

Trophy DICOM Patient Management System

User's Manual

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1 INTRODUCTION

This document is related to the usage of the Trophy DICOM application and provides the user with a description of its functionalities and its user interface.

Trophy DICOM is a patient management system implementing a subset of the DICOM standard in order to achieve patient information and image data exchange with remote systems (see [2]).

Trophy DICOM is actually a front-end application program providing the Trophy Imaging Software (namely Trophy Windows or DIS) with both patient management and DICOM capabilities.

This DICOM implementation enables the system to communicate with any DICOM 3.0 compliant systems (PACS, RIS, imagers, workstations...). This allows the exchange of patient and procedure information or images and ensures proper integration of the Trophy products into the workflow of the medical institution and the patient management environment.

Note: This document has a supplement related to DICOM Configuration within Trophy DICOM (refer to [4]).

1.1 Revision History

Revision	Date	Author	Description
1.0	2004-03-11	Xavier CARAYOL	Creation
2.0	2004-04-02	Xavier CARAYOL	First Release
2.1	2004-04-23	Xavier CARAYOL	Added License Management & DSIO Export
3.0	2005-01-07	Xavier CARAYOL	Updated to software version 6.0.3
4.0	2006-07-01	Xavier CARAYOL	Updated for Trophy DICOM 6.0.4 version
5.0	2009-02-24	Xavier CARAYOL	Updated for Trophy DICOM 6.1.0.0 version
5.1	2010-02-17	Xavier CARAYOL	Updated for Trophy DICOM 6.2.0.0 version
5.2	2013-05-23	Marc LAURENTIN	Rebranding

1.2 Audience

This document is provided to any regular user of the Trophy DICOM application.

It is assumed that the reader of this document is familiar with the DICOM 3.0 standard and with the terminology and concepts used in the standard.

1.3 Applicable Software Version

This document is related to the version 6.2.0.0 and above of Trophy DICOM, unless otherwise explicitly stated.

This Trophy DICOM version is associated with the Trophy imaging application version 6.11.0.0 and above, and shall not be used in conjunction with any other earlier version. Therefore this Trophy DICOM version is compatible with the associated 3D imaging application.

This Trophy DICOM version also provides a new background process named CSDServices for dealing with all dataset transfers in an asynchronous manner: this is particularly useful for large dataset, like 3D volume, transfers. This Trophy DICOM version is associated with CSDServices version 1.1.2.0 and above, unless otherwise stated.

1.4 Definitions, Terms and Abbreviations

The following definitions are used in this conformance statement:

Trophy Windows

The imaging application designed and developed by

3D Module	Trophy (also called Dental Imaging Software or DIS). The imaging application designed and developed by Trophy providing 3D display and processing functionality (also called DIS 3D Module).
CSDServices	A background process providing Trophy DICOM with asynchronous transfer capabilities.

The following symbols and abbreviations are used in this conformance statement:

DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
MPPS	Modality Performed Procedure Step
Q&R	DICOM Query/Retrieve Service
SCP	Service Class Provider
SCU	Service Class User
TCP/IP	Transmission Control Protocol/Internet Protocol

1.5 References

[1]. ACR/NEMA Standards Publications, PS 3 - 2009 DICOM Standard:

Copies of the DICOM 3.0 standard may be obtained by contacting:

National Electrical Manufacturers Association
1300 N. 17th Street
Rosslyn, Virginia 22209 USA
<http://medical.nema.org>

Current standard status may be checked also at:

<http://www.dclunie.com/dicom-status/status.html>

[2]. Trophy DICOM Patient Management System - DICOM 3.0 Conformance Statement.

Reference: "04XC001-I Trophy DICOM CS" document

[3]. Trophy DICOM Patient Management System - Installation and Configuration Manual.

Reference: "04XC002-I Trophy DICOM IM" document

[4]. Trophy DICOM Patient Management System – DICOM Configuration Manual.

Reference: "05XC002-E Trophy DICOM DC" document

[5]. CSDServices – User's Manual.

Reference: "09XC003-C CSDServices UM" document

[6]. Trophy DICOM Patient Management System – How to Print within Trophy DICOM.

