DentalEye 3.2

Installation instructions
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1. **Labelling and symbols**

<table>
<thead>
<tr>
<th>![CE Mark]</th>
<th>DentalEye 3.2 is a medical device, CE-marked according to the directive 93/42/EEC.</th>
</tr>
</thead>
</table>
| ![Manufacturer Icon] | Manufacturer: DentalEye AB  
Kavallerivägen 30  
SE-174 58 SUNDBYBERG  
SVERIGE  
Tel: +46 (0)8-621 07 00  
Fax: +46 (0)8-621 07 55  
Email: info@dentaleye.com  
www.dentaleye.com  
The **date of manufacture** is shown in the software. |
| ![Info Icon] | **Read all instructions before use!** |
| ![Reference Icon] | The catalog number is DentalEye 3.2.  
Current product version is shown in the software (DentalEye 3.2.x).  
This version of the installation instructions is valid for product versions from DentalEye 3.2.1. |
| ![Warning Icon] | **WARNING!**  
This symbol alerts the user to the risk of possible injury, death or other serious adverse reactions. |
| ![Caution Icon] | **CAUTION!**  
Instructions with this symbol must be followed in order to ascertain proper function of the equipment. |
2. **Introduction**

DentalEye 3.2 is an image management software for dental practices. Before the DentalEye software product is put to clinical use, it must have been properly installed and configured according to the Installation instructions (this document).

Installation and configuration is not intended to be performed by an end-user, but by an authorized DentalEye representative or an IT technician with experience in installing software and hardware used in dental practices.

The Installation instructions are to be followed together with the Instructions for use. Both documents are distributed with the software and are also available from the distributor or DentalEye AB. Please refer to the Instructions for use regarding product description, regulatory information, intended use and details regarding the user interface and clinical use of the product.

Before installing and configuring software components, please consult the sections regarding System requirements and Supported equipment to establish that the product is suitable for the intended use and compatible with the available equipment.

There are two editions of the software, DentalEye 3.2 Pro for practices without need for DICOM communication and DentalEye 3.2 Enterprise which is DICOM 3.0 compliant and supports communication with a DICOM storage server, typically found in hospitals and large dental practices. The DICOM Conformance statement for DentalEye 3.2 is available from DentalEye AB.

Please refer to the Instructions for use for more information on the Pro and Enterprise editions. This document describes both editions, with differences noted where applicable.

3. **System requirements**

3.1. **Workstation system requirements**

The recommended computer hardware for a workstation running DentalEye 3.2 is:

- **Processor**: Intel Core i3-compatible or better
- **RAM**: 4GB
- **Disk**: 40GB available
- **Network adapter**: 1 Gbit/s
- **Screen resolution**: 1280x1024, 32 bit color or better

A medical display monitor, (DICOM monitor) is strongly recommended. Alternatively, a high-quality display, properly calibrated, may be used if image rendering is considered acceptable for clinical use.

DentalEye 3.2 is supported on the following operating systems:

- Microsoft® Windows 7, 32-bit or 64-bit
- Microsoft® Windows 8.1, 32-bit or 64-bit

For security reasons, the Windows operating system should be updated with the latest service packs and Windows updates. Use of anti-virus software and firewalls is also recommended, but such software must be properly configured to not interfere with DentalEye and image transfer over the network.
The **Instructions for use** and the **Installation instructions** (this document) are installed as PDF files that can be opened from the start menu or in the application. For this to work, a **PDF Viewer** such as Adobe Acrobat must be installed on the computer.

DentalEye can be installed with optional software modules, so called **plugins**, to connect DentalEye with third-party hardware such as sensors and cameras, with software such as other imaging applications or patient management systems and with services for e.g. image transfer.

The third-party hardware and software and the plugins may have different system requirements than those listed above. For example, some sensors may work in 32-bit Windows but not in 64-bit.

Such additional system requirements are listed for each plugin in the **Appendix: Component-specific instructions**. It is important to verify that any hardware that is to be used with DentalEye is supported by the plugin and that the driver version is compatible with DentalEye and with the operating system.

### 3.2. Database server and network system requirements

DentalEye 3.2 requires a database running on **Microsoft® SQL Server 2012**. It is not necessary to install DentalEye 3.2 on the database server.

For best reliability and performance, it is recommended to connect workstations and servers in an Ethernet network with at least 1 Gbit/s bandwidth, in network adapters, switches and cables.

It is recommended to run DentalEye in a Windows domain, but the system works on a single computer or in a peer-to-peer network as well. DentalEye can run in a terminal environment, but performance and hardware compatibility with imaging devices must be considered.

The network and server performance, as well as storage space for the database server and backup system, need to be dimensioned for the expected workload. This is determined by the number of workstations in the network and the type and size of the images captured. Photographic images with high resolution are typically much larger than radiographs.

User statistics show that a dental practice after 5 years has roughly 10-20 images per patient, which typically occupy 3-5 MB per patient. For a medium-sized dental practice with 5-10 workstations, the total database size could reach about 50-200 GB after 5 years.

Based on these estimates, calculate the storage capacity that will be needed in the current environment during the lifetime of the server and storage system before upgrading server hardware and installing DentalEye.

**DentalEye 3.2 Enterprise** also requires a SQL Server database but in addition supports redundant storage to a **DICOM storage server**. If such a server is deployed, the total storage space required roughly doubles. Depending on configuration, even network bandwidth could be affected. Images can alternatively be transferred asynchronously to the DICOM storage server which reduces bandwidth use. Contact DentalEye AB for assistance when such a configuration is to be deployed.
CAUTION!
Follow the system requirements for server, network and workstation performance!
If there are reliability or performance problems when accessing the system, there is a risk for delayed dental treatment.

4. Supported equipment

DentalEye can be connected to many third-party hardware and software systems used in the dental practice. Connection to X-ray devices, cameras and other hardware is made via separately installed plugins. Image transfer via files or internet services is also handled via plugins.

Integration with patient management systems (PMS) is typically performed by the manufacturer of the PMS via an application programming interface (API) supplied by DentalEye. If such integration is not available from the manufacturer of the PMS, DentalEye supplies a few alternative methods of connection using software components described below.

Below is a brief description of how supported equipment can be connected to DentalEye using the different types of plugins included with the software.

4.1. X-ray devices

X-ray devices include intraoral sensors, phosphor plate scanners and panoramic X-ray systems. Typically, different X-ray devices from the same manufacturer use a plugin with the name of the manufacturer. There are some exceptions, as noted in the appendix, for instance when a certain plugin works with equipment from different manufacturers.

Below is a list of the X-ray plugins available with DentalEye 3.2. If the manufacturer of the device is supported, please refer to the relevant section for the plugin in the Appendix: Component-specific instructions, for detailed information whether a specific device is compatible with DentalEye and how to connect it.

- Belmont BelSensor GOLD
- Carestream/Kodak
- Dentalmind Digital X-ray II
- Dentalmind Digital X-ray 3
- Denterprise QuickRay HD
- Dentron USB
- Dürr VistaEasy
- ImageLevel NV SA MDX3
- Instrumentarium
- Kavo Gendex
- Morita
- Planmeca
- Schick Intraoral (supports Schick and some Sirona sensors)
- Sirona
- Soredex (supports Soredex and some Instrumentarium devices)
- SUNI SDR
Install the plugin and software supplied with the device, such as drivers with the correct version, according to the instructions in the appendix. After installation, refer to chapter 9 regarding settings in the plugin, such as image enhancement. It is important to **calibrate the imaging system** according to the instructions in chapter 10 before clinical use takes place!

Devices such as scanners and panoramic X-ray systems can be placed centrally and shared by all workstations by setting up the **Developer** feature in DentalEye. Please refer to chapter 7.

### 4.2. Intraoral cameras

DentalEye supports intraoral cameras from a variety of manufacturers. Most intraoral cameras and some other equipment, such as microscopes, use DirectShow drivers and can be connected via **Video plugin**, but there are some exceptions such as Gendex intraoral cameras that instead connect via the Gendex plugin. Some intraoral cameras connect via **TWAIN plugin** (such as the Kodak/CS 1500) or via **Camera WIA plugin**. See the corresponding sections in the appendix to determine which plugin to use for installing an intraoral camera.

Many cameras have **buttons** on the hand piece for freeze/release and capture functions. Some intraoral camera models are only partially supported in the sense that these buttons may not work, whereas image capture almost always works. As an alternative to using the hand piece buttons the Video plugin also supports foot switches connected to either COM ports or game ports (emulated or real).

### 4.3. Extraoral digital cameras

Extraoral digital cameras can be used either in import mode or in direct capture mode.

**Import mode** means that the images are imported from the camera memory card after they are taken. The import can be done by connecting the camera via a cable or using a memory card reader. All digital cameras support import mode.

Import mode is achieved using the **Camera WIA plugin** or the **Autoimport plugin**. The Autoimport plugin is configured to point to a folder and automatically imports any files saved to it, optionally deleting them after the import. See the Autoimport section in the appendix.

**Direct capture mode** means that the camera is connected to the computer with a cable or via Wi-Fi and the image is imported into DentalEye directly when captured. Cameras supporting direct capture include most DSLR camera models like Canon EOS and the Nikon D series.

Direct capture mode can be achieved using the **Camera WIA plugin** for most DSLR cameras (see appendix). The exception is Canon EOS cameras, using the Autoimport plugin in combination with the “EOS utility” software from Canon. Refer to the section **Canon EOS direct capture** in the appendix for instructions on configuring the Canon EOS Utility for use with DentalEye.

### 4.4. Flatbed and film scanners

Flatbed scanners and film scanners can be used to scan analog radiographs and photographs and to import documents as images into DentalEye. Flatbed and film scanners usually have a TWAIN driver and can therefore be connected via the **TWAIN plugin**.

For occasional use, scanning may also be performed directly from the application without a plugin with the **Acquire** function of the **Import** dialog. Please refer to the **Instructions for use** for more details.
4.5. **Image transfer and communication**

The DentalEye application contains features for image file import and export; see the [Instructions for use](#) for more information. If the users often import files from the same folder or removable storage device, such as the memory card from a digital camera, the workflow can be made easier by setting up **Autoimport plugin** or **Manual Import plugin**. Similarly, the **Export plugin** can be used to simplify file export to a specific folder.

Files can be transferred via the internet using services such as C-Takt Link and Medspace. To use a service, install the [C-Takt Link plugin](#) or [Medspace plugin](#) and configure the plugin with the account login information for the service, according to the relevant section in the appendix.

For DentalEye Enterprise, the **DCM Store plugin** can be used to transfer images to DICOM storage servers to remote locations other than those configured in the network environment. The plugin is included with the software installation but must be purchased separately before it can be installed. Please contact DentalEye AB for more information.

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**CAUTION!**

Only install compatible hardware and software combinations and verify that the system works after installation! If unsupported hardware or software components are installed, the system or the component may not work, causing a risk for delayed dental treatment.

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5. **Installation**

The DentalEye 3.2 software is distributed as a single executable file containing a self-extracting installer package. The package contains the DentalEye application, all available plugins and software tools and documentation in all the supported languages. The installer package is available for download from the manufacturer's website, [www.dentaleye.com](http://www.dentaleye.com), or supplied via authorized distributors.

Every DentalEye 3.2 installer package is labelled **3.2.x**, where x is a version number. The name of the executable installer is **DentalEyeSetup3.2.1.exe** for the first version of DentalEye 3.2 and similar for future versions. The file name of the installer package must not be changed or the installer will not run.

It is only possible to install components from one package version. The package configuration is tested and verified. Attempts to mix components from different versions of DentalEye will cause the installation to fail. It is not possible to install DentalEye 3.2 on a computer with a previous version of DentalEye already installed until the previous version is completely removed.

If the DentalEye configuration becomes corrupted or if components with wrong version number are detected, the application will alert the user with a message stating "**NOT FOR CLINICAL USE**". In that case, uninstall DentalEye and all components completely and reinstall from a valid installer package.
In order to run the installer, the user must have administrator rights in Windows. When started, the installer will show a list of the available components. Select DentalEye 3 to install the application and select the plugins needed to connect the equipment attached to the computer (see chapter 4 and the relevant section in the appendix).

The installer needs to be run on every workstation in the network. Often, different components are installed on different workstations, depending on the equipment in the treatment room. In large organizations, it is possible to automate the workstation installation. Contact DentalEye AB for more information.

It is possible to re-run the installer at a later time to add components not previously selected. All components that are selected in the list will overwrite previously installed components. This way, it is possible to reinstall the application or components if the installation has become damaged.

The installer will not uninstall components if they are deselected. The application and all components can be uninstalled with the Programs and Features option in Windows Control panel.

No hardware drivers or other third-party software needed to connect specific equipment is included in the DentalEye 3.2 package. Drivers and other software can be downloaded from the equipment manufacturer's website or is included with the equipment. Only install drivers with the correct version number according to the relevant plugin section in the appendix.

