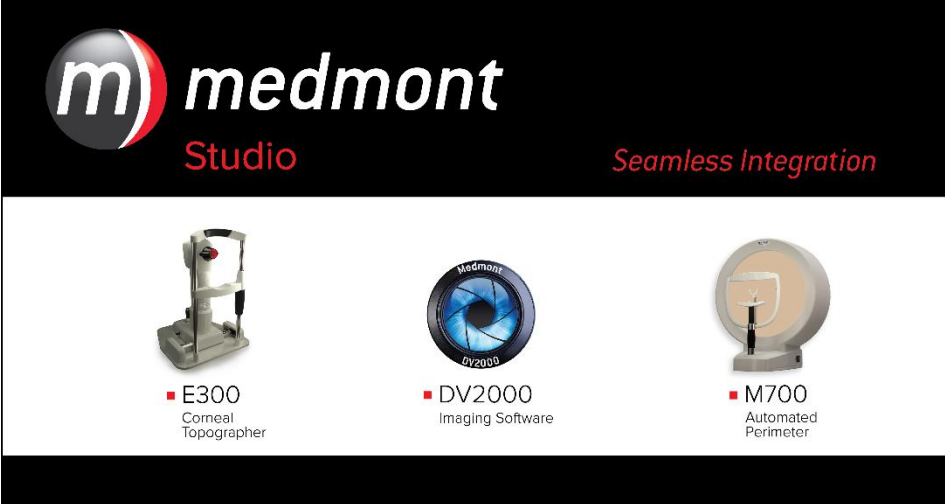


MEDMONT STUDIO



m medmont
Studio *Seamless Integration*

■ **E300**
Corneal
Topographer

■ **DV2000**
Imaging Software

■ **M700**
Automated
Perimeter

USER MANUAL

Medmont International Pty Ltd

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1. Intended Use

Medmont Studio is a powerful software package for controlling the Medmont range of medical instruments from your personal computer or laptop. Medmont Studio is a component of the following instruments:

- Medmont Automated Perimeters (all models)
- Medmont DV2000 Diagnostic Video Imaging
- Medmont Corneal Topographers (all models)

The extensibility of Medmont Studio means that its capabilities expand as you purchase new instruments and software, fully integrating into a single working environment.

In addition to controlling the instruments, Medmont Studio provides additional *Analysis Tools* and *Patient Management* facilities. These include complete patient management functions out-of-the-box using Medmont's own database, or optionally via a 3rd party Practice Management system. Check the Medmont web site for an up-to-date list of supported 3rd party systems.

In a small practice Medmont Studio can be run from just one computer, managing both the patient database and controlling the instrument. This is called the ***standalone*** configuration.

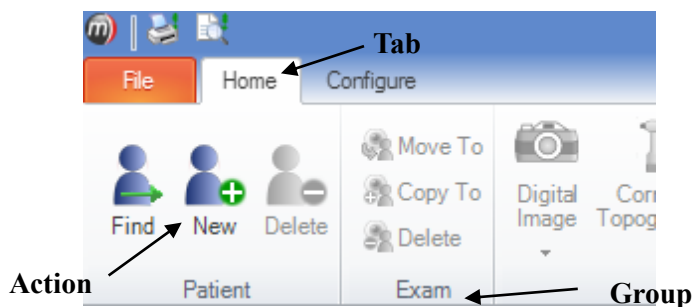
For larger practices, Medmont Studio contains powerful features for inter-connecting multiple computers to centralise data-storage on one computer called the ***server***. All other computers on the network are called ***clients***. Medmont instruments may be connected to any client in the network.

This document describes the basic Medmont Studio capabilities, including patient management. Separate on-line and printed documentation is available describing the additional functionality specific to particular instruments.

The software is not to be used for purposes other than stated in this manual.

Software Conventions

When referring to menu selection, the terminology **Home > Patient > New** means click on the **Home** ribbon bar tab, then look for the **Patient** group on the ribbon bar and click on the **New** icon. This format conforms to the **Tab > Group > Action** system for identifying menu items in a ribbon bar menu system.



A small glossary is included for terminology that originated with Medmont. It also includes some common terms where they apply to Medmont equipment. It is not a glossary of perimetry. Terms that appear in the glossary are underlined in the text.

Explanation of Symbols



Warning - In event of user error or equipment fault condition there may be a serious risk to health or life of patients or operator or product damage may occur.



Note - notice that additional attention should be paid to use or maintenance to prevent misuse or unexpected behaviour

Accessories

- PC incl. Operating system (provided by customer)
- User Manual
- Isolation Transformer (optional)
- Dummy plug network connection (optional)
- Dummy plug serial 9 pin serial port (optional)
- Label for Patient environment (optional)

2. Hardware Configuration

Important: Install the software before inserting or attaching any new hardware to your computer. This allows the software to pre-install the hardware drivers ready for when the hardware is connected.

PC and Associated Equipment Requirements

Check that your computer meets or exceeds the very basic requirements listed below to run Medmont Studio.

- Pentium™ processor-based personal computer, P4 2.8 GHz or Higher (P4 1GHz minimum). Motherboard using genuine Intel™ PCI chipset highly recommended. VIA chipsets have proven to be unreliable.
- Microsoft™ Windows™ 7 and Microsoft™ Windows™ 8
- 3 GB RAM or more (2 GB minimum)
- Video cards that share main memory are not recommended. For stereo viewing using shutter glasses, a compatible NVidia video card is required.
- 10GB of available hard-disk space setup to use NT File System (NTFS).



Use only PC and associated equipment that has been certified to the Standard EN/IEC60950 (Information Technology Equipment) and the Standards for Electromagnetic Emissions CISPR22/EN55022.



If used within a patient environment, power the PC and associated equipment with an EN/IEC60601-1 compliant isolation transformer e.g. Medmont TR2450 (230/240V), or an additional fixed protective earth connection.



Cover any open PC communication ports that have accessible conductors with dummy plugs if used in a patient environment.

If you have a previously installed version of Medmont Studio we strongly recommend that you back-up your old database before proceeding.

If you have used the *archiving* facility of the very old versions of Medmont Studio, you should un-archive old exams to allow the installation data conversion program to upgrade your data. The later versions do not support archiving.

3. Installation Configurations

There are a number of configurations for a Medmont Studio installation that depend on the practice patient management environment and whether a networked computer system exists. Medmont Studio can be run in three configurations:

- **Standalone** – A small practice configuration consisting of only one computer or alternately a small network system. The latter would have a computer for instrument control and another for administration where the patient data resides, and typically including a 3rd party Practice Management package.
- **Network (Client/Server)** - For large practices with a local area computer network (LAN) in place.
- **Single User Review** - An analysis-only mode is available that allows editing and analysis, but no capture from instruments.

Standalone

The **standalone** configuration is the most popular and simplest to use. Appropriate licensing for this configuration is included with each Medmont instrument. This is a versatile configuration that can be configured in a number of ways.

Warning! Networking of the instrument computer with other computers may cause unacceptable leakage currents. Only connect through wireless network connections.

A standard configuration consists of

- A computer including monitor.
- One or more Medmont instruments.
- The Medmont Studio software.
- Optional supported 3rd party practice management software same computer
- Printer (wireless unless connected through isolation transformer)

Another common configuration consists of

- Two computers. One configured to control the Medmont instrument(s), and the other configured with one of the supported 3rd party Practice Management packages, the two typically connected as a Windows Workgroup through a wireless network connection.

- One or more Medmont instruments.
- The Medmont Studio software.

Both systems would also include:

- An activation key with licenses for
 - Exactly one session.
 - Instrument license(s).
 - Additional functionality licenses.

Configuration Typical Use

- Conducting exams.
- Subsequent review, editing, and analysis of exams.
- Patient management.

Network (Client / Server)

The Medmont network configuration works with one or more Medmont **client** computers connected to a single Medmont **server** computer. The underlying network can be either a Workgroup or a Domain based system.

This configuration requires the purchase of a license upgrade from Medmont to allow multiple computers to run the software simultaneously.



Warning! Networking of the instrument computer with other computers may cause unacceptable leakage currents. Only connect through wireless network connections.

Where the Medmont Studio **server** software is installed depends on the operating system running on the network's server computer. The options are:

- The Medmont Studio **server** installed on the network server computer itself, as long as the server is running Windows Server 2003 or Windows Small Business Server 2003 or later versions of these products, or
- The Medmont Studio **server** installed on one of the client computers in the network.

The computer on which Medmont Studio is configured as a **server** requires:

- An activation key with licenses for
 - Maximum number of sessions (typically more than one).
 - Instrument license(s).
 - Additional functionality licenses.

- 3rd party Practice Management software with software license as required (optional).

One or more Medmont **client** computers with:

- Medmont Studio software configured as a **client**.
- Medmont instruments as required, although a computer can be a Medmont **client** without having an instrument connected.

Configuration Typical Use

- **Administration** - Provides centralized functionality for large practices
 - One shared database.
 - One practice management system.
 - Central maintenance of licensing.
- **Testing** - Exams are conducted from any client computer with an instrument attached.
- **Review** - Any computer in the network can act as a review machine, including the server.

Single User Review

The **unlicensed** mode is available when no license has been successfully authenticated. This mode replaces the now obsolete Medmont Studio Viewer.

The physical configuration consists of

- A computer.
- Medmont Studio software.

Configuration Typical Use

- **Review** – For a small numbers of exams on a laptop or home PC. Data is transferred from the licensed system using the import/export facilities.
- **Referral to specialists** - By a specialist (non-Medmont user) who is sent exam data by a practitioner using a Medmont instrument.
- **Presentation** - When giving talks using a laptop and data projector.
- **Spread the word** - Give a copy of the Medmont Studio CD to a colleague to try before they buy.

4. Installing the Software

Medmont Studio is provided on a single USB flash drive that contains all the necessary software. To install Medmont Studio from the USB flash drive follow these steps:

1. Insert the Medmont Studio USB software key into your computer. After a few seconds a Windows Explorer window will display. If not, launch Windows Explorer and select the new removable drive now listed in the left pane labelled “MEDMONT”.
2. Next, expand the removable drive and select folder “Medmont Studio”. Double-click on file setup.exe to start installing the software.

Common Installation Steps

Medmont Studio requires the installation of the Microsoft .Net (pronounced dotNet) Framework.

If the Microsoft .Net Framework was previously installed, or if your operating system has this package preloaded, then the Medmont Studio will skip the installation of this software package. Otherwise, click *Accept* to install the Microsoft .Net Framework

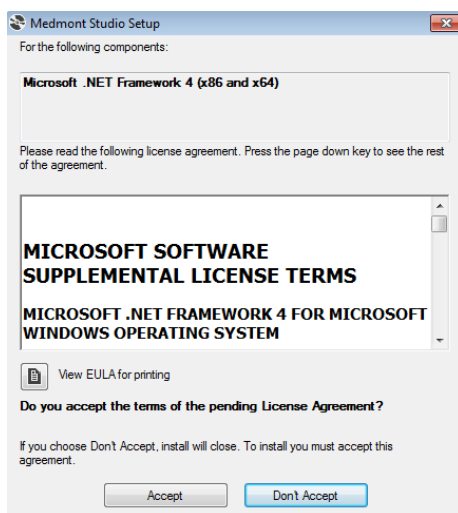


Figure 1. .NET Framework Accept screen.

The next dialog will show the progress of the .Net installation (if required). Note that if you select cancel at any stage, then the installation of Medmont Studio will not proceed any further.

Once the software packages are installed, click **Next** to start the Medmont Studio installation wizard.

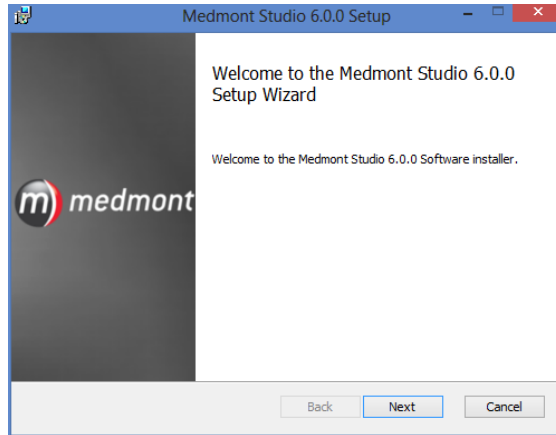


Figure 2. The Medmont Studio Setup Wizard.

The next dialog allows you to define where the associated files will be stored. Medmont strongly recommend that you leave the chosen default path. Click **Next** to proceed.

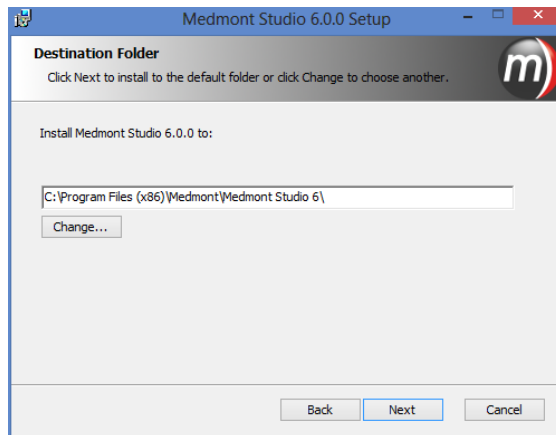


Figure 3. Installation folder selector.

Note: This step does not decide the location of your patient database. This will be assigned later in the configuration step. This is the location of the application files only.

Next, the dialog asks you to confirm that the installation can begin. Click **Back** if you need to review or change any of the previous options. Otherwise, click the **Install** button and the installation will proceed. At this point the setup process displays a dialog with a progress bar to visualise the file copying process.

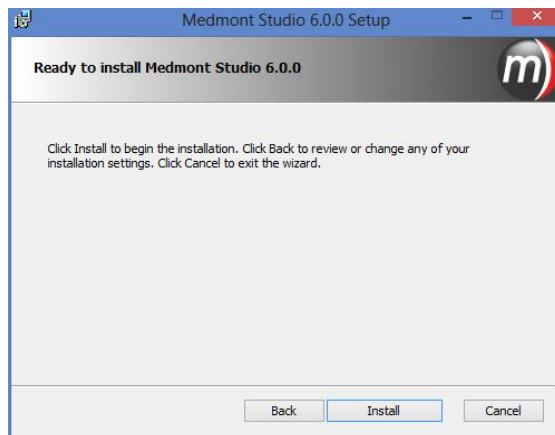


Figure 4. Installation confirmation.

With all files transferred, the Medmont Studio Configuration Tool will run and asks you to select from the set of Medmont Studio language translations.

The **Medmont Configuration** tool presents the next series of system configuration dialogs. When the installation is complete, this can be run to re-configure the system at any time from:
Start > Programs > Medmont > Medmont Studio Configuration Tool

Once the language is selected the next dialog asks you to select the type of Medmont Studio installation.

Installing a Standalone System

Click on the **Standalone** radio button and then on the **Next** button.

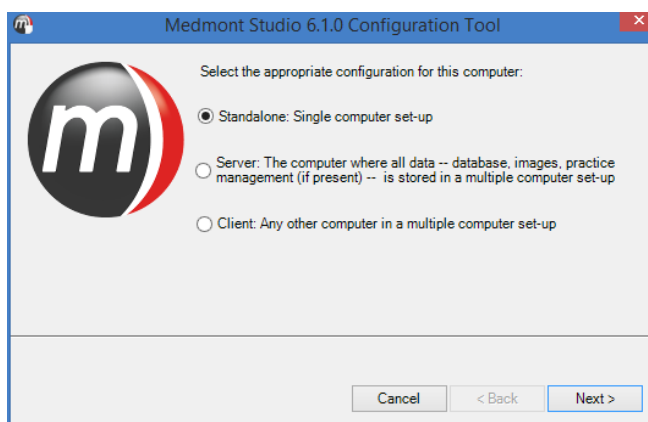


Figure 5. Executing mode selection.

The next page of the wizard will ask you what database operation you would like to perform. Once selected click on the *Next* button and the wizard will guide you through the steps of obtaining all of the relevant information to complete that process.

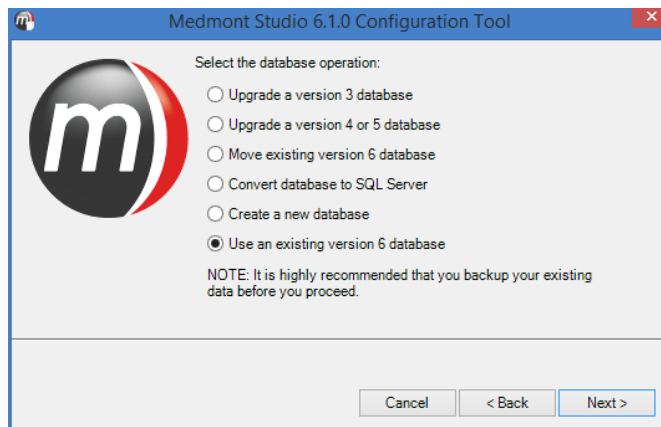


Figure 6. List of database operations

Upgrade a version 3 database

You will need to provide the location of the version 3 database files and a new location to store your new database. These locations cannot be the same. Currently Medmont Studio only supports upgrading a version 3 database to an Access database. Once this conversion is complete you can re-run the configuration tool to convert it to SQL Server® or move it to another location if desired.

Upgrade a version 4 or 5 database

You will need to provide the location of the version 4/5 database that you would like to convert as well as the type of database that is being upgraded (Access® or SQL Server®). Version 4/5 upgrades are performed in place and must use the same database type as used previously. Once this conversion is complete you can re-run the configuration tool to convert the type of database or move it to another location.

Create a new database

This operation will create a new, empty database. You will need to provide an empty folder to install the database to and if you are using SQL Server® you will also need to provide the server location and login credentials.

Use an existing version 6 database

If you have successfully run the configuration process before then this will be the default option. If you select this option and have run the configuration process before then the next step will show the path to the previously chosen database, if you would like to change to a different database then press the **Location** button and chose a different database path.

Move existing version 6 database

This option will allow you to move the currently configured database to a new location on the current PC. The destination folder for the database must be empty and please remember when changing your database folder you may need to update any automated backup applications you are using to protect your data.

If you are using an SQL Server® database this option will also allow you to move the data to a new server providing you have the relevant login credentials.

Convert database to Microsoft SQL Server® / Access®

This option will allow you to perform an in-place change of the type of database you are currently using. When changing to the SQL Server® technology, as well as requiring valid user credentials you will also need to provide a unique database name. You cannot specify a database name that already exists on the server.

Once you have entered all the required database information, the installation needs to know whether you are integrating Medmont Studio with a 3rd party

practice management system. This option seamlessly integrates the patient management of both systems (see *Installing with a 3rd Party Practice Management System* on page 19). We will continue with the **None** option here. Click the **Next** button to continue.

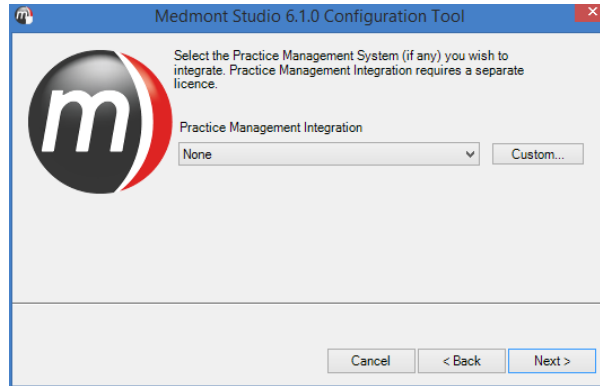


Figure 7. Option to select PMI.

An installation typically consists of one or more Medmont instruments. The next dialog allows you to select which instruments to install. Installing instruments for which you do not have a license will use additional computer resources, but nevertheless does offer a review capability where you can view results produced by those instruments on other computers or from other practices.

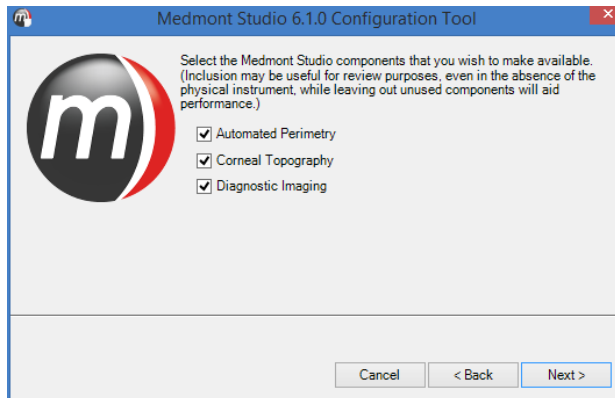


Figure 8. Instrument selection dialog.

