the window. This will open a list of letters and reports from which to choose.

9.4.3 Frames

If you click in different areas of your report, you will notice that there are several sections to the report. Each section is housed in a box called a frame. Each frame contains specific data, such as text, logos and images. Once your basic template is constructed you will probably not need to make changes when creating a report. The exception may be in the text in the body of the letter or report. To change this text, click on the area to be changed and add or delete text. The function and modification of frames is discussed in detail in the Template Management section of the manual, see “Designing Custom Report Templates” on page 141.

9.4.4 Image Selection Box

Most of the letters and reports that will be created with DEXwrite will include images of one sort or another. The Image Selection box shows the visible images for this patient. That is, you will see all the X-rays as they were placed from the last time that patient’s file was accessed. Images should be enhanced prior to entering DEXwrite.

There are selection buttons at the top of this screen. From here you are able to select images from one of the other integrated DEXIS modules.

For example, clicking the Intra-oral color image icon will open a screen that stores intra-oral camera images within that patient’s DEXimage record.

Please note: DEXwrite only works with DEXray and DEXimage. You cannot add images captured with other image capture programs. You can, however, cut and paste and import and export images from other programs into DEXray or DEXimage and have them available for use in DEXwrite.

Click the appropriate icon to view and select Intra-oral gray (X-ray) images, Extra-oral gray (including cephalometric) X-ray images, Intra-oral color images, and Extra-oral color images.
• To place a series of images into a letter or report, click the down arrow to the right of the date to open the date menu. Choose the appropriate date and click the check box to the left of Select series of. All images for that date will move to the letter or report in one step.

• To select individual images, click and drag the image to the letter or report or double-click an image to move it to the next open image frame.

• To move all images from the report back to the Image Selection box, click Clear All on the upper right of the Image Selection box. To move an individual image, drag it from the report to the Image Selection box.

Click Close when you are done selecting images.

**9.4.5 FUNCTION BUTTONS**

Function buttons are located on the right side of the Default Report.

**Images**

Appears when the Image Selection box is closed. To re-open, click Images.

**Spell Check**

*Please note:* This button is only available for English, French, and German.

Click this button and the Check Spelling screen opens. This screen functions in the same way as your word processing spellchecker. It will display the erroneous word and offer replacement options. You can choose to Ignore or Change words as necessary. You can also add words to your dictionary by using the Add button.

**Zoom**

Enlarges the report for easy viewing. Use “−” and “+” to decrease and increase the size of the report.

**Sign**

Allows a scanned signature to be placed into a letter. Click Sign to open the Signature Selection box. You may double-click a signature to put it into a
predefined signature frame or you may drag a signature to the appropriate location.

Signature usage is secured by signature codes; refer to “Secure Signatures” on page 138.

Print
Print a report immediately.

Queue
Hold printing for later. An information box appears referring you to DEXIS Administration, Print Queued Reports where the choices are: Print to print a single selected report; Print All to print all reports in the Queue; Delete to delete a selected report from the Queue (it will remain in the Archive).

E-mail
A new e-mail message box opens with the appropriate information automatically entered: the doctor’s e-mail address if it is in his or her Referrer Data screen; the sender’s information; the patient’s name and the letter as a PDF (Portable Document Format) file — the recipient will need Adobe® Reader® to open the letter. This is free software and can be downloaded from www.adobe.com. Additional text may be added to your e-mail as with any other message.

Print on Letterhead
Hides the letterhead text and logo so that pre-printed stationery may be used. Choose Print or Queue to complete the process. Click Print on Letterhead again to restore this text.

Templates
Opens the Template Management screen, giving access to the templates for letters and reports.
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Archive

Offers a report history for the patient. DEXwrite automatically stores reports in Archive. From this screen you may choose to Print, Queue, E-mail or Delete a stored report.

Text Blocks

Opens the list of Text Block Categories. You can Add, Modify, and Delete text blocks and text block categories, see “Reusable Text Blocks” on page 139.

Recipient

Opens the list of possible recipients, which is the same list as the list of referring dentists. You can add and delete names, modify recipient data, and select a recipient.

Patient Data

Allows access to the Patient Data screen where immediate changes in information for the patient are accomplished, including the selection of Provider and Referring Dentist. Upon opening DEXwrite, this box will appear if any required information is missing.

Exit DEXwrite

Closes DEXwrite. After creating a report and upon exiting DEXwrite, you will be notified that the report has not been saved.

The report is saved only by choosing Print, Queue, or E-mail.

9.4.6 Secure Signatures

The usage of stored signatures is secured by encrypted codes, which are associated with the signature file. Clicking Sign and double-clicking one of the stored signatures will open a dialog asking you to enter a signature code.

If the signature is used for the first time, the code associated to it is empty, and you can just click OK to use the signature. If you do that, the signature code is left empty, and all users can freely use the signature.
If you enter a signature code for the first time – any sequence of up to 32 characters – you will be asked to repeat the code.

From now on, the signature is secured. Each time it is used, the same code has to be entered.

**Please note:** Signature codes cannot be changed. To change or remove a signature code, you have to import a new signature and delete the secured one.

### 9.4.7 Reusable Text Blocks

The concept of reusable text blocks was especially designed for dentists who want to generate reports well adapted to the individual case.

DEXwrite comes with some predefined text blocks which can easily be adapted and extended as need arises.

**Text Block Categories**

Click *Text Blocks* to display the list of *Text Block Categories*. The report text refers to these categories through the Parameter mechanism, see “Parameters” on page 145.

Click one of the buttons to the right to modify the name of the category. Click a button to the right of an empty line to add a category. In both cases an input box opens, that allows you to enter or modify the name. For all your categories, choose brief, unique names; do not use names already used in the software, like *Patient*, *Practice*, or *Provider*.

Click a button to the left to open the corresponding category displaying the list of text blocks belonging to it.

Click *Done* to save changes, click *Cancel* to close the dialog without saving changes.
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List of Text Blocks

When you open a category, or when DEXwrite finds the name of a Text Block Category as a parameter in the report text, the list of text blocks belonging to the category is displayed.

The row of buttons at the top is used to define the type of text blocks listed:

- **Words** means that the text blocks consist of single words or phrases. If several are selected they will be interconnected by commas.
- **Lines** means that each text block will be placed on a separate line.
- **Paragraphs** means that the text blocks will be separated by empty lines if more than one text block is selected.

Below the selected category, the first few words of each text block are listed. If you click the buttons to the right of a text block the whole block is shown in an edit field and can be modified.

By clicking the button to the left of a text block, the text block is selected for insertion into the text, replacing the parameter with the category name. Several text blocks can be selected; they will be interconnected according to the Type defined above.

Click **Other** to open an input box and to enter a text block “on the fly.” This text block is entered into the text, but not permanently stored. You may select one or more text blocks and additionally enter one by clicking **Other**.

Click **Done** to save your selection, click **Cancel** to cancel it.

9.4.8 Generating DEXwrite Reports

Now that you are familiar with the components of Report Creation, choose a patient and open DEXwrite. Follow these steps to create a report:

- Choose a report from the **Report Library**.
- Select a recipient, if applicable.
- Select text blocks, if applicable.
- Place images into the report.
- Make text changes.
• Add a signature, if applicable.
• Choose to \textit{Print on Letterhead}, if applicable.
• \textit{Print, Queue, or E-mail} to complete the process.

To make changes to the text of an archived report, open the patient’s Archive, select the report, change the text as needed and choose \textit{Print, Queue, or E-mail} to save the changed report. Upon returning to Archive, the new report appears with a pipe symbol indicating that it is a revision.