**CAUTION!**

Only install tested software configurations, and verify that the system works after installation! If components such as plugins or drivers have a different version than those listed in the Installation instructions, the system or the component may not work, causing a risk for delayed dental treatment.
6. Database setup

The DentalEye database consists of two parts: a SQL server database that stores patient information and image metadata and a directory structure in Windows that contains the image files belonging to each patient.

The SQL server database and image store typically reside on the same server for small- and medium-sized installations. In large organizations, it may be desirable for performance reasons to separate the server roles and place the image store on a Storage Area Network (SAN), possibly combined with clustering of database servers and/or storage servers.

In DentalEye Enterprise installations, redundant storage can be provided by a DICOM storage server. In such installations, additional redundancy can be obtained if the DICOM storage server cluster is physically separated from the DentalEye database servers.

**CAUTION!**
Setup database and network combinations that have been tested according to the Installation instructions. If the image database connection is lost, there is a risk for delayed dental treatment.

6.1. SQL Server installation

The DentalEye database requires Microsoft SQL Server. It is available in different editions for large and small organizations and the SQL Server Express edition is available for download at no cost. See [https://www.microsoft.com/en-us/server-cloud/products/sql-server/](https://www.microsoft.com/en-us/server-cloud/products/sql-server/) for more information.

Planning and configuration of a large SQL Server installation, possibly in a failover-cluster, could be a complex task. Database administrators may contact DentalEye AB for assistance before deployment.

For small and medium-sized dental practices, it is possible that a SQL Server Express may suffice. Below is a short description of SQL Server Express setup for a small- or medium-sized installation. The description illustrates the general concepts, but SQL Server installation is otherwise beyond the scope of this document. It is the responsibility of the installer or database administrator to install and configure the database server according to the needs of the organization.

**SQL Server Express installation and setup**

Download and run the SQL Server Express with Tools installer. This version contains SQL Server Management Studio which may be needed for maintenance such as restoring backups.

**Create server instance**
The installer will ask for the instance name to set up; either the default instance “MSSQLSERVER” which will allow connections using just the server name, or a named instance – the default named instance is “SQLExpress”. If the server already runs existing SQL Server instances, e.g. for a patient management system database, it is recommended to create a separate instance for DentalEye – change the name of the named instance to e.g. “DENTALEYE”. If this is the only instance on the server, the default instance can be selected.
Server configuration
Change the setting for Authentication mode: select mixed mode to allow Windows authentication as well as enabling the administrative user “sa” login. Choose a password for the “sa” user. Write down the selected "sa" password and store it in a secure location – the password will be needed later to create and restore database backups!

Accept incoming connections
This step may not be needed for a single-user installation where DentalEye, SQL Server and the database are stored on the same computer.

Enter SQL Server Configuration Manager and configure the server to accept incoming connections. Select “Network Configuration” and “Protocols”. Enable the options TCP/IP and Named Pipes.

Go back to SQL Server Services and restart the SQL Server. Make sure that it starts and that the SQL Server Browser is running.

Incoming client connections may be blocked by the Windows firewall or by a third-party security application. Make sure that the necessary ports are open in the firewall(s).

If database access is to take place using Windows authentication, all DentalEye user accounts need to be properly configured with read and write access rights to the SQL Server. This is easier to maintain in a Windows domain environment.

6.2. Image store setup
The image store is a shared directory on a server. The image store server can be the same server running SQL Server or a different server in the network. The image files can be located on the workstation itself for single-user systems (in that case there is no need to share the folder on the network).

DentalEye will create the directory structure in the share when the database is created. First create the share and set the user access rights. All DentalEye users (domain users or local Windows accounts) need both read and write access rights to the image store directory structure on the operating system level.

The image store path should be made available to all clients through a UNC path on the form \\server\imagestore. It is not recommended to use a mapped drive in the path such as X:\imagestore. Such mappings are user-specific and may not be available when the application is run as an administrator.

The image store path is stored in the SQL database. If the SQL database is moved to a new server or if a backup is restored in a new environment, the image store path will need to be changed to the new location.

CAUTION!
Configure the network settings properly according to the Installation instructions. If the system or a component does not work, there is a risk for delayed dental treatment.
6.3. Database creation

In order to create a new database, start DentalEye on a workstation. In the System menu, select Create new database. Under Server name, enter the name of the SQL Server instance set up previously, e.g. “SERVER\DENTALEYE” (replace SERVER with the actual name of the server) if a named instance called DENTALEYE was created. If the default instance was installed, just enter the server name.

Type a name for the new database, e.g. “DentalEyeDB”. Then select the path to the image store: browse to the image store share configured previously, e.g. \server\imagestore. Click OK to create the new database.

A SQL Server login box is presented. Enter username: “sa” and enter the password that was selected during the SQL Server installation. Windows authentication can also be selected, e.g. in a Windows domain environment with domain users properly configured with access rights to the SQL Server. Click OK to create the new database.

6.4. Database selection

To connect to an existing database, for example when adding a new workstation to the network, first start DentalEye on an existing workstation and select Database information in the System menu. This will show the existing server instance name and the image store path. Note the information and use it on the new workstation.

In the System menu, select Connect to existing database. Enter the SQL Server authentication parameters and under Server name, enter the name of the SQL Server instance where the DentalEye database is stored. If the client can connect to the server, a list of databases on the server will show up in the list. Select the correct database in the list. The image store path stored in the database is shown and can be changed, e.g. if migrating or restoring a database to a new environment. Click OK to connect to the existing database.
If the SQL Server or the image store cannot be reached from the new workstation, check the network settings and verify that any firewall software in the server and/or the workstation is configured to allow connections.

**CAUTION!**
Configure the database settings properly according to the Installation instructions. If the system or a component does not work, there is a risk for delayed dental treatment.

6.5. **Database backup**

**CAUTION!**
Configure a system that creates regular backups of the SQL database and image store and verify that the backup system works! If the image database is lost, there is a risk for delayed dental treatment.

It is essential to create regular backups of the SQL Server database as well as the image store files. Backups need to be taken daily or even more frequently and transferred to an off-site location. Third-party backup software is commercially available that is capable of backing up a SQL Server database as well as any other data stored at the practice, such as the patient management system database. In some editions of SQL Server, it is also possible to schedule automatic backups using the SQL Server agent in Management Studio.

If such options are not available, a simple SQL Server backup script is included with the DentalEye installation. After manual configuration, it uses command-line tools to create a SQL database backup to a file that can then be copied to the backup media by any file-copy tool.

The sqlbackup script is found in the application folder in Program files. Configure the script according to the instructions in the appendix and then schedule it to run regularly with Windows Task Scheduler.

The script will create a SQL backup file, e.g. “DentalEyeDB.bak”, in the desired folder, by default “C:\DEBackup” on the server. The whole DentalEye patient database is then backed up or moved to a new server by copying the “DentalEyeDB.bak” file and the entire contents of the image store folder including subfolders.

6.6. **Move or restore database**

If the patient database is destroyed or corrupted, possibly due to a database server crash or a fire, it may be necessary to restore the most recent existing backup.

When performing a planned migration to a new server, start by creating a fresh backup according to the instructions above. The backup consists of the following:

- a file named “DentalEyeDB.bak” (or similar) containing the backup of the SQL database
- the entire image store directory structure including files and subfolders
Install a new SQL Server and set up a new image store share according to the instructions above. Next use Management Studio to restore the .bak file and copy all the image store contents to the new location. Make sure all users have read and write access rights in the new image share.

Launch DentalEye on a workstation and select Connect to existing database. Select the database on the new server and click OK to verify the connection. Open the Connect to existing database again and change the image store path (stored in the restored database) to the correct path of the new image store location. Note: do not use Add to create a second image store folder.

Test the restored or migrated system by accessing patients and old images on all workstations. Verify that image capture still works.

### 6.7. Convert existing database

If an image management system from another manufacturer was used before installing DentalEye 3.2, or if the previous DentalEye version was used with a Microsoft Access database (see chapter 13), the existing patient database may need to be converted to DentalEye 3.2 format in order for historic images to be accessed from DentalEye 3.2.

In such a case, DentalEye 3.2 is typically installed with a new, empty database and new images are captured into the database. A backup is taken of the old patient database and sent to DentalEye AB for conversion. The order will be placed in a queue and it may take some time before the converted database is returned. In the meantime, old images can be viewed in the old image management system whereas all new images are stored in the new DentalEye 3.2 database. When the conversion is completed, the converted data is merged with the active database and historic images become available in DentalEye 3.2.

### 7. Application setup

**WARNING!**

Application settings must be set carefully according to the instructions and to the current clinical environment. If the settings are wrong, there is a risk of misdiagnosis or malpractice.

Most of the settings in the main DentalEye application are accessed from the Preferences dialog in the System menu. The dialog consists of a number of tabs with different groups of settings. The settings are sometimes stored in the common database and thus affect all users and all computers. Other settings are stored in the registry and affect either the local computer or the currently logged in user.

In order to save some settings after changing them in the Preferences, Windows administrator rights are needed. If User Access Control (UAC) is turned on, the application must be started by right-clicking the DentalEye 3.2 icon and selecting Run as administrator. A warning message alerts the user when entering Preferences if settings cannot be saved because the user lacks administrator rights.

Below is a short description of the tabs in the Preferences dialog. Some of the settings are described in greater detail in sections below. Only the first tabs, User and License, are visible for end-users. To access the other tabs, first click the button Advanced and confirm the warning message.
User
These settings are intended for end-users and control the language and user-interface appearance for the current user. There is also an option to reset the menus and toolbars if they become corrupted.

License
On this tab, it is possible to view and manage license keys stored in the database. See chapter 8 for more information.

General
These settings allow Referrers to be configured and affect how the system prompts for Referrer during capture. A Referrer is the person requesting the images and who is later responsible for approving them.

Integration
These settings control the connection to some patient management systems (PMS). For instance, it is possible to disable the built-in patient edit and search functions when using a PMS.

Display
Settings that control the rendering of images on the computer screen. Use these settings with caution and remember that monitor calibration may be affected (chapter 10).

Capture
On this tab, there are settings for image enhancement and other processing, such as mirroring, which will be applied on images after they are captured with a specific plugin but before they are shown in DentalEye. Individual processing can be applied to different image sources. Do not use additional image enhancement in the Capture settings if it is already applied in the plugin settings. See chapter 9 for more information.

Security
These settings control the login method and user access rights. Described in more detail below.

Network
This tab contains settings for the Developer feature for clients and servers. See below.

DICOM (DentalEye Enterprise only)
Settings for controlling access to DICOM Storage servers and Modality worklist servers. See below.

Image format
These settings control the image file format in the DentalEye database. The choice of file compression affects the size of the image files and the database but could also decrease the image quality. This setting affects all users and should be changed with caution and only if necessary.

7.1. Security settings
The security tab controls access rights within DentalEye for different users or groups of users. The login method is by default to use the login name in Windows. This can be changed to AD login for Windows domains or Application login for peer-to-peer networks. If these settings are used, there is no need to log out from Windows to change user and DentalEye presents a login prompt when launching the application. In this setup, it is also possible to configure DentalEye to use swipe cards for logging in and approving images.
User access rights can be modified for the **Default user**, which affects new users that are added, or separately for each existing user or a group of users. Select a user in the left box and check the boxes to the right to control access to various features.

The installer or administrator that changes permissions for other users must have the permission to **Administrate security**, but once this user is added the **Administrate security** permission should be removed from the Default user and any ordinary users.

The user permissions are dependent on the workflow and roles of the users and should be decided together with a clinic manager or responsible dentist. See the **Instructions for use** for more information on how user permissions affect the functionality of the application.

For instance, an assistant that captures images but is not allowed to diagnose can have permission to **Edit**, **Capture** and **Import images**. A dentist should have the same permissions and in addition permission to **Approve** and **Export images** and possibly **Delete and crop**. The right to **Unapprove images** should be reserved for a clinic manager or system administrator and possibly only activated on a temporary basis. This is especially important in DentalEye Enterprise installations. Unapproving approved images is not a routine task and should only be done if the approval was made by mistake.

Installers and IT technicians need to have the permissions **Administrate application** and **Administrate plugins** in order to change the settings in Preferences and plugin settings.

---

**CAUTION!**

Configure the security settings properly according to the Installation instructions. If the system or a component does not work, there is a risk for delayed dental treatment.
7.2. **Developer setup (Network tab)**

A scanner or panoramic device may be shared by all users and accessed easily from all treatment rooms by setting up the Developer feature. The Developer feature is further described in the Instructions for use.

The shared device needs to be connected to a dedicated computer, installed with the correct plugin according to the appendix. This computer is configured to be a Developer server. Other computers are configured as Developer clients to this server. There may be several Developer servers, each identified by an ID number.