The next dialog is associated with installing the Windows Drivers for M700 instrument features and the various digital image frame grabbers associated with the DV2000 and E300 instruments.

Complete the installation of Medmont Studio before connecting or installing the associated hardware for the first time.

Some of these selections may be greyed-out depending on the instruments that were previously selected for installation. Select the drivers associated with your instrument(s).

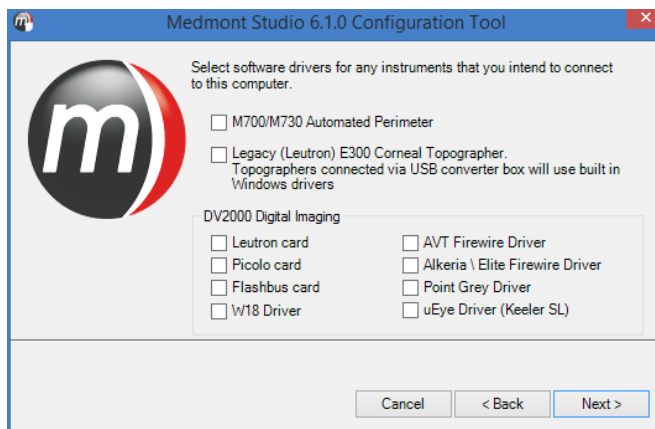


Figure 9. Windows Driver installation dialog.

Clicking the **Next** button will proceed to the final step of the installation. You now have an option to review your previous steps or cancel the setup. Click **Back** to change any of the previously selected options or click **Cancel** to stop the setup of your software.

Otherwise, click **Finish** to finalise the installation. Once this process completes, and depending on the selected instruments and existing installed Windows Drivers, a number of device driver installers will automatically run. Simply follow the prompts and click on the **OK** button. If previously configured, the database conversion from another version of Medmont Studio will also happen at the end of the installation process.

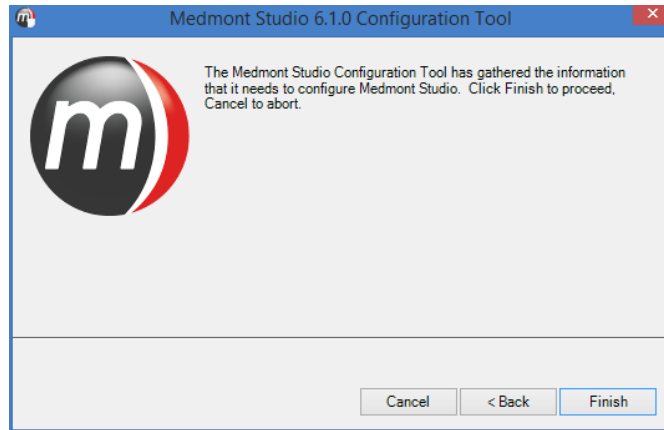



Figure 10. Installation complete screen.

The Medmont Studio icon  will now appear on the Windows desktop. Additionally, you can also launch Medmont Studio, Medmont Studio Administrator Tools and Medmont Studio Configuration Tools from **Start > Programs > Medmont**.

Installing a Server Based System

A server based system consists of a computer with Medmont Studio installed as a database server, and one or more additional computers with Medmont Studio installed as clients, all connected with a standard Windows network.

The server is configured to manage the patient database.

Installing the Server

Install the software as per the previous instructions until you are prompted for a Standalone, Server or Client installation. Click on the **Server** radio button and then the **Next** button.

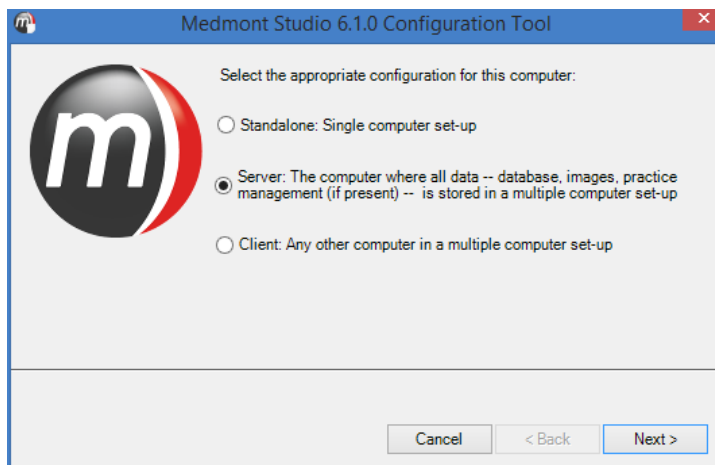



Figure 11. Selecting a Server installation.

If you have more than one network connection available in your server computer, the next step of the wizard will ask you which network interface you would like to use to connect to your client PC's. This will be the network card that is connected to your local network and thus, your client PC's.

The installation will proceed from this point exactly the same as the stand-alone installation. When the installation completes the server starts automatically and you should see the Medmont Studio server icon  in the Windows desktop tray.

Installed Medmont Studio clients can now connect to the server. However there are a number of steps required to license the server and these are covered in *Running Medmont Studio* starting on page 21.

Installing the Clients

The server installation must be completed, configured, and running on the designated server computer before attempting to install any clients.

Install the software as per the previous instructions until you are prompted for a Stand-Alone, Server or Client installation. Click on the **Client** radio button to select a client computer installation as shown in Figure 12.

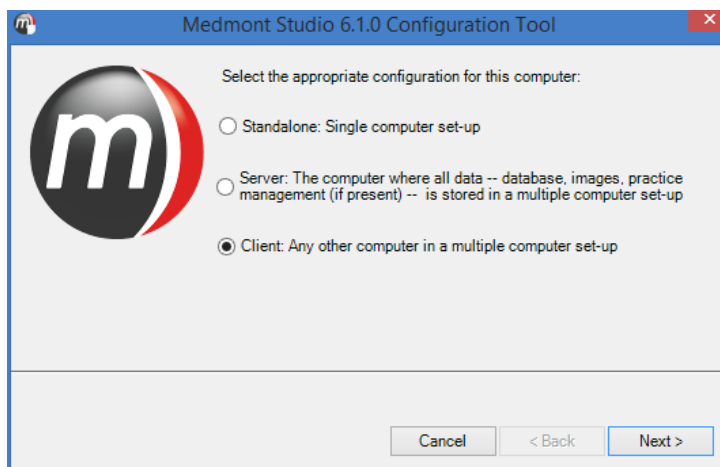


Figure 12. Selecting a Client installation.

The next dialog will present a drop-down list with the names of the computers in your network. Select the computer on which the Medmont Studio server is running, then click **Next**.

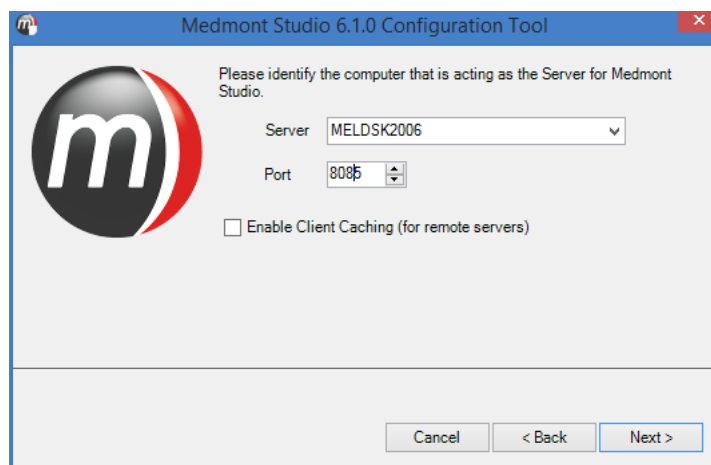


Figure 13. Selecting a server.

The next dialog will ask for the instruments attached to this client computer (see Figure 14). Based on your current license, select the appropriate instruments to be installed and click **Next**.

The next step will allow you to install Windows drivers for the appropriate instruments. Some of these selections may be greyed-out depending on the

instruments that were previously selected for installation. Select the drivers associated with your instrument(s) and click **Next**.

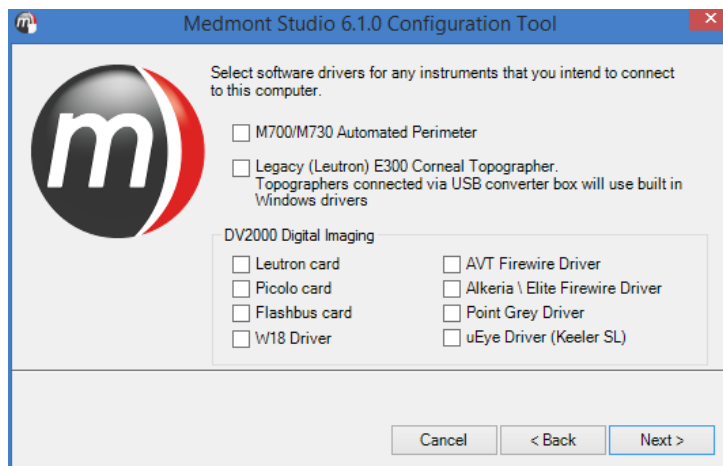


Figure 14. Final installation dialog.

Review your previous configuration by clicking **Back** if needed. Otherwise, click the **Finish** button to complete the setup.

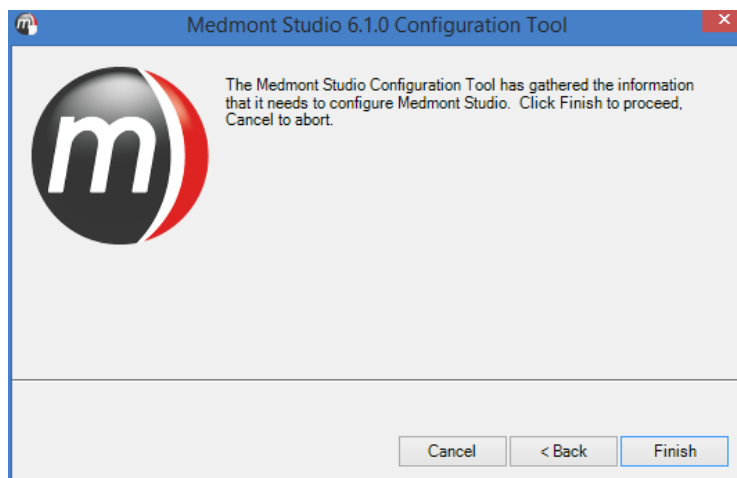


Figure 15. Installation complete screen.

Lastly, if the setup will only be used for exam review, then the installation is complete. Double click the Medmont icon on the desktop to start Medmont Studio. Check that the Practice database is visible and that patient and exam

details are also visible. Whether these can be edited or changed will depend on the permissions given to the particular clinician (see *Setting Permissions* on page 25).

If the computer will have an instrument attached then use the procedure described in the **Installation** section of the relevant instrument User Manual.

Installing with a 3rd Party Practice Management System

You can integrate a 3rd party Practice Management System with Medmont Studio. The option to create a Patient Management Integration (PMI) system is presented during both a Stand-alone and a Server installation.

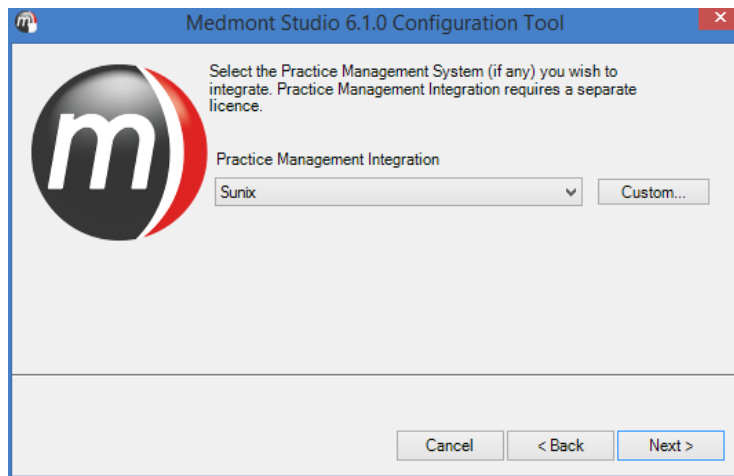


Figure 16. Option to select PMI.

When prompted by the configuration tool, select your Patient Management system from the drop-down selection box. The list of supported Patient Management systems will be updated when a new system receives integration support. Please check <http://www.medmont.com.au> for an up-to-date list.

Click the **Next** button and you will be asked for the location of the PMI data files.

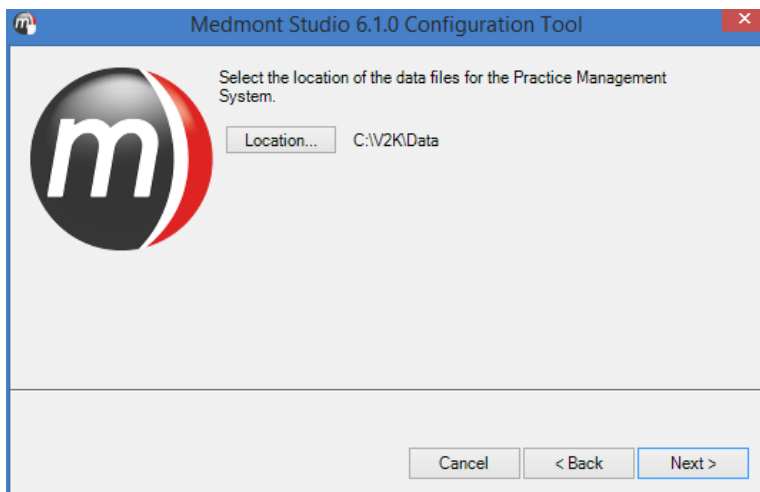


Figure 17. Selecting the path to a 3rd Party Patient management system.

Click the **Location** button to make any changes to the default if required. When you click the **Next** button the install program will examine the entered location for the expected set of files. If they exist the installation will proceed as previous.

5. Running Medmont Studio

Double-click the Medmont Studio icon on your Windows desktop.



A banner with the Medmont Studio logo is displayed while the software loads.

For the First Time

The first time you run the software after installation you will be prompted to install a license as shown in Figure 18.

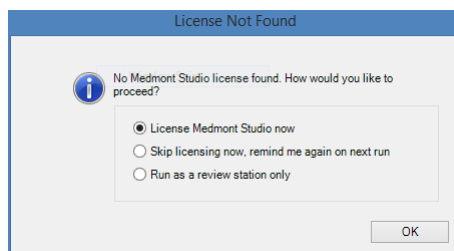
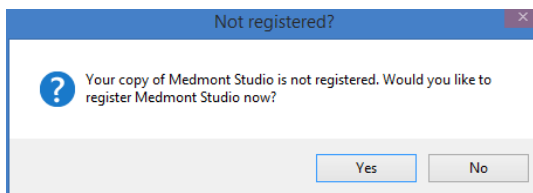


Figure 18. License prompt.

To install a license select the ***License Medmont Studio now*** option which will display the License Manager window, please follow the section *Installing a Medmont Studio license*. If on the other-hand you would prefer to run without a license (not connected with an instrument) then you can choose to run as a review station by selecting the ***Skip licensing now*** option. Selecting skip will prompt you again next time you run the software.

Next you will be asked to register your Medmont Studio software.



Click **No** if you do not want to register your software now.

Please note that you will be prompted to register each time your software starts until you have successfully registered.

If you click **Yes**, the registration window will be displayed as per Figure 19.

Registering your software

You can register your software at any time by clicking on the **Help > Register** menu. Once selected the Registration window shall be displayed as per Figure 19.

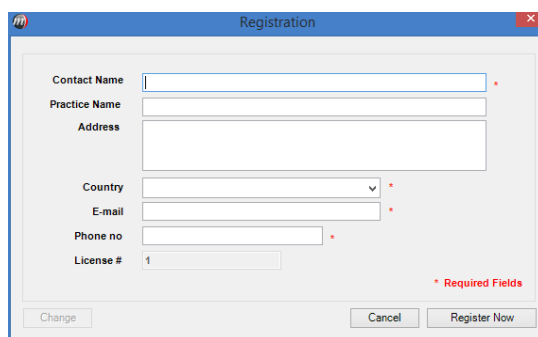
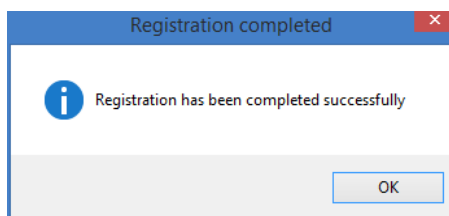
The image shows a 'Registration' dialog box with a blue title bar and a close button. It contains several input fields: 'Contact Name', 'Practice Name', 'Address' (a larger text area), 'Country' (a dropdown menu), 'E-mail', 'Phone no', and 'License #' (with a small '1' in the text). Red asterisks are placed to the right of 'Contact Name', 'Country', 'E-mail', and 'Phone no'. A legend at the bottom right indicates '* Required Fields'. At the bottom of the dialog are three buttons: 'Change', 'Cancel', and 'Register Now'.

Figure 19. Software registration window.

Before proceeding with the registration process please ensure your computer has a working internet connection. If running in a client/server mode the registration only needs to be performed once and can be done from any client computer.

Enter information into all of the available fields. The fields marked with a red asterisk are required fields and must be completed before proceeding. Once all information is entered click on the **Register Now** button. If the registration process is successful the following message shall be displayed.



If a different message is displayed please check your internet connection and try again, if the problem persists please contact your local authorised distributor for support. You can update your contact details at any time by

opening the Registration Window by clicking **Help > Register** and clicking on the ***Change*** button, modify your details and press ***Register Now*** again.

You are now ready to start using Medmont Studio.

6. Configuring a Server/Client System

A standalone Medmont Studio system is ready-to-go once the installation completes. However a Server/Client installation will require some additional configuration.

Setup for a Secure System

By default a system installed with a server and several clients will be an insecure system. This means anybody can use Medmont Studio and have full administrator privileges.

This may be an adequate configuration in a small practice. However, in a large practice with many clinicians, or in a teaching environment, the recommendation is for a password-protected system. This allows the system administrator some control over the access each clinician has to the Medmont Studio capabilities. For example, a clinician (or more correctly, a particular password) can be prevented from deleting patients, or from (re-)configuring instruments. In a teaching situation, students can be issued with a generic password that only allows for creating patients and performing tests.

Password protection can be useful even for a small practice, where the system is normally accessed via a password that allows everything except patient deletion. For this case the clinician must log back in using the admin password. This action therefore requires a specific step, and helps to prevent inadvertent deletions.

Setting the Administrator Password

The first step is to setup the administrator password. With Medmont Studio running click **Configure > Logon > Set Password**. It will present the login dialog shown here.

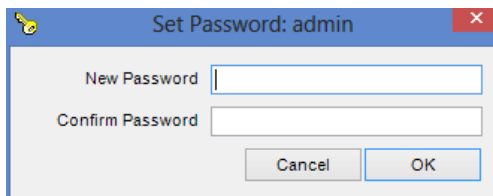


Figure 20 – Set Password Dialog

Fill in and confirm the password you will use to administer the networked Medmont Studio system. The name “admin” has by default all the permissions shown in Figure 22.

Adding Clinicians

The next step is to register the clinicians who will be using the system. Click on **Configure > Studio > Clinicians** to display the **Clinicians** dialog shown in Figure 21

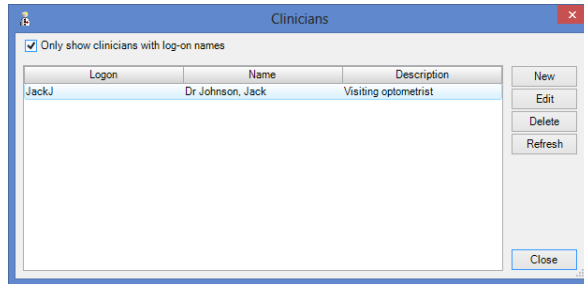


Figure 21. Manage the Clinicians in the Practice dialog.

Click the **New** button in this dialog to display the **New Clinician** dialog shown in Figure 22. Fill in the text boxes in the Details section. By default this clinician will be enabled to use the system with the **Enable Logon** checkbox ticked. Enter the name the clinician will use to log on to Medmont Studio into the **Logon** text box. Click the **Set Password** button and enter their password.