Remember: At this point you are in Report mode. Any changes made here will only affect the report you are currently preparing for this patient.

9.5 \textbf{Designing Custom Report Templates}

The following describes the tools and functions for Template Construction:

Throughout this section of the manual we will use the term \textit{Template} to signify the basic template for a report or letter that has a specific layout and general predefined text; the actual text and graphics are not yet inserted. Templates are the basis for creating \textit{Reports}. These reports are completed when you add your own text, pictures and patient’s X-rays.

\textbf{Please note:} We suggest that you have one person in charge of Templates Management to avoid erroneous modification of Templates.

9.5.1 \textbf{Components of the Template Management Screen}

Click \textit{Templates} to open Template Management for this overview:

\textbf{Paper Format}

Select the size and shape of the final letter or report. The selected size should be equal to the size of the paper used. Please be sure that your printer supports the format you choose.

\textbf{Insert Parameter}

Offers a list of items to merge such as practice, referrer, image, patient and provider information. If you select an information item from this list, it will
be inserted into the text at the current cursor position, see “Parameters” on page 145.

List of Templates
DEXwrite contains a long list of predefined templates to fulfill the requirements of different types of practices. You may choose the templates that work for your practice and have them become your Report Library, see “Report Library” on page 135.

Save
Choose after modifying a Template to save the changes.

Save As
Choose to give the modified version a new name thereby maintaining the original Template and creating a new one with the modified contents.

Delete
Deletes the selected Template entirely.

Done
Close Template Management.

9.5.2 Selecting the Templates For Your Personal Report Library
Open the Template Management screen to select the templates to be contained in your personal Report Library. Scroll down the list of templates and locate the End of Listed Templates line. To choose a template for your Report Library, drag it above the End of Listed Templates line. To remove a template from your Report Library, drag it below the End of Listed Templates line.

By dragging a template to the top-most position, it will become your default report and will be shown whenever you launch DEXwrite. For example, an Endodontist may choose to have Endo Post Treatment Report as the default report for the practice.
When you have completed arranging, adding and subtracting report templates to your Report Library, click Done to exit the Template Management screen.

9.5.3 COMPONENTS OF A TEMPLATE

Before initiating any changes, let's examine the components of a template.

Frames

Click on different areas of the template. You will notice red boxes. These boxes are called Frames. Every report is comprised of frames. Each frame is filled with text or images.

Using “right-click and drag,” you may move frames. In text frames, the left mouse button is used to move the text cursor and to mark text. Right click and drag on the borders to resize frames.

Text frames are bottomless; they will expand as additional text is added.

To create a new frame, draw a box on the template using click and drag.

Frames Properties Screen

When you create a new frame or right double-click an existing one, the Frame Properties screen will appear. This screen provides the tools you need to select which type of item the frame is to contain and to specify the properties of the frame.

The following types of frames are designed to contain certain types of information such as:

Text: contains text only. You can specify the following additional properties:

• Text Color: select from the available colors.
• Font: select from the built-in fonts: Helvetica (serif-less font with variable width characters), Times Roman (variable width characters with serifs), Courier (typewriter style font — fixed width characters with serifs).
• Fontsize in points.
• Bold and/or Italic.
**Please note:** You may copy and paste text to and from text frames and word processing programs. Highlight text, hold the *Control* key and press “C” to copy; paste by holding the *Control* key and pressing “V” on your keyboard.

**Intra-oral X-ray:** is for containing a picture, preferably an intra-oral X-ray. You can drag any picture into frames of this type, but only intra-oral X-rays will be placed here by double-clicking the image in the intra-oral *Image Acquisition* screen. You can also specify a tooth number or tooth number range. If you do this, the X-rays will be positioned automatically into the correct frames whenever you double-click that particular X-ray when printing full mouth series or bitewing series templates. You can also specify whether the images placed into this type of frame will be printed *Colorized* or in *ClearVu* mode.

**Panoramic X-ray:** is for containing a picture, preferably a panoramic X-ray. You can drag any picture onto frames of this type, but only panoramic X-rays will be placed here by double-clicking. You can specify that pictures placed into frames of this type are to be printed *Colorized* or in *ClearVu* mode.

**Intra-oral Image:** is for containing a picture, preferably an intra-oral camera image. You can drag any picture into frames of this type, but only intra-oral camera images will be placed here by double-clicking.

**Facial Image:** is for containing a picture, preferably a facial photo or one stored in the extra-oral screen of DEXimage. You can drag any picture onto frames of this type, but only facial photos will be placed here by double-clicking.

**Any of the Above Pictures:** is for containing a picture. Any of the aforementioned pictures can be placed here by dragging or double-clicking. If you are unsure of the type of image to be placed into a frame, then select **Any of the Above Pictures**. In that way, double-clicking any image will automatically place it into the next free frame.

**Signature:** is for containing a provider signature only. It will be filled by the *Sign* function.

**Patient Picture:** is for containing a Patient Picture. It will be filled automatically if a patient picture is available for the current patient. Patient Pictures are captured on the *Patient Data* screen using a scanner or digital camera as discussed previously.
**Provider Logo:** is for containing the Practice logo or Provider logo. This frame will be filled automatically if a practice logo or provider logo is available. It will not be printed if *Print on Letterhead* is selected.

**Letterhead Text:** is for containing text only. It will be printed only if *Print on Letterhead* is not selected. You can specify the font size in points as before.

Click *Clear* to clear the contents of a frame for this template. Empty frames do not appear on printed reports. Click *Delete* to remove the frame entirely. *Done* closes and saves changes. *Cancel* will not save changes.

### 9.5.4 Parameters

Parameters are placeholders for data related text, which are filled automatically by the computer. They are enclosed in angle brackets (“<” and “>”). Since the computer must “understand” the nature of these parameters to know what text to place, the parameters must be spelled exactly as they are in the *Parameters* list. Therefore, we highly suggest that you insert parameters by selecting them from the list rather than typing them manually.

It is in text frames that information is merged using *Parameters*. These parameters or merge items draw on information previously entered in DEXIS; therefore, you may need to edit information after an initial printing. Examples:

**Data Related Parameters**

*Practice* in parameters is a placeholder for the *Practice Name* in *Component Licensing*.

*Prx* (practice) *Address Line 1, 2, 3,* and *4* in parameters relates to the *Address Text* in *Preferences > Administration*.

*Referrer* information in parameters relates to data of the patient’s *Referring Dentist*, selected in *Patient Administration*. The referrer data is entered and modified on the *New Referrer* screen.

*Recipient* information in parameters relates to data of the report recipient, if that is not the referring dentist. If the software encounters a recipient parameter in the report it displays the list of recipients and allows to select from it.
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_Patient_ information in parameters relates to information on the individual's _Patient Data_ screen.

**Image Related Parameters**

Pay particular attention to the _Image..._ choices in parameters. These parameters link image information from a particular frame to text in another frame. The choices are:

- **Image Date** — the date an image was taken
- **Image Diagnosis** — any note attached to the image
- **Image Implants** — manufacturer, model, and size of placed implant(s)
- **Image Tooth #** — the tooth number(s) attached to the image

These parameters can be filled in only after a picture is selected. The parameters entered into the text when one of these menu points is chosen, all end in an underscore (“_”). If you leave the parameter as they are, the information will be taken from the first picture selected into a frame. If you want to refer to the picture in a specific frame, you have to replace the underscore by the _Frame Number_ of the frame that is to receive the picture. The frame number is shown in the _Frame Properties_ dialog. You can determine the frame number by double-clicking that frame.

