2 Softneta

MedDream Surgery Workstation USER'S MANUAL (version 1.15)

© 2014, Softneta UAB, Kaunas

All rights reserved in the event of granting of patents or registration as a utility patent.

All names of companies and products mentioned in this user's manual may be trademarks or registered trademarks. References to products of other manufacturers are for information purposes only. Such references are intended neither as an approval nor a recommendation of these products. Softneta UAB accepts no liability for the performance or use of such products.

Other brand names, software and hardware names used in this user's manual are subject to trademark or patent protection. The quoting of products is for informational purposes only and does not represent a trademark misuse.

This user's manual is protected by copyright. Unless expressly authorized in writing, dissemination, duplication or other commercial exploitation of this documentation set or communication of its contents or parts of it is not permitted. In case of infringement, the violator may be liable to pay compensation for damages.

Specifications due to technical developments are subject to change. This user's manual is not subject to the revision service. Please contact the manufacturer or authorized dealer to request the latest edition of the manual.

Table of Contents

Table of Contents	
Notes on the user's manual	5
Purpose and availability of documentation	5
Questions and comments	5
Explanation of symbols used	6
Introduction	7
Virtual Keyboard	8
Creating a New Study	
Opening Multiple Studies	12
Search of Studies	12
Image Forwarding	17
Study Removal	18
Editing of an Unsaved Study	19
Viewing and Analyzing Images	20
Manipulating Images	20
Scroll Bar	24
Recording	25
Surgery Workstation Settings	27
Leaving Surgery Workstation	28
Pictures	29
Index	

Notes on the user's manual 5

Notes on the user's manual

Purpose and availability of documentation

This user's manual describes the operation with MedDream Surgery Workstation software.

Correct operation of the system is imperative for its safe and successful functioning. You should therefore ensure that you are thoroughly familiar with the user manual before setting up and using MedDream Surgery Workstation for the first time.

The user manuals and other documentation enclosed with MedDream Surgery Workstation should be kept accessible to users at all times to ensure that the information required for the use of MedDream Surgery Workstation is readily available.

MedDream Surgery Workstation is not intended to replace skilled and qualified medical professional. The software should only be used by people who have been trained and is acquainted with its functions, capabilities and limitations.

Users must be aware that the quality, accuracy and correctness of the output data displayed on the screen, printed or sent from MedDream Surgery Workstation depends on the quality, accuracy and correctness of the input data, the user's interface with the data, the quality, calibration and other parameters of printer or monitoring device.

MedDream Surgery Workstation has been tested extensively, however, it is possible that errors may remain/emerge in the software. Users must be aware of the potential for errors and in case of an error or for other assistance, please contact Softneta UAB Customer support:

write an e-mail <u>info@softneta.com</u>

Questions and comments

If you have any questions or comments regarding this user's manual, please contact Softneta UAB Customer support.

Explanation of symbols used

The symbols used in this daily workflow refer to important safety information which warn against possible health risks or fatal injuries and contain useful notes. Whenever you see these symbols, read the accompanying information carefully and observe all safety notes and information in the user manual, daily workflow and on the device labels.

WARNING

Indicates a hazardous situation which may result in a fatal or serious bodily injury if the appropriate safety precautions are not heeded.



CAUTION

Indicates a hazardous situation which may result in a minor injury if the appropriate safety precautions are not heeded.



CAUTION - PROPERTY DAMAGE

Indicates possible device damage if the appropriate safety precautions are not heeded.



Information, hints and advice for a better understanding of the instructions to be observed in the operation of the instrument.

Introduction 7

Introduction

High-quality HD recording into DICOM by using MPEG-4 AVC/H.264 compression.

The core functions:

- Recording HD video during the surgery.
- Reviewing medical images.
- Full integration with Hospital Information System (HIS).
- SW capturing system records still and video HD images in full 1920x1080 resolution.
- Recorded studies can be stored locally and sent directly to the DICOM compatible system (PACS or other) of the hospital network.
- Images and videos can be accessed by WEB browser from doctor's office after the surgery.
- Patient Data may be selected from the Worklist Server.
- SW can locally store more than 125 hours of HD video and up to 100.000 of still images.
- Intuitive, simple, but very powerful software controllable by touchscreen.



MedDream Surgery Workstation cannot guarantee the accuracy of calibration data received from the modality. Moreover, Softneta cannot guarantee that the manual calibration which is performed by users is done accurately.