Setting Permissions

If you tick the **Administrator** checkbox that clinician will have access to all the listed options.

If you click nothing then that clinician will be able to review results only.

Tick the other options as your situation requires.

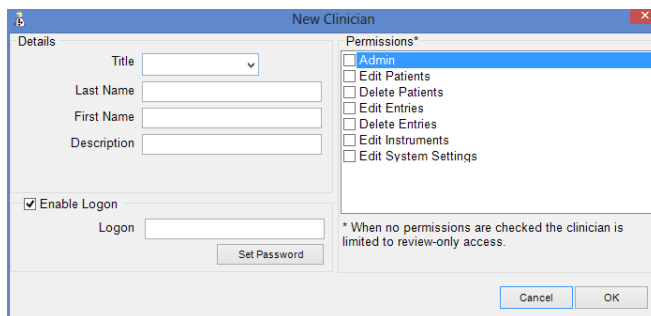
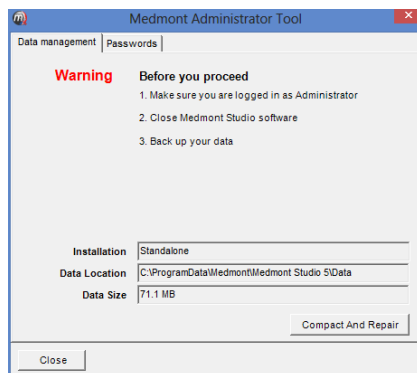
The 'New Clinician' dialog box is divided into two main sections. The left section, titled 'Details', contains a 'Title' dropdown menu, and three text input fields for 'Last Name', 'First Name', and 'Description'. Below these is a checked 'Enable Logon' checkbox and a 'Logon' text input field with a 'Set Password' button. The right section, titled 'Permissions*', features a list box with 'Admin' selected and several unchecked options: 'Edit Patients', 'Delete Patients', 'Edit Entries', 'Delete Entries', 'Edit Instruments', and 'Edit System Settings'. A note at the bottom right states: '* When no permissions are checked the clinician is limited to review-only access.' At the bottom of the dialog are 'Cancel' and 'OK' buttons.

Figure 22. Enter and Edit the New Clinicians dialog.

You can prevent a user from logging on by un-checking the **Enable Logon** checkbox if necessary.

Database management

A separate program to Medmont Studio performs database management.

The 'Medmont Administrator Tool' dialog box has two tabs: 'Data management' and 'Passwords'. The 'Data management' tab is active and displays a red 'Warning' icon and the text 'Before you proceed'. Below this is a numbered list: '1. Make sure you are logged in as Administrator', '2. Close Medmont Studio software', and '3. Back up your data'. At the bottom, there are three fields: 'Installation' (Standalone), 'Data Location' (C:\ProgramData\Medmont\Medmont Studio 5\Data), and 'Data Size' (71.1 MB). A 'Compact And Repair' button is located to the right of the 'Data Size' field. A 'Close' button is at the bottom left.

Click on **Start > Programs > Medmont > Medmont Studio Administrator Tool**. The Data Management tab on this dialog provides the path to and size of the Medmont Studio database. Prior to running a system backup (see *Data Backup* on page 98) execute the steps listed on this dialog.

The Passwords tab has a single button that will clear the Medmont Studio administrator password.

Session Management

A client logged on to the system constitutes a *Session* (see also *Session Licenses* on page 88). You can review the current sessions at any time by clicking the **Configure > Studio > Sessions** menu entry.

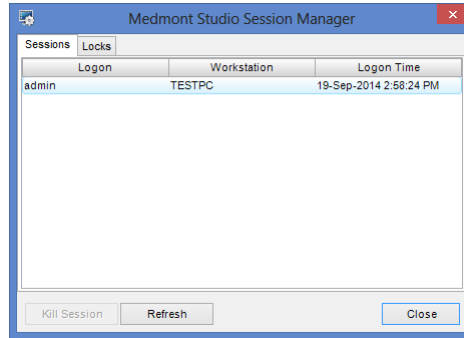


Figure 23. Medmont Studio Session Manager.

The administrator can kill a session at any time by selecting the entry and clicking the **Kill Session** button. This does not literally kill the Medmont Studio application on the client computer, but just disconnects it from the database.

If the session is in use there is a strong possibility of data loss for that session.

Database Locks

When a client computer accesses the database by examining a patient's details or by viewing an exam, there is nothing stopping another client computer examining that same patient or exam. However, as soon as one client attempts to edit patient details or start annotating an exam, that entry in the database will be locked. Because an editing session may consist of several edits, the item will remain locked until it is dismissed, typically by the clinician saving it or by moving on to the next patient or exam.

While an entry is locked, if another client attempts to change the same entry, they are immediately presented with a message indicating that someone else has that entry locked.

As an example, if a clinician on client computer A is adding comments to a particular patient's record, and a clinician on client computer B also attempts to add some comments to the same patient record, client B will be presented

with a warning message about the record being locked the instant typing starts. In effect he or she will be prevented from typing anything at all.

As soon as client A moves on, the lock will be removed. At this point if client B tries once more to add his or her comments, at the instant typing starts a message will be presented stating that another user has changed this record. Clicking **OK** on the message will update the client B display, showing the changes made by client A. Client B can now see these new comments as well as being free to start entering further comments.

Clicking on the **Locks** tab in the Session Manager dialog shown in Figure 23 will show the current set of database locks.

Client Caching

Practice's that are interconnected over low speed connections can benefit by enabling the client caching option. Enabling client caching improves performance by storing exam data locally and transferring the exam data to the server in the background. This means the user is free to continue normal operations rather than wait while the exam data is transferred to the server which could take several seconds or minutes on very low speed networks. The exam data is available immediately on the client where the data was captured but may not be available at other clients until the background data synchronization is complete.


To enable Client Caching run the Configuration Tool and tick the check box labelled ***Enable Client Caching (for remote servers)*** located within the server settings tab. This option is only available when configuring a client setup.

7. Practice Management System Integration

When Medmont Studio is operating with Practice Management Integration (PMI) activated, it smoothly integrates the patient management of a 3rd party Patient Management system with its own Patient management. Medmont Studio uses the 3rd party system only as a source of patient data - it cannot change the data in any way.

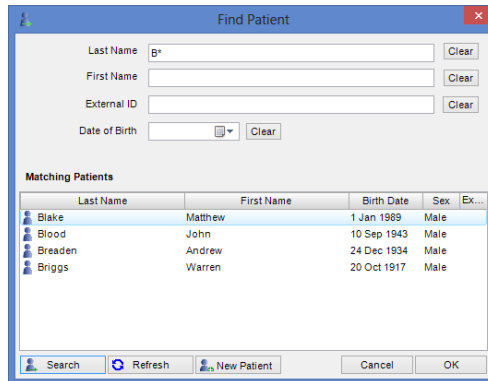
An additional license is required to connect Medmont Studio to a 3rd party Practice Management system.

Patients who are listed in Medmont Studio are those for whom an examination has been performed using a Medmont instrument. A new Medmont Studio installation will therefore have no patients listed even though the PMI may have hundreds.

While you can still create patients with Medmont Studio by clicking on the  Create New Patient icon, they will be unknown to the PMI.

Adding a New Patient in Medmont Studio

The idea is to link Medmont Studio to a patient entry in the PMI. The technique is to use the **Find Patient** menu entry when starting a new exam. This displays the Find Patient dialog, which for a PMI system is directly linked to the 3rd Party Patient Management system database.



The 'Find Patient' dialog box contains the following elements:

- Search fields: Last Name (with a magnifying glass icon), First Name, External ID, and Date of Birth (with a calendar icon). Each field has a 'Clear' button to its right.
- Matching Patients table:

	Last Name	First Name	Birth Date	Sex	Ex...
	Blake	Matthew	1 Jan 1989	Male	
	Blood	John	10 Sep 1943	Male	
	Breaden	Andrew	24 Dec 1934	Male	
	Briggs	Warren	20 Oct 1917	Male	

At the bottom of the dialog are buttons for Search (with a magnifying glass icon), Refresh (with a circular arrow icon), New Patient (with a person icon and a plus sign), Cancel, and OK.

Figure 24. Find a Patient in 3rd party Management System.

Figure 24 shows the range of selection options for a patient search. At this point it is more than likely you will have the PMI application open prior to

starting Medmont Studio as part of your initial patient interview. This implies the patient either already existed there or you have just entered the details for a new patient. Now use the Find Patient dialog to copy the patient details to Medmont Studio.

The quickest method is to copy the 3rd party Management System patient ID number into the Medmont Studio **External ID** field and click the **Search** button. This will produce a guaranteed singular match. Click **OK** to create a matching patient entry in Medmont Studio.

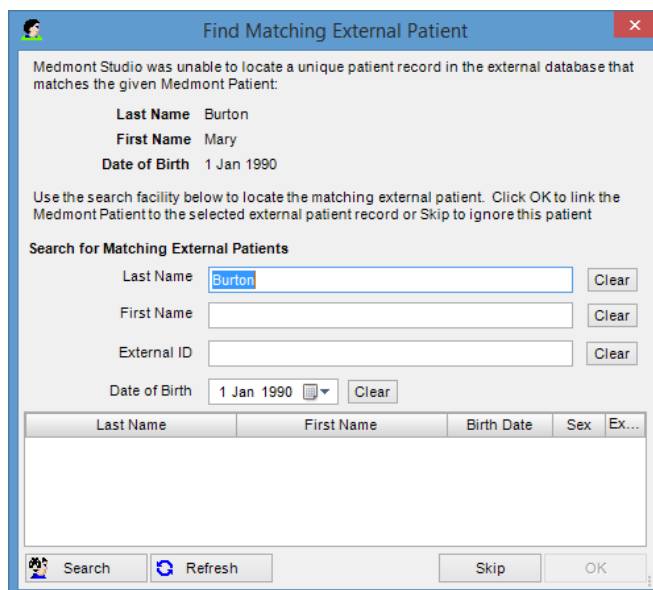
The alternative is to enter some search criteria into one or more of the text boxes. In Figure 24 the clinician has entered B* in the last name box and then clicked the **Search** button. This will search for all names in the PMI that start with “B”, as the asterisk is shorthand for “match anything” (see *Searching by Patient Name* on page 45). The search example located three patients. Select the correct one and click **OK** to create a matching patient entry in Medmont Studio.

Synchronising the Databases

If for some reason a patient has been entered into Medmont Studio without being linked to the PMI, you can reconcile the entry at some later time.

First select the patient in Medmont Studio and on the **Home** tab, click on **Synchronise Current**. If the details previously entered into Studio match those in the PMI, this will reconcile the two entries, automatically adding the PMI external ID to the Medmont database. The ID will now be visible in the patient details External Record box.

What if there is no matching entry in the PMI database? As an example, suppose someone had previously entered a patient called *Peter Adams* with a birth date of 14-5-1956 and proceeded with some exams but without linking to the PMI. Perhaps the network was down. At some later time it is noticed this patient has no external ID number. Select this patient and on the **Home** tab, click on **Synchronise Current**. Medmont Studio displays the dialog in Figure 25, indicating no matching entry in the PMI.



Find Matching External Patient

Medmont Studio was unable to locate a unique patient record in the external database that matches the given Medmont Patient:

Last Name Burton
First Name Mary
Date of Birth 1 Jan 1990

Use the search facility below to locate the matching external patient. Click OK to link the Medmont Patient to the selected external patient record or Skip to ignore this patient

Search for Matching External Patients

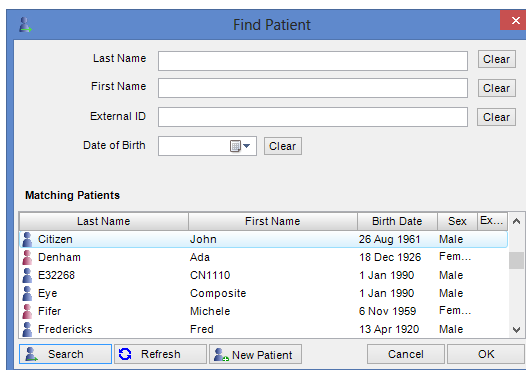
Last Name Clear
First Name Clear
External ID Clear
Date of Birth Clear

Last Name	First Name	Birth Date	Sex	Ex...
-----------	------------	------------	-----	-------

Search Refresh Skip OK

Figure 25. Example No Patient Match in PMI dialog.

The next step is to check if there is such a patient as *Peter Adams* in the PMI. On the **Home** tab, click on **Find**, entering this name and then clicking the **Search** button shows the dialog of Figure 26.



Find Patient

Last Name Clear
First Name Clear
External ID Clear
Date of Birth Clear

Matching Patients

Last Name	First Name	Birth Date	Sex	Ex...
Citizen	John	26 Aug 1961	Male	
Denham	Ada	18 Dec 1926	Fem...	
E32268	CN1110	1 Jan 1990	Male	
Eye	Composite	1 Jan 1990	Male	
Fifer	Michele	6 Nov 1959	Fem...	
Fredericks	Fred	13 Apr 1920	Male	

Search Refresh New Patient Cancel OK

Figure 26. Example search PMI database.

The dialog shows that there is such a person, but that the birth date is 14-12-1956 rather than the 14-5-1956 entry in the Medmont Studio database. Re-doing the **Synchronise Current** sequence and clicking on the **Clear** button for the Date of Birth entry will remove that criterion. Now clicking on the

Search button will find this patient and clicking **OK** will update the Medmont Studio database with a complete entry.

Find Matching External Patient

Medmont Studio was unable to locate a unique patient record in the external database that matches the given Medmont Patient:
Last Name Burton
First Name Mary
Date of Birth 1 Jan 1990
Use the search facility below to locate the matching external patient. Click OK to link the Medmont Patient to the selected external patient record or Skip to ignore this patient

Search for Matching External Patients
Last Name
First Name
External ID
Date of Birth

Last Name	First Name	Birth Date	Sex	Ex...
Burton	Mary	5 Apr 1964	Fem...	22

Figure 27. Example patient found dialog.

8. Overview

The User Interface

Medmont Studio has a single main *Windows Explorer* style user-interface, and provides point-and-click access to its capabilities. The user can swap between instruments and most tasks with a single mouse click.

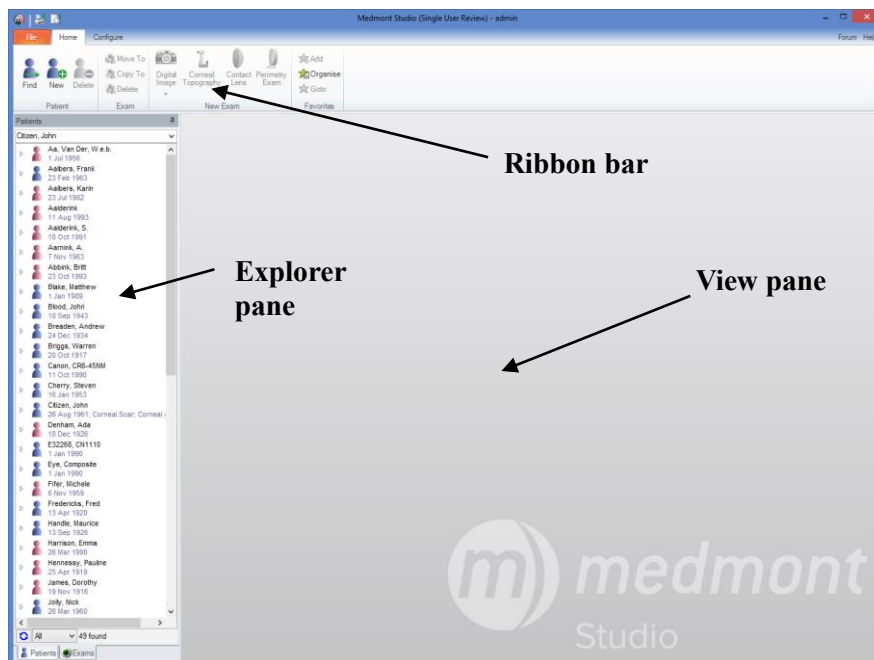


Figure 28. Studio Main Window.

The main window shown in Figure 28 is divided into three areas:

Explorer pane: Lists patients and exams. These can be selected by single mouse click. Filtering, sorting and searching are also supported.

View pane: Displays the current patient or exam(s) selected in the Explorer pane.

Ribbon: Tabs to select a function with a single mouse click. Examples are entering a new patient or creating, analysing and editing an exam.

These are described in detail in subsequent sections.

9. The Explorer Pane

The Explorer pane allows you to select the data you wish to display. The *Patients* pane (Figure 29) displays patients within the Medmont database as top level elements, with exams for each patient displayed under them.

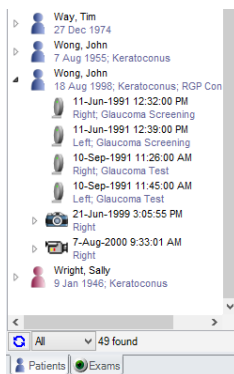


Figure 29. Explorer pane showing the Patients pane

The *Exams* pane (Figure 30) shows exams within the Medmont database as top level elements and allows you to sort, filter and select exams across all patients.

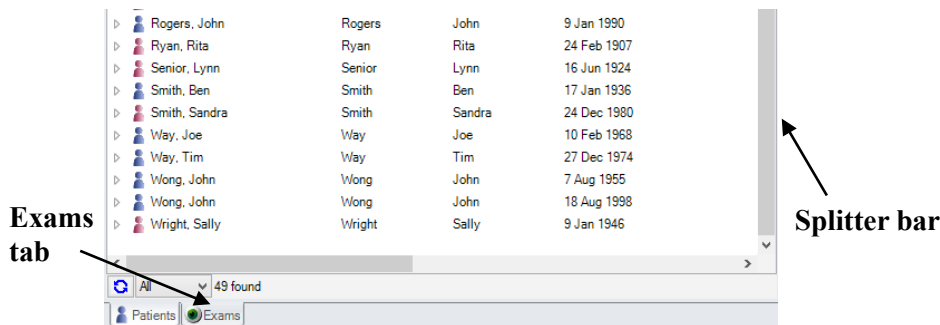


Figure 30. Explorer pane showing Exams

You can select either of these views by clicking on the respective selection tab along the bottom of the Explorer pane as shown below. Additional tabs for specific instruments may also be present depending on the installed components. The data displayed within the *Patient* and *Exam* tabs depends on the width of the Explorer pane. Expanding the explorer pane (by dragging

the splitter bar) displays additional information in columns which can be sorted and arranged.

Sample Data

If this is the first time you have used Medmont Studio, you can become familiar with most aspects described in this and the instrument manuals by importing the various sample data sets on the flash drive. There is sample data for the M700, E300 and DV2000 instruments and a corresponding set of patients.

Click on the **File menu**, then click **Import** and navigate to the **Sample Data** folder on the flash drive. You can import any or all of the files (although only one at a time).

Changing the Size and Position of the Explorer Pane

A vertical *splitter bar* separates the Explorer pane from the View pane (see Figure 30). The size of the Explorer pane can be changed by dragging the splitter bar to the left or right. The View pane rescales itself correspondingly. Both the *Patient* and *Exam* tabs automatically reformat the displayed data when more space is available to display data in columns which can be sorted and arranged.

A horizontal scroll bar will appear along the bottom edge of either pane if required.

Docking and Undocking

Double clicking on the title bar of the Explorer pane undocks the Explorer pane turning it into a free-floating window. This creates maximum space for the View pane. If your system has dual monitors, dragging the Explorer pane to the other monitor leaves the View pane full-screen.

Double clicking the title bar again re-docks the Explorer pane in its usual spot (left of the View pane).

Unpinning and Pinning

Clicking on the Explorer pane vertical drawing-pin icon (see Figure 31) *unpins* the pane. The pin will change to a pin lying on its side and the pane will slide off screen to the left of the main window and auto-hide itself when not in use. The pane appears as a thin vertical strip containing the same set of filter icons as were across the bottom of the expanded pane.



Figure 31. Explorer pane docking pin location.

When the Explorer pane is uninned, a single click on the desired tab will temporarily expand the Explorer pane. Any one of the selection tabs can be selected by hovering the mouse cursor over the tab for a short period - no click is required.

Clicking on the horizontal pin turns off auto-hide.

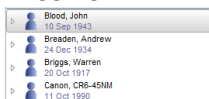
Patients Explorer Pane

The patient's pane lists all patients known to the system in alphabetical order (by default). An icon represents the patient's gender.