**An example:** You want to include the tooth number of an attached X-ray into your text. The X-ray is to be placed into frame number 7. If this is the only X-ray on the report, or if you do not mind which one is used to deliver the information, you put `<tooth_>` into the report or simply select _Image Tooth_. You can get the software to enter the tooth number from this specific frame 7 into your text by entering `<tooth7>` or by selecting _Image Tooth_ from the list and by typing “7” on your keyboard to replace the underscore. In this manner you are associating the image in the Image Frame with the tooth number presented in the text of the report.

**Text Block Categories**

The _Text Block Categories_ delivered with the system or added by you are also listed in the _Parameters_ menu. If you select one of them or enter it into the text, enclosed in “<” and “>”, the software will show the selection menu for this _Text Block Category_ allowing to enter one or more of the text blocks of this category into the text.
**An example:** You want to define a place in the report where one or more of the predefined diagnoses is to occur. You have a Text Block Category *Diagnoses*, with several text blocks to select from. If you put `<Diagnoses>` into your text, or have the computer do that by selecting *Diagnoses* from the Parameter Menu, the list of diagnoses will be displayed when the report is generated. You select the applicable ones, and they will be inserted into the text replacing the place holder.

For more on Text Blocks, see “Reusable Text Blocks” on page 139.

**Input Fields**

Any parameter that could not yet be replaced when the report is to be printed, queued for printing, or e-mailed, causes an input window to be opened allowing you to enter text to replace the place holder.

**An example:** The report text contains `<Remark>`. Since `<Remark>` is neither a known parameter (like `<Practice>` or `<Patient>`) nor a Text Block Category, an input window is shown when you select to print the report, asking for the remark. It shows `<Remark>` in the title bar.

### 9.5.5 Saving the Template

After making changes to a template, choose *Save* to make permanent changes to this particular template, or choose *Save As* to give the modified template a new name and therefore keep both the original and the new template. Choose *Delete* to remove the template entirely. Remember, these are permanent changes.

If you try to exit without choosing any of these options, a warning will appear asking for a choice to save or not to save. This is a safeguard against losing changes made to templates.

### 9.5.6 Constructing your Own Template

The changes described in templates construction can be accomplished on individual reports outside of *Template Management*; however, the changes will then take effect only for that current report and not for any subsequent report using the same template. It is only in *Template Management* that permanent changes to templates can be accomplished.
We suggest that you first become familiar with the letters and reports included with DEXwrite before attempting to alter existing templates or to create your own.

Select a Template to modify: We suggest that you construct your own template by selecting one that is similar, saving a copy under a new name, then starting from there.

Click Templates to open Template Management, select a suitable template from the list and click on it. Click Save as... giving it a meaningful name. This way, the original will not be altered. Close and re-open Template Management and choose the new template. As with all newly constructed templates, it will be at the end of the list. You might want to drag it up closer to the top.

Change text: Click on a text frame (the frame will turn red). The cursor will appear in the text box and can be moved by either clicking elsewhere in the box or by moving it with the arrow keys. Once the cursor is located in the proper position you can type additional text or delete text using the keyboard, much like you would with a traditional word processor.

Insert text parameters: Parameters are fields with specific names that will later be filled in with values by the computer. Parameters in DEXwrite are enclosed in brackets (“<” and “>”), see “Parameters” on page 145. To insert a DEXwrite parameter, you move the cursor to the spot where you wish to insert it, then select the parameter from the list in the Template Management dialog by clicking with the left mouse button. You open the Parameters List by clicking with the left mouse button on the down arrow adjacent to the Insert Parameter box.

Resize a frame: Move the cursor over an edge or corner of the frame, press the left or right mouse button and drag the border while holding the mouse button down.

Move a frame: Move the cursor over the frame, press the right mouse button (cursor will turn into a hook) and drag the frame to the position you want.

Create a new frame: Move the mouse over an empty space of the report, press the left or right mouse button and drag open a rectangle. When you release the button, a Frame Properties screen will come up which allows you to select the type of frame this will be, see “Frames” on page 135. The
dialog also allows you to specify the text properties, like size, font, and color, and to specify special picture modes (ClearVu, Colorized).

**Modify the frame type:** Double-click with the right mouse button on the frame to bring up the *Frame Properties* screen. You can then change the frame type. The screen also allows you to change the text size and to specify special picture modes (ClearVu, Colorized).

**Delete a frame:** Double-click with the right mouse button on the frame to bring up the *Frame Properties* screen, click *Delete*, then *Done*.

**Change the paper format for the template:** Select the appropriate format from the list at the top of the *Template Management* screen. Please be sure that your printer supports the format you choose. Not all printers support all formats.
Please note: DEXclaim is only applicable for dentists residing in the USA.

DEXclaim is an image-forwarding program that allows you to select X-rays and/or camera images and other information and send them through Fast-Attach™ by National Electronic Attachments (NEA). DEXclaim is not a claim-submitting program. However, since it sends images in support of insurance claims, it becomes the claim-settling component for your image management program from DEXIS.

To use DEXclaim and FastAttach you must be submitting your standard insurance claims electronically through a stand-alone program or through your practice management program (PMP).

The claim submittal process passes your claim through a clearing-house and the clearing-house then passes the claim to a payor, usually an insurance carrier.

If your standard claim requires a supporting image, the clearing-house or payor will notify you (usually the next day) either by an electronic message, or by mail. In response to the notification, you simply use DEXclaim to enter patient information, select the image(s), and send the attachment to NEA.

NEA then posts the attachment for the payor for review. Throughout this chapter, we refer to attachment as the image document sent from DEXIS and claim as the claim generated by your PMP’s claims processing program.

DEXclaim is made of two components: DEXclaim by DEXIS and FastAttach by NEA. Like all DEXIS components, DEXclaim is automatically installed as part of the DEXIS Imaging Suite. Through our partnership with NEA, FastAttach is also pre-installed for your convenience. Once you open DEXclaim, you will be asked to complete the NEA install and accept the end-user license agreement.
The DEXclaim icons appear on the DEXIS Administration, DEXray, and DEX-image screens. The function remains the same no matter where you choose to initiate the program.

10.1 Registration

DEXclaim requires that you register with DEXIS and have a subscription from NEA. You will be registering these two components: DEXclaim by DEXIS and FastAttach by NEA, covered here in that order.

Click the DEXclaim icon to open DEXclaim.

DEXclaim may have been part of your initial purchase. If so, your DEXclaim Registration Number may already be entered during your DEXIS Imaging Suite installation process. If not, or if you have yet to purchase DEXclaim, a screen appears asking that you enter a DEXclaim registration code. Click Later to move to the next step.

The NEA Registration screen appears asking you to enter your Facility ID number. Enter your number, or to register and receive this number, click Registration Form. Follow the instructions on the form; a DEXIS Customer Care representative will assist you with this step.

Please note: If you are currently an NEA subscriber, you will be able to click Later to fully use the DEXclaim program for 30 days.
10.2 Sending Images as Attachments with DEXclaim

Images can be attached to new or existing claims which are sent through your current electronic claims processing program.

For existing claims, you are notified that images are needed. Use DEXclaim to send the images as attachments, linking the attachment number to the originally submitted claim.

For new claims, the attachment is sent to NEA first, then the tracking number is inserted into the new claim as it is created.

The DEXclaim process for either case is as follows:

Select a Patient

Select a patient and click the DEXclaim icon. A DEXclaim claims information screen opens specific for this patient.

Enter Insurance Data

Send Via should remain NEA FastAttach unless you are verifying operation or instructing personnel. In this case, choose DEXIS Demonstration.