Measuring function is approximate and cannot be used for diagnostic purposes.



Further in text MedDream Surgery Workstation will be referred to as SW.

Virtual Keyboard 8

Virtual Keyboard

Since the SW has a touchscreen monitor and no other equipment (e.g. keyboard, mouse, etc.), after touching the input fields, a virtual keyboard appears:



Picture 1. Virtual keyboard.

Keyboard buttons:

- Restore this button resets initial data in the field (if the field is already empty, the button is deactivated).
- Clear this button clears the filled fields.
- OK press this button if you typed the right information in the field and want to continue the work.
- BackSpace this button deletes the preceding symbol and shifts back the text after it by one position.
- Caps Lock pressing this button sets an input mode in which typed letters are uppercase by default. The keyboard remains in Caps Lock mode until the key is pressed again.
- Shift is a modifier key on the keyboard, used to type capital letters and other alternate "upper" symbols. There are two Shift keys, on the left and on the right side of the keyboard.
 - Close this button closes the virtual keyboard (it hides).
- Space is a key on the bottom of the keyboard in the form of a horizontal bar, significantly wider than other keys. Its main purpose is to conveniently enter the space, e.g. between words during typing.

If you need to fill the data fields (e.g. date of birth), press on the field and virtual calendar will pop-out:



Picture 2. Virtual keyboard. Numbers.

Virtual Keyboard 9



If you leave the fields empty and press *OK*, the date will be chosen automatically, i.e. the initial date – 1900-12-31. Remember you may make your work faster by pressing four symbols in the year field and two symbols in the month and day fields, then the cursor will automatically jump to another field. If you type only one symbol in the each of the month and day fields (e.g. May (5th month) 5th) you will have to change the cursor position by pressing on the required field to fill.

If you have filled the date incorrectly and want to change it, press Clear. If the virtual calendar is not necessary, press Close.

Creating a New Study

In order to start recording or do other study related works, the patient must be registered. If it is not registered, you have to create a *New Study* account. The following steps must be made:

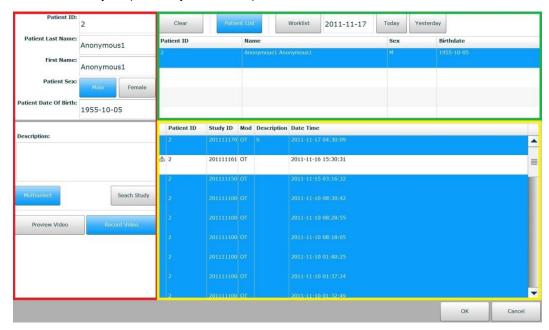
Firstly, press New Study icon.



Picture 3. New study icon.

A new study account window will open. It consists of three parts:

- 1. Creation and search of a patient account (box with red outline);
- 2. Patient list (box with green outline);
- 3. Study list (box with yellow outline).



Picture 4. A new study window.



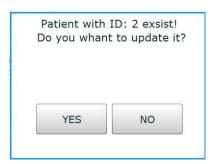
New patient account creation and Search of patient is happening at the same time.

In order to create a new patient account you have to fill these fields:

- 1. Patient ID.
- 2. Patient Last Name.
- 3. First Name.
- 4. Patient Sex (male/female).
- 5. Patient Date of Birth (YYYY-MM-DD).
- 6. Description of the Study (optional field, not necessary to fill in).

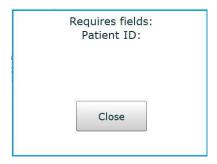
While creating a new patient account, a search is also proceeded, because the patient may already be registered before. The buttons *OK* and *Add Patient* shifts with each other depending on which process is happening: *OK* – you have found the patient you need in the database; *Add Patient* – there is no such patient and you have created a new account.

If after pressing *Add Patient* some information (e.g. *Patient ID*) coincide with patients information that already exists, the following window with a query will pop-out:



Picture 5. A notification that the patient account is already created.

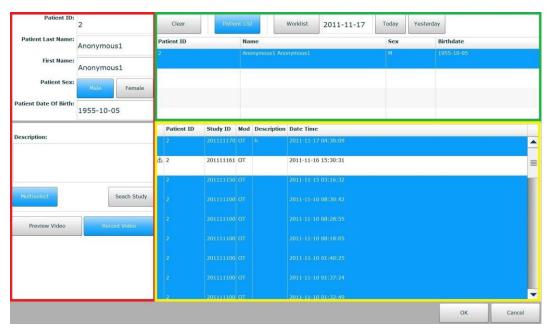
There are **obligatory fields** which are necessary to fill in, i.e. *Patient Last Name, Patient Sex, Patient Date of Birth* and *Patient ID.* Without filling any of these fields you cannot successfully create a new patient account and the following pop-out window will show (by pointing out which field is not filled in):



Picture 6. A notification that obligatory fields are not filled.