Reference: "08XC003-D Trophy DICOM HT-Print" document

2 THE USER INTERFACE

2.1 The Application Main Screen

Trophy DICOM provides the user with an Explorer like User Interface as presented in the following figure:

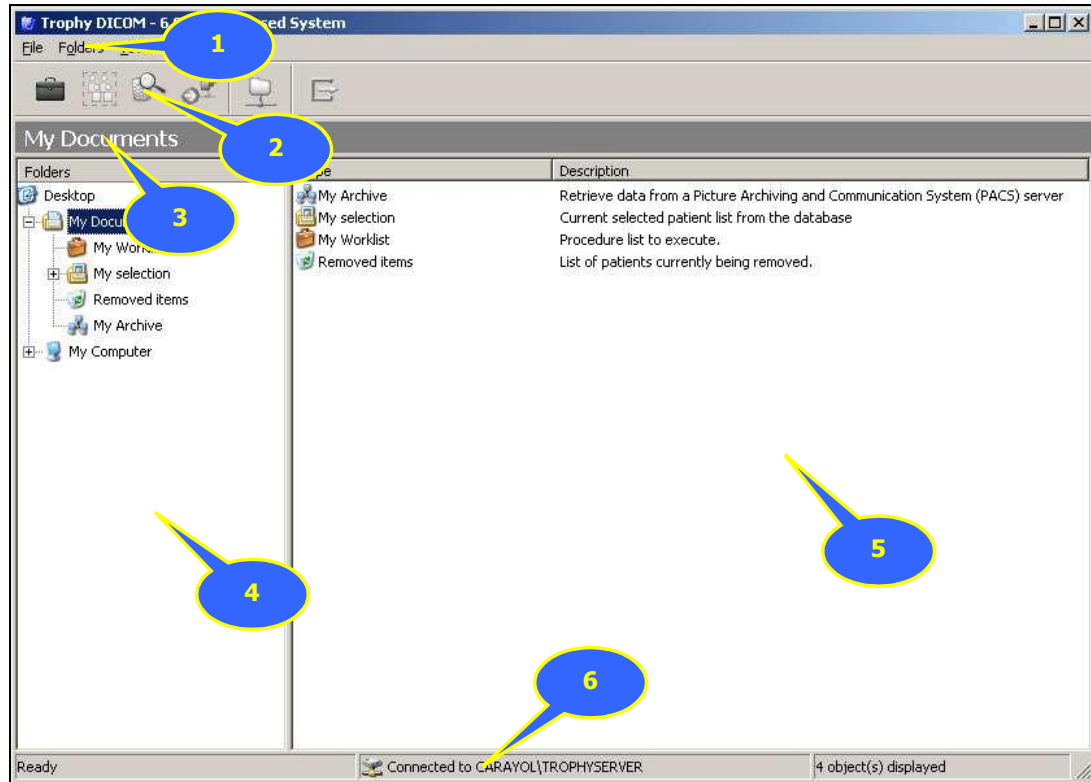


Figure 1: Application Main Screen

This presentation offers an easy-to-use and user-friendly access to all Trophy DICOM functionalities thru a set of data views (basically data presentation screens or application contexts).

A Data View is a particular representation of a set of information under the control of the application, along with the specific commands applicable to this data set in a given context.

This representation is actually mainly based on a List View presentation of the underlying information.

2.1.1 Screen Components

The Trophy DICOM User Interface consists of 6 main components as described in the following table:

Table 1: Main Screen Components

#	Component	Description	Context Sensitive
1	Main Menu	Provides access to all common functionalities and some Data View specific commands.	Yes
2	Tool Bar	Provides graphical shortcut to major common functionalities and Data View specific commands.	Yes
3	Data View Title	Provides useful information about the current Data View item.	Yes
4	Data Explorer View	Provides a graphical view and shortcut of all available Data	No

		View.	
5	Data View	Provides the actual current Data View.	Yes
6	Status Bar	Provides some current status information.	No







Note: The Explorer Component is accessible from the Main Menu Folders option, thru the "Show the explorer" sub-option.

Note: The default first Data View can be configured per user, between the Worklist and the Current Patient List data views (refer to section 5.3).