On the Developer server, enter Preferences and open the Network tab. Check the box Be a Developer server and choose an ID number. Optionally, and depending on the desired workflow, check the boxes to auto-save the images when the template is full and/or a few seconds after scanning the last image.

Next, open the Capture tab on the Developer server and select the Less prompts option for save and approve. This allows images to be saved without approval on the Developer computer.

![Screenshot of Developer setup](image)

On each of the clients, open the Network tab and check the box Be a Developer client and choose the same ID number as the server.

The clients should be configured with the default More prompts option for save and approve. This option will urge users to approve images on the Developer clients.
7.3. DICOM settings (DentalEye Enterprise only)

With the settings on the DICOM tab, a client can be configured to connect to one or several DICOM storage servers. Configure each server by entering its AE title, IP address and port number which can be obtained from the DICOM server administrator. When configuring the connection, make sure that the right network adapter on the client is selected, in case there are several adapters installed.

Multiple servers may be selected for DICOM Query and are then available for searching patients, but only one may be used for storage. In some environments, it is recommended to configure all clients with DICOM Query only (no DICOM Store) and instead setup asynchronous batch transfer of approved images from the DentalEye database server to the DICOM storage server as a scheduled job performed daily or weekly. Unapproved images may be approved and transferred at a later stage with the List unapproved series tool.

In order to access a DICOM server, the client needs to be configured with a unique Client AE title (Application Entity) and Client port number. The same information needs to be entered into the DICOM server by the server administrator. After configuring the Client AE and port, the connection to each storage server can be tested by selecting the server in the list and clicking Test connection. On the same tab, Modality Worklist Query can be enabled and MWL server settings can be configured.

**CAUTION!**

Store all images in the DentalEye database as well as in the DICOM server for redundancy. If historic images or data are lost, there is a risk of decreased diagnostic capability.
8. **License management**

After purchase, a DentalEye 3.2 installation is activated for a specified time interval, typically one year, and for a certain number of workstations. This is controlled with a license key that is entered on one of the workstations and stored in the database. When the license is renewed or if the number of workstations needs to be increased, a new key is distributed. A list of the license keys stored in the database, their type and expiry date is shown in the **License** tab in **Preferences**.

If the license expires, the program enters a restricted state where it is not possible to open patients or view images. If the practice has migrated to another image management system but there is a need to access older images still in DentalEye, a special **viewer license** can be obtained that allows image viewing but not capture. Contact DentalEye AB to order a viewer license.

The product edition (Pro, Enterprise or Viewer) is controlled via the license key. If a Pro user decides to upgrade to the Enterprise edition, a new key will be distributed and all workstations change to the new edition once the key is entered.

The license key consists of a text file containing the name of the practice and a code string. When a new license key is distributed via email, simply double-click the license file to import it into DentalEye. If the license file is unavailable, enter the code string in the **License** tab in **Preferences** exactly as shown. If it fails, note that some letters and digits may look similar, such as 1-I-1 and 0 and O.

9. **Plugin setup**

<table>
<thead>
<tr>
<th>CAUTION!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure the imaging hardware settings properly according to the Installation instructions. If the system or a component does not work, there is a risk for delayed dental treatment.</td>
</tr>
</tbody>
</table>

Run or re-run the package installer to select and install the plugins needed to connect the desired equipment to the workstation, after determining that the equipment model is supported and the system requirements fulfilled, based on the relevant plugin section in the appendix.

When a plugin is installed, it shows up in DentalEye as an extra toolbar. In the **Tools** menu, **Plugin options** can be used to enable or disable selected plugins. The settings for each plugin can also be accessed in the Tools menu. This requires the user to have the **Administrate plugins** permission (chapter 7). In the settings dialog for each plugin, there are parameters that may need to be adjusted.

In the **Video plugin**, the intraoral camera model or connection method is selected, possibly with additional parameters according to the Video plugin section in the appendix and the camera manufacturer’s instructions. If the camera buttons do not work, a foot switch may also be configured in the Video plugin.
For cameras, it is recommended to set up auto-selection of a certain template when images are captured so that photographs are not placed in an X-ray template. Open the Capture tab in Preferences, select the plugin used for camera capture, then check Use auto-selected template and select a suitable template such as PA5 or PA9.

In several X-ray plugins, the devices connected to the workstation can be specified, sometimes with additional settings for each device. Review and adjust these settings according to the plugin instructions in the appendix and the instructions from the device manufacturer.

Some X-ray devices need to be activated before capture. Automatic activation of a specific device when a patient is opened can be configured on the Capture tab in Preferences once the plugin is installed.

The X-ray plugins also have image enhancement options. Adjust these according to the next section. In these plugins, there is also an option to reduce the image quality before storing the image in DentalEye.

Image enhancement can be applied in several steps of the capture chain. Some drivers contain image enhancement filters that sometimes cannot be disabled. The next step is the plugin image enhancement and similar options on the Capture tab in Preferences in the main application. Finally, the user may add image enhancement during analysis with the tools in the user interface.
Some enhancements, such as noise reduction and edge enhancement, are destructive and can degrade the image quality, especially if applied repeatedly. It is therefore recommended to only apply image enhancement in one of the steps in the capture chain and the preferred step is the plugin image enhancement described below.

Reduction of image quality should be applied after image enhancements for best results. If it is desired to perform extensive image enhancement in the user interface, disable reduction of image quality in the plugin. Images will then consume considerably more storage space.

**CAUTION!**
Verify that the image acquisition chain works after installation! If the system or a component does not work, there is a risk for delayed dental treatment.

### 9.1. Image enhancement

**WARNING!**
Image enhancement settings must be adjusted carefully according to the instructions and verified by a dentist before being put into clinical use. Incorrect settings could lead to inferior image quality and cause a risk of misdiagnosis or malpractice.

Each X-ray plugin has individual image enhancement settings which will be applied to all new images captured with the connected device. Some plugins support more than one type of device, such as sensors and scanners, and may then have separate enhancement settings for each device.

In the image enhancement dialog, change the settings and click **Update preview** to see the result. Compare the enhanced image to the raw image. Test different settings until the image quality is sufficient to perform accurate diagnosis. **This step requires the approval of the dentist!**

To start over from the default settings, press **Defaults**. Click **OK** to save the settings or **Cancel** to close without saving. Resize or maximize the window to get larger images. Click an image to switch between displaying the full image or a zoomed view. On the keyboard, press “+” to zoom in and “-“ to zoom out.
Histogram adjustments
Often, the images are too bright and have poor contrast. This can be improved by reducing the Gamma correction value to approximately 0.5-0.8. Too dark images can be brightened up by increasing the gamma value above 1. Gamma = 1 corresponds to an unchanged image.

As a final step after calibrating the X-ray chain, Histogram stretch may be enabled, in order to obtain optimal contrast. Adjust the limits Upper histogram cut and Lower histogram cut to stretch the histogram, 0-2% is usually enough. The Equalize histogram option offers even more contrast but can make the image look distorted. Use this option with caution.

Noise reduction
Noise in the image can sometimes be reduced by checking Noise reduction, which will apply a median filter on the image. The degree of noise reduction is adjusted using the Mask size. If the smallest mask size (3x3) does not remove all noise, try a slightly larger, 5x5 or 7x7. Note that too large masks are destructive for the image details. It is possible to set a small threshold value with the Threshold slider in order to reduce unwanted side effects of the noise reduction. Use this filter with caution since small details in the image may be lost, especially with large mask sizes.

Sharpening
The Sharpen image option can enhance the perceived sharpness of the images. An “unsharp mask” filter will then be applied and the three parameters may need adjusting to get a good result. The degree of sharpness is set by the Amount; 20-50 is often enough. The sharpness is also increased by choosing a larger Mask size. The best result is obtained with a small mask size and a moderate amount; too much sharpness will introduce artifacts in the image. Sharpening will also amplify noise in the image; therefore noise reduction is often used in conjunction with sharpening. In addition, the Threshold value for the sharpening filter can be slightly raised in order to further reduce the noise effect. Threshold 2-10 usually provides sufficient noise reduction.
Important note about destructive image operations

Please note that the image enhancement functions in the plugin settings perform irreversible operations on all captured images. The filters distort information and may even add misleading effects that were not present in the original image, and there is no way to recover the original image after permanent image enhancement has been applied. Use the image enhancement filters with caution and consider that an image with good appearance may not be optimal for diagnostic purposes.

10. X-ray imaging system calibration

**WARNING!**
The X-ray imaging system must be properly calibrated before being put into clinical use. Inferior image quality could cause a risk of misdiagnosis or malpractice.

Every X-ray imaging system must be calibrated before it is used for diagnostic purposes. The imaging system must also be checked regularly to verify that it does not deteriorate, due to aging of the X-ray source or due to inadvertently changed settings.

The term ”X-ray imaging system” here includes the whole chain of components, each of which may affect image quality:

- The X-ray source
- Imaging devices such as sensors and scanners
- Drivers, sometimes containing image enhancement algorithms
- A DentalEye plugin with image enhancement filters
- The DentalEye application and other imaging software
- The computer monitor where the result is interpreted by the dentist

Before calibrating the X-ray imaging system, it is important that the X-ray source is in good condition and functioning properly. The performance of the X-ray source must be verified by regular dose measurements. This should be performed by the distributor of the X-ray source.

When installing a new X-ray imaging system, or replacing any of the components in the system, the imaging system must be calibrated. The calibration includes adjusting the exposure time of the X-ray source to obtain optimal image quality from sensors and phosphor plates, while minimizing the X-ray dose to patients. In addition, the image enhancement settings in DentalEye and/or hardware drivers are configured, and the computer monitor is calibrated for correct rendering of X-ray images.

Below is a checklist for calibrating the X-ray imaging system after installing new hardware or replacing some part of the system:

1. Install the X-ray sensor or phosphor plate scanner according to the manufacturer’s instructions.
2. Follow the plugin installation instruction in the relevant section in the appendix.
3. Calibrate the monitor according to the next section.
Go to **System | Preferences | Capture.** Select the correct plugin under “Select source”. Turn off all image enhancements; uncheck all options in the list and disable gamma correction (set gamma = 1). Click OK to save the settings on the Capture tab.

5. Open the plugin settings in the **Tools** menu. Click the button **Image enhancement options** and disable all settings as above. If the option **Save image copy for enhancement preview** is available in the plugin settings, make sure it is turned on.

6. Sometimes there are also settings in the driver software installed with the device that may affect the image. Check the manufacturer’s instructions on how to calibrate and optimize such settings before moving on. Disable image enhancement in the driver as well, if possible.

7. Capture a test image under realistic clinical conditions. Use an imaging phantom or ideally real teeth, and expose an image using the recommended X-ray exposure time according to the device manufacturer’s instruction.

8. In DentalEye, open the tool **Histogram** and check that the grayscale content of the image is within the boundaries of the histogram. Optimally, the main peak should be centered in the range, but sometimes the dynamic range of the device is so wide that the content is in a narrower part. If the grayscale content looks like it is partly outside the histogram range, adjust the X-ray exposure time accordingly and capture a new image. Repeat these steps until a good exposure is made. Write down the exposure time, voltage and other parameters set on the X-ray source and use them as the standard for future captures.

9. Go to the plugin settings again and turn on the **image enhancements** (see chapter 9). In the image enhancement dialog there is now a preview of the last image captured. Use it to adjust the settings for optimal image quality. It is the responsibility of the dentist to finally approve the image quality.

10. When done, click OK on the image enhancement dialog and click OK on the plugin setup dialog as well to save all settings.

11. Restart the computer and capture another image to confirm that all settings were saved and that the image quality is still good.

12. The image quality shall be approved for diagnostic use by the dentist. Use the approval form in the appendix.

Please note that image enhancement settings may cause loss of information and/or introduction of artifacts in the image. This could decrease the diagnostic value of the image. Use the settings with caution and do not turn on settings unless the dentist determines that they aid accurate diagnosis.

**10.1. Monitor calibration**

**WARNING!**

The computer monitor must be properly calibrated before being put into clinical use. Inferior image quality could cause a risk of misdiagnosis or malpractice.

It is important to calibrate the computer monitor to make sure that X-ray images are displayed accurately. With incorrect settings, important clinical information may be lost in the darker or lighter parts of the image. Incorrect settings may also cause distorted image proportions.
Also consider the lighting conditions of the room, and the fact that the monitor orientation with respect to other light sources and the viewing angle may affect the perception of images on the monitor.

It is very important to use a high-quality computer monitor. It is strongly recommended to use a monitor designed to display medical grayscale images (sometimes called a DICOM monitor). Sometimes, such monitors are factory-calibrated and it is not possible to change settings and in other cases, special software and/or hardware must be used for calibrating the monitor. Refer to the manufacturer's instructions.

The computer's graphics adapter must be installed with the proper driver and set to the correct resolution based on the monitor specification. Also check that it is set to at least 24 bit color depth.