According to the information that you filled in the creation of a new patient account (box with red outline) the SW searches through the database and shows the search results in the Patient list (box with green outline). This section is always active, e.g. if you write Anonymous in the *Patient Last Name* field, automatically all patients with this last name will be selected. Also, if you search in the *Worklist* (i.e. the patient's information is loaded straight from the hospital's informational system) you can use two quick buttons: *Today* and *Yesterday*.

You may see all of the patient's studies in the Study list (box with yellow outline). This field is only active when you select a patient, otherwise it is empty.



Picture 7. Study list.

If you want to select a study – just press on it with a finger. You may also select more than one study due to the function *Multiselect*. *Multiselect* is chosen by default and so all studies are selected. You have to deselect the studies you do not want to open and leave only ones that are necessary for you. By pressing *Multiselect* again, you will deactivate it and then you may select only one study to open (read more in Section 3.1). Furthermore, if you want to search only for a study, enter the *Patient ID* or *Patient Last Name* and press *Search Study* button.

After pressing *Preview Video*, you will be able to see images of the cameras. After pressing *Video Recording* button, you will be sent to the main window. You can read more about *Video Recording* in Section 6. If you press *Cancel* you will go back to the initial window.

Opening Multiple Studies

If you need to open more than one study (e.g. to compare them) please do the following:

- 1. *Multiselect* is chosen by default, so all the studies will be highlighted in blue.
- 2. Leave only those studies highlighted in blue that you want to open.



Picture 8. Opening multiple studies (1).

However, keep in mind that you may open only a limited amount of studies at one time. You can open studies to the extent of the Study list that are visible in the main SW window, if you select more studies you will see the alert message as follows.

After selecting all wanted studies, you will see all study series displayed in the pane on the left. When you select the study and touch it, you will see the image icons of the study series:



Picture 9. Opening multiple studies (1).

In order to navigate through the study, just touch the header to activate it and see the image icons.

Search of Studies 14

Search of Studies

Search menu will help you to quickly find the studies you need. We recommend using all possible search menu options in order to get the most accurate search results and save your time. To find a study, please follow these steps:

1. Press Search in the top left corner of the window.



Picture 10. Search of studies.

2. Select search settings (the default search settings are usually set to the search by *Patient ID* or *Patient Name*).

If you wish to change the search settings, just press the header and choose the criterion you need from the list:



Picture 11. Search criterion.

- Patient ID enter patient's ID number in the search field
- Patient Name enter the patient's name or surname in the search field
- Study ID enter the study number in the search field
- Accession Number enter the accession number in the search field
- Description enter few keywords from the study description in the search field
- Referring Physician please indicate, to which doctor the study was sent.
- Reading Physician please indicate, which physician has opened and analysed the study.
 - 3. To specialize the search further, please select the period when the study could be done. You will activate the date search fields by touching the *From* and *To* fields:

Search of Studies 15



Picture 12. Search by date (1).



The same virtual calendar as described Virtual Keyboard Section will appear. If you do not choose the date till which the studies have to be shown, there will be all studies till current date.

To see the list of the studies done during the current day, please click the button *Today*. If you are looking for the studies that were done yesterday, please click *Yesterday*:



Picture 13. Search by date (2).

4. The search can also be specified by selecting modalities which was used to obtain the study images:

Tick the field next to one or more modalities (devices) that were used in the required study (please look below for the meaning of the abbreviations). For example, if you want to find all the images done using Computed Tomography devices, you should touch the field as shown below:



Picture 14. Search by modalities.