If the patient has exams stored on the system a small ▶ symbol will be visible to the left of their name. Clicking on this symbol will show the exams for that patient, and the symbol will change to a ✱ symbol. Clicking on this symbol will hide the exams again and restore the original ▶ symbol.

The same symbol will appear for some types of exam that have associated sub-items.

The Patient's Pane can be expanded (see Figure 32) to show a tabular list of the patients and their exams. The width of the columns can be adjusted by clicking on the vertical line separating adjacent column headings and dragging left or right. Columns can be added or removed by right clicking on the column header area and selecting Show/Hide columns. Columns can be moved and reordered by clicking on the column header and dragging.



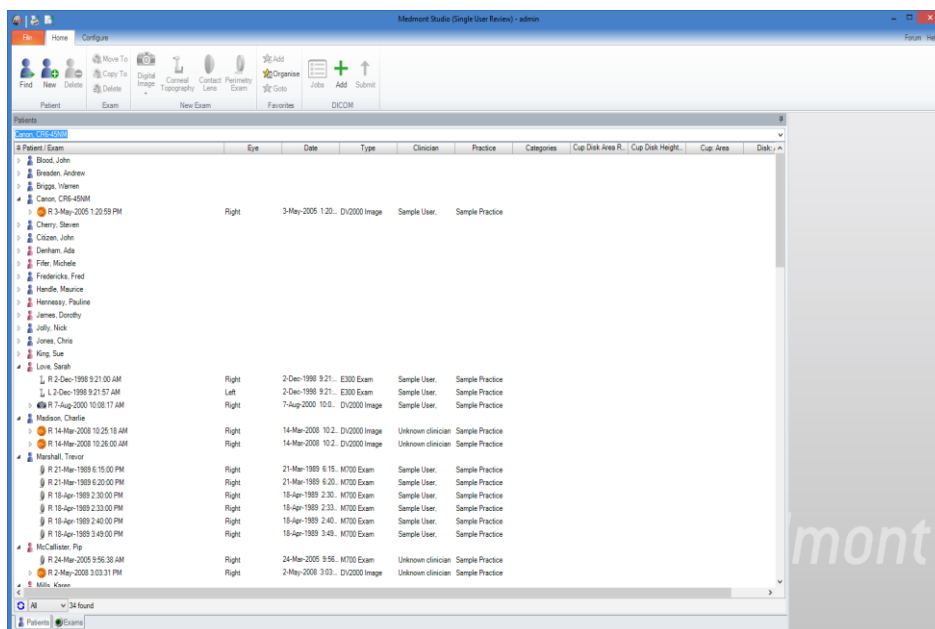


Figure 32. Studio Main Window showing the expanded Patient View.

Exams Explorer Pane

The exams pane lists all exams in the database in exam date order (by default). Like the Patients Pane it can be expanded to show a tabular list of the exams and their attributes. The width of the columns can be adjusted by clicking on the vertical line separating adjacent column headings and dragging left or right. Columns can be moved and reordered by clicking on the column header and dragging. Columns can be added or removed by right clicking on the column header area and selecting Show/Hide columns. The displayed/available columns depends on the currently selected item. Only columns relevant to the currently selected item are displayed.

Adding a Patient

From the Medmont Studio main window, click on **Home > Patient > New** to bring up the New Patient dialog shown in Figure 33.

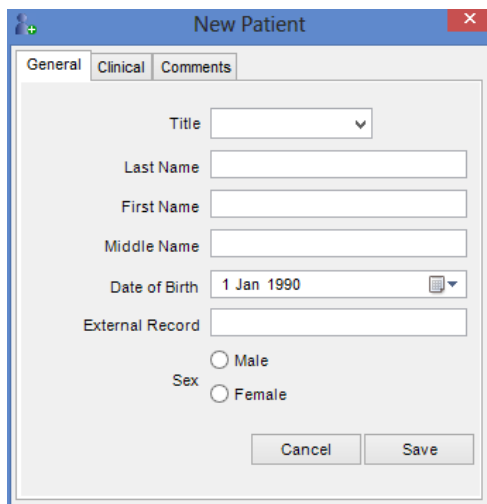
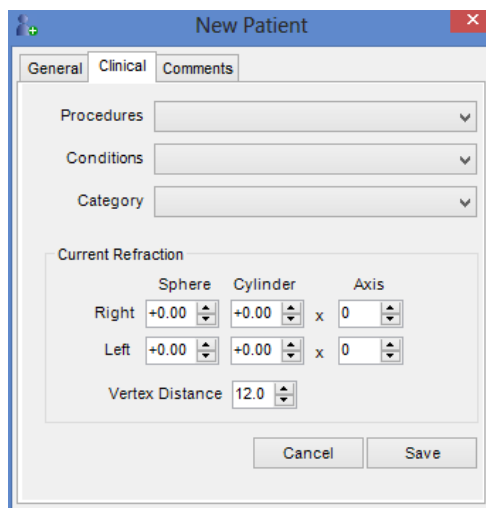


Figure 33. New Patient dialog.

Text entry boxes in Medmont Studio such as **Last Name** and **First Name** in Figure 33 use *Auto Case* by default. For details of how this effects entering patient details, see *Auto-Capitalisation* on page 82.

The General tab provides for entering a standard set of patient identification parameters such as Name, Date of Birth, Gender, etc. The External Record entry can be used to link the patient to a 3rd party patient management system.

The Clinical tab dialog shown in Figure 34 provides for selecting clinical details that describe the patient's condition. The Current Refraction entries provide for recording a current prescription and are quite straightforward. You can enter numbers directly or by using the up/down spin buttons.




The 'New Patient' dialog box has three tabs: 'General', 'Clinical', and 'Comments'. The 'Clinical' tab is active. It contains three drop-down menus for 'Procedures', 'Conditions', and 'Category'. Below these is a section for 'Current Refraction' with a table for 'Right' and 'Left' eyes. Each eye has input fields for 'Sphere' and 'Cylinder' (both set to +0.00) and a multiplier 'x' (set to 0) followed by an 'Axis' input field (set to 0). A 'Vertex Distance' input field is set to 12.0. 'Cancel' and 'Save' buttons are at the bottom right.

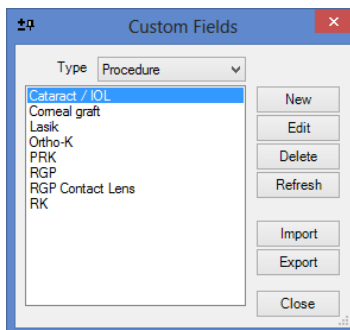
	Sphere	Cylinder	x	Axis
Right	+0.00	+0.00	x	0
Left	+0.00	+0.00	x	0

Vertex Distance: 12.0

Figure 34. New Patient Clinical tab.

The three drop-down boxes display selections from your practice set of categories as entered into the **Configure > Studio > Lookup Fields** option, as shown in Figure 35. Use the Custom Fields dialog to enter Procedure, Condition and Category descriptions (both patient and exam) that apply in your practice. Note that you cannot make *new* entries in the Clinical tab from the New Patient dialog; they must be entered from the Custom Fields dialog.

The Comments tab of the New Patient dialog presents a simple text-editing window into which you can enter any relevant details. Once comments have been entered an indicator icon  shall appear in the title for the comments tab.



The 'Custom Fields' dialog box has a 'Type' drop-down menu set to 'Procedure'. A list of procedures is shown: 'Cataract / IOL', 'Corneal graft', 'Lasek', 'Ortho-K', 'PRK', 'RGP', 'RGP Contact Lens', and 'RK'. To the right of the list are buttons for 'New', 'Edit', 'Delete', 'Refresh', 'Import', 'Export', and 'Close'.

Figure 35. Custom Fields Entry and Editing dialog.

The Refresh Button

The ***Refresh*** button in Figure 35 and other dialogs in Medmont Studio software only have a real function in a networked system. In these systems, clicking the button will update the items associated with the current dialog from the central database. Thus if items have been edited on one client computer, they can be updated on any other client computer by clicking the ***Refresh*** button in the relevant dialog.

Editing a Patient

If you click on an existing patient you will see the same dialog shown in Figure 33, only now the title bar will show the selected patient's name and the various fields will be filled with data. You can use the dialog to review the patient's details or make any changes that may be required.

Selecting Explorer Pane Items

To select a single item in the Explorer pane, such as a name, click on the symbol or the label to the right of the symbol (in the tree) or anywhere on the line (in other views). The selected item will be highlighted and the View pane will show data or an image for that item. Figure 36 shows a patient with the exams shown, a particular exam selected (shown highlighted), and with that exam displayed in the View pane.

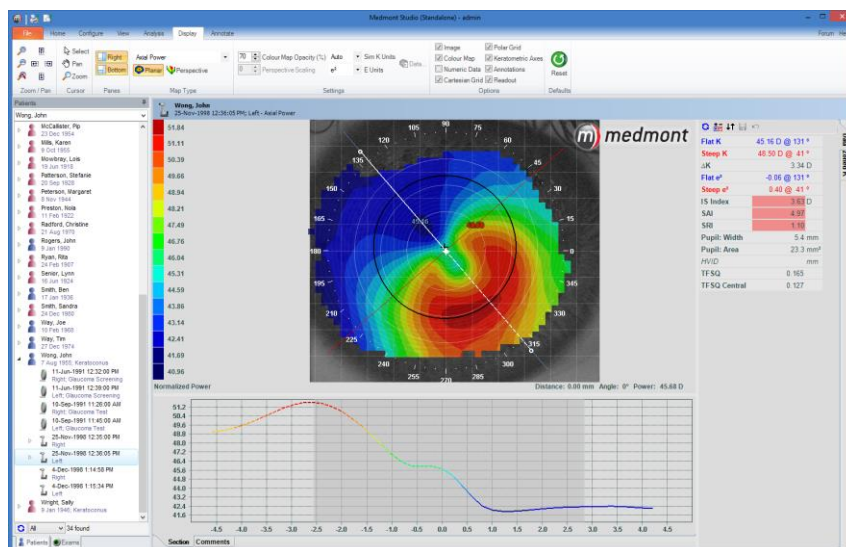


Figure 36. Selecting and displaying an item from the Patient Explorer pane.

Selecting Multiple Items

To select multiple items, hold down the control key while selecting additional items.

To select a range of items, select the first item in the range and then select the last item in the range while holding down the shift key *or* simply drag the mouse while holding the left button down, over the items you wish to select.

Procedures, Conditions and Categories

Procedures, conditions and categories are custom fields that allow you to categorize and filter patients and exams. You typically set these fields for a patient or exam using the Details View (see page 58). The selected custom fields are, by default, displayed in the second entry line in the explorer pane. You can control this in the Explorer Pane user settings by clicking **Configure > Studio > Preferences**. The text (and its colour) displayed in the explorer pane for a custom field can be changed by editing the field using the **Configure > Studio > Custom Fields**.

The explorer pane also provides a short cut mechanism for setting custom fields for the selected item. Use the right mouse button to select an item in the Explorer pane. Select or deselect the *Condition*, *Procedure* or *Category*

to associate with the item. Note that *Conditions* and *Procedures* only apply to patients.

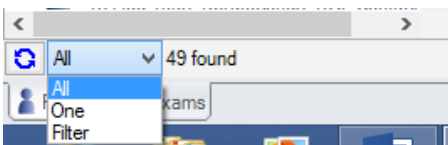
Filtering

The Patient View provides three filter modes: *All*, *One* and *Filter*. These are selected from the dropdown list just above the tabs at the bottom of the Explorer pane. The message “xx found” beside the selector, indicates how many matching patients can be seen using the current filter.

The selections are:

- **All** - shows all the patients in the system.
- **One** - shows the currently selected patient. This is especially useful where privacy is a concern, for example when showing a patient her or his exam; it will prevent that patient seeing a list of your other patients.
- **Filter** - pops up a custom filter that allows the user to specify more detailed criteria.

Selecting the Filter option will display the dialog of Figure 37 that demonstrates the very extensive patient filtering capabilities of Medmont Studio. As a simple example, with this dialog displayed, click on the **Female** radio button and then the **Apply** button. You should see the Explorer pane re-display with just the female patients.



The 'Patient Filter' dialog box is shown with the 'Advanced' tab selected. It contains two main sections: 'Patients With' and 'Who Have'. The 'Patients With' section includes fields for 'Date of Birth' (with a calendar icon), 'To' (with a calendar icon), 'Sex' (radio buttons for Male and Female), 'Procedures' (dropdown), 'Conditions' (dropdown), and 'Categories' (dropdown). Each of these fields has a 'Clear' button. The 'Who Have' section includes a 'Seen Clinician' dropdown with a 'Clear' button, a checkbox for 'Find Patients Without a Clinician', an 'Attended Practice' dropdown with a 'Clear' button, a checkbox for 'Find Patients Without a Practice', and 'Exams between' (with a calendar icon) and 'and' (with a calendar icon) fields, each with a 'Clear' button. At the bottom are 'Clear All', 'Cancel', 'Apply', and 'OK' buttons.

Figure 37. Patient Filter selection dialog.

The Standard tab provides functionality for selection based on a number of standard selection criteria. The Advanced tab however, provides for considerably more detailed selection. The initial dialog is shown in Figure 38.

The 'Advanced Filter' dialog box is shown with the 'Standard' tab selected. It features two radio buttons: 'Conditions are AND-ed (Intersection)' (which is selected) and 'Conditions are OR-ed (Union)'. Below these is a large empty rectangular box for defining conditions. To the right of this box are four buttons: 'New' (with a dropdown arrow), 'Edit', 'Delete', and 'Clear'. At the bottom are 'Clear All', 'Cancel', 'Apply', and 'OK' buttons.

Figure 38. Advanced Filter dialog.

You may create a number of conditions via the **New** condition button, and the resulting selection will be based on each and every one being true if you leave the default **AND** radio button selected. Otherwise only one of the conditions need be true if you select the **OR** button.

Click on the *New* button to define a new simple condition.

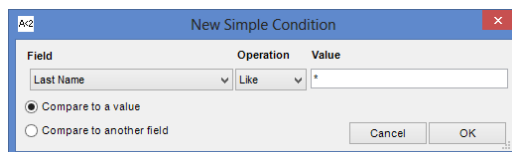


Figure 39. Advanced Filter Simple Condition entry dialog.

The Simple Condition dialog shown in Figure 39 provides for selecting a field variable and equating it in some way with a value or perhaps with another field. A *field* in the Medmont Studio condition context is a patient or exam *attribute*. A Patient attribute would be age, name, gender, etc, while Exam attributes are items like an M700 threshold exam false positive count or an E300 exam iris area.

The drop-down **Field** box allows for selection of the particular attribute. The drop-down **Operation** box provides for selecting from the criteria list, and the **Value** drop-down box provides for selecting a comparison value.

Note that this dialog can extend the width of the **Field** drop-down box by clicking and dragging the left or right edge.

Taken together, the set of simple conditions and whether they are ANDed or ORed provides for very powerful analysis of your patients and their exam results.

Searching

The Patient view has a search box at the top of the pane. It normally reflects the current patient selection.

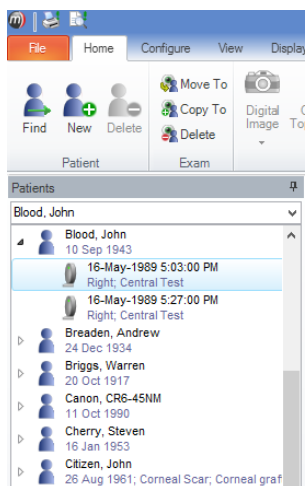


Figure 40. Patient name Search box.

Searching by Patient Name

Type the *last-name* or a combination *last-name, first-name* to search for a particular patient. If a unique match is found that patient will be selected. Otherwise the **Find Patient** dialog will appear and you can use this to find the patient. The dialog will also appear where the search criteria is not sufficiently unique, such as entering “mi” when the patient database includes a Mills and a Mitchell.

Recently selected patients can also be found by clicking on the down arrow beside the search box.

Some additional points about searching are:

- The search is not case sensitive.
- Entering in the first few letters of the surname may be sufficient.
- You may enter patterns:
 - ? stands for any single character (e.g. Jons?n will find *Jonson* and *Jonsen*)
 - * stands for any group of characters (e.g. St*s will find *Sticks* and *Stones*)

Searching by Patient External ID

You can search by the patient external identifier (the patient index in a 3rd party Patient Management system). If these are numeric, then just enter the number, eg. 2345. If your 3rd party system uses an alphabetic or

alphanumeric index system, then you must precede the identifier with the hash “#” character to distinguish the identifier from a name, eg. #DF451. No *pattern* search is available for external IDs.

Searching a 3rd-party Practice Management

If a 3rd party practice management is installed the patient search is first carried out in the 3rd party database.

If a unique match is found this will result in pertinent information about the patient being read from the 3rd party database into Medmont Studio. The information for that patient is either added to Medmont Studio or updated (the two databases are *synchronised*).

Search Behaviour and the Different Filter Modes

The exact effect of a search depends on the current filtering:

- **All** - The selection jumps to the sought patient (the simple case).
- **One** - The selection changes to the sought patient.
- **Filter** - If the sought patient is in the filter result, the selection jumps to that patient; otherwise filtering reverts to **All** and the selection then jumps to that patient.

Sorting

The sort order for both Patient and Exam views can be changed by expanding the view to display columns and then clicking on a column heading to sort by that criterion (see Figure 32). A second click reverses the order of the sort.

A small arrow in one of the column headings indicates the current sort criterion and the direction of the sort (ascending or descending).

Using the individual column headers to sort the exams belonging to each patient does not change the patient list order, only the order of the exams belonging to that patient.

Using Favourites

The Favourites menu allows you to add a shortcut to frequently accessed patients and exams.

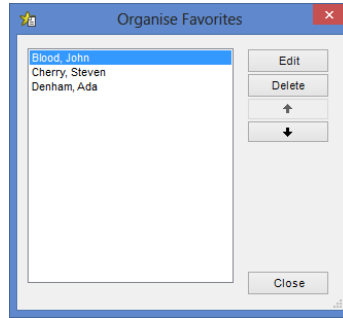


Figure 41. Organise Favourites dialog.

Select the item in the Explorer pane and click on **Home > Favourites > Add** to add a shortcut to the item in the Favourites menu. You can optionally rename the shortcut to indicate its purpose. The new shortcut is then shown under the **Home > Favourites > Goto** drop down box.

Clicking **Home > Favourites > Organise** displays the dialog shown in Figure 41. This allows you to change the order of shortcuts by selecting the shortcut and using the up or down arrows, or to edit or delete the selected shortcut.

You can jump to a favourite entry by clicking on it in this dialog. The item referenced by the shortcut will be displayed in the View pane and selected in the Explorer pane.

10. The Ribbon Menu

Medmont Studio uses a tabbed ribbon style interface. The ribbon tabs are organized into groups and are labeled according to the function. For example, the **Home** tab contains all functions for creating a new patient or exam. All functions have an icon and are labeled, to assist the user with identifying functions.

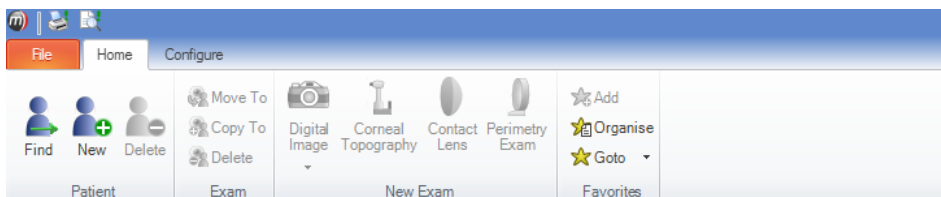


Figure 42. Home Tab.

The following lists the contents of each tab, and gives a brief summary of what each function performs when selected from those tabs. Tabs and function will vary depending on which instruments are installed or what exam is selected.

Items that are inappropriate for the current exam(s) or patient(s) appear *greyed out* (disabled), and clicking will have no effect.

File Menu

Print - Print a report based on the currently selected patient or exam(s).

Print Preview - Preview the appearance of a print report.

Refresh – Forces an update of data from the database. Useful in client/server configurations where users on other computers may be making simultaneous changes to the database.

Export - Export a file summarising the currently selected items and other information on which they depend. For example, if an exam is selected, the essential information about the clinician who conducted the exam will be included in the export file.

Import - Reads in a file created by *Export*.