The DentalEye function Monitor calibration in the System menu can facilitate calibration and regular check-up of the monitor. It shows a test image to use when adjusting the display for optimum image quality. Each monitor calibration performed is logged with date and time, workstation, the user who performed the calibration and any comment made. By default, the monitor calibration function shows a list of all monitor calibrations made on the current workstation. Checking the option “Show calibrations for all workstations” will show calibrations from all stations connected to the same database.

Click Perform new calibration to show the test image below:

![Test Image](image)

Adjust the brightness, contrast and other settings of the monitor so that it is possible to distinguish the fields inside the boxes at the bottom left and right marked 5% and 95%. Check that all shades of gray are correctly displayed.

Verify that the proportions are correct. Boxes with gray shades should be squares and there should be a circle in the middle. Use a ruler to measure that the height and width of the circle are equal. If the proportions are not correct, the resolution setting of the monitor or the graphics adapter is not configured properly.
10.2. Consistency check

In order to maintain the calibrated state of the X-ray imaging system, regular consistency tests need to be performed and documented, using the DentalEye feature Consistency check.

Go to System | Consistency check. The function opens a record with the name “Consistency check”, similar to a patient record. Images can be displayed and stored as usual. Perform the consistency check as a fixed routine with certain periodicity, each time with the same X-ray exposure time, imaging phantom and distance between phantom and X-ray source. Check that the image quality has not deteriorated since the last time. If it has, it means that some component of the chain has changed for the worse.

When images are captured in the Consistency check file, the average grayscale value of the image is automatically saved as an image comment. This value is normally seen at the bottom right in the status bar when the image is selected. Also, the Color probe tool in the Image | Color/Gray-levels menu can be used to check the grayscale in various parts of the test image. Enter the measurements as comments.

Please note that there is only one Consistency check-record in the database, so each image series should be saved with a unique name for each workstation, e.g. the name of the treatment room.

When performing the consistency check, it is important that all image enhancement filters that can hide any X-ray imaging system deterioration are turned off wherever possible, in order to get an accurate picture of the state of the capture chain. Some image enhancement functions could compensate for bad exposures, such as Histogram stretch, and must be disabled during the consistency check.

Sample routine for consistency check:

1. Go to System | Consistency check.
2. Go to System | Preferences | Capture. Select the correct plugin under Select source. Turn off all image enhancements; uncheck all the options in the list and disable gamma correction (set gamma = 1). Click OK to save the settings on the Capture tab.
3. Open the plugin settings in the Tools menu. Click the button Image enhancement options and disable all settings as above.
4. Sometimes there are also settings in the driver software installed with the device that may affect the image. If such settings are enabled, make sure they are set equally at each consistency check session. At least turn off functions that would hide changes in exposure like “histogram stretching” or “automatic grayscale leveling”.
5. Capture a few images with different exposure times using the X-ray phantom.
6. Check the average grayscale value (in the status bar): measure the grayscale in different parts of the image with the Color probe tool, and check the histogram. Compare with previous checks made under the same circumstances and note any differences.
7. Restore all settings to the way they were before the consistency check.
8. If deterioration in the system is observed, troubleshoot it to determine the cause and take corrective action.
11. Patient Management System integration

Patient management systems (PMS) are generally adapted to work with DentalEye by the PMS manufacturer. Once installed, configuration of the PMS might be needed to connect it to DentalEye so that it is possible to open a patient in DentalEye by e.g. clicking an icon in the PMS. This is usually performed by the distributor or installer of the PMS.

If there is no integration to DentalEye built into the PMS, a couple of tools are supplied that can be used to set up a connection between the PMS and DentalEye. These are the Patient Selector, a configurable tool that can be set up to read patient information from the window of the PMS, and the Command line link interface to DentalEye. The documentation for these tools is found in the appendix.

12. Templates

**WARNING!**

User-defined templates must be created carefully according to the instructions and verified by a dentist before being put into clinical use. If there is an error in a template, there is a risk of misdiagnosis or malpractice.

Templates are used to arrange images for diagnosis and to assign anatomic information to images. In addition to the built-in templates in DentalEye, it is possible to create new templates, optionally by modifying an existing template and to export and import files containing templates. The built-in templates cannot be deleted, but can be hidden from the menu in the toolbar.

Select Edit templates in the Window menu. Either select an existing template in the list pane and save it with a new name using Save As, or start with an empty template and add frames using Tools | Add image.
frame to template. Arrange the frames and adjust their size by dragging the corners. Gridlines can be shown with Show/hide grid in the Tools menu.

Under Properties in the list pane, enter Sequence number, Frame number, Proportions, and Rotation correctly. The sequence number controls the order in which captured images are placed into the frames. Proportions control the aspect ratio of images by masking off a section of the square frame.

Also, enter correct Anatomic information for each frame. The Laterality, Region and Modifier information will be filled in according to the selected Anatomic Description. Click Save to save the new template, then go back to Properties and give the template a type such as Intraoral or Secondary Capture.

All template settings must be verified by the dentist before clinical use! After approval, click Save again to save the new template in the database and make it available to all workstations.

13. Upgrading from a previous DentalEye version

It is not possible to install DentalEye 3.2 if an older version, such as DentalEye 3.1, is already installed on the computer. DentalEye 3.1 must first be uninstalled in order for the DentalEye 3.2 installer to run.

Before uninstalling an older version, it is recommended to write down important settings in the old system, especially database settings and plugin settings such as image enhancement. All settings are reset to default values when DentalEye 3.2 is installed.

DentalEye 3.2.1 is the first CE-marked version of DentalEye. All components, such as plugins, that are included with DentalEye 3.2 have been updated to comply with regulatory demands and to fulfil the system requirements of the product. It is not possible to use plugins from DentalEye 3.1 with DentalEye 3.2.

A major part of equipment, such as sensors and cameras, currently in use by DentalEye 3.1 users is supported with the set of plugins included with DentalEye 3.2. In future releases, support for additional equipment will be added as soon as possible. However, some legacy hardware that was supported in DentalEye 3.1 may not be supported in DentalEye 3.2, based on the number of users and the system requirements of the legacy equipment. For instance, the drivers for some older sensors only work on Windows XP which is a deprecated operating system. In such cases, it will be necessary to replace the hardware with a modern alternative before upgrading to DentalEye 3.2.

13.1. Converting MS Access database to MS SQL

Previous versions of DentalEye could use a Microsoft Access database as an alternative to a SQL Server database, particularly useful for small practices. DentalEye 3.2 no longer supports Microsoft Access databases.

In order to upgrade from DentalEye 3.1 to DentalEye 3.2, an existing MS Access database must be converted to MS SQL format before the data can be used with DentalEye 3.2. The conversion can be performed by an IT technician with tools and support provided by DentalEye AB or it can be performed by DentalEye AB for a fee. Please contact DentalEye AB for more information.

It is possible to install MS SQL Server and start using DentalEye 3.2 with a new empty SQL database and then later add the converted data from the MS Access database to regain access to historic images.
13.2. Connecting 3.1 and 3.2 workstations to the same database

In some cases it may be necessary to connect both DentalEye 3.1 and DentalEye 3.2 workstations to the same database. Examples of such situations include:

- Legacy hardware is still in use and working with DentalEye 3.1 but not supported by 3.2
- A gradual upgrade of a large system where both versions need to co-exist until all workstations have been upgraded

In order to make this work, both a DentalEye 3.1 and a DentalEye 3.2 license must be stored in the common database. Both licenses must be issued to the same customer name. Add the DentalEye 3.1 license using a 3.1 workstation and the DentalEye 3.2 license from a 3.2 station, after connecting them to the database.

14. Problem solving

If there are any problems with DentalEye or attached equipment, please verify that the Installation instructions (this document) and all instructions from the manufacturers of the attached equipment have been followed.

DentalEye AB manufactures the image management system and the included software components such as plugins only. Problems with third-party hardware or software attached to DentalEye, such as sensors, cameras, drivers or patient management systems are beyond the scope of DentalEye AB. In such cases, contact the distributor or manufacturer of the hardware or software for assistance.

If DentalEye has lost the connection to the network or server, a network error is shown until connection is restored. Such errors do not generally indicate a problem within the DentalEye software.

If a software error occurs in DentalEye, a warning message is shown and the error is logged to a file. Please report any software errors to DentalEye AB as soon as possible. By using the System Information utility in the Help menu, the configuration of the system and the error log can be inspected and the report will also be transmitted to DentalEye AB for collection of user statistics and troubleshooting.

If there are any other problems that cannot be solved using the information in this document, please contact DentalEye AB for assistance!
## Troubleshooting

A few common problems and solutions are listed below for troubleshooting:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message on workstation saying “No access to network or database”</td>
<td>Database server is unavailable. Network cables disconnected.</td>
<td>Check network connections of the workstation. Check that the SQL database server is available to the client.</td>
</tr>
<tr>
<td>Message on workstation saying “Image store folder not available”</td>
<td>Server hosting the image store folder or network connection is down.</td>
<td>Check that the server that hosts the DentalEye image store is available to the client. Check that the user has read and write access rights to the image store folder.</td>
</tr>
<tr>
<td>Message on workstation saying “There is only XX MB free disk space...”</td>
<td>There is too little disk space remaining in the image store folder.</td>
<td>Free up disk space or replace the disk with a larger one.</td>
</tr>
<tr>
<td>Database server non-responsive or backup system is not working.</td>
<td>The SQL Server transaction log file has grown extremely large and the disk is full. The log is deleted when a backup is performed so this is a sign that backups are not working.</td>
<td>Perform a backup of the SQL Server database. This will empty the log file.</td>
</tr>
<tr>
<td>Toolbars or menus are corrupted or items are missing.</td>
<td>Menus altered by user or menu file has been damaged.</td>
<td>Enter Preferences</td>
</tr>
<tr>
<td>The application alerts the user with the message &quot;NOT FOR CLINICAL USE&quot;.</td>
<td>The configuration is corrupted or invalid components are found.</td>
<td>The software must not be used! Completely uninstall DentalEye and reinstall from a verified installation package.</td>
</tr>
<tr>
<td>Image replaced with X on screen. Message about manipulated or missing image is shown.</td>
<td>Image file is not found where expected or file cannot be opened.</td>
<td>Verify that the image store folder is available to the user. Right-click the X image and select Image information. Note the path. Open the path in an Explorer window and look for the file. If found, try to open it in the Import images dialog to see if can be opened. Check that it has the correct name according to the path noted. If missing, restore from backup.</td>
</tr>
<tr>
<td>X-ray image quality is consistently poor.</td>
<td>Uncalibrated X-ray image capture chain.</td>
<td>Calibrate the X-ray imaging system.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>---------</td>
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</tr>
<tr>
<td>Unable to activate capture device, typically a sensor. Plugin status indicator stays red or switches back to red when activation is attempted.</td>
<td>Hardware or driver failure.</td>
<td>Restart computer and device control box, check device cables and connection. Check hardware. If possible try device on other station to verify that the device is not broken. Reinstall drivers. For a USB device, remove any USB hubs, other USB devices and cable extenders and try without them. Try different USB ports. Make sure power saving features are turned off.</td>
</tr>
<tr>
<td>X-ray device is active, but does not trigger on exposure.</td>
<td>X-ray exposure time set too low. Incorrect configuration settings. Uncalibrated image capture chain.</td>
<td>Increase exposure time. Verify installation of drivers and configuration with manufacturers’ instructions and the plugin release notes. Calibrate the capture system.</td>
</tr>
<tr>
<td>Sensor spontaneously captures/imports images without exposure. Images are white, gray or black.</td>
<td>Sensor is defective and may need to be replaced.</td>
<td>Turn off power to the computer and device. Try again on a test patient file. If possible, try the device on a different station. If it still captures images spontaneously, replace device.</td>
</tr>
</tbody>
</table>
15. Appendix: Component-specific instructions

15.1. Autoimport

DESCRIPTION
The Autoimport plugin can be used to automatically import image files from a folder. A single folder and file name pattern can be configured in the setup of the plugin. All files added to the folder matching the file pattern will be imported. Local, mapped network drive and UNC paths can be used.

Autoimport plugin is useful in combination with other software or hardware that store images in a predefined folder. Digital cameras and card readers are examples of devices that work well with Autoimport plugin.

INSTALLATION
1. Install DentalEye with the DentalEye and Autoimport plugin options selected.
2. Run DentalEye, go to Tools, Auto Import plugin to configure the import folder and file pattern.
3. When the configuration is tested and works, check the 'Delete imported files' option to avoid importing the same images more than once.

USER INSTRUCTION
Open a patient in DentalEye. Make sure the Autoimport plugin is active. Copy an image file to the configured import folder. The image will be imported to the selected patient and deleted from the import folder (if so configured). The plugin will not import the same file more than once per session.