Choose the insurance company in the Insurer field.

Select Pre-authorization or Dates-of-Service for previously performed procedures. Fill in the dates of service.

Next, fill in the remaining highlighted fields. DEXclaim remembers this insurance information for this patient after it has been initially set. In the future, please verify the insurance information for the patient, change if necessary. Move to the next step by clicking Next.

Attach Images

An image selection box and a form displaying the attachment and insurance information opens. Choose from any available DEXIS images including intra-oral X-rays, pans and cephs, intra-oral and facial camera images. Drag X-ray or camera images to the form placing images in the lower half of
the page, randomly or in the mount. In the case of a series, you may select by date to move all the images for the series in one step.

**Please note:** Should you select the wrong image, you must drag it back to its *home location* on the *Click Images or Drag to Attachment* box. The image is in its home location when the mouse changes to a hand dropping a document.

You should arrange images on the form and stretch them to size only if you intend to print a hardcopy for office reference. Otherwise, the arrangement and size of the images you place on the form is of no consequence, as the form you see will change format when sent. Instead, the images are always sent full size along with the claim data extracted in the format required by the payor.

To the right of the form are options:

- *Use Zoom* for easier viewing.
- *Use Scan* to open your installed scanner to scan and attach additional information, such as perio charts and student enrollment forms.
- *Use Edit* to change information on the form.
- *Use Print* to print a hard copy.
- *Use Cancel* to cancel the attachment.
• Use Done to complete the attachment. This will send the attachment to the Attachments queue.

Continue with other attachments using the previously described process until you have selected all of the images required by your payor notifications or for soon-to-be-generated standard claims.

Send Attachments

When you are ready to send these attachments, connect to the Internet and click the DEXclaim icon. A light under the icon indicates there are attachments ready to be sent.

The Attachment Status screen opens. Click Send All to send all attachments to NEA. You must be connected to the internet at this point. You cannot edit attachments at this stage, only send them or delete them. You can select one, then use New to create a new attachment for that patient, then delete the erroneous attachment.

The NEA transmitting screen opens; click Send Attachments. When the transmission is complete, the attachment transmission software will automatically print an Attachment File Receipt report to verify that you have successfully submitted your attachments. On this report you will find an NEA# for each attachment you have sent. You can also open Reports, pulling the tracking number from each attachment.
The final step is to enter the NEA tracking number into the remarks section of the electronic claim and to send the claim to your claims clearinghouse. Please note, when putting the NEA# into the notes section of your electronic claim that the first four characters of your notes must be NEA#.

Your Insurance Payor will immediately be able to view your attachments on the NEA site.

If you have yet to file a claim but would like to attach images and other information, create the attachment first, using the above steps, so that you can insert the tracking number into the claim.

**10.3 Assistance**

Throughout the DEXclaim process, dialog screens will appear should there be missing information, skipped steps, or verification needed.

For example:

If the patient’s birth date or provider is missing, a dialog appears alerting you and leading to the Patient Data screen where you can make the additions.

Should you click Done to move an attachment to the Send Attachments queue without adding an image, a dialog appears alerting you to do so.

Should you click the DEXclaim icon with no attachments in the queue (no light under the icon), a dialog will appear asking if you would like to check for updates.

**10.4 Demo Mode**

If you would like to use DEXclaim in Demo mode, enter the word DEMO for the Facility ID on the NEA Registration screen (see Registration). Choose DEXIS Demonstration in the Send Via space on the Patient’s Insurance Data screen (see “Enter Insurance Data” on page 153). With these selections, you will be able to duplicate the entire process.
APPENDIX A

Hardware and Testing

A.1 Recommended hardware specifications

Our current hardware system requirements are available on our web site (www.dexis.com), from your DEXIS representative and from our Customer Care Center. As technology changes, our requirements will be updated to reflect such changes. Please consult current DEXIS System Requirements before purchasing any hardware.

A.2 Installation verification and testing

This section allows for the verification and testing of your DEXIS Imaging Suite software.

Please verify your software installation; test the DEXIS sensor and print functions. Then test additional hardware only as it applies to your particular practice and purchased modules.

If your verification and testing do not produce the desired results, please contact DEXIS Technical Support for assistance.

Verify the Installation of DEXIS Software Modules

Double-click the DEXIS Imaging Suite icon from your desktop to open DEXIS Administration. If all modules are installed properly, you will see eight icons on the upper left of the screen.

If the appropriate icons do not appear, call Technical Support for assistance.

Verify the Installation of the DEXIS Sensor File

Your sensor numbers are visible from the Intra-oral Capture screen in DEXray.
Open the *DEXIS Administration* screen. Double-click any patient’s name to open the *DEXray* screen. You will receive a disclaimer. Read the disclaimer and choose *I Accept* to close it.

Type “X” on your keyboard. This will open the *Intra-oral X-ray Capture* screen (appears as a tooth chart).

Your sensors should appear in the drop-down box on the left side of the screen. If there are no sensors, or missing sensors, please refer to the specific owner’s manuals for these sensors for installation and use.

If the sensors still do not appear after troubleshooting the sensor, call Technical Support for assistance.

**Test Print Functions**

If you are using a new printer, follow the manufacturer’s guide for installation and print a test page before entering DEXIS Imaging Suite.

Please verify that your printer functions outside DEXIS Imaging Suite.

For use with a non-networked laptop, you may need to shut down the laptop, attach the printer and restart the laptop.

If you are using an established network printer, or once you have printed a test page with a new printer, proceed to the test patient’s X-ray screen.

**Print from DEXray**

Click the *Print* icon to open the Windows *Print* dialog. Select the printer to use, then click OK to open the DEXIS *Print Images* dialog. Click your actual test image or click the selection box listed in the center of the screen. Then, click *Print*. The image will print. For network systems, print from DEXray on each workstation where the printer is accessible.

If the image does not print, call Technical Support for assistance.

**Print from DEXwrite**

If you have purchased DEXwrite, check for its print function. From the test patient’s X-ray screen, click the *DEXwrite* icon on the upper right and click *Print* on the right side of the report. The report will print. For network systems, print from DEXwrite on each workstation.
If the report does not print, call Technical Support for assistance.

**Test External Devices**

To verify the installation and performance of external devices (such as intra-oral cameras), refer to the readme.txt files that are copied to the hard drive during installation. These files can be found under C:\Program Files\DEXIS\Devices\<Device folder>.

**Test Digital Camera**

DEXIS Imaging Suite owners may capture from the *Edit Patient* screen under *Select Patient Picture*. Please verify that your camera functions outside DEXIS Imaging Suite.

**Place Patient Pictures into Patient Data**

You may use your digital camera to capture patient pictures, which will appear on the DEXIS Administration screen.

Set your type of digital camera interface from the DEXIS Administration screen. Open *Preferences* by clicking the *Wrench* icon, then click *Digital Camera Acquisition*. If you use a TWAIN compatible camera, select it under *Camera Type*. If you use a memory card, click *Browse* to specify the Memory Card Folder. Connect your camera or insert your memory card to your computer.

**Memory Card/PC Card Adapter Use**

If images do not appear in the *Picture Acquisition* box, consult the directions for your camera and make necessary changes. If images still do not appear, call Technical Support for assistance, see also “Memory Card with Card Reader” on page 94.

**Camera with TWAIN Interface**

If your installed camera software does not open through DEXIS or you are unable to acquire an image, call Technical Support for assistance, see also “TWAIN Interface” on page 94.
Test Scanner

DEXscan owners may scan standard film (intra-oral or extra-oral) into DEXray.