Close - Close Medmont Studio.

Home Tab

Patient

Find – Search for a particular patient based on their name, birth date, or external ID if using 3rd party practice management.

New - Create a new *Patient*

Delete - Permanently delete the currently selected patient(s).

Note - deleting a patient will also delete <i>all</i> of that patient's exams.
--

Exam

Move To – Copies the selected exam(s) from the current patient to a different patient, and removes them from the current patient. Moving exams whilst a patient is selected moves all exams belonging to that patient to a different patient.

Copy To – Duplicates, without removing, the selected exam(s) from the current patient to a different patient. Copying exams whilst a patient is selected copies all exams belonging to that patient to a different patient.

Delete - Permanently deletes the currently selected exam(s).

New Exam

Digital Image – Opens the DV2000 exam window.

Corneal Topography – Opens the E300 exam type selection dialog.

Contact Lens – Fit a Contact Lens to an existing E300 exam.

Perimetry Exam – Opens the M700 exam window.

External Data

Synchronize All – Synchronise all existing Medmont Studio patient data with an integrated 3rd party Practice Management System

Synchronize Current – Synchronise the currently selected patient's data with an integrated 3rd party Practice Management System

Link unlinked – Link a patient in Medmont Studio that is not already linked with an integrated 3rd party Practice Management System

Favourites

Add – Add a patient or exam to the Favourites list.

Organise – Change the order of favourites in the list or add/delete an entry.

Goto – Select a Favourite that has previously been added.

Links

Externally linked applications icons are placed here. Export data to 3rd party tools, for example contact lens designer tools or email results.

Configure Tab

Logon

Set Password - Change the password of the current user.

Change User - Switch users without restarting the application.

Studio

Practices - Add, modify, import or export associated practice names.

Clinicians - Add or modify clinicians using Medmont Studio and assign or edit their passwords and security access.

Custom Fields - Define or edit *conditions*, *procedures*, *categories* (of exams), and *categories* (of patients).

Attributes – Displays the Attributes management dialog.

Licence – Check, install and update licensing details.

Session - Check who is logged on and has exclusive access (*data locks*) to particular patients and exams.

Preferences – Set global preferences for Medmont Studio.

M700

Instrument Setup – Opens the M700 instrument setup window, allowing you to install, uninstall and test your M700 instrument

Template Setup – Opens the M700 Template setup window so Test Templates, used for M700 exams, can be created, modified, imported and exported

E300

Instrument Setup – Similar to the M700, this button opens the E300 instrument setup window, allowing you to install, uninstall and calibrate your E300 instrument

Calibrate – Calibrate your installed E300

System Settings – allows you to configure/adjust the Eccentricity, Shape Factors, height and Wavefront errors which affects the attribute values.

DV2000

Image Sources – provides access to the Image Source dialog, allowing you to setup an image source to create DV2000 exams.

Custom Operations – provides access to the Custom Operations dialog allowing you to create a custom operation with its own icon.

View Tab

The View tab provides buttons to allow you to select the data view to display in the View pane. The available views depend on the item(s) selected in the Explorer pane. The available views when a patient is selected are:



Details - View and edit personal details and clinical notes.



Thumbnail - Shows thumbnail-sized images of all the patient's exams.



Regression - Statistical analysis tools.

For exams, views include a primarily text-based **Details** view, together with a variety of instrument-specific graphic views.

Display Tab

Graphical views typically provide a *Display* tab which contains the following common items, in addition to items specific to the view:

Zoom / Pan

Controls to zoom and pan the display by clicking the corresponding button

Cursor

Select – change the cursor for the active view to enable selection of annotations and other displayed items

Pan – change the cursor to allow the active view to be panned by clicking and dragging the mouse

Zoom – change the cursor to allow the active view to be zoomed in about a selected point by clicking the mouse. Hold the control key down while clicking to zoom out.

Panes

Right – select whether the right hand pane (containing attribute values and other view specific data) is displayed

Bottom – select whether the bottom pane (containing comments, cross sections and graphs) is displayed

Annotate Tab

Provides controls to allow you to add, delete and modify annotations on graphic views.

Selection

Properties – display (and change) the properties for the selected annotation. You can also use the right click menu or double click on the annotation to display properties.

Delete – delete the selected annotation

Lock – lock or unlock the selected annotation. Locked annotations cannot be moved or resized. Locking annotations can be useful to prevent them accidentally be changed.

Add Annotation

Controls to add different types of annotations to the graphic view. See *Adding Annotations* on page 65 for more detail

Help Menu

Links to the various electronic User Manuals and other useful information. See *Help* on page 103 for more details.

Customizing the Ribbon

The ribbon has a quick access toolbar (see below) which can be used to store a shortcut to a function. The toolbar will become available when a quick access shortcut has been added and is located in the title bar.



Figure 43. Quick Access Toolbar

By right-clicking on an icon, you can choose from one of the following options:

Add to Quick Access toolbar – creates a shortcut to the function in the Quick Access toolbar.

Customize the Quick Access toolbar – Opens a dialog box where changes can be made to the quick access toolbar. See (*Customizing the Quick Access toolbar*).

Place Quick Access toolbar below the ribbon – Moves the quick access toolbar below the ribbon.

Minimize the Ribbon – Hides the ribbon, only leaving the tab labels. To access functions when the ribbon is minimized, click the required tab, which temporarily displays the ribbon containing those functions. The ribbon will then minimize once a function has been selected. To leave the ribbon on permanently again, double-click on a tab label.

Customizing the Quick Access toolbar:

To customize the toolbar, first right-click on an icon and click **Customize the Quick Access toolbar**. Functions are broken down into groups. Select the appropriate group from the **Choose commands from** drop down menu and the functions will then appear on left hand side of the divider. Click a function and click add. Functions for the quick access toolbar will now appear on the right hand side of the divider.

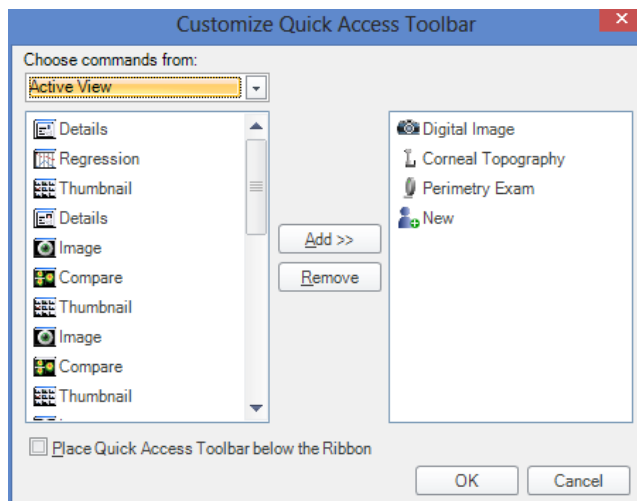


Figure 44. Customize the Toolbar

You can also remove a function from the quick access toolbar by clicking on it from the right hand side of the divider and clicking remove. Once all changes have been made, click OK.

Placing the quick access toolbar below the ribbon can also be done from this dialog box. Click the box next to **Place the quick access toolbar below the ribbon** and then click OK to enable this option.

11. The View Pane

The View pane is the area to the right of the Explorer pane. It displays graphics and information for the patient or exam selected in the Explorer pane.

The exact display depends on the current view mode set using the View menu or toolbar. What is displayed depends on the Medmont instrument associated with the selected exam, and this is covered in the respective instrument manuals.

Displaying Multiple Views

When multiple items are selected in the Explorer pane the View pane will display (if possible) a separate view for each selected item.

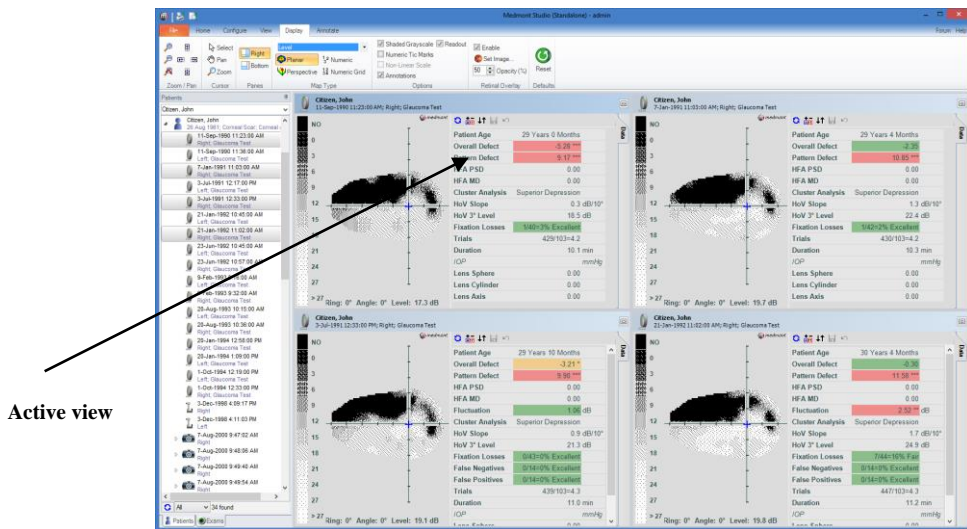




Figure 45. Multiple Views.

For this to be possible each selected item must have a view mode that supports Multiple Views. If more than four items are selected, or one of the selected items does not support Multiple Views then no views are displayed.

The title bar of one view is drawn in a different colour to indicate that this is the *active* view. The menus and toolbars displayed are determined by, and relate to, the active view. You can change the active view by clicking on the title bar of another view.

Any of the views can be temporarily made to fill the View pane by clicking on the  *explode* button or double-clicking the view's title bar. To restore the Multiple View display, click on the  *implode* button or double-click on the view's title bar.

You can use the zoom and pan controls in this view and the translations will apply to all images. The Ctrl-I key for example, will zoom in on all four images, and the Ctrl-O will zoom them out. Note that if you have a wheel mouse, the wheel allows you to zoom in and out on just the currently active view.

Zooming and Panning

Using the Menus to Zoom and Pan

Zooming and panning of graphical views works in a consistent way across all Medmont Studio components. In graphical views you can zoom and pan the currently displayed exam using the **Display > Zoom/Pan** ribbon bar group. You can use the **Display > Defaults > Reset** item to reset the default image view.


When multiple images are displayed zooming and panning of the images is synchronised.


Using the Keyboard to Pan and Zoom

The keyboard can be a convenient means for zooming and panning. Ctrl-I zooms in, Ctrl-O zooms out. Using the arrow keys, Ctrl-left pans left, Ctrl-right pans right, Ctrl-up pans up and Ctrl-down pans down.

Using the Mouse to Pan and Zoom

You can also use the mouse to pan or zoom within a single image. If the mouse is fitted with a wheel, the wheel is always enabled as zoom control. You can also change the cursor mode by pressing the spacebar, clicking the right mouse button within the image and selecting an option from the popup menu or by navigating to the **Display > Zoom/Pan** ribbon bar group. The shape of the cursor will change to reflect the current cursor mode.

In  **Pan** mode, click on the image and drag the mouse in the direction you wish to move the image. The image will continue to move in that direction while the mouse button is down or until a boundary is reached. The speed and direction of movement is proportional to the distance of the current cursor position from the position when the mouse button was pressed.

In  **Zoom** mode, click on the point in the image that you wish to zoom in on. The image will continue to zoom in while the left mouse button is held down. If you hold the **Ctrl** key down while clicking then you zoom out instead of in.


12. Patient Views

There are three different views available for Patients described in more detail below. Select a patient in the Explorer pane and then use the **View** ribbon tab to select one of the views. These views are only displayed when there is a single patient selected in the Explorer pane.

Details View



The Details view displays the name, date of birth and sex of the patient as well as allowing you to enter some basic clinical data – such as the current patient refraction. If Practice Management System Integration (see page 19) is installed then this data is updated from the practice management database each time the patient is selected based on the External Record that identifies the linked patient in the practice management database.



The screenshot shows the 'Patient Details View' for a patient named John Citizen. The header bar is blue and contains a patient icon, the name 'Citizen, John', and the date of birth '26 Aug 1961'. Below the header are three tabs: 'General' (selected), 'Clinical', and 'Comments'. The main content area is light gray and contains the following fields:

- Title: A dropdown menu showing 'Mr.' with a downward arrow.
- Last Name: A text box containing 'Citizen'.
- First Name: A text box containing 'John'.
- Middle Name: An empty text box.
- Date of Birth: A text box containing '26 Aug 1961' with a calendar icon to its right.
- External Record: An empty text box.
- Sex: Two radio buttons, 'Male' (selected) and 'Female'.

Figure 46. Patient Details View.

Thumbnail View



The Thumbnail view displays a thumbnail image of each exam belonging to the selected patient (see Figure 47).

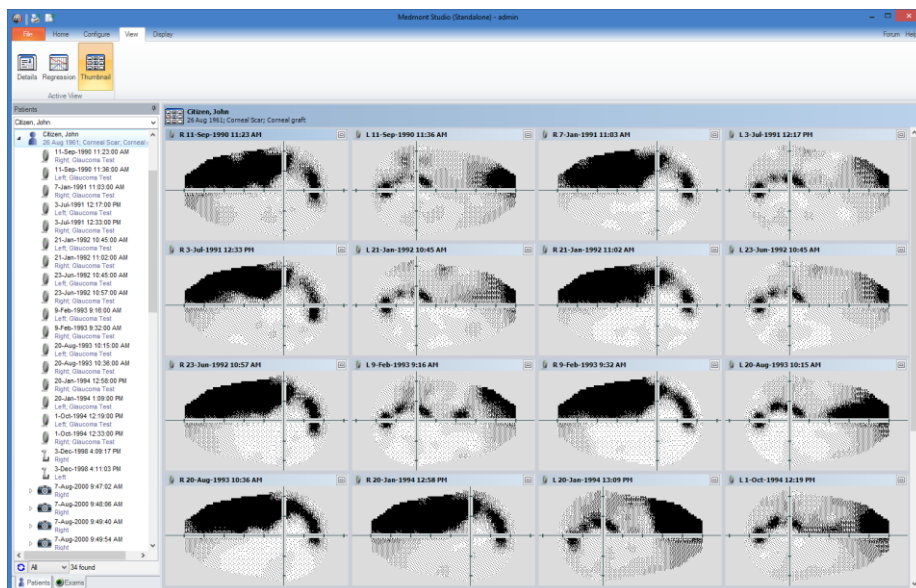


Figure 47. Thumbnail View.

By default, this view will show a 4x4 grid of the patient's exams, but this configuration can be changed by clicking **Configure > Studio > Preference**, selecting the *User Settings* tab and clicking on the *Review Pane* node. Here you can make changes to the number of rows and columns shown in the thumbnail view.

If the number of exams for that patient exceeds the number of grid squares (e.g. 16 grid squares for a 4x4 grid), a vertical scrollbar will appear, allowing you to scroll through the images.

Regression View



The regression view allows you to see the progress of a patient's results over time. Figure 48 shows a Regression view for a sample patient. The displayed data can be controlled by clicking on **Display > Settings > Edit**.

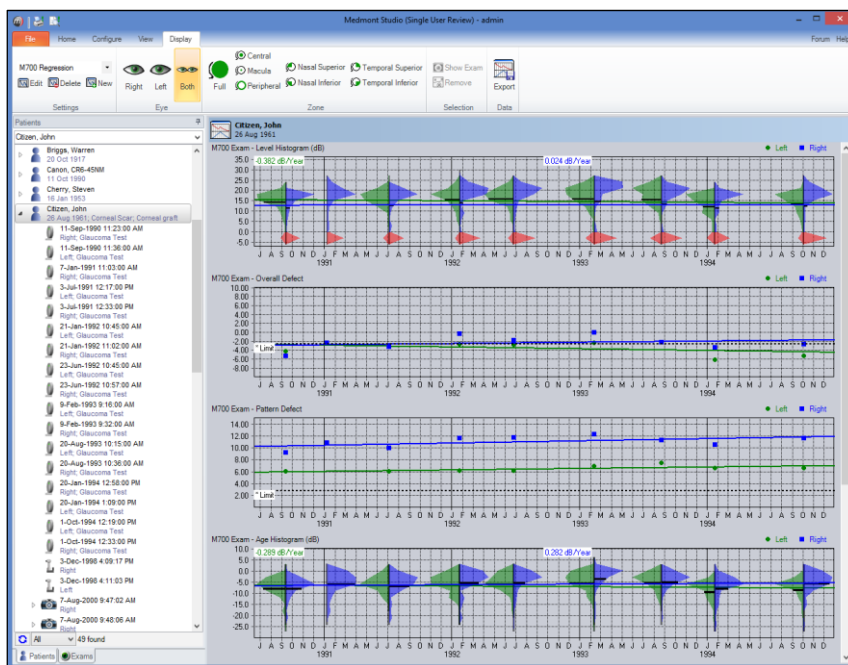


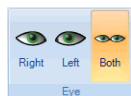




Figure 48. Regression View.


The regression view displays plots of data from each of the patient's exams over time. You can select exactly what data is graphed and displayed. Any exam attribute (see Section 14 Attributes) can be graphed. There are also a number of graph types specific to certain exams types (such as the M700 histograms displayed above). The regression settings can be saved in named profiles. The current profile is selected using the drop down selection box in the **Display > Settings** ribbon tab. There are three profiles defined by default – to display data relevant to each supported instrument. You can modify these default profiles (using the  **Display > Settings > Edit** button) or add your own profile (using the  **Display > Settings > New**

button). You can even display data from different exam types in a single profile.

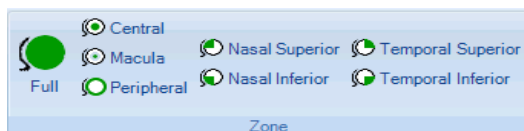


The **Eye** ribbon allows you to filter the displayed data by eye. If **Both** is selected then data from both eyes is displayed on the one graph with left eye data being displayed in **green** and right eye data being displayed in **blue**.

You can select any data point on the graph and the corresponding exam data point will be highlighted on all displayed graphs. Click the **Display > Selection > Remove**  button to remove the selected exam from all graphs (note this just removes the exam from the displayed graph and does not delete the actual exam). The displayed regression line will be automatically recalculated for the remaining exams. You can restore the original full set of data points at any time by clicking on the **Display > Eye > Both**  eyes button.

Click **Display > Data > Show Exam**  button (or double click on a data point) to display the exam corresponding to the selected data point in a separate window. Once this window is displayed you can select other data points and the exam displayed in the window will track the selected data point.

Zone Filtering



Some types of graphs (eg M700 Histograms) support filtering the displayed data based on a selected zone of the eye. Clicking one of the **Display > Zone** buttons will select that zone for each of the displayed graphs that support this capability. If a graph supports filtering by zone then the selected zone is displayed in the graph title.

The zone boundaries are shown below in Table 1, where the angular coordinate system is anti-clockwise from 3 o'clock (ie 0° is at 3 o'clock, 90° is at 12 o'clock).

Regression Zone	Points Included
Full	All points.
Central	Points out to 22°

Macula	Points out to 10°
Peripheral	Points between 23° and 50°
Nasal Superior	Points between 9° and 23° in the upper nasal quadrant
Nasal Inferior	Points between 9° and 23° in the lower nasal quadrant
Temporal Superior	Points between 9° and 23° in the upper temporal quadrant
Temporal Inferior	Points between 9° and 23° in the lower temporal quadrant

Table 1. Zone definitions.

Specialized Graphs

Some exam type's support specialized graphs (for example M700 Exams support histograms as shown in Figure 48). These specialized graphs are described in more detail in the relevant instrument specific manual.

Trend Lines

Trend lines are fitted to the mean values for histograms, and to the points themselves for single value data points. The default trend line uses the least squares method and is based on minimising the sum of the squares of the differences between the line and the graphed points. This method works well for data that is reasonably distributed and where the data approximates a straight line.

Least squares trend lines are not so effective when the data contains significant outliers, as each point has equal weight and the outliers tend to skew the regression away from its true position. A more robust median regression using M-estimates that minimises the absolute deviation gives outliers less weight and in general provides a better fit for highly variable data. Median fit is the second regression option (see *Regression* below).

Regression Settings

Clicking on **Display > Settings > Edit**  will display the dialog shown in Figure 49.