KNOWN ISSUES
To avoid import attempts on unsupported file types, make sure you specify a file pattern that excludes the unwanted files: C:\Import\*.JPG
The pattern above will import all files in C:\Import\ that have the JPG extension and exclude all others (like thumbs.db)

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS: Windows 7, 8.1
15.2. **Belmont BelSensor GOLD**

**DESCRIPTION**
The plugin can be used to acquire images from the Belmont BelSensor GOLD intraoral x-ray sensors. It is possible to connect up to 10 sensors to the same computer at the same time, but tests have only been made with 1 and 2 sensors. All connected sensors are automatically activated on startup.

**INSTALLATION**
1. Run the DentalEye installer with the DentalEye and the Belmont BelSensor GOLD plugin option selected. Select a database and add the license key.
2. Install the drivers that came with your sensor according to its instructions.
3. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under "Universal Serial Bus controllers".
4. If your sensor came with a correction file, install it now: Start DentalEye, Go to Tools, Belmont BelSensor GOLD Plugin, Setup Belmont BelSensor GOLD Plugin. Click 'Copy correction files' and browse to the folder containing your correction files (*.COR or *.CAL).
5. Restart DentalEye and test the system.
6. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

**USER INSTRUCTION**
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. The default settings make the plugin activate automatically as soon as a patient is selected. Make sure the status indicator shows ACTIVE before exposing the sensor.

**KNOWN ISSUES**
No driver installer is included with the plugin like in the 3.1 version. Use the driver installer provided by the sensor manufacturer.

**TESTED CONFIGURATION**
- DentalEye version: 3.2.1
- OS versions: Windows 7 32 & 64 bit, Windows 8.1 64 bit
- Sensor models: EV71JU213 & EV71JU215
- Driver version: Philog SA, ver. 1.3.4.0 2010-02-04
15.3. Camera WIA

DESCRIPTION
The Camera WIA plugin can be used to automatically import images from a device supported by WIA (Windows Image Acquisition).

Many scanners and digital cameras have WIA drivers that allow them to be used with this plugin. In particular, many DSLR cameras support WIA so that images can be captured and imported directly when a cable is attached between the camera and PC.

INSTALLATION
1. Install DentalEye with the DentalEye and Camera WIA plugin options selected.
2. Run DentalEye, go to Tools, Camera WIA plugin to configure the plugin.
3. Install any WIA devices and their drivers.

USER INSTRUCTION
Open a patient in DentalEye. Connect or activate the WIA scanner/camera to import images from it. The plugin automatically detects connected devices and shows a button for it in the toolbar. The images will be imported to the selected patient and deleted from the import folder. (If configured to do so).

KNOWLEDGE ISSUES
The "Show video preview” option only works on Windows Vista.
The File format option "Preserve received format as far as possible" is not applicable and will have no effect in Enterprise editions.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS: Windows 7, 8.1
15.4. Carestream

DESCRIPTION
The Carestream plugin can be used to capture images from Carestream and Kodak dental imaging
devices. This includes RVG intraoral sensors, CS phosphor plate scanners, Panoramic and Cephalometric
devices and intraoral cameras.

INSTALLATION
1. Install and configure your Carestream devices and their drivers according to Carestream
   instructions. You do not have to install the DIS imaging software.
2. Install DentalEye with the DentalEye and Carestream plugin options selected.
3. Run DentalEye, go to Tools | Carestream plugin | Setup Carestream plugin to configure the
   plugin. The plugin setup dialog has a list with detected Carestream devices. Check the ones you
   want to use from the application toolbar.
4. Open a patient in DentalEye. Activate the Carestream plugin by clicking the button on the toolbar
   for your device and capture an image to test the system.
5. For best performance follow the instructions for calibrating your entire system. See the installation
   instructions.

USER INSTRUCTION
Open a patient in DentalEye. Activate the Carestream plugin by clicking the button on the toolbar for
your device. A dialog will be shown by the drivers. Use the dialog according to instructions from
Carestream and capture images. The images will be captured to the selected patient.

KNOWN ISSUES
Some devices may not have the names expected in the list of devices in the plugin.
As an example the CS 7600 scanner may list as "Stella".

TESTED CONFIGURATION
DentalEye version: 3.2.1
CS Acquisition DLL: 2.1.79.2, 2.1.80.0
Hardware: CS 7600, RVG 6000, RVG 6100
OS: Windows 7 32 bit, 8.1 64 bit
15.5. C-Takt Link

DESCRIPTION
C-Takt Link plugin can be used to export images, series and image cards to the C-Takt Link communications system. It requires that you have the C-Takt Link client application version 1.82 or newer installed on the PC.

INSTALLATION
1. Install DentalEye, with the DentalEye and C-Takt Link plugin options selected.
2. Install and configure the C-Takt Link client application.
3. Run DentalEye, go to Tools | C-Takt Link Plugin | Setup C-Takt Link Plugin. Configure the plugin according to your preferences.
4. Open a patient, select images or a series/image card and click the C-Takt Link plugin icon to test the system.

USER INSTRUCTION
Open a patient in DentalEye, select either a whole series/image card in the list or some images on a series/image card. Click the C-Takt Link plugin icon to add them to a new case in C-Takt Link. C-Takt Link will open and ask for your user credentials. Enter them and accept the data exported when prompted. Use the icon with a + sign to add the images to an already open case in C-Takt Link. Selecting individual images in DentalEye will only export the selected images to C-Takt Link. Selecting a series or image card in the list will include all its images and the layout. Only approved images are exported.

KNOWN ISSUES
#561 Using the plugin with C-Takt 2.0, 2.0.1 or 2.0.2 causes double and/or accumulated imports. This does not happen in 1.82. C-Takt/Unident has been able to repeat this and will fix it in a future release. In the 2.0.3 beta it works OK.

TESTED CONFIGURATION
DentalEye version: 3.2.1
C-Takt link versions: 2.0.2, 2.0.3 beta
OS: Windows 8.1
15.6. DCM Store

DESCRIPTION
DCM Store plugin can be used to store approved DICOM images to DICOM storage servers. It can store to the servers configured in the host application, but also servers specifically defined in the plugin. Several destination servers can be configured. Stores are made with a single click. The plugin will add a toolbar button for each configured destination DICOM Storage server.

DCM Store plugin can only be used with Enterprise versions of the host application.

INSTALLATION
1. Install DentalEye, with the DentalEye plugin option selected.
2. Go to the application folder (default: C:\Program files\DentalEye) and then to the subfolder \AddOns. Run the file DCMStorePluginSetup.exe.
3. Run DentalEye (As Administrator if UAC is turned on). Go to System | Preferences | Advanced | DICOM. Make sure you have configured a Client AE title and port. Restart the application if you changed the settings.
4. Go to Tools | DCM Store Plugin | Setup DCM Store Plugin. If needed, add local only store destinations. Check the ones you want to use from the toolbar. Select your store destinations and click "Test server" to verify the connections. Set any other options if needed. Click OK to close the setup dialog.
5. Restart the application. Open a patient, select images and click the DCM Store plugin icons to test the system.

SETUP NOTES
Since this plugin is a paid add-on the installer requests a password. The password is received when buying this add-on.

USER INSTRUCTION
Open a patient in DentalEye enterprise, Select an approved series. Click any of the DCM Store icons to export the selected images to files. The series must be approved and the images stored in DICOM format (captured with the enterprise version) for the store to work.

KNOWN ISSUES
-

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS: Windows 7, Windows 8.1
DICOM Storage servers: MiPACS Storage server 1.3.6.4
15.7. Dentalmind Digital X-ray II

DESCRIPTION
The plugin can be used to acquire images from the Dentalmind Digital X-Ray II intraoral x-ray sensors. It is possible to connect up to 10 sensors to the same computer at the same time, but tests have only been made with 1 and 2 sensors. All connected sensors are automatically activated on startup.

INSTALLATION
1. Run the DentalEye installer with the DentalEye and the Dentalmind Digital X-Ray II plugin option selected. Select a database and add the license key.
2. Install the drivers that came with your sensor according to its instructions.
3. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under "Universal Serial Bus controllers".
4. If your sensor came with a correction file, install it now: Start DentalEye, Go to Tools, Dentalmind Digital X-Ray II Plugin, Setup Dentalmind Digital X-Ray II Plugin. Click 'Copy correction files' and browse to the folder containing your correction files. (*.COR or *.CAL).
5. Restart DentalEye and test the system.
6. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. The default settings make the plugin activate automatically as soon as a patient is selected. Make sure the status indicator shows ACTIVE before exposing the sensor.

KNOWN ISSUES
No driver installer is included with the plugin like in the 3.1 version. Use the driver installer provided by the sensor manufacturer.

The Dentalmind driver installer requires .NET framework 4.X and must be started "As administrator" manually on computers with UAC turned on.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS versions: Windows 7 32 & 64 bit, Windows 8.1 64 bit
Sensor models: EV71JU213 & EV71JU215
Driver version: Philog SA, ver. 1.3.4.0 2010-02-04
15.8. Dentalmind Digital X-ray 3

DESCRIPTION
The plugin can be used to acquire images from the Dentalmind Digital X-Ray 3 intraoral x-ray sensors. It is possible to connect up to 3 sensors to the same computer at the same time, but tests have only been made with 1 and 2 sensors. In single sensor installations the sensor will be automatically activated on startup. With more than one sensor connected none is auto-activated as default. In these cases it is possible to configure a certain sensor for automatic activation using the tools in System, Preferences, Advanced, Capture.

INSTALLATION
1. Check that the PC has .NET framework 4.5 or newer installed. Install it if needed.
2. Run the DentalEye installer with the DentalEye and the Dentalmind Digital X-Ray 3 plugin option selected. Select a database and add the license key.
3. Install the driver that came with your sensor according to its instruction.
4. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under the header "USB imaging device". Don't start DE until the drivers are fully installed.
5. Start DentalEye and test the system.
6. Calibrate the system to get optimal image quality. See the Installation instructions

USER INSTRUCTION
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. With a single sensor connected the default settings makes the plugin activate automatically as soon as a patient is selected. With more than one sensor connected you may have to activate the sensor you want to use manually. Each connected sensor is represented by its own button in the toolbar. Hovering the pointer over the button will reveal a tooltip including the sensor serial number for identification. Make sure the status indicator shows ACTIVE before exposing the sensor. Also make sure you use the correct sensor in multi-sensor installations.

KNOWN ISSUES
- No driver install is included with the plugin installer. Use the driver installer provided by the sensor manufacturer.
- If sensors are shown with the wrong serial number in the toolbar something has gone wrong. Turn off DE, disconnect the sensor and then reconnect it. If connected to a powered USB hub, disconnect and reconnect the sensor from that USB hub. Then try again.
- Due to a .NET Framework 4.5 dependency this plugin does NOT work on Windows XP.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS versions: Windows 7 64 bit, Windows 8.1 64 bit, Windows 10 64 bit.
Sensor models: S11684-61, S11685-61
Driver version: 2.1.0.0 2014-08-05
15.9. Denterprise QuickRay HD

DESCRIPTION
The plugin can be used to acquire images from the Denterprise QuickRay HD intraoral x-ray sensors. It is possible to connect up to 3 sensors to the same computer at the same time, but tests have only been made with 1 and 2 sensors. In single sensor installations the sensor will be automatically activated on startup. With more than one sensor connected none is auto-activated as default. In these cases it is possible to configure a certain sensor for automatic activation using the tools in System, Preferences, Advanced, Capture.

INSTALLATION
1. Check that the PC has .NET framework 4.5 or newer installed. Install it if needed.
2. Run the DentalEye installer with the DentalEye and the Denterprise QuickRay HD plugin option selected. Select a database and add the license key.
3. Install the driver that came with your sensor according to its instruction.
4. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under the header "USB imaging device". Don't start DE until the drivers are fully installed.
5. Start DentalEye and test the system.
6. Calibrate the system to get optimal image quality. See the Installation instructions

USER INSTRUCTION
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. With a single sensor connected the default settings makes the plugin activate automatically as soon as a patient is selected. With more than one sensor connected you may have to activate the sensor you want to use manually. Each connected sensor is represented by its own button in the toolbar. Hovering the pointer over the button will reveal a tooltip including the sensor serial number for identification. Make sure the status indicator shows ACTIVE before exposing the sensor. Also make sure you use the correct sensor in multi-sensor installations.