The abbreviations of modalities stand for:

- CR Computed Radiography
- DX Digital Radiography
- IO Ultra-Oral Radiography
- MR Magnetic Resonance
- OT Other
- RF Radio Fluoroscopy

- SC Secondary Capture
- XA X-Ray Angiography
- CT Computed Tomography
- ES Endoscopy
- MG Mammography
- NM Nuclear Medicine

You can select all possible methods by touching All, or you can clear all the types by touching None:

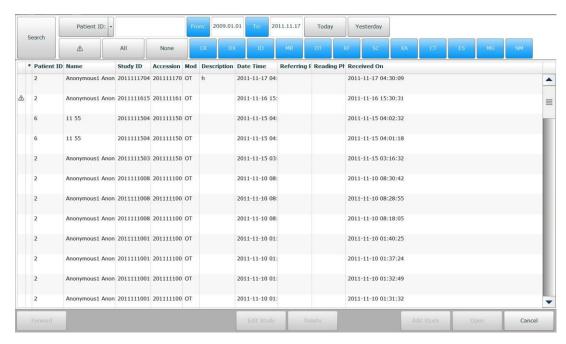


Picture 15. Selection of all or none of the modalities.

5. After you have selected your search settings, press Search to start searching.

You will see the following window with the search results:

Search of Studies 16



Picture 16. The search results.

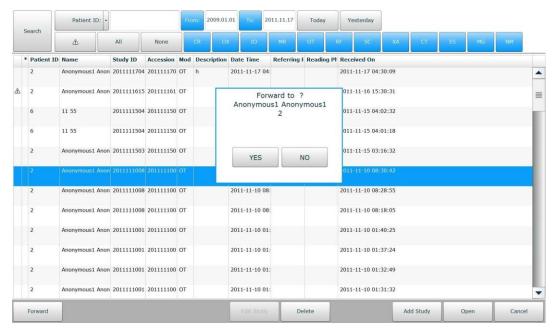
If you have found required study press *Open*, if not, press *Cancel* and go to *New Study* window in order to create a new patient account.

Image Forwarding 17

Image Forwarding

SW provides a possibility to send the selected study to the default DICOM device. To forward the study, please make the following steps:

- 1. select the study you would like to send and press Forward button;
- 2. after pressing the button a pop-out query appears:



Picture 17. Request to forward the study.

3. The forwarding will start after accepting (press YES):



Picture 18. Forwarding a study.

When the forwarding will reach 100%, it will be successfully done.



However, there might occur some technical problems and the forwarding will fail. In this case, please contact your administrator who can make a troubleshooting.

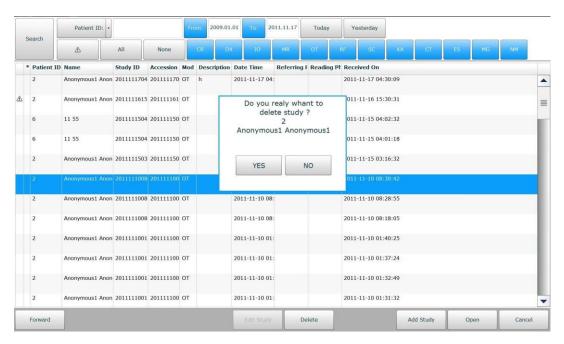


Picture 19. Notification of failed forwarding.

Study Removal 18

Study Removal

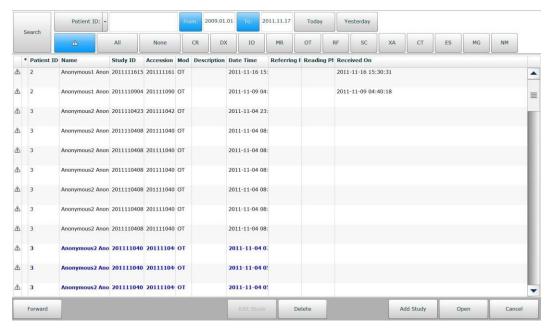
In order to delete the study from SW you must select the study and press *Delete*. After pressing the button, a pop-out window will appear with a query: *Do you really want to delete the study?* If you press *NO* – the study will be left in SW, if *YES* – it will be removed permanently.



Picture 20. Deleting the study.

Editing of an Unsaved Study

A triangle with an exclamation mark inside indicates that the study is not saved. After pressing this button SW will sort out all unsaved studies from the saved ones.



Picture 21. A list of not saved studies.

You may edit these studies by pressing Edit (the button is deactivated for those studies that are already saved).



If the patient information is displayed in **blue letters**, it indicates that the study was not opened. If the information is displayed in **black** letters, it means that the study was opened previously.