Please verify that your scanner functions outside of DEXIS Imaging Suite.

Scan X-ray Film into DEXray

Select the scanner to use in Preferences > X-ray Acquisition. Open DEXray for your test patient and select the extra-oral screen. Click the scanner icon to open the scanner software. Scan a grayscale image (B/W photo, see “Scanning X-ray Films” on page 111.

If your scanner software does not open or your image does not appear, consult the directions for your scanner and make necessary changes. If an image still does not appear, call Technical Support for assistance.

Test E-mail Function

If you have Internet service and have a MAPI-compliant e-mail program such as Outlook Express, you may use the DEXIS Imaging Suite e-mail feature.

To test your e-mail function, proceed to the test patient’s DEXray intra-oral X-ray screen where images appear. Click the Export icon to open the Export Images screen. Click E-mail, then click on your actual test image or click on the small selection box in the center of the Export Images screen. Click Export Images and then click Done.

Your e-mail program’s New Message screen will appear with the X-ray image as an attachment.

If your e-mail program’s New Message screen does not open, call Technical Support for assistance in choosing the appropriate settings.
APPENDIX B

Keyboard Use and Shortcuts

For those who feel more comfortable using the computer keyboard to move around the program, DEXIS Imaging Suite provides a variety of key combinations to make this possible.

In Focus/Appropriate Key

Before listing the actual keystrokes, it is important to understand that at any given time, there is one item on the screen that is highlighted or in focus; and that only the item in focus receives the keystrokes.

Examples:

If an X-ray is highlighted (in focus), pressing “R” (the appropriate key) on your keyboard will cause the image to rotate.

In the Intra-oral X-ray Capture screen, if a tooth on the chart is highlighted (in focus), pressing the Enter key will set that tooth up for X-ray.
Upon changing to History mode on the Visible Images screen, when Done is highlighted (in focus) pressing the Enter key will change the X-ray screen from Mouth view to History view.

If a function screen, such as Navigator, Measurement, or Notes is open then it becomes the screen that is in focus, not the program screen. To close it and proceed with other keystrokes, you must press “O” on your keyboard.

The Arrow Keys

The arrow keys move the focus from item to item on that particular screen. Depending on the type of item (X-ray image, text, etc.) that is in focus, different results may occur. We highly suggest that you take the time to work with the keystroke combinations in order to better understand their utilization.

The arrow keys on the keyboard will most often move you from one X-ray image to another. If there is more than one X-ray on the screen, try pressing the arrow keys to move from image to image. The right and left keys move right and left; the up and down keys similarly move up and down. The image that is highlighted with a blue border at the top is the item in focus at that time. If a magnified image is on the screen, the arrow keys will change brightness and contrast, since only that image is in focus.

The Arrow Keys have a special function when used in:

Measurement: They move the marker (the small circle located on the image) within the image to assist in placing the marker at the appropriate measurement point, see “Measurement on Images” on page 66. The red marker will only appear after you activate the Canal feature to indicate your intention to measure the root canal.

Zoom: The arrow keys move the magnifying glass. Pressing the Enter key displays that portion of the image.
Accessing the DEXray and DEXimage Icons

From the DEXray and DEXimage screens, press one of the following keys to access the corresponding icon and its function:

<table>
<thead>
<tr>
<th>Key</th>
<th>DEXray</th>
<th>DEXimage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Intra-oral X-ray images</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Extra-oral X-ray images</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Intra-oral Light images</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Extra-oral Light images</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Overview</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>Zoom</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Spotlight</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Measure</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>Annotate</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Enhance</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>ClearVu</td>
<td>Mirror</td>
</tr>
<tr>
<td>R</td>
<td>Rotate</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Reset</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Archive/History</td>
<td></td>
</tr>
<tr>
<td>&lt;</td>
<td>Import Images</td>
<td></td>
</tr>
<tr>
<td>&gt;</td>
<td>Export Images</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Print</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td>Quit</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Acquire X-ray (NA)</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>(NA) Live Video</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>DEXimplant (NA)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Scanner Camera</td>
<td>Camera</td>
</tr>
<tr>
<td>K</td>
<td>(NA) DEXcosmetic</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>DEXwrite</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>DEXclaim</td>
<td></td>
</tr>
</tbody>
</table>
Text Fields

When it is necessary to issue a command while a text field is in focus (a box where text is typed in to add information), hold the Alt key while pressing the command key at the same time. The arrow keys move within the text field until the last character when the cursor will move to the next neighboring element.

You can use the Tab and Shift+Tab keys to move to neighboring fields. In a single-line text field, you can also use the up and down arrow keys to move to neighboring fields.

You may also use the following standard Windows functions in any fields where text can be entered:

- Toggle between insert and replace modes using the Insert key on the keyboard. Insert mode is the default.
- Move the cursor to the beginning of the line (Home key) and end of the line (End key).
- Copy (Ctrl-C), Cut (Ctrl-X), and Paste (Ctrl-V) text.

Other Keystroke Tools

Enter

When a button is highlighted or in focus, pressing the Enter key is the equivalent of clicking that button, thus starting the function of that button or toggling its state.

When an image is highlighted or in focus, pressing the Enter key will automatically enlarge the image. Pressing the Enter key a second time will return the image to its standard size. If the image is magnified, pressing Enter will return the image to standard enlargement.

Delete

If an image is enlarged, pressing the Delete key will return the image to its standard size. Pressing the Delete key when the image is in its original size will delete the image. Please note: DEXIS will ask for confirmation before deleting any X-ray image.
Escape
Pressing the *Escape* key will close a function box such as *Measurement* or *Enhancements*. Pressing it again will close the enlarged image.

Spacebar
Pressing the *Spacebar* will pause a function, such as the scroll feature in Navigator or the playback of a voice note.

F1 Key
Press *F1* to open the online User Manual.

F4 Key
When an item with a drop-down box is in focus, pressing *F4* will open the drop-down box. You may then use the arrow keys to move through the box.
Appendix C
Interfaces, Bridges, and Links

C.1 DEXpSp-ScanX and DEXpSp-Optime

If your practice has the DEXpSp-ScanX module or the DEXpSp-Optime module installed, you can use a ScanX/VistaScan or Soredex Optime phosphor plate scanner with DEXray. These modules allow you to select any patient in DEXray on any workstation in the practice to acquire, store, and display images from the ScanX/VistaScan or Soredex Optime phosphor plate scanner.

C.1.1 DEXpSp-ScanX for ScanX/VistaScan Scanner

With a patient selected in DEXray, click the **X-ray Acquisition** icon to display the DEXpSp-ScanX window. Several X-rays can be scanned at one time by selecting up to four different patients for the four slots of the scanner. This allows scanning a full mouth series without having to interrupt a scan for a single X-ray of a different patient. To change the resolution of the scanner, click the **Wrench** icon and make the changes.

The DEXpSp-ScanX window shows the progression of a scan. When scans are complete, the module will close and the acquired images are displayed in DEXray. You will be prompted to assign tooth numbers; see “Assigning Tooth Numbers” on page 168.

C.1.2 DEXpSp-Optime for Soredex Optime scanner

With a patient selected in DEXray, click the **X-ray Acquisition** icon to display the DEXpSp-Optime window. Optime scanners support only intra-oral X-rays and have just one slot. Click **Start** to open the scanner, then insert a plate. The DEXpSp-Optime window shows the progression of the scan.

When the scan is complete, the module will either:
• show a preview window that allows you to assign tooth numbers to the scan.

• close and display the acquired images in DEXray. You will be prompted to assign tooth numbers; see “Assigning Tooth Numbers” on page 168.