KNOWN ISSUES
- No driver install is included with the plugin installer. Use the driver installer provided by the sensor manufacturer.
- If sensors are shown with the wrong serial number in the toolbar something has gone wrong. Turn off DE, disconnect the sensor and then reconnect it. If connected to a powered USB hub, disconnect and reconnect the sensor from that USB hub. Then try again.
- Due to a .NET Framework 4.5 dependency this plugin does NOT work on Windows XP.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS versions: Windows 7 64 bit, Windows 8.1 64 bit, Windows 10 64 bit.
Sensor models: S11684-61, S11685-61
Driver version: 2.1.0.0 2014-08-05
15.10. Dentron USB

**DESCRIPTION**
The plugin can be used to acquire images from the Dentron Systems Dentron USB intraoral x-ray sensors. It is possible to connect up to 3 sensors to the same computer at the same time, but tests have only been made with 1 and 2 sensors. In single sensor installations the sensor will be automatically activated on startup. With more than one sensor connected none is auto-activated as default. In these cases it is possible to configure a certain sensor for automatic activation using the tools in System, Preferences, Advanced, Capture.

**INSTALLATION**
1. Check that the PC has .NET framework 4.5 or newer installed. Install it if needed.
2. Run the DentalEye installer with the DentalEye and the Dentron USB plugin option selected. Select a database and add the license key.
3. Install the driver that came with your sensor according to its instruction.
4. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under the header "USB imaging device". Don't start DE until the drivers are fully installed.
5. Start DentalEye and test the system.
6. Calibrate the system to get optimal image quality. See the Installation instructions

**USER INSTRUCTION**
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. With a single sensor connected the default settings makes the plugin activate automatically as soon as a patient is selected. With more than one sensor connected you may have to activate the sensor you want to use manually. Each connected sensor is represented by its own button in the toolbar. Hovering the pointer over the button will reveal a tooltip including the sensor serial number for identification. Make sure the status indicator shows ACTIVE before exposing the sensor. Also make sure you use the correct sensor in multi-sensor installations.

**KNOWN ISSUES**
- No driver install is included with the plugin installer. Use the driver installer provided by the sensor manufacturer.
- If sensors are shown with the wrong serial number in the toolbar something has gone wrong. Turn off DE, disconnect the sensor and then reconnect it. If connected to a powered USB hub, disconnect and reconnect the sensor from that USB hub. Then try again.
- Due to a .NET Framework 4.5 dependency this plugin does NOT work on Windows XP.

**TESTED CONFIGURATION**
DentalEye version: 3.2.1
OS versions: Windows 7 64 bit, Windows 8.1 64 bit, Windows 10 64 bit.
Sensor models: S11684-61, S11685-61
Driver version: 2.1.0.0 2014-08-05
15.11. Dürr VistaEasy

DESCRIPTION
The VistaEasy plugin can be used to capture images from Dürr devices supported by the VistaEasy framework and drivers. This includes VistaScan phosphor plate scanners, VistaRay sensors and VistaCam cameras.

INSTALLATION
1. Install VistaEasy drivers (version 5.3 or later). Restart your PC. Configure your Dürr devices according to Dürr instructions.
2. Install DentalEye with the DentalEye and VistaEasy plugin options selected.
3. Run DentalEye, go to Tools | VistaEasy plugin | Setup VistaEasy plugin to configure the plugin. The plugin setup dialog has a list with detected VistaEasy devices and a number of modes per device. Check the ones you want to use from the application toolbar.
4. Open a patient in DentalEye. Activate the VistaEasy plugin by clicking its button on the toolbar and capture an image to test the system.
5. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Open a patient in DentalEye. Activate the VistaEasy plugin by clicking its button on the toolbar. A dialog will be shown by the drivers. Use the dialog according to instructions from Dürr and capture images. The images will be captured to the selected patient.

KNOWN ISSUES
-

TESTED CONFIGURATION
DentalEye version: 3.2.1
Driver version: 5.7.1.13108
Hardware: VistaScan Mini Plus
OS: Windows 7 32 bit, 8.1 64 bit
15.12. Export

DESCRIPTION
Export plugin can be used to export images to predefined folders and file names. Several destinations can be configured. It can optionally run an application with the (first ten) files on the command line. You can select to export in several file formats. Exports are made with a single click. The plugin will add a toolbar button for each configured export destination. Variables can be used in the folder and file names. By default a destination is configured pointing to the user’s desktop.

INSTALLATION
1. Install DentalEye, with the DentalEye and Export plugin options selected.
2. Run DentalEye (As Administrator if UAC is turned on), go to Tools | Export Plugin | Setup Export Plugin. Edit the default or add new export destinations. See below for variables that can be used. Optionally check the "Run this application after export" and specify a path to an application.
3. Open a patient, select images and click the Export plugin icons to test the system.

SETUP NOTES
Variables that can be used when configuring export destinations:

%USERDESKTOP%  Will be replaced with the path to the logged in Windows users desktop folder.
%USERDOCS%  Will be replaced with the path to the logged in Windows users Documents folder.
%TEMP%  Will be replaced with the path to the current windows folder for temporary files.
%ID%  Will be replaced with the patient ID
%FN%  Will be replaced with the patient first name
%LN%  Will be replaced with the patient last name
%BD%  Will be replaced with the patient birth date
%SX%  Will be replaced with the patient gender
%IMGID%  Will be replaced with the image database ID
%IMGDT%  Will be replaced with the image capture date

The applications that are configured to run after export must support file paths on the command line. The files will be passed on the command line like in the example below:

C:\Windows\System32\mspaint.exe "C:\TEMP\file1.jpg" "C:\TEMP\file2.jpg" "C:\TEMP\file3.jpg"

USER INSTRUCTION
Open a patient in DentalEye, select some images on a series/image card or in the image list. Click any of the Export plugin icons to export the selected images to files. Only approved images are exported.

KNOWN ISSUES
-

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS: Windows 7, Windows 8.1
15.13. ImageLevel NV SA MDX3

DESCRIPTION
The plugin can be used to acquire images from the ImageLevel NV SA MDX3 intraoral x-ray sensors. It is possible to connect up to 10 sensors to the same computer at the same time, but tests have only been made with 1 and 2 sensors. All connected sensors are automatically activated on startup.

INSTALLATION
1. Run the DentalEye installer with the DentalEye and the ImageLevel NV SA MDX3 plugin option selected. Select a database and add the license key.
2. Install the drivers that came with your sensor according to its instructions.
3. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under "Universal Serial Bus controllers".
4. If your sensor came with a correction file, install it now: Start DentalEye, Go to Tools, ImageLevel NV SA MDX3 Plugin, Setup ImageLevel NV SA MDX3 Plugin. Click 'Copy correction files' and browse to the folder containing your correction files. (*.COR or *.CAL).
5. Restart DentalEye and test the system.
6. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. The default settings make the plugin activate automatically as soon as a patient is selected. Make sure the status indicator shows ACTIVE before exposing the sensor.

KNOWN ISSUES
No driver installer is included with the plugin like in the 3.1 version. Use the driver installer provided by the sensor manufacturer.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS versions: Windows 7 32 & 64 bit, Windows 8.1 64 bit
Sensor models: EV71JU213 & EV71JU215
Driver version: Philog SA, ver. 1.3.4.0 2010-02-04
15.14. Instrumentarium

DESCRIPTION
The plugin can be used to acquire images from Instrumentarium branded and some other PaloDEX group devices using "DICC" drivers. This includes Instrumentarium Snapshot sensors, OP200D and OC200D extraoral devices.

INSTALLATION
1. Install the PaloDEX IAM drivers version 4.22 or higher.
2. Run the DentalEye installer with the DentalEye and the Instrumentarium plugin options selected.
3. Restart the computer.
4. Run DentalEye and test the system.
5. Calibrate the system to get optimal image quality (see the Installation instruction).

USER INSTRUCTION
Select a patient. Click the activation button on the plugin toolbar to activate your device. When the plugin status indicator shows ACTIVE you can start capturing.

KNOWN ISSUES
No known issues.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Driver versions: IAM 4.22.10099
Windows versions: Windows 7, Windows 8.1
Tested devices: Instrumentarium Snapshot
15.15. Kavo Gendex

DESCRIPTION
The plugin can be used to acquire images from the KaVo and Gendex x-ray devices including panoramic devices, KaVo Dig eXam, VisualiX GX-S, eHD, GXS-700 sensors, Intra oral cameras and DenOptix scanners.

INSTALLATION
1. Install the Gendex gxPicture drivers version 3.5.0 or higher. Select one of the "Other application..." options when prompted. If not using UAC you can install the drivers after running the DentalEye installer. With UAC it is important to run it before though.
2. Install any Calibration files for your device if included.
3. If DentalEye is not installed yet: Run the DentalEye installer with the DentalEye and the Gendex plugin option selected. In existing DentalEye installation: Run the DentalEye installer with only the Gendex plugin option selected. See the installation instructions for DentalEye.
4. Restart the computer.
5. Run DentalEye and test the system.
6. Calibrate the system to get optimal image quality (see the Installation instruction).

USER INSTRUCTION
Some Gendex devices like the intraoral sensors are "always-on" devices and will allow capture as soon as a patient is selected in the host application. Others may require you to click the activation button of the plugin before capture.

KNOWN ISSUES
The status indicator of the plugin toolbar is not a true indicator of the device state for all devices. Use the systray icons of the different devices as your device status indicator. This is a limitation of the SDK construction and not a bug in the plugin.

KaVo/Gendex recommends users to turn off UAC to avoid issues. We realize that there are cases where this is not possible or convenient (i.e. Windows 8.1). To work around problems when using UAC, gxStart and any GxVideoApp must be turned OFF before starting DentalEye. The Gendex plugin tries to help work around the problem by turning off gxStart at start and close. The installer also removes gxStart and any GxVideoApp from the Startup folder on systems where UAC is detected as turned on for this purpose.

Older devices may not work on newer operating systems. Refer to this guide for more information about this: http://www.gendex.com/filebin/pdf/032-0297_B_Software_Compatibility_Guide.pdf

TESTED CONFIGURATION
DentalEye version: 3.2.1
Driver versions: GxPicture 3.5.1, 3.5.3
15.16. Manual Import

DESCRIPTION
The Manual Import plugin can be used to manually import image files from a folder by browsing the file system. Manual Import plugin is useful as a quick way to import files from a folder.

INSTALLATION
1. Install DentalEye with the DentalEye and Manual Import plugin options selected.
2. Run DentalEye, go to Tools, Manual Import plugin to configure the plugin options.

SETUP NOTES

Image type sent
Image type passed to the host application.

Send any comments found in the file
This option will extract any comments found in the image file as comments in the host application.

Reduce resolution
Here you can configure the plugin to reduce the resolution of the imported images. Do this to improve performance for images that does not need to have the high resolution they were originally stored in. Images with a resolution below the setting will not be changed.

The Device options allow you to specify a manufacturer and model for images sent. As an example you can use this if you always import images captured with the same camera.

USER INSTRUCTION
Open a patient in DentalEye. Click the Manual Import plugin toolbar button. Browse for and select one or more image files. The files are imported.

KNOWN ISSUES
The plugin does not support import of non-image objects like word files. If attempting to import a non image object the plugin has to be restarted to continue working.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS: Windows 7, 8.1
15.17. Medspace

DESCRIPTION
Medspace plugin can be used to export images to the Medspace communications service. It requires that you have an active Medspace account.

INSTALLATION
1. Install DentalEye, with the DentalEye and Medspace plugin options selected.
2. Run DentalEye (As Administrator if UAC is turned on), go to Tools | Medspace Plugin | Setup Medspace Plugin. Provide your Medspace user name and password and configure the plugin according to your preferences.
3. Open a patient, select images or a series/image card and click the Medspace plugin icon to test the system.

USER INSTRUCTION
Open a patient in DentalEye. Select either a whole series/image card in the list or some images on a series/image card. Click the Medspace plugin icon to add them to a case in Medspace. Selecting individual images in DentalEye will only export the selected images to Medspace. Selecting a series or image card in the list will include all its images. Only approved images are exported. If successful, your internet browser will open with the Medspace case open and the images added to the Images tab.

KNOWN ISSUES
#37 Does not use the new Medspace API.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Medspace API version: Medspace Webservices 1.0
OS: Windows 8.1
15.18. Morita

DESCRIPTION
The Morita plugin can be used to capture images from Morita dental imaging devices. This includes Panoramic and Cephalometric devices.

INSTALLATION
1. Install and configure your Morita devices and their drivers according to Morita instructions. You do not have to install any Morita provided imaging software.
2. Install DentalEye with the DentalEye and Morita plugin options selected.
3. Run DentalEye, go to Tools | Morita plugin | Setup Morita plugin to configure the plugin.
4. Open a patient in DentalEye. Notice that the plugin is active and capture an image to test the system. There is no need to manually activate the plugin.
5. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Open a patient in DentalEye. Notice the Morita plugin status. When showing a green light and status ACTIVE you can start capture on your device. The images will be captured to the selected patient.

KNOWN ISSUES

TESTED CONFIGURATION
DentalEye version: 3.2.1
DixelD OCX: 6.4.0.6
Hardware: Simulated using raw data files only
OS: Windows 7 32 bit, 8.1 64 bit
15.19. Planmeca

DESCRIPTION
The Planmeca plugin can be used to acquire images from all Planmeca devices supported by the Planmeca DIDAPIUI drivers/subsystem. This includes intraoral sensors Dixi, Dixi2, Dixi3, ProSensor as well as panoramic and cephalometric devices.