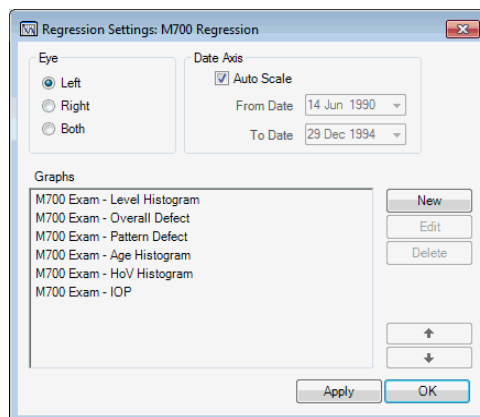


Figure 49. Regression Settings dialog.

This dialog allows you to change the settings for the displayed graphs, add or delete graphs and select the time period that the regression covers. By default the date axis is auto-scaled to include all exams for the selected patient. You can also change the order of the graphs using the up and down arrows.

Select an existing graph and click the **Edit** button or add a new graph using the **New** button. The dialog shown in Figure 50 is displayed. It allows you to change the settings for the selected graph.

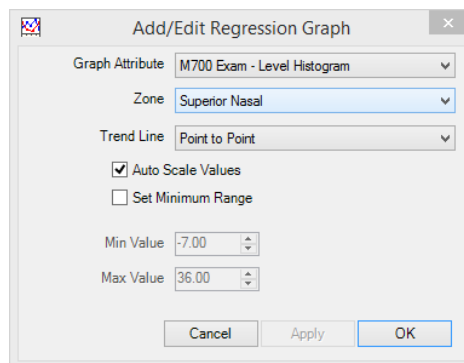


Figure 50. Add/Edit Regression Graph.

The **Graph Attribute** drop down allows you to select the attribute or item to be graphed.

The **Zone** drop down selects the displayed zone (if the graph type supports Zone filters). See *Zone Filtering* on page 61 for more detail.

The **Trend Line** drop down selects the displayed regression trend line (None, Point to Point, Least Squares, Median Fit). See *Trend Lines* on page 62 for more detail.

If the **Auto Scale Values** option is checked then the graph Y values are automatically calculated to include all the displayed data points. If the option is not checked then the **Min Value** and **Max Value** numeric boxes are enabled and allow you to manually set the Max and Min Y values for the graph. The **Set Minimum Range** option allows you to specify a Min and Max value in conjunction with Auto Scaling. In this case the Min and Max values specify the minimum range of Y values that the graph will display. This prevents the Y axes collapsing to a very small range when there are only a few data points or the data points all have the same value. If data points lie outside the minimum range the Y axes is still automatically scaled to ensure the points are visible.

13. Annotations

Annotations can be added to exams using the options on the **Annotate** tab. Annotations are stored with the exam and may be printed, exported and imported. Display of annotations can be turned off for the current view, by deselecting **Display > Options > Annotations**.

Annotations can even be added to a comparison view of two exams. In this case the annotation is stored and the next time the same two exams are compared the annotation is displayed.

Adding Annotations

Click on the desired tool from the **Annotate** tab. Move the mouse to the active view pane and the mouse cursor will change to reflect the type of shape being drawn.

Text Annotations

The **A** **Text** tool changes the cursor to allow you to place a text annotation on the image. Click at the location that you want the anchor for the annotation to be placed. The Text Annotation dialog (see Figure 51) is then displayed, allowing you to enter the text.

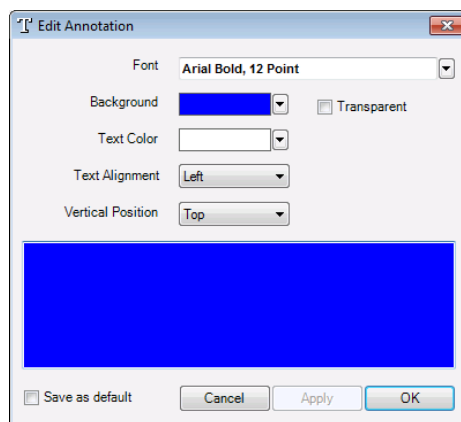



Figure 51. Text Annotation Dialog.

Callout Annotations

The **A** **Callout** tool changes the cursor to allow you to place a text callout annotation on the exam. This consists of a text label and line pointing to the








selected anchor location. Again a dialog is displayed to allow you to enter the text for the annotation.

Ruler Annotations

The  **Ruler** tool allows you to make a measurement between two points on the exam. The units of measurement depend on the exam.

Shape Annotations

The **Annotate** tab provides tools for adding different shape annotations to the active view:

-  **Circle** – create circle annotations.
-  **Ellipse** – create ellipse annotations.
-  **Rectangle** – create rectangle annotations
-  **Square** – create square annotations.
-  **Polygon** – create polygon area annotations.
-  **Curved** – create curved area annotations.
-  **Freehand** – create freehand area annotations.

Click on the desired shape tool from the **Annotate** tab. Move the mouse to the active view pane, the mouse cursor changes to reflect the type of shape being drawn.

As their names imply, the Circle, Ellipse, Rectangle and Square annotation tools allow you to create these shapes. To create one, click at the point where you want to place the shape and drag the mouse to complete the drawing.

You can create three types of area annotations. To draw Curved or Polygon areas click on the first point and keep clicking until the second-last last point. Right click to complete the curve. To draw a Freehand area, click on the first point and drag the mouse around the required shape, and stop dragging when you are finished.

Shapes can always be fine-tuned by resizing or moving. To move or resize a shape annotation, click anywhere on the shape to select it. Small, circular hot spots will be displayed on the shape. Click and drag the desired hot spot to move a particular point. To move the whole shape, click and drag from either any point on the shape (except a hotspot), or from the centre cross hair.

Editing Annotations

To edit an existing annotation double click on the annotation and the editor will be displayed allowing you to change the text or attributes. Selecting a Text or Callout annotation displays the **Edit Annotations** dialog shown in Figure 51, allowing you to change the text and colours. Selecting a Shape Annotation displays the **Edit Shape Annotation** dialog shown in Figure 52.

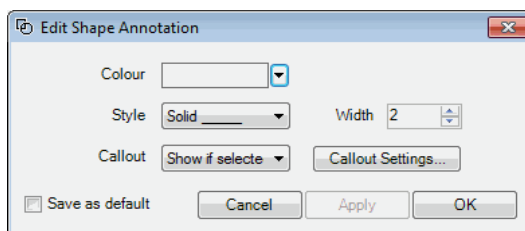


Figure 52. Edit Shape Annotation.

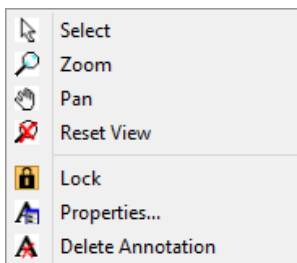
This dialog allows you to choose the colour, style and line width of the shape. You can also add a callout to the shape that allows you to associate text with the shape. The **Callout** box allows you to select the option that controls the visibility of any text associated with the shape. Select the **Show always** or **Show if selected** entry to enable the **Callout Settings...** button, and then click on this to display the text annotation dialog (see Figure 51) to edit the text and display properties.

Locking Annotations


Once an annotation has been created it can be locked, meaning that it cannot be altered or repositioned until it is unlocked. This is to avoid accidentally moving or otherwise altering an annotation while left clicking on the exam data to view critical readout data or otherwise navigate around the image data.

Once you have selected the annotation, you can change the status of the locking mechanism in 2 ways:

1. Directly on the annotation itself - Right click to bring up the annotation menu and select **Lock** to toggle the current status of the lock.



2. From the menu – Select **Annotate** > **Selection** > **Lock** to toggle the current status of the lock.

The locked status of an annotation is indicated by the presence of a small lock symbol  attached to the annotation as shown in Figure 53.

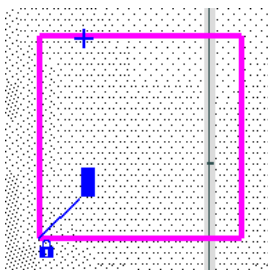




Figure 53 Square Annotation showing the lock symbol.

Deleting Annotations

To delete an annotation, select the annotation (by clicking once on it), click on **Annotate** > **Selection** > **Delete**.

Saving and Undoing Changes

Changes and additions you make while working with an exam are not saved immediately. You will notice that as soon as you add an annotation, two buttons will become active on the **Data** pane for the active view,  **Save** and  **Undo**. You can use these buttons to save the changes you have made or to undo any changes since the last save operation. If you haven't saved changes manually the system will automatically display a dialog to prompt you to save changes when you change the selected item(s) in the **Explorer** pane.

14. Attributes

Attributes are calculated values that apply to a particular type of exam result. They may be a physical measurement or dimension, or they could be a number that is the result of applying some statistical based calculation.

Medmont predefine a large set of standard attributes for each instrument. You can modify these predefined attributes or use the underlying exam data to create new attributes. Click **Configure > Studio > Attributes** to display the Attributes dialog (Figure 54). Each Exam Type has its own set of attributes – select the Exam Type using the selection box.

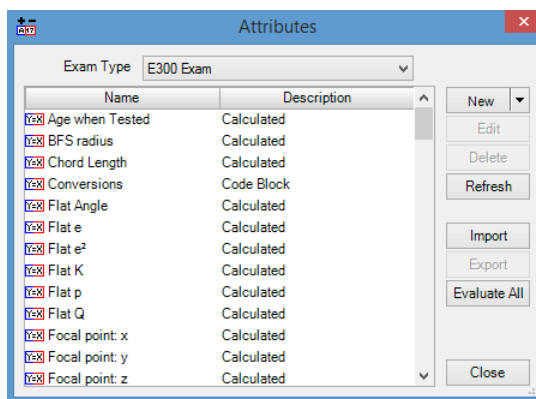


Figure 54. Attributes dialog.

To edit an existing attribute, select the attribute in the list and click the **Edit** button.

To add a new attribute click the **New** button and select the type of attribute from the drop down. There are four basic types of attributes:

- Calculated Attributes
- Annotation Attributes
- Entered Attributes; and
- Code Blocks

These are described in more detail below.

Calculated Attributes

Calculated attributes calculate a simple value, using a mathematical expression, based on other attribute values or predefined data functions that are specific to the exam type. The mathematical expression is a simple Visual Basic statement that returns a simple numeric value. The attribute expressions for each exam type are compiled into code that is used to evaluate attribute values for each exam.

Click the **New > Calculated Attribute** button to display the dialog shown in Figure 55.

The dialog box is titled "New Calculated Attribute". It contains the following fields and controls:

- Name:** A text box containing "Avg_Power_8mm".
- Display Name:** A text box containing "Avg Power @ 8mm".
- Units:** A text box containing "D".
- Decimal Places:** A spinner box set to "1".
- Scientific Format:** An unchecked checkbox.
- Classify Function:** A dropdown menu showing "ClassifyAbove(Value, 42, 44)".
- Expression:** A large text area containing the formula: $(\text{AxialPower}(\text{Flat_Angle}, 4) + \text{AxialPower}(\text{Flat_Angle} + 180, 4)) / 2$.
- Toolbar:** A row of buttons for mathematical operations: /, *, -, +, abs, sin, cos, tan, exp, log, sqrt, (,), atan.
- Data Functions:** A section with two tabs: "Data Functions" and "Attributes". The "Attributes" tab is active, showing a list of functions:
 - AverageTearFilmQuality(sMinHalfChord, sMaxHalfChord, sMinAngle, sMaxHalfChord, sMinAngle, sMaxHalfChord, sMinAngle, sMaxHalfChord)
 - AxialCurvature(sAngle, sHalfChord)
 - AxialPower(sAngle, sHalfChord)** (highlighted in blue)
 - BestFitSphereRadius()
- Buttons:** "Cancel" and "OK" buttons at the bottom right.

Figure 55. New Calculated Attribute Dialog

The Calculated Attribute dialog fields are described below.

Name

The name is used to identify the attribute within the compiled Visual Basic code and so must be a valid Visual Basic identifier containing only alphanumeric characters.

Display Name

This is the name of the attribute displayed in the data pane for the exam. The software will automatically generate a Display Name for you based on the Name you type (replacing underscores with spaces) – however you can change the Display Name to make it more readable.

Units

The units displayed in the data pane for this attribute

Decimal Places and Scientific Format

These controls allow you to specify how the displayed attribute values are formatted.

Classify Function

This allows you to specify a function that classifies the resulting attribute value as Normal, Suspect or Abnormal and colour codes the display accordingly (see *Classifier Functions* on page 72 for more detail). In this example the predefined *ClassifyAbove* function is used to specify that values above 42 are to be classified as suspect and values above 44 as abnormal.

Expression

This is the Visual Basic statement that generates the attribute value. It must be a valid Visual Basic (single line) statement that evaluates to a numeric value. The statement can call **Data Functions** that are defined for the Exam Type. The **Data Functions** tab displays the available functions and the parameters that the function expects. Double click on a Data Function to paste it into the Expression text box – then replace the parameter placeholders with the values to pass to the function. The expression can also reference other attributes already defined for the Exam Type. The **Attributes** tab displays the existing attributes and allows you to paste them into the expression in a similar way. The example shown in Figure 55 uses an existing attribute (Flat_Angle) and passes this to the predefined AxialPower Data Function to calculate the average power at an 8mm chord. The buttons under the expression show common Visual Basic mathematical operators and clicking on them pastes the operator into the Expression text box.

Annotation Attributes

Annotation attributes allow you to define named annotations that when added to an exam by a user generate attribute values related to the properties of the annotation (eg width, height, area etc). Use the **New > Annotation with Attributes** button to add a new annotation attribute of the selected type.

New Circle Annotation with Attributes

Name:

Display Name:

Attributes

Name	Exp Format	Decimal Places	Units
Radius	False	1	
Area	False	1	
Circumference	False	1	
Centre X	False	1	
Centre Y	False	1	

Figure 56. New Annotation with Attributes Dialog

Name

The name is used to identify the attribute within the compiled Visual Basic code and so must be a valid Visual Basic identifier containing only alphanumeric characters.

Display Name

This is the name of the attribute displayed in the data pane for the exam. The software will automatically generate a Display Name for you based on the Name you type (replacing underscores with spaces) – however you can change the Display Name to make it more readable.

Icon

You can specify a custom icon that will be used to represent this attribute in the **Annotate > Add Attribute** ribbon group.

Attributes

Each annotation type has its own set of predefined attributes that are generated automatically when the attribute annotation is added to an exam. Circle annotation attributes (as in the example above) define attributes for the radius, area, circumference and centre of the circle. These attributes can be displayed in the data pane (eg Tumour Border: Area) or referenced by other attributes. You can change the formatting, units and classification of these generated attributes by double clicking on the attribute or selecting the attribute and clicking the *Edit Attribute* button

Default Annotation Properties

Click the *Color/Font* button to specify the default properties of the annotation that is created when the user selects the custom annotation attribute from the **Annotate > Add Attribute** ribbon group.

Entered Attributes

Entered attributes allow the user to manually enter a value that will be associated with an exam. This value can be referenced by other attributes and used for filtering the displayed data.

Figure 57. New Entered Attributes Dialog

Name

The name is used to identify the attribute within the compiled Visual Basic code and so must be a valid Visual Basic identifier containing only alphanumeric characters.

Display Name

This is the name of the attribute displayed in the data pane for the exam. The software will automatically generate a Display Name for you based on the Name you type (replacing underscores with spaces) – however you can change the Display Name to make it more readable.

Max/Min Value

These are the maximum and minimum allowed values for the attribute – values outside these values cannot be entered.

Default Value

Entered attributes are not defined until the user clicks on the attribute (shown in italics) in the data pane. When the user clicks on the attribute the value is set to the **Default Value** and the user can then change this with the up/down arrows or by typing. The value can be reset to its original undefined value by right clicking.

Units

The units displayed in the data pane for this attribute.

Decimal Places and Scientific Format

These controls allow you to specify how the displayed attribute values are formatted.

Classify Function

This allows you to specify a function that classifies the resulting attribute value as Normal, Suspect or Abnormal and colour codes the display accordingly (see *Classifier Functions* on page 72 for more detail).

Code Blocks

Code blocks allow you to define your own Visual Basic functions and constants that you can then call from Calculated Attributes. This can be useful if you need a more complex expression that cannot be evaluated in a single line of code. Click the **New > Code Block** button to create a new code block.

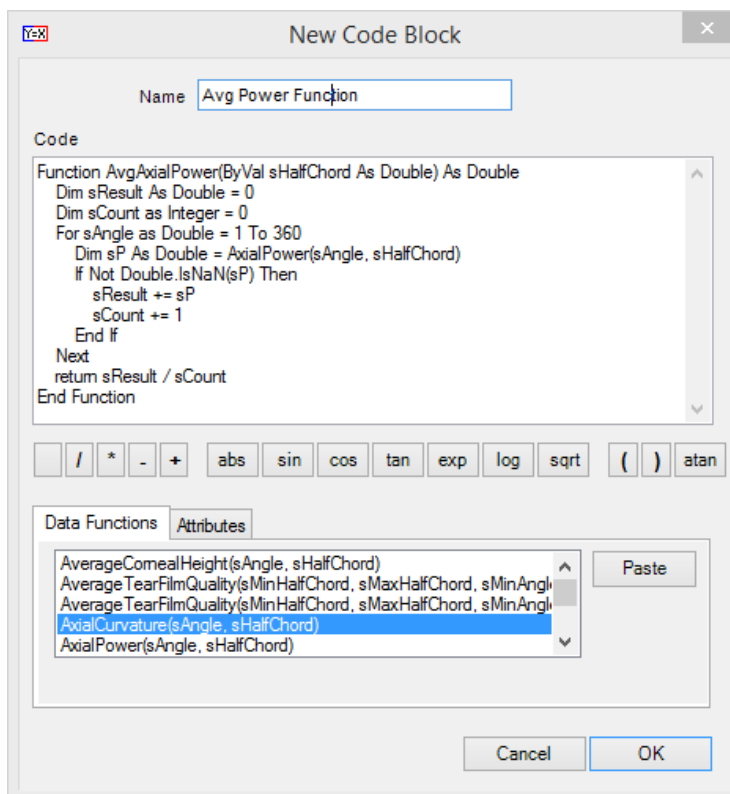


Figure 58. New Code Block Dialog

Name

The name is used to identify the code block – but is not compiled, so it may contain non-alphanumeric characters.

Code

The code text box is used to enter the function definition. You can define multiple functions in a single code block and may also declare constants and properties. Code block functions may call any of the predefined data functions or reference other attribute values. In this example we have defined a new *AvgAxialPower* function that computes the average axial power around a given half chord by iterating over the angle (from 1 to 360 degrees) and calling the predefined *AxialPower* data function. Note that the predefined data function returns the Double.NaN (Not a Number) value if there is no data at the specified point – so the function checks for this and ignores these values if present.

Once you have defined the code block with your new function you can then use this function from within a Calculated Attribute. In this case you could define a Calculated Attribute with the expression *AvgAxialPower(4.0)* to display the average half chord of 4mm.

Classifier Functions

Classifier functions allow you to specify a function to be called to determine the classification of the attribute value. Classifier functions are typically passed the attribute Value and return one of three classifications:


- **Normal** – displayed as green in the data pane
- **Suspect** – displayed as orange in the data pane
- **Abnormal** – displayed as red in the data pane

There are three predefined classifier functions:

- *ClassifyAbove* – takes the attribute value and two threshold values. Values above the thresholds are classified as Suspect and Abnormal respectively
- *ClassifyBelow* – takes the attribute value and two threshold values. Values below the thresholds are classified as Suspect and Abnormal respectively
- *ClassifyBetween* – takes the attribute value and four threshold values. Values above and below the thresholds are classified as Suspect and Abnormal respectively.

It is also possible to define your own classifier function using a **Code Block** to implement more complex classification schemes.

Displaying Attributes

You can select the attributes to be displayed in the **Data** pane by clicking on the  *Arrange user defined attributes* button. This displays the dialog shown in Figure 59. The **Available** column on the left is the list of available attributes, while the **Selected** column on the right is the list of those attributes selected for display. You can move any or all from one side to the other using the arrow keys in the centre. The single arrows will move a selected attribute from the **Available** list to the **Selected** list, or remove it from the **Selected** list. The double arrows will copy the entire **Available** list to the **Selected** list, or completely clear the **Selected** list.