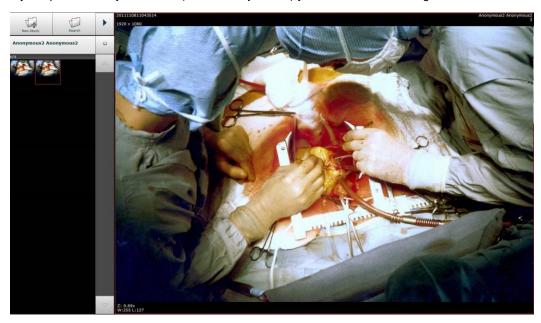
You may also save unfinished studies by pressing on the *Save* icon, that you will find after pressing *Open*. The icon *Save* is on the right side of the patient's name and surname:



Picture 22. Saving study icon.

Viewing and Analyzing Images

If you open the study or several (in this case just one) you will see the following view:



Picture 23. Opened study.

Manipulating Images

You can manage and analyze the study images according to the criteria you need. In order to do that you must call the manipulating buttons by pressing on the image. These are the following image manipulating buttons:



Windowing button is used to adjust the Level/Window contrast of the image.

After pressing a little arrow in the left of the button a pop-up menu appears from which you can select one of the standard contrast settings:

Liver (150,50)	Default	Windowing
Lung (1500,-500)	Auto	
Mediastinum (300,50)	Abdomen (350, 50)	
Pelvis (400,40)	Bone (2500,500)	
Posterior Fossa (250,80)	Cerebrum (120,40)	

Picture 24. Windowing possibilities.

Default - a preset setting

Auto – the system analyses the image and adjusts the brightness and contrast automatically.

Abdomen – a preset setting for abdomen studies.

Bone – a preset setting for bone studies.

Cerebrum – a preset setting for cerebrum studies.

Liver - a preset setting for the liver studies.

 $\ensuremath{\textit{Lung}}\xspace$ – a preset setting used for studying the images of the lungs.

Mediastinum - a preset setting for mediastinum studies.

Pelvis – a preset setting for pelvis studies.

Posterior Fossa - a preset setting for Posterior Fossa studies.

After selecting the contrast type, you may modify the level of it with buttons: L+ and L- (L – high), W+ and W- (W – width).



Picture 25. Changing the level of windowing.



Hand button allows you to position images within the pane. This feature is especially useful when the image is larger than the pane, as it usually is after zooming.

To move the image within the pane use the appeared arrows: $\leftarrow \rightarrow \uparrow \downarrow$:



Picture 26. Changing the position of the image.



Zoom – the button is used to increase and decrease the selected image.

Press on the image lacktriangle to zoom in and lacktriangle to zoom out.



Picture 27. Zooming.



Fit to Screen – when you press this button, the size of the image is automatically adjusted so the whole image fills the screen. For example, if only part of the image is visible on the screen, choose this button to see the whole image displayed on the entire screen.



1:1 Resolution button allows to restore the original image display value.



Delete button only appears when you are creating a new study or if the study is unsaved. You may delete unnecessary image or video by pressing this button.

Scroll Bar

There are two types of scroll bar in the main window:

An empty triangle -

A filled triangle -



If you scroll the filled triangle (up or down), you will scroll through the whole study, while if you scroll the empty triangle (up or down) the scrolling will happen only within limits of the series to which the scroll bar belongs (every series have its own scroll bar, except those that do not have more than six (6) images or videos):

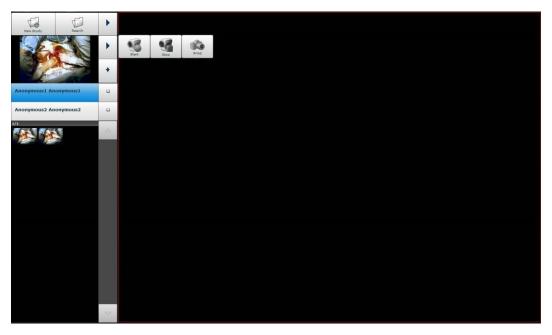


Picture 28. Scrolling possibilities.

Recording 25

Recording

If you have created a new patient account or found a patient in the search window, you may start recording by pressing *Recording* and then *OK*. As soon as you do it the recording window will open. The initial recording position is above the selected studies:



Picture 29. Recording.

If you press on the recording video or the lower arrow \rightarrow the view will be maximized (or minimized). Also, the position of the buttons will change depending on the recording position.



In order to start the recording press Start:

You may see that the recording is happening when the indicator near the patient's name and surname is red and the time is running.



Picture 30. Indication of recording.