INSTALLATION
1. Install DentalEye, with the DentalEye and Planmeca plugin options selected.
2. Install the "DIDAPI" drivers version 5.1 or newer. Make sure the "DIDAPIUI" and "JRE" components are selected during the installation of the drivers.
3. Run DentalEye and test the system.
4. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Select a patient. Activate capture by clicking the activation button for your device on the plugin toolbar. A dialog is shown during capture. It indicates the state of the device. Capture images. Close the dialog when done capturing.

KNOWN ISSUES
OS compatibility depends on available drivers. Ethernet interfaces usually work in both 32 and 64 bit environments while other devices may be restricted to 32 bit.

For best workflow, it is recommended to check both the options: Auto close exposure dialog and Hide preview during capture in the plugin setup.

Plugin status indicator in toolbar may not always show the right status. Look for the actual status on the separate status and preview dialog shown when activating the device.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Driver versions: DIDAPI 5.1.0
OS: Windows 7 x64, Windows 8.1 x64
Hardware: Planmeca Dixi2 Ethernet interface
IO, Panoramic & Ceph simulators.
15.20. Schick Intraoral

DESCRIPTION
The plugin can be used to acquire images from the Schick brand sensors including CDR 2000, wireless, CDR Elite and Schick 33.

INSTALLATION
1. Install DentalEye with the Schick Plugin option selected. Select a database and add the license key.
2. Run the driver installer for your sensor model. Refer to separate instructions from Sirona/Schick depending on model and OS (see www.schickbysirona.com).
3. Connect your sensor(s) and verify that they are detected OK by the computer in Device manager. They should show up under their own categories "CDR devices".
4. Start DentalEye. If a calibration file is provided with your sensor, go to Tools, Schick Plugin, Setup Schick plugin, click "sensor options" and select the tab "Calibration". Install the calibration file for your sensor.
5. If installed correctly the plugin will activate the sensor automatically.
6. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. The default settings make the plugin activate automatically as soon as a patient is selected. Make sure the status indicator shows ACTIVE before exposing the sensor.

KNOWN ISSUES
There are no x64 drivers for the CDR 2000 sensors when used with the older black "remote" boxes.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Devices: CDR 2000, Schick 33
OS: Windows 7 32-bit, Windows 8.1 64-bit
15.21. Sirona

DESCRIPTION
The plugin can be used to acquire images from the 2D Sirona devices including Orthophos panoramic product family devices, XIOS, XIOS plus and XIOS XG Supreme intraoral sensors.

INSTALLATION
1. Install DentalEye with the Sirona plugin option selected.
2. Select a database and add the license key in DentalEye.
3. Install the Sirona SIDEXIS XG software version 2.6 or higher
4. Install the drivers for your device (XIOS or Orthophos).
5. Install any calibration/Correction files included with your device.
6. Run DentalEye and test the system.
7. For best performance follow the instructions for calibrating your entire system. See the installation instructions.

USER INSTRUCTION
Select a patient. Activate capture by clicking the activation button for your device on the plugin toolbar. A dialog is shown during capture. It indicates the state of the device. Follow the instructions in the dialog to capture images. Close the dialog when done capturing.

KNOWN ISSUES
-

COMMENTS
XIOS XG Supreme sensors can run with the Schick plugin for an alternate, less intrusive workflow.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Device: XIOS XG Supreme
Windows versions: Windows 8.1 64 bit
SIDEXIS version: XG 2.61
15.22. Soredex

DESCRIPTION
The plugin can be used to acquire images from Soredex branded and some other PaloDEx group devices using "dsd" drivers. This includes Digora Optime and Instrumentarium Express scanners. Soredex ToTo sensor, Soredex Vidi intraoral camera.

INSTALLATION
1. Install the PaloDEx IAM drivers version 4.22 or higher.
2. Run the DentalEye installer with the DentalEye and the Soredex plugin options selected.
3. Restart the computer.
4. Run DentalEye and test the system.
5. Calibrate the system to get optimal image quality. See the Installation instructions.

USER INSTRUCTION
Some Soredex devices like Digora Optime scanners are "always-on" devices and will allow scanning as soon as a patient is selected in the host application. Others may require you to click the activation button of the plugin before capture.

KNOWN ISSUES
No known issues.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Driver versions: IAM 4.22.10099
Windows versions: Windows 7, Windows 8.1
Tested devices: Digora Optime, Digora Toto, Soredex Vidi, Instrumentarium Express
15.23. SUNI SDR

DESCRIPTION
The plugin can be used to acquire images from the SUNI SDR compatible intraoral x-ray sensors (SUNIRay/SDR303 and Dr. Suni Plus/SDR2000/Suni2000). It is possible to connect up to 4 sensors to the same computer at the same time, but tests have only been made with 1 sensor.

INSTALLATION

1. Run the DentalEye installer with the DentalEye and the SUNI SDR plugin option selected. Select a database and add the license key.

2. Install the driver that came with your sensor according to its instruction.

3. Connect the sensor(s) and make sure the drivers are installed properly in Device manager. The sensors usually show up under the USB devices category. Don't start DE until the drivers are fully installed.

4. Start DentalEye and test the system.

5. Calibrate the system to get optimal image quality. See the Installation instructions

USER INSTRUCTION
Select a patient. When the plugin status indicator shows ACTIVE you can start capturing. With a single sensor connected the default settings makes the plugin activate automatically as soon as a patient is selected. With more than one sensor connected you may have to activate the sensor you want to use manually. Each connected sensor is represented by its own button in the toolbar. Hovering the mouse over the button will reveal a tooltip including the sensor serial number for identification. With more than one sensor you may want to turn off the setting that automatically activates the first sensor detected. Make sure the status indicator shows ACTIVE before exposing the sensor. Also make sure you use the correct sensor in multi-sensor installations.

KNOWN ISSUES
- No driver install is included with the plugin installer. Use the driver installer provided by the sensor manufacturer.
- Extension cables for USB may affect reliability of sensor.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS versions: Windows 7 64 bit
Sensor models: Dr. SUNI Plus (SUNI2000), SUNIRay
Driver version: 3.4.1.20, SDRHW.DLL and SDRInterface.DLL 2.5.0.0 2015-02-23
15.24. TWAIN

DESCRIPTION
The TWAIN plugin can be used to import images from a device supported by TWAIN: a standard for connecting imaging devices to PC’s. Most standard flatbed scanners and some dental imaging devices have TWAIN drivers that allow them to be used with this plugin.

INSTALLATION
1. Install any TWAIN supported devices and their drivers.
2. Install DentalEye with the DentalEye and TWAIN plugin options selected.
3. Run DentalEye, go to Tools | TWAIN plugin | Setup TWAIN plugin to configure the plugin.
   The plugin setup dialog has a list with detected TWAIN devices. Check the ones you want to use from the application toolbar.

USER INSTRUCTION
Open a patient in DentalEye. Activate the TWAIN scanner by clicking its button on the toolbar to import images from it. The images will be imported to the selected patient.

KNOWN ISSUES
If no TWAIN devices are detected the plugin setup dialog cannot be opened. Install your TWAIN devices and drivers before configuring the plugin.

Most TWAIN drivers are made for one by one scans using a dialog on screen. This usually makes them inconvenient to use for capturing a series of images. Check if your device has a dedicated plugin to use instead of TWAIN for a better workflow.

TESTED CONFIGURATION
DentalEye version: 3.2.1
OS: Windows 7, 8.1
15.25. Video

DESCRIPTION
The Video plugin can be used to capture still images from a video camera connected to your PC. Video cameras supported include many dental intraoral cameras and web cameras. Cameras with DirectShow drivers are supported.

The hand piece buttons on some intraoral cameras are supported. A game port or COM port (or simulated through USB) connected foot switch is also supported for controlling the capture.

INSTALLATION
1. Install your camera and its drivers. Install any footswitch and its drivers.
2. Install DentalEye with the DentalEye and Video plugin options selected.
3. Run DentalEye, go to Tools | Video plugin | Setup Video plugin to configure the plugin. Select a compatible model from the list of supported devices. Optionally configure the method to use with the camera buttons or foot switch.
4. Open a patient and click the Video camera plugin activation button to test the system.

SETUP NOTES
The settings for your camera driver are reached from the setup menu within the live video window. This is also where you can select your driver if you have more than one installed. Make sure you run as an administrator if UAC is turned on when changing settings.

Camera models known to work with this plugin are listed below. If the setting for one camera is known to support more models, they are listed on the same line. Some may have OS compatibility requirements that differ from the main application.

- Cameras using DirectShow drivers: Panasonic EJ-CA02EPA
- SUNICam USB
- Schick USBCam
- Schick USBCam 2
- Sopro 617
- Owandy Real Hi-T
- OwandyCam
- DEXIS DEXcam 3: Gendex GXC-300 (can also be used with Gendex plugin)
- Empia 28XX-based using Snapshot feature: USB CCD CAM MD760, AdvanceCAM AIC899/TPC
- Soredex Digora Vidi
- Camera using UVC hardware triggering: Imagin ImageMaster, many webcams
- KaVo DIAGNOCam (Follow instructions in dialog to enable capture button)

USER INSTRUCTION
Open a patient in DentalEye. Turn on your camera if needed. Activate capture by clicking the Video plugin activation button on the toolbar. A live video Window will be shown. Here you can freeze, release and capture images using the menu of the window, keyboard or camera buttons or footswitch if configured.
Captured images are shown in the "Captured images" bar on the right side of your screen. When you are done capturing images close the live video window to let the captured images import into the host application.

In most configurations you can use the following keyboard commands in the live video window:

- **Space** Freeze/Release
- **Enter** Capture
- **Esc** Close capture session
- **F** Full screen

**KNOWN ISSUES**
There are many methods to implement the capture buttons on dental intraoral cameras. The creativity to come up with new methods is still thriving. Therefore you may find that your camera's method to implement capture buttons is not supported. If this is the case we recommend using keyboard, menus or a footswitch.

**TESTED CONFIGURATION**

DentalEye version: 3.2.1
Hardware: Gendex GXC-300, Soredex Digora Vidi, Panasonic EJ-CA02EPA
OS: Windows 7, 8.1
15.26. Canon EOS direct capture

CONFIGURE DIRECT IMAGE CAPTURING WITH CANON EOS CAMERA
This instruction will help you to configure your system for capturing images to DentalEye with a Canon EOS camera. The purpose is to be able to have the camera connected to your computer with a USB cable and also to be able to capture images which will be stored directly in a pre-selected template in DentalEye without touching the computer. This is the most convenient way of capturing images. The prerequisite is that the USB cable is connected to the computer during capturing.

There are alternatives to direct capturing: You can capture images without having your camera connected to the computer and transfer the images when connecting the camera to the computer or by means of a card reader. This method, however, requires a few additional steps and will not be described here. There are also Wi-Fi equipped cameras transferring images wirelessly. This method will not be described here either.

SETTINGS IN WINDOWS
Connect your camera to the computer with the USB cable. Any windows popping-up automatically should be cancelled. You will find the settings for this behavior under the Auto play option in the Control panel. Either uncheck the “Use auto play…” option on top or specifically choose “Take no action” for your camera in the list below.

INSTALLATION OF CANON SOFTWARE
Install the application Canon EOS Utility on your computer. The installation CD comes with the camera and is probably called something like “Canon EOS Digital Solution Disk”. You do NOT need to install any other application from the disk (such as for example ZoomBrowser).

SETUP CANON SOFTWARE
1. Create a folder on your local disk, e.g. C:\EOSImages.
2. Go to Start, All Programs, Canon Utilities, EOS Utility, EOS Utility.
3. Click “Preferences” at the very bottom (the camera does not need to be connected in order to perform these settings.
5. In the “Destination folder” tab, fill in the path to the folder you just created. All other checkboxes are to be left unchecked.
6. Click OK. Close the EOS Utility.

CONFIGURE AUTOIMPORT FOR DENTALEYE
1. Install Autoimport plugin with DentalEye, You will find it as an option in the main DentalEye installation. Run the DentalEye installation.
2. Start DentalEye (As Administrator if UAC is turned on). Go to Tools, Autoimport plugin, Setup Autoimport plugin. Fill in the path to the folder you just created under “Watched folder” and add a file pattern like this: C:\EOSImages\*.JPG
3. Check the option “Auto-activate on startup”. Click OK.
4. Restart DentalEye and verify that the Autoimport plugin is active (i.e. green light to the right of the camera icon).
OTHER SETTINGS IN DENTALEYE

To ensure that the camera images end up in a certain template, the “Auto template” option should be activated. This is done as follows: Decide what template you want to use for your camera images, for example PA5. Or create a new template. Go to System, Preferences, Capture. Select Autoimport plugin from the list. Check “Use auto selected template on capture” and select your template in the drop down list.