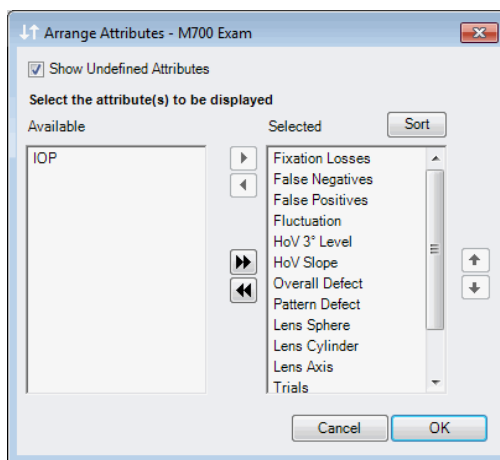



Figure 59. Arrange Attributes dialog

The up and down arrows on the right allow for changing the order in which the selected attributes are displayed. The top item will be the first attribute displayed. Selecting an attribute in the **Selected** list and then clicking on the up arrow will move that attribute towards the top of the list. Clicking on the **Sort** button will sort the column alphabetically.

If the **Show Undefined Attributes** checkbox is selected then attributes are displayed even if they are not defined for the current exam. If, for instance an annotation attribute has not been defined by the user for the exam then the attribute values corresponding to it will not be displayed in the Data pane unless this option is selected. If this option is selected then these attributes are always displayed (in italics if they are not defined).

Note that the displayed attributes are saved as part of the windows user settings and so can be different for each windows user. You can use the **Configure > Studio > Preferences** menu to reset these user settings to their original default values.

Recalculating Attributes

Normally Medmont Studio will automatically recalculate the displayed attribute values for an exam whenever required (for instance if you move or resize an annotation attribute then all of the values that depend on it will be automatically recalculated). Sometimes however you may need to manually force the attributes for an exam to be recalculated. If new attributes have been created or existing attributes changed since an exam was evaluated then the attribute values for that exam may be out of date. The  **Recalculate**

Attributes button on the Data pane allows you to force the attributes for the current exam to be recalculated. You can force the attributes for all exams of a given type to be recalculated by clicking the ***Evaluate All*** button in the Attributes dialog (see Figure 54)

15. Printing

The Print Dialog

The **File > Print** and **File > Print Preview** menu items bring up a list of reports pertinent to the current selection.

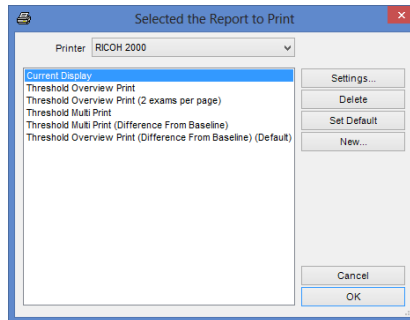


Figure 60. The Print dialog.

Select a report format from the list and click **OK** to Print or Print Preview the report.

Print Settings

Clicking the **Settings** button in this dialog brings up another that allows you to customize the report by changing the *General* settings (see Figure 61).

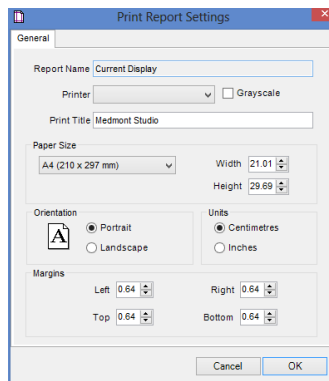


Figure 61. Print Settings dialog.

For some reports, typically exams, additional options are available from a second tab. An M700 exam for example, would name the second tab an **Overview Print**, and selecting this tab would display the dialog in Figure 62.

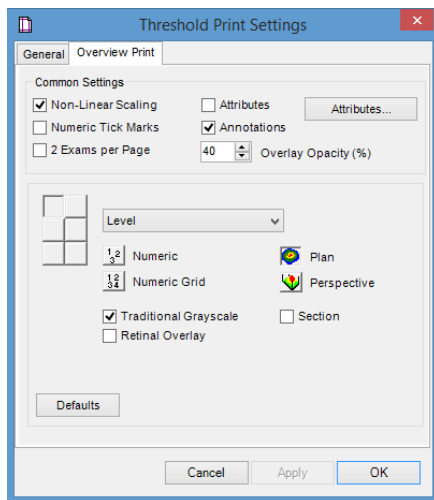


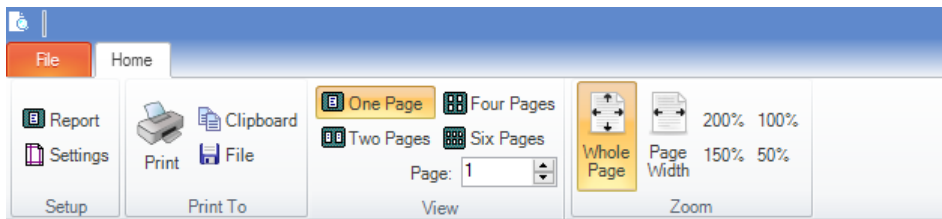
Figure 62. M700 Threshold exam Overview Print dialog.

The **New** button enables you to name a customized report format and retain it for future use.

Print Preview

The **File > Print Preview** option brings up a similar dialog to **File > Print**, but clicking **OK** now shows a *preview* window containing a precise version of what the report would look like on paper.

Note that what is printed for a given view is not necessarily the current display in the View pane, depending on the Print settings.



The preview window provides the following options for working with the preview:

Report – Select the type of report to print.

Settings - Change the settings for this report.

Print - Prints the report.

Clipboard - Save the preview image to the clipboard.

File - Save the preview image to a file. Supported file formats are:

- i. **Windows bitmap** - .bmp
- ii. **Graphics-interchange-format** - .gif
- iii. **JPEG** - .jpg

One Page – Show only one page of the report

Two Pages – Show two pages of the report (if applicable)

Four Pages – Show four pages of the report (if applicable)

Six Pages – Show six pages of the report (if applicable)

Page – Change the currently displayed page of the report (if one page is only shown).

Whole Page – Adjust the current view so the entire page is shown

Page Width – Adjust the current view so the width of the page fits across the screen.

200% - Zoom the current page of the report to 200%

150% - Zoom the current page of the report to 150%

100% - Zoom the current page of the report to 100%

50% - Zoom the current page of the report to 50%

16. Usage Hints

This section provides some hints for making the most of Medmont Studio.

Auto-Capitalisation

Some text entry boxes in Medmont Studio allow you to specify automatic formatting options such as *Auto Case*. This means that if you type “john citizen”, it will automatically be translated to “John Citizen” as you type. However, this is not what you want if you are entering a name like “McDonald”, so you can change this option with a right mouse click.

For example, if you are entering a Procedure called “Cataract & IOL Surgery” into the custom Fields dialog, you will need to turn off auto-case so the “IOL” is not entered as “Iol”. Right-clicking on the *Name* text box will popup a menu (see Figure 63) that allows you to select from the following options:

uSer cAse	There is no automatic case control. Only the keyboard Shift key controls case.
Auto Case	The leading character of any single word will be capitalised.
UPPER CASE	All characters entered will be converted to upper case, regardless of the keyboard Shift key.
lower case	All characters entered will be converted to lower case, regardless of the keyboard Shift key.

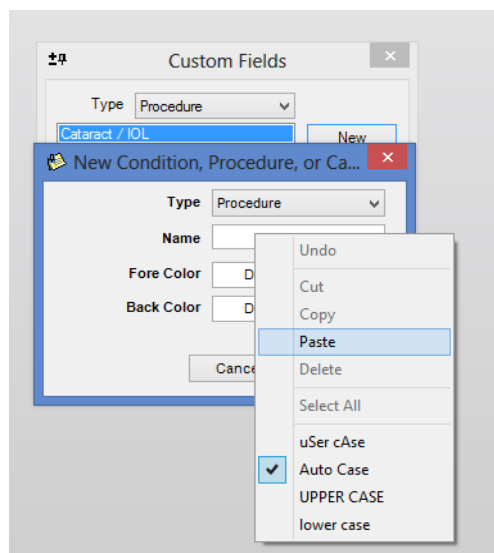


Figure 63. Right mouse click for Case entry control.

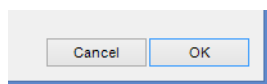
The dialog will remember these settings. Thus if you have selected *uSer cAse* to enter a new patient name like “MacDonald”, the next time you enter a new patient the setting will still be *uSer cAse*.

Tabbing between Fields

When entering data in dialogs, you can navigate between data fields using the Tab key. This is often more efficient then swapping continually between using the mouse and keyboard. Tab moves the focus to the next field. Shift-Tab moves the focus to the previous field.

Default Buttons

Many displays and dialogs support *default* buttons. This is the button with a darker shadow around it, like the **OK** button shown here.



You can activate the default button at any time by just pressing the Enter key. When combined with the use of Tab, these keys provide a very efficient mechanism for entering data.

Entering Dates

Many dialogs use the Microsoft Date control for entering dates. This control lets you enter dates in a variety of ways. Choose the one that suits your needs best:

Numeric / Arrow Key Entry

1. Select the date control. The day is highlighted.
2. Type in the day using the numeric keypad.
3. Press the spacebar, “/” key, “-” key, or right arrow key to move to the month. You can change the month using the up/down arrow keys.
4. Move to the year. You can enter a 4-digit value or change the year using the up/down arrow keys.

Graphic Calendar Selection

1. Select the down arrow next to the date control.
2. A small calendar is displayed.
3. Click on the year and use the up/down arrow keys to select the year.
4. Click on the month to select the month from a drop down list, or click on the left/right arrow keys.
5. Select the day on the displayed calendar.

Today’s date can be quickly selected by clicking on “**Today**” at the bottom of the calendar.

17. Utilities

Medmont Studio Configuration Tool

The Configuration tool allows you to re-configure Medmont Studio without requiring a new installation. Run this tool if, for example, you have purchased a new instrument, selecting it in the *Select Instruments* section of the configuration wizard:

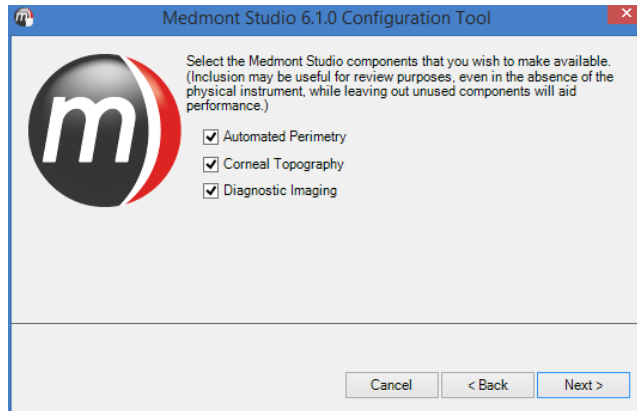


Figure 64. Configuration Tool

As another example, if it was necessary to move the Medmont Studio database to a different folder on another disk or even onto another computer, use this tool to manage the transfer. Ensure Medmont Studio is not running then move through the Configuration dialogs until the data location entry appears. Note the current location, as you will need this later.

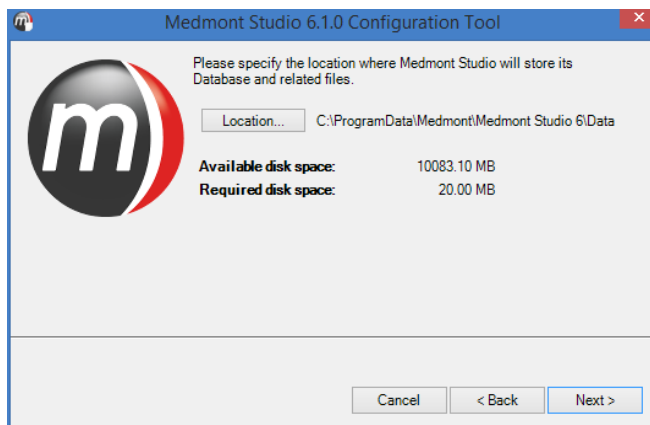


Figure 65. Moving a Database

Ensure the new data directory exists. Click on the **Location** button and navigate to the new folder. Click on **OK** and then click **Next** to advance through to finish the configuration. This step will have reconfigured Medmont Studio to now use the new folder, but it has not moved the data. You will need to use Windows Explorer or similar to actually copy the data from the old to the new location. Remember to copy all the source sub-folders too.

RSS News Reader

Medmont Studio incorporates an RSS news reader to display up-to-date company announcements. In order for this feature to operate correctly, the computer must have a working internet connection. When connected to the internet, the software will query the Medmont internet server and alert the user to any new company announcements.

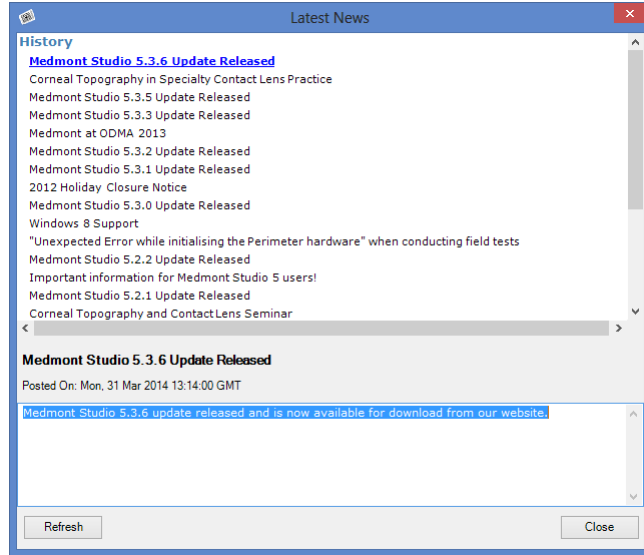


Figure 66. RSS News Reader

To display the RSS news reader at any time, select the **Help > Latest News** menu item (located on the far right of the ribbon bar menu). From within the news reader, click the desired link to view the full article. The RSS news reader may be disabled or enabled at any time by clicking on **Configure > Studio > Preferences** to display the preferences dialog. From the **User Settings** tab select **Startup** in the preferences tree and add or remove the tick next to the **Check News At Startup** option.

18. Licensing

Medmont Studio uses an online licensing scheme which limits access to only licensed software modules called components. A special alpha-numeric code called an Activation Key is required to activate components of Medmont Studio. The Activation Key is then locked to the computer and the lock is sent to Medmont via the internet, this process shall be referred to as “Authenticating your license”. If the computer does not have an active internet connection a license file can be sent via email or other electronic medium. Components can be licensed indefinitely or for a set time period.

In the absence of a valid Activation Key or if your component licenses have expired, Medmont Studio will function in Single User Review Mode.

Installing a Medmont Studio license.

The first step required to license Medmont Studio is to install the software onto a computer. If the software is not yet installed please follow the installation instructions in the section titled *Installing the Software*.

All licensing tasks are performed from the License Manager. To start the licensing process, open the **License Manager** by clicking the **Configure > Studio > License** button as per Figure 67.

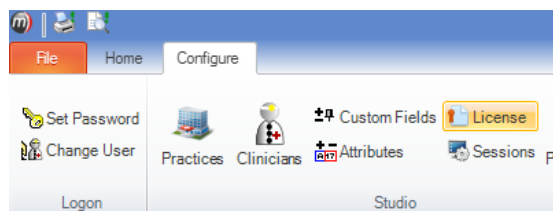


Figure 67. Opening the License Manager

The License Manager window should now be displayed. An example of the License Manager window is displayed in Figure 68.

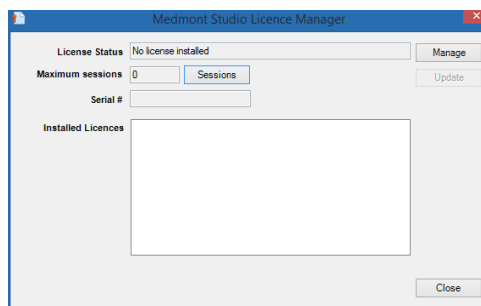


Figure 68. License Manger Window with no license installed.

Click on the **Install** button. The Install License window should now be displayed as per Figure 69.

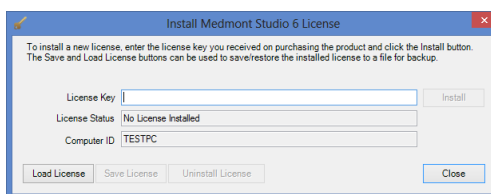


Figure 69. Install License window

Installing a license on a computer with internet access.

If your computer has a working internet connection enter the Activation Key which was provided with your instrument into the field marked **License Key** as per Figure 70 and click the **Install** button.

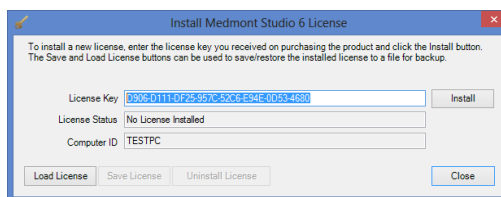


Figure 70. Install License window with Activation Key

The Install License window should now contain the phrase “License Installed” in the **License Status** field as per Figure 71. If any other message appears in this field please contact your local Medmont support agent for support.

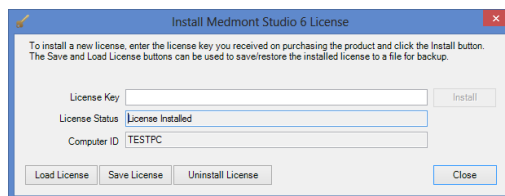


Figure 71. Install License window with valid license installed.

The license process is now complete. Click **Close** to display a list of active components. Verify you have been assigned the correct licenses. If you believe an error has been made with your license please feel free to contact the agent who supplied you with the instrument for support.

Installing a license on a computer without internet access

If your computer does not have a working internet connection enter the Activation Key which was provided with your instrument into the field marked **License Key** as per Figure 70 and click the **Install** button.

After a brief pause the message in Figure 72 will be displayed.

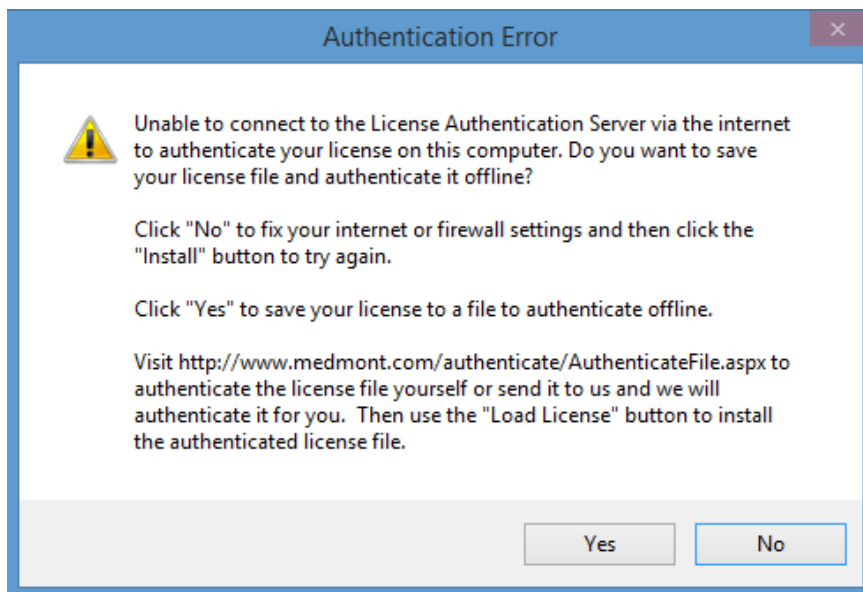


Figure 72. Warning message displayed if no internet connection is available.

Click **No** if you would like to repair your internet connection and try again.
Click **Yes** if you would like to save the license to a file. By choosing to save

to a file you then have the option of either emailing the file to Medmont or transferring it to a computer with a working internet connection and authenticating it via a web browser.

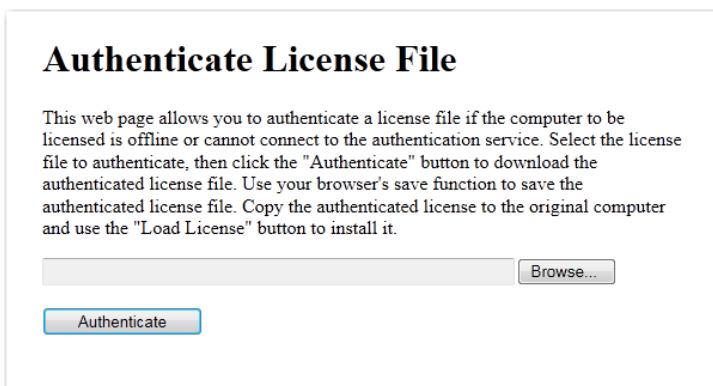
Authenticating via a web browser

If you would prefer to authenticate your license right away then you can authenticate your license file via a web page available online. Transfer your license file onto a computer with a working internet connection. A USB flash drive is ideal for this task.