To set the preference for the tooth assignment workflow you want to use, click the Wrench icon on the DEXpsp-Optime window and make the desired selection.

Assigning Tooth Numbers

When intra-oral X-rays or images are detected that do not carry tooth numbers, the Assign Teeth dialog is displayed. This dialog shows the X-rays in the order they were scanned.

To assign teeth to a selected image, click on a tooth or range of teeth on the tooth diagram at the top of the Assign Teeth dialog, and click Set Teeth of Selected. The tooth sequence will be assigned to the image. To assign teeth to all displayed images, select a tooth or a range of teeth on the tooth diagram, and click Set Teeth of All. The selected tooth sequence will be assigned to all displayed images.

To change the date of an image, select it and click Set Date of Selected. To change the date of all displayed images, click Set Date of All. The date can only be changed on images that are NOT marked as “Original”.

To rotate an image, select it and click Rotate Selected. To mirror an image, select it and click Mirror Selected. You can only mirror images that are NOT marked as “Original”.


To use the auto-numbering feature, drag the images to a mounted position — for example, teeth #1-3 on the screen’s upper left, bitewings in the center, etc. Click **AutoNumber** and the images gain the proper tooth numbers and will position on the screen appropriately.

### C.2 DEXpan

DEXpan is the link between digital panoramic software and DEXIS. It allows for the transfer of a digital panoramic/cephalometric X-ray image from the digital panoramic software to the DEXray extra-oral screen. Once on the screen, it can be stored in DEXray along with the patient’s intra-oral X-rays. It is available for use by the Image Management Tools.

To operate this program, you must have an authorized digital extra-oral (panoramic) system whose software is recognized by DEXIS. Please contact Technical Support or your representative for information on specific product recommendations.

DEXIS Imaging Suite recognizes two types of interfaces: Panoramic digital sensor that is attached to a panoramic X-ray unit and a phosphor plate scanner. Both systems take the place of standard film. In the latter, you have the ability to use panoramic and cephalometric plates if your unit accepts these.

Once your digital extra-oral hardware (digital sensor on panoramic X-ray unit or phosphor plate reader) and panoramic capture software are installed, the DEXpan program can be activated.

To start the process of obtaining a digital image, open the patient’s DEXray extra-oral screen.

**Digital Sensor**

Place the patient into the panoramic unit. To capture the image, click the X-ray capture icon or press “X” on your keyboard to open the panoramic capture software and expose the digital sensor as you would standard film.

Once complete, the image appears in the panoramic X-ray capture screen. Close this screen to move the image into the DEXray extra-oral screen.
**Phosphor Plate-To-Digital System**

Start by loading the plate into the cassette and mounting the cassette on your panoramic unit. Place the patient into the panoramic unit and take your image as you would with traditional film.

Once the exposure is complete, remove the plate from the cassette and load into the dedicated reader according to the manufacturer’s instructions.

Click the X-ray capture icon or press “X” on your keyboard to open the panoramic capture software. Choose plate size and click the Start (or Scan) button.

Once complete, the image appears in the panoramic capture screen. Once this screen is closed, the image moves to the DEXray extra-oral screen.

**C.3  DEXIS i-CAT Link**

The DEXIS i-CAT Link optional module integrates i-CAT based cone beam CT systems into the DEXIS Imaging Suite. Supported systems include:

- Imaging Sciences i-CAT 17-19
- GXCB-500 HD
- KaVo 3D eXam and 3D eXam- i

DEXIS i-CAT Link allows you to schedule patients for volume or pan acquisition. The patient data is passed automatically from DEXIS Imaging Suite to the acquisition software, so that data does not have to entered twice. For each acquired volume DEXIS i-CAT Link stores a placeholder image in the DEXIS image database that serves as a link to the volume. Clicking the placeholder image opens the volume in the Vision 3D viewer program. Acquired 2D images — pans and exported slices — are stored in the DEXIS image database to be directly accessible in the DEXray imaging program.

**C.3.1 INSTALLATION**

The following software has to be installed before installing DEXIS i-CAT Link:

- DEXIS Imaging Suite
• Vision 3D Viewer
• VisionConnect

Having installed these prerequisites, run the DEXIS i-CAT Link setup program to install DEXIS i-CAT Link in the DEXIS software folder. The setup program will copy the necessary files and will add the necessary settings to include DEXIS i-CAT Link into the DEXIS Imaging Suite.

DEXIS i-CAT Link requires a separate license code.

C.3.2 Operation

If DEXIS I-CAT Link is installed, the DEXray toolbar will show an additional 3D icon.

Click the 3D icon to schedule a patient for X-ray acquisition with the 3D device. The patient name and other known information will be automatically transferred to the acquisition workstation.

After acquiring a volume, a placeholder image will be shown in the extra-oral X-ray section of the DEXray program, which contains a link to the acquired volume.
C.3.3 Cooperation with DEXIS Integrator

Users of DEXIS Integrator have the additional option to acquire volumes and to view acquired volumes directly from their practice management system.

If DEXIS I-CAT Link is installed, Integrator shows an additional 3D icon. Click this icon to schedule a 3D acquisition. Click the shown placeholder image to open the acquired volume in the Vision 3D viewer.
C.4  The Integrator

The innovative Integrator™ software represents the next generation in the seamless integration of digital imaging software with practice management programs. It displays preview thumbnails of all available radiographic and photographic images in a floating window that is automatically synchronized with the record of the selected patient. This enables the user to have direct and immediate one-click access to the images from the patient’s records.

The Integrator is available now for all major practice management programs, including Dentrix® G3 v13, G4 v14 and Enterprise 4; Easy Dental® 2008 and 2009; Practiceworks® 7; Softdent® 12; and Eaglesoft® 14 and 15.

An open interface allows manufacturers of practice management programs to attach their software to DEXIS Integrator with little effort. The following manufacturers have implemented this integration of the DEXIS Imaging software through Integrator:

- Dentisoft Technologies: Dentisoft Office Desktop

Integrations using the open interface are maintained by the respective companies, and DEXIS takes no responsibility for them. DEXIS is independent (and thus not affiliated with or a licensee of) the aforementioned companies. Refer to the appropriate DEXIS Integrator user manual for specific information on the practice management programs supported.
CAUTION

To avoid improper linking and/or loss of data, installation of DEXIS Integrator should not be attempted without assistance from DEXIS Technical Support. Always back up your image database before installing the Integrator!

All patient records are entered and chosen through your practice management program. The Integrator will obtain information about the selected patient from the practice management program automatically without user intervention.

Once the Integrator is installed and verified, open the chairside program of the practice management program and select a patient. The Integrator screen will appear and will show the images already present in DEXIS. Most practice management programs require that the chairside program (sometimes called ‘charting program’ or ‘clinical module’) be installed and open. This may require a separate license. With some practice management programs the Integrator already appears when the patient is selected from the patient list.

You may size and position the Integrator window so that it best fits into the screen layout of the practice management program. Once configured, the window will always be displayed in the same position and size.

You may now use the icons on the Integrator screen to view the stored images on the DEXray and DEXimage intra-oral and extra-oral screens. Click the DEXIS logo to show program information, to open the DEXIS Imaging Suite user manual, or to access the DEXIS web site.
Click on an image to open an enlarged version in DEXview, where you may enhance it by changing the contrast or by using ClearVu.

Click the highlighted icon again or click anywhere on the background of the Integrator to open the DEXIS Imaging Suite so that you have full access to the DEXIS tools and can acquire new images. When you’re finished, close the DEXIS Imaging Suite and Integrator will re-appear.