CAMERA PREFERENCES AND TESTING

In order to get the best performance, configure the camera to save pictures in JPG format and reduce the resolution to the lowest acceptable level.

Switch off the camera. Connect the camera to the computer with the USB cable and turn it on again. Now you will be able to capture an image which will directly transfer straight into the active patient’s folder in DentalEye.
15.27. SQL Backup script

DESCRIPTION
sqlbackup is a command line tool that creates a backup of a local DentalEye database running on a SQL server. Version 2.0 is updated for DentalEye 3.2 and is tested on SQL Server 2012 and 2014.

IMPORTANT
This version will attempt to convert the database to the SIMPLE recovery model which is appropriate for smaller organizations. This tool might not be useful for larger installations that need to run the full recovery model in order to enable point-in-time recovery.

Please note that the database backup does not include images. In addition to backing up the database, the image folders need to be copied separately to the backup destination.

PARAMETERS
In order for the tool to work, five parameters need to be specified:

1. A path where the backup file is written. This may be a local folder or a network path but must be writable by the SQL server process. If a path is not given, it defaults to "C:\DEbackup".

2. A user name for connecting to the SQL server. This could for instance be "sa". If a user name is not entered, connection using Windows authentication will be attempted.

3. The password corresponding to the user name. Leave this blank for Windows authentication.

4. Name of the computer running the SQL server and the instance name if other than the default instance, on the form "SERVER\INSTANCE". SQL Server Express instances often have the name SERVER\SQLEXPRESS.

5. Name of the database to back up.

DEFAULT SETTINGS
The script can be customized by editing the default values in the beginning of the script. Once this is set up, the backup can be run manually by just double-clicking the tool. In addition, the script can be scheduled using the Windows Task Scheduler to run e.g. every night.

LOGGING
By default, information about the most recent backup (such as errors) is logged to the file "sqlbackup_report.txt" written to the same path as the backup file. All previous backups are logged in "sqlbackup.log". If the parameter "logging" under default settings is changed to OFF, the information will instead be printed in the command window.

TESTED CONFIGURATION
DentalEye version: 3.2.1
Database engines: SQL Server 2012 and 2014
OS: Windows 7, 8.1
**15.28. Patient Selector**

**DESCRIPTION**
Patient Selector is one of the methods used for integrating/linking DentalEye to a patient management system (PMS). It can be used if there is no way to link using a native solution (using DELink.dll) or command line (using command line link). Patient Selector uses “screen scraping” methods to get the patient data from the PMS when linking. Several configurations can be created to link to different PM systems. There are no presets included in the installation. Check with your distributor if there is one needed or made for your PMS.

**INSTALLATION**
The files needed for using Patient Selector are installed with the main application installer. You only need to add the configuration to match your PMS. You can create configurations yourself or import configurations in a file. To enable the Patient Selector you must run the file PatientScanLink.exe from the application folder. It will add a “head” icon to the System tray. Right-click the head and get into the Setup menu. From there you can check the “Run Patient Selector on Windows Startup” option to make sure it runs automatically on subsequent restarts. This Setup dialog is also where you add your PMS configurations and choose options for the behavior of the link. See more under **Configuration**.

**USER INSTRUCTION**
Select a patient in the PMS. Click the head icon in System tray. DentalEye will open with the same patient selected in the PMS.

**CONFIGURE PATIENT SELECTOR BEHAVIOR**
In the Setup dialog (right-click the head icon and select Setup), these options can be configured:

**Check the systems to scan for**
Check the PMS configurations you want to be used when clicking the head icon. There are also buttons for adding, editing and deleting items in this list. For more info about the creation of PMS links, see Configure PMS Links below.

**Prompt for Add or Merge on new patients**
When this option is turned on, any patient found but not yet present in the DentalEye database will trigger a dialog where you have the option to merge it with an existing patient. This is useful in cases where different patient IDs or patient ID formats have been used. This option is on by default since it is also useful when creating a new configuration. When you have a working configuration and a database with consistent patient ID’s we recommend you to turn this option off.

**Show warning on patients with no unique ID**
This option will trigger a warning message if a patient found when linking does not have a patient ID. If your PMS configuration includes the patient ID, this could indicate an incomplete record in your PMS. It is also useful when configuring and troubleshooting PMS configurations. This option is turned on by default.

**Run Patient Selector on Windows Startup**
This option should be turned on for all stations that use the Patient Selector. It causes the Patient Selector head icon to be present in System tray on every startup.
Enable debug mode
With this option turned on, a message box with the detected window data from the PMS is shown before trying to use it to open DentalEye. This option is useful when configuring and troubleshooting the PMS configurations. Turn it off for production use.

CONFIGURE PMS LINKS

Add a new link
Click New in the Setup dialog. Give the PMS configuration a name under PM system name. In the “Dialog caption” that shows up you specify options needed to identify the PMS main window and extract patient info from the main window title bar.

Under Fixed title, type a part of the PMS main window title that is fixed/always the same. For example, if the PMS title bar says

```
PMS - John Doe; 123456
```

the part that goes into this row would be “PMS “. You must have something in Fixed title that is unique enough to tell it apart from all other windows currently open by the user.

Under Title mask, specify the patient info variables to use for the link and string data to enable the Patient Selector to find and separate them. In the example title above a suitable title mask would be

```
PMS - %FN %LN; %ID
```

See the list below for all variables that can be used. Consider that names could have spaces in them and that the first or last name could be blank. Under Main class you can specify an optional windows class name for the main PMS window. This can help to separate it from other windows in cases where the title bar content is not enough and the class name is unique enough.

If the patient information needed is NOT in the title bar of your PMS system, you must add Controls. Use the buttons below the list to Add, Edit and Delete controls. When adding controls you specify Fixed text, Class name and Mask in the same way as mentioned above for the main window title bar. In addition, there is an ID number that can be used to identify the control in a window. At least one of Fixed text, Class name or ID number must be filled in to be able to identify the control.

Edit a link
Click Edit to edit an existing PMS link configuration.
Right-clicking the Edit button will open a special analyze window that can be used to find information about the PMS window and its controls. Use this information when filling in the Class and control ID number fields of a PMS configuration. The content and use of this window is for advanced users only.

Delete a link
Click Delete to delete a PMS link configuration.
Variables that can be used in the Mask fields:

%ID  Patient ID number
%LN  Patient Last Name
%FN  Patient First Name
%FN  Patient full name. Patient selector will try to separate the name into first and last.
%BD  Patient birth date. Must be in a format that Windows will recognize as a date.
%XX  Text to ignore

Please note that some parts of the fixed text in between the wanted text may need to be specified to find the right positions; this includes spaces. So, if a space separates ID from first name, enter %ID %FN in the mask (with a space in between the variables).

Additional information

The PMS link configurations are stored in the PMSSystems.INI file that you can find in the application folder (Default: C:\Program Files\DentalEye or C:\Program Files (x86)\DentalEye)

To move a configuration made to other workstations, simply copy the PMSSystems.INI and replace any existing files. Restart the workstation to make sure the new INI is used.

Contact DentalEye AB for support if needed!
15.29. Command line link

The Command line link is intended for linking patient management (PM) systems capable of sending patient information on the command line to DentalEye. This is an instruction on how to configure and use the command line link.

SETUP INSTRUCTION

- Configure your PM-system to launch the file "cmdLink.exe" and make it add relevant patient information on the command line. There might be special instructions on how to do this for your PM-system. Ask your distributor for this if you do not have that information.
- Open the cmdLink setup by double-clicking the file cmdLink.exe in the DentalEye application folder in Program Files.
- Create your own custom configuration to work with your PM-system by following the instructions in "Custom configuration".
- Test the system by selecting a patient and clicking the link in your PM-system. It should start your imaging application and open the same patient.

CUSTOM CONFIGURATION

Before creating new or editing existing configurations you should check with DentalEye AB or the PM-system manufacturer if there is already a configuration made for your system.

Edit and create new configurations for the command line link

The cmdLink.exe looks for files ending with ".CLC" in the DentalEye application folder. Each CLC file contains a configuration for linking to a specific PM-system. If you double-click the cmdLink.exe file in Explorer you will be able to select CLC-file/PM-system to be used.

If your system is not in the list you can easily add it simply by creating a new text file. Name it after your PM-system and save it with the extension ".CLC" in the DentalEye application folder. To edit an existing file you can click the button "Edit configuration".

Depending on how your PM-system's command line looks like you specify either a [Prefix] or a [Mask] section in the CLC file.

If the PM-system sends a command line with prefixes like this:

/ID=561231-1234 /FN=John /LN=Smith /BD=1956-12-31 /Sex=M

you should create a [Prefix] section. But if your PM-system sends a command line with all fields in a specific order with a separator but no prefixes like this:

-561231-1234;John;Smith;1956-12-31;M

you should create a [Mask] Section. Please note that you cannot have both these section in the same CLC file. If a Mask is specified the Prefixes will be ignored.
Sample CLC file with Prefix section
(This sample shows the default values used if no configuration is selected.)

```
[Prefix]
ID=/ID=
Firstname=/FN=
Lastname=/LN=
Birthdate=/BD=
Sex=/Sex=

[Settings]
BirthDateMask=
Prompt=No
```

Sample CLC file with Mask section

```
[Mask]
Mask=<ID>;<Firstname>;<Lastname>;<Birthdate>;<Sex>

[Settings]
BirthDateMask=YYYY-MM-DD
Prompt=No
```

PARAMETERS
The file is in the so-called INI-format. Please include the headers ([Prefix] or [Mask] and [Settings]) and make sure you type the parameter names exactly as above.

PREFIXES
The prefixes are used on the command line to define each field.
(i.e.: CMDLINK.EXE /ID=561231-1234 /FN=John /LN=Smith /BD=1956-12-31 /Sex=M )
PM-systems might use fixed or configurable prefixes when calling the imaging system. By defining the prefixes for each field under [Prefix] you can make the cmdLink understand your PM-system.

MASK
When not using prefixes each field is defined by its position on the line.
(i.e: CMDLINK.EXE 561231-1234;John;Smith;1956-12-31;M )
In the line above ID is always the first field, Firstname the second and so on.
In the Mask= parameter you specify the fields surrounded by < > like this:
Mask=<ID>;<Firstname>;<Lastname>;<Birthdate>;<Sex>

FIELDS
Here is a description of each field that cmdLink is able to receive:

ID: This is the unique ID for the patient. It must be provided by the PM-system. It can contain both numbers and letters up to 64 characters.

Firstname and Lastname: At least lastname should also be provided by the PM system for good functionality. Both fields can contain up to 100 characters. (Please note that the command line length is limited by the OS.)

Birthdate: This parameter is optional. If used you must also set the "BirthDateMask" below the [Settings] header so that the date format is understood properly.
Sex: This parameter is optional. If used the values provided by the PM-system should be M for male and F for female. Only the first letter of the value will be used.

SETTINGS

BirthDateMask: Controls the way the birthdate is understood by the BD parameter. 4 character years are recommended. Preferably specify the date in ISO format like this: YYYY-MM-DD. If no BirthDateMask is specified it will use the regional settings of Windows to read the date.

Prompt:
YES means: If the ID provided by the PM-system is not found in DentalEye the user will be prompted if he/she wants to associate it with an existing patient or add the patient as new. This is useful if DentalEye has been used for a while before implementing this link. If you choose to associate the patient with an existing one the ID will be changed in DentalEye to match the ID in the PM-system.

NO means: If the ID provided by the PM-system is not found in DentalEye it will always be added as a new patient. The default value is NO.

Please note that if "Prompt=Yes" or "Prompt=No" is provided on the command line it will override the value set in the CLC file.

ACTIVATE THE CONFIGURATION
Double-click the file cmdlink.exe in explorer. Select your configuration file in the list and click OK. The cmdlink.exe and the .CLC files should be located in the DentalEye application folder. Contact DentalEye AB if you need assistance!
16. **Appendix: Installation approval form**

The technician signs this form for each computer to confirm that the installation was performed correctly according to the Installation instructions. Use additional forms if there are more than 10 computers.

The responsible dentist signs the form after calibration to verify correct installation and to approve each system for diagnostic use.

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<th>Practice name</th>
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<td>Names (print)</td>
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<td>Technician</td>
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<tr>
<th>Room No. or Computer name</th>
<th>Installation performed correctly (signed by technician)</th>
<th>Approved for diagnostic use (signed by dentist)</th>
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</table>

The form shall be submitted to DentalEye AB by FAX to +46 (0)8 621 07 55 or via mail to DentalEye AB, Kavallerivägen 30, SE-174 58 Sundbyberg, SWEDEN or via e-mail to info@dentaleyecom