In order to stop recording press *Stop*. After pressing this button you may immediately open and watch what you have recorded.



In order to take a photo press Snap. You may also take a photo during the recording.



While recording you may make various study related actions with other image.

Recording 26



Picture 31. Manipulating image while recording.

If you already finished the recording, press *Stop* and *Save* buttons. A pop-out with a query will appear that you must submit in order to save the study:



Picture 32. Notification asking whether to save the study.

If you press YES, the following saving window will appear, if NO – your video will be unsaved.



Picture 33. Saving the study.

Surgery Workstation Settings

The SW settings may be modified by pressing the arrow near the Search button and then pressing Settings:



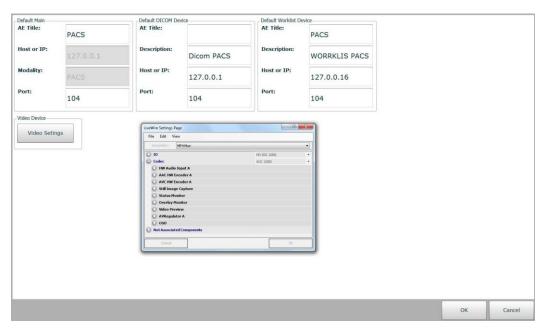
Picture 34. Settings button.

Here you may indicate or modify the following settings:

- Default Main;
- Default DICOM Device;
- Default Worklist Device;
- Video settings.



In order to secure successful SW job, the settings must be modified only by the system administrator.



Picture 35. Settings window.

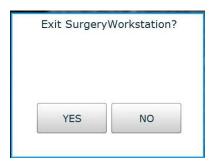
Leaving Surgery Workstation

If you want to leave SW press Exit.



Picture 36. Exit button.

After pressing *Exit* button, a query will appear, asking if you want to exit SW. If you press *YES* you will successfully leave the system.



Picture 37. Notification asking whether to exit the software.

Pictures

Picture 1. Virtual keyboard	8
Picture 2. Virtual keyboard. Numbers	8
Picture 3. New study icon.	10
Picture 4. A new study window.	10
Picture 5. A notification that the patient account is already created	11
Picture 6. A notification that obligatory fields are not filled.	11
Picture 7. Study list	12
Picture 8. Opening multiple studies (1).	12
Picture 9. Opening multiple studies (1).	13
Picture 10. Search of studies	14
Picture 11. Search criterion	14
Picture 12. Search by date (1)	15
Picture 13. Search by date (2)	15
Picture 14. Search by modalities.	15
Picture 15. Selection of all or none of the modalities.	15
Picture 16. The search results.	16
Picture 17. Request to forward the study	17
Picture 18. Forwarding a study	17
Picture 19. Notification of failed forwarding	17
Picture 20. Deleting the study.	18
Picture 21. A list of not saved studies.	19
Picture 22. Saving study icon	19
Picture 23. Opened study.	20
Picture 24. Windowing possibilities	20
Picture 25. Changing the level of windowing.	21
Picture 26. Changing the position of the image.	22
Picture 27. Zooming	23
Picture 28. Scrolling possibilities.	24
Picture 29. Recording.	25
Picture 30. Indication of recording.	25
Picture 31. Manipulating image while recording	26
Picture 32. Notification asking whether to save the study	26
Picture 33. Saving the study.	26
Picture 34. Settings button	27
Picture 35. Settings window	27

Pictures 30

Picture 36. Exit button	28
Picture 37 Notification asking whether to exit the software	28

Index 31

Index

	С	
Creating a New Study		ç
	_	
	E	
Editing of an Unsaved Study		
Explanation of symbols used		5
	ı	
mage Forwarding		
ntroduction		6
	L	
_eaving Surgery Workstation		27
3 3 7		
	M	
Manipulating Images		10
vianipulating images		18
	N	
Notes on the user`s manual		4
	0	
Opening Multiple Studies		11
	Р	
Pictures		28
Purpose and availability of documentation		
·		
	Q	
Questions and comments		1
Questions and comments		
	R	
Recording		24
	S	
	-	
Scroll Bar		
Search of Studies		
Study Removal		
Surgery Workstation Settings		26
	т	
	•	
Table of Contents		4
	V	
Viewing and Analyzing Images		19
/irtual Keyboard		

MedDream Surgery Workstation is manufactured by Softneta UAB.

Softneta UAB Varniu str. 1 48310 Kaunas, Lithuania