To close Integrator, click the ‘x’ in the upper right corner. To reopen, click the DEXIS icon on the taskbar.

When you select another patient, that patient’s images will appear in Integrator.

Right-clicking the icon on the taskbar will offer other options:

• **Hidden Mode** — when this box is checked, the Integrator will remain closed and left-clicking the taskbar will open the DEXIS Imaging Suite (see below).

• **Move to Home Position** moves the Integrator window to its original position and size.

• **Exit** closes the Integrator. Note that you will need to close the practice management program before you close Integrator.

• **Continue** closes the popup dialog and continues operation in the selected mode.

**Hidden Mode**

*Hidden Mode* lets Integrator run in background without its window being displayed. This may be useful if your screen is small and you find the window showing the selected patient’s images inconvenient.

To switch to Hidden Mode, right-click the DEXIS taskbar icon and check the appropriate box. To switch back to standard mode, uncheck the box.

When in Hidden Mode, left-click the taskbar icon to open the DEXIS Imaging Suite for the selected patient.
Installing a Keyboard Shortcut

If you are used to opening DEXIS Imaging Suite by typing a keyboard command rather than using the mouse, you may install a keyboard shortcut by creating an icon on your desktop, starting the Integrator, and specifying the desired shortcut key. The example shown starts DEXIS Imaging Suite through the F10 key.
**APPENDIX D**

*Administrator Functions*

D.1  **DEXcopy**

DEXcopy can be used to transform the database when changing practice management programs (PMPs), or to fix the database if images are accidentally moved to a wrong directory.

The DEXcopy program should be used only after having been advised by trained DEXIS technical support personnel.
D.1.1 Server Settings

By default, DEXcopy uses the database settings set up in DEXIS Imaging Suite; refer to “Setting Data Preferences” on page 31. However, you can check Select Server Settings and use controls to operate on another database.

- Server: The name of the SQL server instance. The general format of the SQL server is Server\Instance where server is the computer name and instance is the instance name of the SQL server installed. The default instance will be unnamed (such as “Server” or “.” for the instance installed on this computer).
- Initial Catalog: The name of the database catalog within the database.
- SQL Server Authentication: If unchecked, the Windows user name is used to authenticate with the SQL server. If checked, the User Name and Password fields are required.
  - User Name: The SQL server user name used to access the SQL server.
  - Password: The password used to access the SQL server.
- Data Path: This is the default folder for patient and image files. Click Browse to change the location, if desired.

D.1.2 Fixing the data directory

If an image file is accidentally moved to the wrong directory, it can be moved back to the correct location by using the Disentangle Files option. This will scan the entire directory to ensure all files are in the correct place.

D.1.3 Transformation Functions

DEXcopy supports various transformation functions. There are common conflict resolution methods used by all. When a conflict, or missing ID is detected, DEXcopy can either generate a new random ID, or always ask the user for a new ID.

These options are located at the top of the form.
D.1.4 PREPARING TO USE A NEW PRACTICE MANAGEMENT PROGRAM

DEXcopy will change all patient IDs to work with the new PMP. This requires access to the data file for the PMP, or a comma separated or tab separated file.

DEXcopy works with the following types:
- Dentrix
- Easy Dental
- Softdent v11 or v12
- Comma Separated: ID, Last, First, Mid, and Date of Birth
- Comma Separated: Last, First, Mid, and Date of Birth, ID
- Tab Separated: ID, Last, First, Mid, and Date of Birth
- Tab Separated: Last, First, Mid, and Date of Birth, ID

Select Get Ids from practice management software option under Transformation Functions.

Click Start Transfer. A Windows browser will open up to allow the user to select the PMP data file, or comma or tab separated file.

D.1.5 SIMPLE TRANSFORMATIONS

- Always ask for a new patient ID: For every patient in the database, DEXcopy will ask the user to enter a new ID.
• Insert letter in front of patient ID: For every patient in the database, DEXcopy will modify the ID by inserting the specified letter in front (i.e. “7” becomes “A7”).
• Strip a letter and zeros for patient ID: For every patient in the database, DEXcopy will remove the leading letter and all leading zeros from the ID (i.e. “B0075” becomes “75”).

D.1.6 STARTING A TRANSFORMATION

Click Start Transfer to execute the selected transformation.

D.2 DEXSAFE

DEXsafe is a simple program used to backup and restore the DEXIS database.

Please note: Enterprise installations are strongly encouraged to make use of redundant backup systems for their data.

D.2.1 DATABASE SETTINGS

Before using DEXsafe, make sure the database settings are correct. These settings specify the database used for backup and restore.
By default, DEXsafe will use the database settings set up in DEXIS Imaging Suite; refer to “Setting Data Preferences” on page 31. However, you can use controls on the Settings tab to operate on another database.

- **Server**: The name of the SQL server instance. The general format of the SQL server is `Server\Instance`, where `server` is the computer name and `instance` is the instance name of the SQL server installed. The default instance will be unnamed (such as “Server” or “.” for the instance installed on this computer).

- **Database Name**: The name of the database catalog within the database.

- **SQL Server Authentication**: If unchecked, the Windows user name is used to authenticate with the SQL server. If checked, the **User Name** and **Password** fields are required.

  - **User Name**: The SQL server user name used to access the SQL server.
  - **Password**: The password used to access the SQL server.

- **Data Directory**: This is the default folder for patient and image files. Click **Browse** to change the location, if desired.
• Backup Storage Path: This is the directory in which all the backups are stored. This only needs to be set once. The backups are separated into multiple directories based on the server computer name. They are further separated into sub directories based on the backup date-time. This means that all of the backups for all servers can be stored under one single directory.

D.2.2 Creating a Backup

Two types of backups can be performed.
• A Full Backup makes a copy of every file. It is a complete snapshot of the database.
• An *Incremental* backup only copies files that have been changed or added since the previous backup.

After selecting the backup type, click *Start Backup*.

### D.2.3 Deleting backups

A list of all backups can be found at the bottom of the Backup tab. Select one and click *Delete Database* to delete.

**Please note:** Deleting a full backup will delete all incremental backups based on it. Deleting an incremental backup will cause all incremental backups based on the same full backup, but taken after it, to also be deleted.
D.2.4 Restoring Backups

To restore a backup, select it in the drop-down list, then click Start Restore.

Please note: Data should be restored only under the supervision of trained DEXIS technical support personnel. You will be required to enter a password to restore the database.

After entering the password, the database will be restored.

D.3 DEXsync

DEXsync is a utility used to synchronize multiple DEXIS databases for use in enterprise environments.
**Please note:** The DEXsync utility is used for synchronizing and moving the DEXIS database and should only be used by trained personnel. For assistance with this utility and to avoid irreversible changes to your database, please contact DEXIS Technical Support at 1-888-883-3947.

In order to synchronize, two databases need to be configured, the client and the server databases. Click the browse button next to each to specify the data path. All SQL server settings are loaded automatically based on data path selection.

DEXsync has two modes of operation:

- **Merge local client into remote server database**

![Diagram of Client and Server Databases](image)

Database changes are moved only from the client database to the server database.
• Synchronize local client and remote server databases

Database changes are moved from the client to the server. Also, changes on the server are moved down to the client.

D.3.1 Starting a synchronization

Click Start to begin synchronization. The following dialog is displayed:

![DEXSync dialog](image)

This displays the progress of the synchronization, and automatically closes when the synchronization is completed.

D.3.2 Continual Sync

Checking Check for updates every allows DEXsync to synchronize on a regular basis. The number of minutes is entered in the edit box.
When Start is clicked, the database is synchronized immediately. DEXsync will then wait for the specified interval to expire, and synchronize again. Press the cancel button to stop synchronizing.