From the online computer open a web browser and enter the following web address into the address bar. We recommend using Internet Explorer 9 or higher.

<http://www.medmont.com/authenticate/AuthenticateFile.aspx>

The following web page in Figure 73 should now be displayed.



The screenshot shows a web page titled "Authenticate License File". The page contains a paragraph of instructions: "This web page allows you to authenticate a license file if the computer to be licensed is offline or cannot connect to the authentication service. Select the license file to authenticate, then click the 'Authenticate' button to download the authenticated license file. Use your browser's save function to save the authenticated license file. Copy the authenticated license to the original computer and use the 'Load License' button to install it." Below the text, there is a text input field followed by a "Browse..." button. Below these, there is a blue "Authenticate" button.

Figure 73. Authentication web page.

Click on the **Browse** button and select the License file saved earlier. Click the **Authenticate** button. Continue to save the authenticated license file to the local computer as per Figure 74.

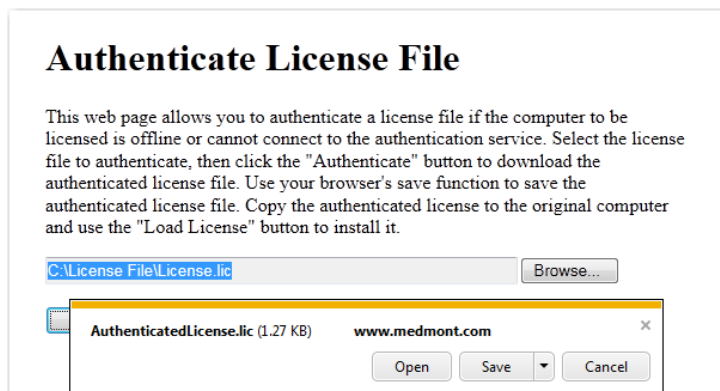


Figure 74. Authenticated license file save prompt.

Click **Save** to write the file on the local hard drive as per Figure 75.

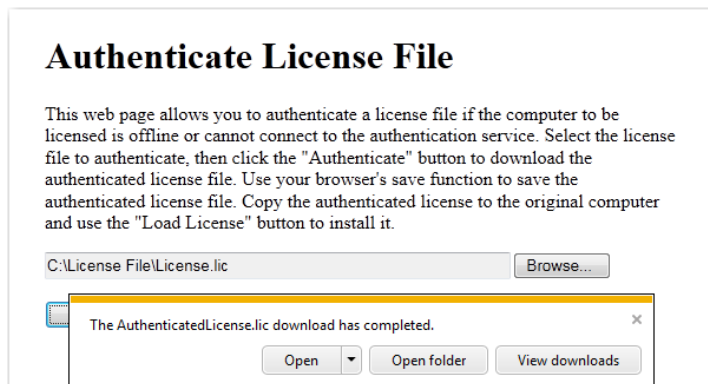


Figure 75. Authentication file download complete.

Click the **Open folder** button to locate the authenticated license file called *AuthenticatedLicense.lic*. Transfer the authenticated license file back to the original computer. From the Install License window press the **Load License** button as per Figure 76

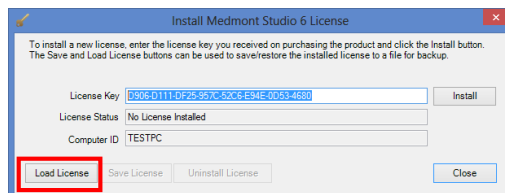


Figure 76. Install License window showing location of Load License button.

The Load License file window should now be displayed. Navigate to the *AuthenticatedLicense.lic* file and click **Open**. The license should now be installed. The text *License Installed* should be displayed in the License Status field as per Figure 77.

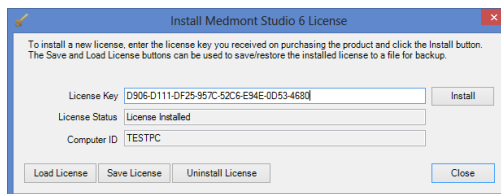


Figure 77. Install License Window with license installed successfully.

Click **Close**. The Medmont Studio License Manager should now display a list of components activated by your license as per Figure 78.

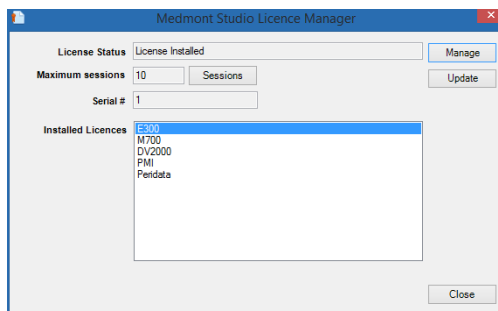


Figure 78. License Manager Window with list of active components.

Authenticating via email.

If you would prefer to have Medmont handle the authentication of your license then you will need to email the license file to your local Medmont representative.

You can close the License Manager while you wait for a response from your local distributor. After receiving a reply email, transfer the attached *AuthenticatedLicense.lic* file back to the computer where Medmont Studio will be installed.



NOTE

There could be up to 3-4 business days before a response is received. If you do not receive an email response within this timeframe please check your Junk or Spam email box to see if the return email has been marked as junk. If it cannot be found here

then contact your local authorized Medmont distributor for help.

Next you will need to import the authenticated license back into License Manager. Open License Manager by clicking **Configure > Studio > License** from the main menu. When the License Manager window appears click on the **Install** button which will display the license entry window. Press the **Load License** button as per Figure 79

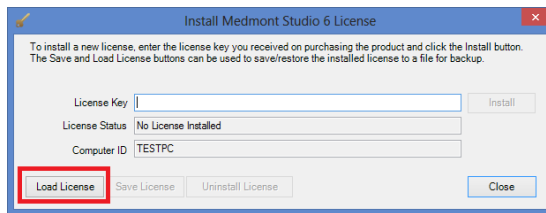


Figure 79. License Entry Window with Load License button highlighted.

You will now be prompted for the authenticated license file which was attached to the email response from Medmont. Specify the location of this file and click **Open**.

The authenticated license should now be installed. The License Manager Window will now display a list of components which have been activated by your license as per Figure 80.

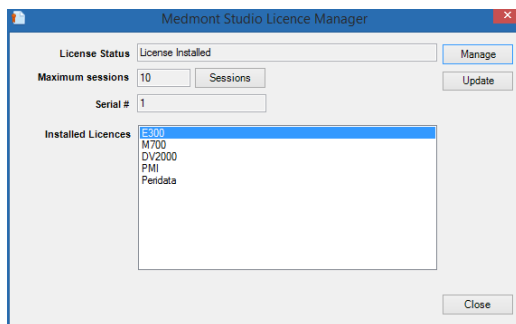


Figure 80. License Manager Window with list of installed components highlighted.

Updating an existing License

If you have already licensed your software and you decide to purchase additional components you can easily update your license. The update license

process requires a working internet connection. If you do not have a working internet connection you will need to re-license your software using your original Activation Key as per the section *Installing a Medmont Studio license*.

To update your license open the License Manager window by clicking on the **Configure > Studio > License** button on the main ribbon bar. Once open you can press the **Update** button to update the license as shown in Figure 81.

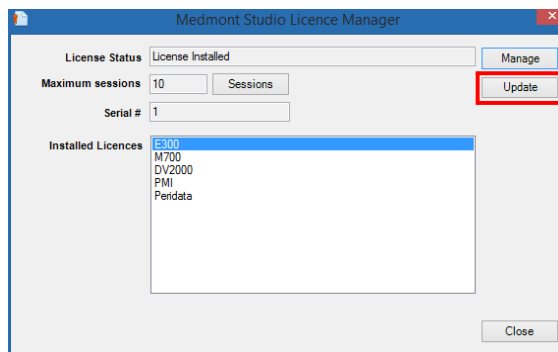
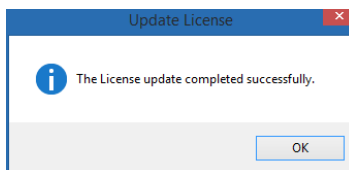


Figure 81. License Manager with highlighted update license button.

After a short delay and provided the update process completes without error the following message shall be displayed.



If any other message is displayed please check your internet connection and try again otherwise contact your local authorised distributor for support.

Frequently Asked Questions (FAQ).

How do I transfer my license to another computer?

If you need to transfer your license from one computer to another and the computer where the license is currently installed has an internet connection then you can simply uninstall the software using the *Programs and Features* applet in Control Panel. During the uninstallation you will be asked to deactivate the license, choose yes. This will release the lock on the license so

that it can be re-installed on another computer. If the licensed computer does not have an internet connection then you will need to contact your local authorized distributor to release the lock for you.

What should I do if I cannot find my Activation Key?

If you cannot find your original Activation Key then Medmont can provide you with your key for a small administrative fee.

What's the best way to contact Medmont for license related questions?

Medmont uses a global network of distributors to handle local support issues like licensing. Please contact your local authorized Medmont distributor. In most cases this will be the company that sold you the instrument originally but since distributors do change from time to time you can find the contact details of your local distributor from the following web page

<http://www.medmont.com/contact>

I already own a fabulous E300 Corneal Topographer from Medmont and I want to buy their equally amazing M700 Automated Perimeter. Can I get a license which combines both instruments?

At the time of purchasing your instrument a sales representative should ask you if you already own any other Medmont instruments. If you do then we can update your license to include the new instrument. Once Medmont has updated your license and provided you have a working internet connection on the computer with the installed license you can update your license using the **Update** license function in License Manager. To update a license on a computer without a working internet connection please follow the step in section *Installing a license on a computer without internet access*.

The laptop I use with a licensed version of Medmont Studio was stolen. Can I get a replacement license?

Yes. Please contact a Medmont authorized distributor who will remove the lock on your license so it can be re-used on another computer.

Session Licenses

Sessions are important for network configurations. In these, each active Medmont Studio application running on a **client** computer needs the **server** computer to supply it with a *session*. The maximum number of sessions allowed is controlled by the license and is encoded in the activation key.

This means that licenses can float between computers. The server will assign up to the maximum number of sessions to client machines, so there may be

more client computers than sessions as long as at any one time there are only the given number of clients actively using Medmont Studio.

In normal use each time the Medmont Studio software is started on a client computer, the server assigns a license to that client. When the application exits the license is returned to the server pool and becomes available for another client.

Once a license has been assigned to a client that client gains all functionality available under the license.

For example, a local-area network with ten computers attached could run Medmont Studio on all of the computers at different times, but if the maximum number of sessions is five, then no more than five computers can run Medmont Studio simultaneously. A sixth user trying to start Medmont Studio will get a **Not Enough Sessions** error message.

If this happens, the user could ask another user to exit, thereby freeing up a license. If this happens often, you may wish to purchase licensing for additional sessions from Medmont.

Extraordinary conditions that could result in the client software ceasing to operate include an administrator logging off a user or the server software shutting down.

19. Data Backup

It is in your own interests to regularly perform backups to avoid loss of data due to hardware failure or accidental deletion or corruption of the database.

If you have been using a 3rd party Practice Management system, it will have its own database files, and it is likely you will have already established a regular backup procedure. If so, then simply add the Medmont database location (see *Backup Locations* on page 99) to the list of folders you are already backing up.

However, if you are just at the planning stage of a backup policy, Medmont suggests that all the various practice databases be regularly backed up to media that can be taken off-site. This could be a laptop computer that is plugged into the practice network, a CD-ROM or DVD, or a USB disk.

Backup Media

The choice of backup media will depend somewhat on the size of your practice, the instruments you are using, and the number and type of exams your practice does in a given period. But no matter how small your practice, the days of using floppy disks for backup are long gone. A medium sized practice that includes imagery as a service can easily require several gigabytes of backup storage.

Backing up to a laptop is convenient in that you can just connect it to the practice network, navigate to the various Medmont and Practice Management data folders, and use Windows Explorer to copy the files. The feasibility of this method depends on first having a laptop with a large enough disk, having plug-in access to the network, and your confidence in the long-term reliability of the laptop.

USB disks in early 2007 came in sizes up to 4 gigabytes, and this would be adequate for most practices. The amount of storage available on these devices will only get bigger, so with the same caveat about long-term reliability, this could be a satisfactory backup solution.

Backup to a CD-ROM burner is a more reliable option, in that the CD is essentially a permanent system snapshot. However, if you are using instruments that produce imagery such as the Medmont E300, it will not be long before your overall database size exceeds the around 700 megabytes available on a single CD. In comparison, the hardware costs and procedures

to backup to a DVD burner are now no different to a CD-ROM, with the advantage of nearly seven times the backup space.

With all this in mind, Medmont recommend using a DVD burner as your backup medium, either mounted in the server computer or capable of being plugged into its USB2 port.

The next decision is the backup software. Unlike Windows 2000, Windows XP and subsequent versions like Vista provide for direct transfer from the various database storage locations to a DVD using Explorer. However this means manually navigating to the various directories to backup each individual database for the products your practice uses. Windows provides a backup program appropriately called Backup on the Windows distribution CD, and if installed it is available from

Start > Programs > Accessories > System Tools. This has facilities that allow you to pre-program the integration of selected files and folders from a number of locations into a single backup file, along with how it should be stored and to where (an adequate solution if you are backing up to another computer or a laptop). However the program knows nothing about CD-ROMs or DVDs.

The requirement is therefore for backup software that offers facilities to pre-specify the locations and folders that require backup (i.e. it will remember the various locations between backup sessions), and the ability to copy to a CD-ROM or DVD burner. In addition, it should have the ability to span the backup file across multiple disks for when the size of the backup exceeds the media capabilities.

Medmont recommended you survey the market yourself for backup software that meets these requirements.

Backup Locations

The Medmont Studio 6 database is by default stored in an all users accessible data folder called **Data**. In a default installation this will be:

%allusersprofile%\Medmont\Medmont Studio 6\Data.

On Windows 7 this path resolves to:

C:\ProgramData\Medmont\Medmont Studio 6\Data

Do not confuse this Data directory with the data directory belonging to an earlier Version 3 Medmont Studio that was usually located at C:\Program Files\Medmont\Data.

At installation this folder can be assigned to any computer in the practice network, to any disk on that computer, and to any folder path on that disk. However, clicking on **Start > Medmont > Medmont Studio Administrator Tool** will display the dialog in Figure 82, and this will list the database location in the **Data Location** field.

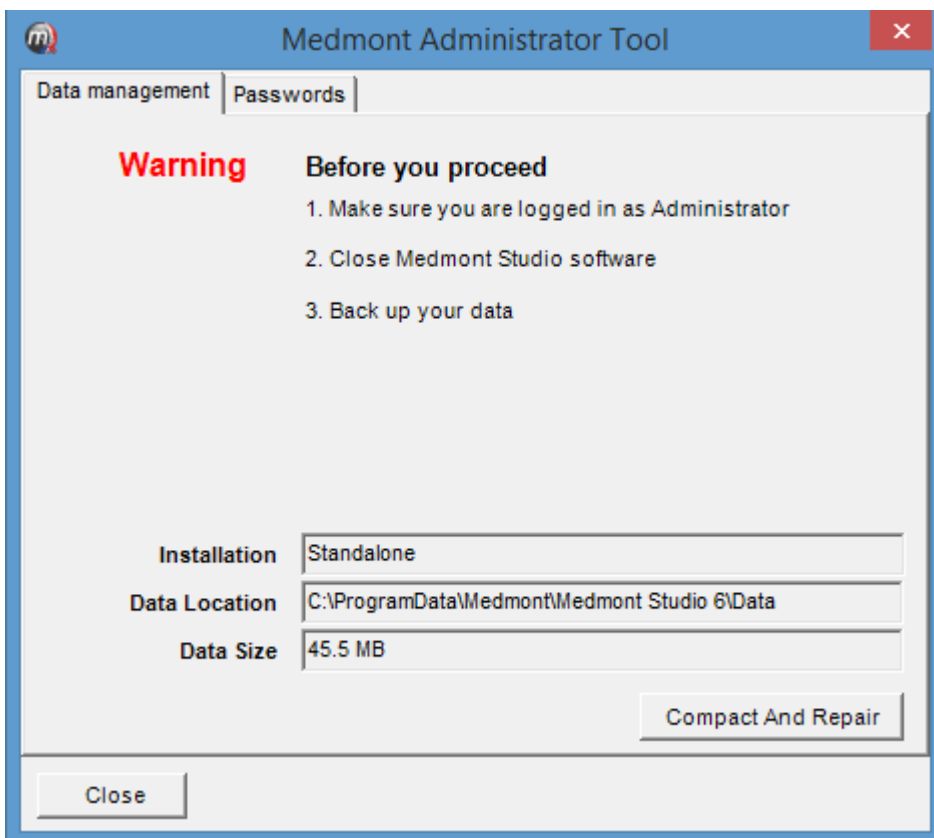


Figure 82. System Administrator Tool.

Initiating a Backup

No matter what Medmont configuration you have installed, all copies of Medmont Studio must be stopped before initiating a backup. For a stand-alone system this is easy, but for a server system you will need to stop the Medmont server using the Server Manager.

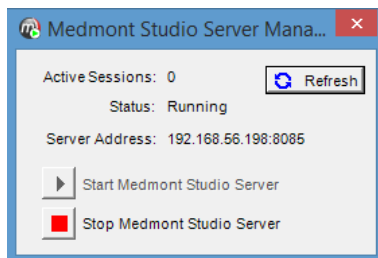



Figure 83. Medmont Studio Server Manager.

The Server Manager icon  will be present in the desktop tray of the network server computer. Double click on this icon to display the Studio Server Manager dialog shown in Figure 83. The **Active Sessions** entry will show if any clients are running Medmont Studio. Click the **Refresh** button to recheck the number of active connections to the server. If connections are still active you can use the following options to disconnect them.

1. Find the machine(s) currently running Medmont Studio to ensure no one is using it, shut it down, and then come back and click the **Stop Medmont Studio Server** button, or
2. Click the **Stop Medmont Studio Server** button.

The effect of clicking this button on connected clients is to disconnect them from the server with no mechanism to reconnect other than re-starting, so the second option has the potential for data loss if the computer is currently in use. Avoiding this situation is a company procedures issue, where either a certain time is set-aside for backup or it happens after hours.

The more usual effect of stopping the server is, of course, to prevent clients starting Medmont Studio. If they try they will see the message shown in Figure 84 and Studio will refuse to start.

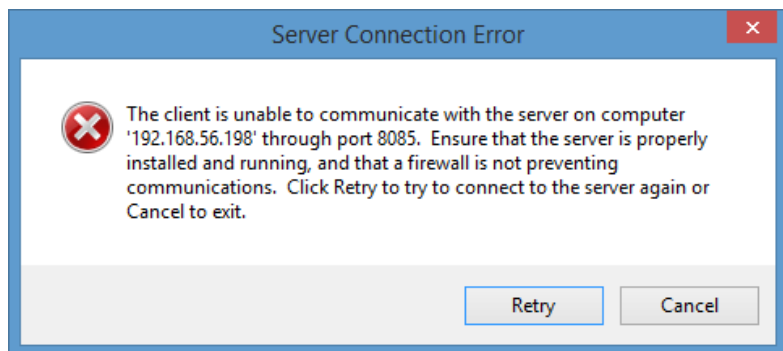


Figure 84. Error message for when no server is available.

Once the server is stopped you can proceed with your backup procedure. If necessary, click the ***Compact and Repair*** button on the Administrator tool (see Figure 82) for occasional database management.

20. Help

The **Help** menu provides access to the User Manuals for Studio and the installed instruments. These are in PDF format and therefore require the installation of a PDF reader such as Adobe Acrobat or similar. Adobe reader is freely available on the Internet at <http://get.adobe.com/reader/>.

The individual manuals include a bookmark page organised as a directly accessible table of contents that indexes the main section headings. Press F6 to show the bookmarks page or click on the sidebar. Clicking on an entry will navigate to the corresponding page.

Also directly accessible are the internal links within each document such as the italicised chapter headings, page numbers, Figures and Tables. Move the mouse cursor over any of these links and the cursor will change to a pointer. Clicking on any of these will move the displayed page to the reference. Use the **Previous View** button on the Acrobat toolbar to return to the original page.