The interval is the number of minutes from the start of a sync to the start of the next sync.

![Sync intervals diagram]

### D.3.3 Hiding the application

Each dialog of the application has a Hide button. Click this button to hide the application. The only way to interact is through the DEXsync icon in the system tray. Right-clicking this opens a menu. Choose Restore to display the application dialog.

The system tray icon is always visible, and the menu is always available.
D.3.4 NAME CONFLICTS

When synchronizing a patient with a name change, a dialog pops up for verification that this is a correct change.

Click Merge to propagate the change up to the server. Click Skip to prevent the change from propagating.

D.3.5 RUNNING FROM A BATCH FILE

DEXsync can be started from a batch file. The following command line options are available:

DEXsync.exe [parameters]

Optional parameters:

/M Merge client database into the server database
/S Synchronize client and server databases
/DD1=<path> Client data directory
/DD2=<path> Server data directory
/P<min> Synchronization every <min> minutes
/H Hidden. GUI is not displayed, and synchronization starts immediately.
/C No questions asked, messages are placed in the application log.

If DEXsync is configured to run from a batch file, you can easily create Windows tasks to schedule DEXsync to run at specific times, such as every evening at 10:00 pm.
D.4 Control Access Permissions with DEXsecurity

If the DEXsecurity package is installed, access to DEXIS Imaging Suite functions is controlled by access permissions. The logged in user has the right to execute a certain function if she/he has been given write access to a corresponding file in the Permissions subfolder of the DEXIS data folder. Write access to files can be granted or revoked by the administrator to individual users or to groups of users using the Windows Access Control List mechanism.

The right to execute the following functions can be individually permitted or revoked through granting or revoking write access to the corresponding files, which are located in the Permissions subfolder of the DEXIS data folder:

<table>
<thead>
<tr>
<th>Preferences.prm</th>
<th>Change Preference Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PracticeData.prm</td>
<td>Change practice data:</td>
</tr>
<tr>
<td></td>
<td>- Practice address</td>
</tr>
<tr>
<td></td>
<td>- List of providers</td>
</tr>
<tr>
<td></td>
<td>- List of referring dentists</td>
</tr>
<tr>
<td></td>
<td>- Component licensing</td>
</tr>
<tr>
<td></td>
<td>- Data folder location</td>
</tr>
<tr>
<td></td>
<td>- Rebuild index of patient file</td>
</tr>
<tr>
<td></td>
<td>- Signature and logo acquisition</td>
</tr>
<tr>
<td></td>
<td>- Report template</td>
</tr>
<tr>
<td></td>
<td>- Print and export lists</td>
</tr>
<tr>
<td>PatientData.prm</td>
<td>Add/delete patient, change patient data</td>
</tr>
<tr>
<td>XraySeries.prm</td>
<td>Setup/change predefined X-ray series</td>
</tr>
<tr>
<td>DEXsafe.prm</td>
<td>DEXsafe data backup and restore</td>
</tr>
<tr>
<td>EmptyRecycleBin.prm</td>
<td>Empty the recycle bin</td>
</tr>
<tr>
<td>DeletelImages.prm</td>
<td>Delete images</td>
</tr>
<tr>
<td>PrintImages.prm</td>
<td>Print images</td>
</tr>
</tbody>
</table>
If the permissions file for a given function is present, the function is only permitted if the logged in user has write access to the permissions file. If the permissions file is not present, the function is permitted for all users (most functions) or for administrators only (administrative functions). The following functions require administrator rights if they are not controlled by permission files:

- Change Preference Settings
- Change practice data
- Empty the recycle bin
- DEXsafe data backup and restore

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExportImages.prm</td>
<td>Export images</td>
</tr>
<tr>
<td>ImportImages.prm</td>
<td>Import images</td>
</tr>
<tr>
<td>XrayAcquisition.prm</td>
<td>Acquire X-ray images</td>
</tr>
<tr>
<td>IntraoralCamera.prm</td>
<td>Acquire intra-oral camera pictures</td>
</tr>
<tr>
<td>DigitalCamera.prm</td>
<td>Acquire digital camera pictures</td>
</tr>
<tr>
<td>DEXscan.prm</td>
<td>Scan images with DEXscan</td>
</tr>
<tr>
<td>DEXimplant.prm</td>
<td>DEXimplant implant planning</td>
</tr>
<tr>
<td>DEXwrite.prm</td>
<td>DEXwrite report writer</td>
</tr>
<tr>
<td>DEXclaim.prm</td>
<td>DEXclaim insurance claims</td>
</tr>
</tbody>
</table>
Appendix E
Specifications and Standards

The DEXIS Imaging Suite conforms to the IEC 60601-1-4 standard.
All IT components used to run the DEXIS software need to conform to the
IEC 60950-1 standard.
The DEXIS Imaging Suite in combination with dental imaging devices builds
a medical, electrical system. Please check the respective imaging devices
manuals for conformity to the IEC 60601-1 and IEC 60601-1-1 standards.

CAUTION
US Federal law restricts this device to sale by or on the order
of a dentist or other licensed practitioner.
Appendix F
Frequently Asked Questions

1) Question: How do I e-mail images?
Answer: Click the Export icon, select E-mail, then select the images to send and click Export Images. This will create a message in your e-mail program and will attach the images.

2) Question: Why do I get a honeycomb pattern on the X-rays when using the DEXIS classic sensor?
Answer: Verify that the sensor disk is installed and that you are using the proper sensor number when taking X-rays.

3) Question: Why does my image look fuzzy on the screen?
Answer: Make sure your monitor is set to best quality; test it with DEX-screen. Verify that you are using the proper sensor number when taking images. Verify that you have the proper exposure setting and that the cone is touching the face.

4) Question: How do I delete a patient?
Answer: First, you must delete all images in the patient’s file. Then, go to the DEXIS Administration Screen, choose the patient and click Delete.

5) Question: I took X-rays in the wrong patient’s file. How do I move them into the correct patient’s file?
Answer: First, export the images from the wrong patient to the hard disk. Once the images are exported, open the correct patient’s file. Import the images from the hard disk. Lastly, delete the images from the incorrect file.
6) Question: Why does my image look better on the screen than when printed?
   Answer: This is often the case even using advanced printers. Print the image using a higher DPI on your printer. Try using different types and quality levels of paper.

7) Question: How do I change the practice name once I am using DEXIS?
   Answer: From the DEXIS Administration screen, click Preferences, then Component Licensing. Once on this screen, call DEXIS Technical Support to assist you in making this change and obtaining new registration codes.

8) Question: What if I lose the CD that came with my DEXIS sensor?
   Answer: Contact DEXIS Technical Support to arrange to have the sensor disk recreated. We can mail a new CD and/or send the sensor file via e-mail.

9) Question: Can DEXIS images be copied and then pasted into other programs?
   Answer: Yes, enlarge and enhance the desired image. While holding down the Ctrl key on your keyboard, drag the image onto the application.

10) Question: When I opened a patient’s file, some of the images were not visible. Are they lost?
    Answer: DEXIS allows you to select certain images and the view in which you would like them to be displayed. Click the Archive icon to see a full history of images for the patient.
Appendix G

Additional Help and Support

DEXIS on the Internet
www.dexis.com

DEXIS Customer Care Center (United States and Canada)
Tel: 1-888-883-3947
Fax: 1-888-833-3947
E-mail: support@dexis.com

We are happy to assist you from Monday–Friday, 8:00 am to 8:00 pm, EST.
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