2.1.1.1 Menu Options

The Main Screen Menu Options and Sub-Options are described in the following table:

Table 2: Main Screen Menu Options

Menu Option	Sub-Options		Description Document Reference	Tool Bar Button
File	DICOM Import	DICOMDIR	Provides access to the DICOMDIR Screen. See section 4.8	-
		DICOM File	Provides access to DICOM File Import Dialog Window. See section 4.7	-
	Exit		Exit the application.	
Folders	My Worklist		Provides access to the DICOM Worklist Item Screen. See section 4.2	
	My Selection		Provides access to the Current Patient List Screen. See section 3.1	
	Removed Items		Provides access to the Removed Patient Screen. See section 3.2	
	My Archive		Provides access to the DICOM Q&R Screen See section 4.3	
	My DICOM Servers		Provides access to the DICOM Server Screen. See section 4.1	
	Show the explorer		Shows/Hides the Explorer Component	-
Tools	Database	Configuration	Provides access to the Database Configuration Dialog Window. See reference 0	-
		SQL Server	Provides access to the SQL Server Manager internal utility. See reference 0	-
		Upgrade	Provides access to the Trophy Windows 5 upgrade utility. See reference 0	-
		DSIO Export	Provides access to the DSIO Export Dialog Window. See section 6.5	-

	Parameters	Provides access to the User Preferences Configuration Dialog Window. See section 5	-
	Import Server	Provides access to the DICOM Server Configuration Dialog Window. See section 4.1	-
	Log Files	Provides access to the Application Logs Dialog Window. See section 4.10	-
?	Help	Provides access to the online Help. See section 6.1	-
	About License	Provides access to the Application License Dialog Window. See section 6.2	-
	About	Provides access to Software Version Information Dialog Window. See section 6.3	-

Note: Menu Options of the Main Screen are available in all Data View screens of the application.

2.1.1.2 Tool Bar Buttons

The Main Screen Tool Bar is represented in the following figure:



Figure 2: Main Screen Tool Bar Buttons

Refer to Table 2 for Tool Bar Button descriptions.

Note: The Main Screen Tool Bar is common to all screens where no specific actions are applicable to the associated Data View.

2.2 Common Properties

2.2.1 Main Menu

Menu options may not be always enabled: Most of the Main Menu options are depending on item selection in the Data View Component of the application.

All menu options are accessible from the keyboard using the ALT / Keyboard Key combination. The underlined character of the option represents menu option keyboard accelerator keys.

Note: On Microsoft Windows XP system, this functionality is user configurable and accessible pressing the ALT Key.

2.2.2 Keyboard Shortcuts

The following common Keyboard Shortcuts are available, if applicable:

Table 3: Common Keyboard Shortcuts

Keyboard Shortcut	Usage
INS (Insert)	Creates a new item in the underlying Data List View.
DEL (Delete)	Removes the selected item from the underlying Data List View.
F5	Refreshes the underlying Data List View.

ENTER	Performs the default action on the selected item of the underlying Data List View.
-------	--

Note: These Keyboard Shortcuts are obviously based on the Data View context, and all of them are not necessary available for all Data Views.

Note: ENTER is equivalent to a Mouse Double-Click

2.2.3 Context Menus




A Mouse Right-Click on any Data List View provides the user with a Context Menu. Default Item Action menu option appears in Bold in this menu option list (see section 2.2.7).

Context Menu options may not be always enabled: Most of the Context Menu options are depending on item selection in the underlying Data View Component of the application.

2.2.4 Tool Bar Buttons

All Tool Bar Buttons have 3 states as described in the following table:

Table 4: Tool Bar Button States

State	Icon Type	Description
Cold		The button is enabled but not selected. The button appears in gray levels and its aspect changes when passing the mouse over.
Hot		The button is enabled and selected. The button is colored.
Disabled		The button is disabled. The button appears in gray levels and is neither selectable nor sensitive to mouse motions.

Button States are context dependant.

2.2.5 Sorting List View Items

A Mouse Left-Click on any Data List View Column Header sorts the data (ascending or descending) according to their value type.

Note: placing and moving the cursor between 2 Column Headers can resize Data List View Columns.

2.2.6 Selecting List View Items

A Mouse Left-Click on any Data List View Item selects the Item. Holding the CTRL key while selecting Data List View Items allows multiple selections.

Note: After a first Data List View item selection, holding the SHIFT key when selecting a different item selects actually all items in the Data List View between the first and last items. This feature is classic under Windows Operating System.

Keyboard Arrow Keys can be used for walking thru List View Items.

Jumping directly onto a specific Item in the List View may be done by typing in the first character of the first column entry, onto the keyboard.

In specific contexts, it may be possible to select multiple Items by holding the CTRL or SHIFT Key while making Item selection.

2.2.7 Performing Default Item Action

Default Item Action is usually the result of a Mouse Double-Click or Keyboard ENTER on a given Item in a Data List View. Default Item Action may be configurable. Default Item Action appears in bold in context menus.

2.2.8 Performing Item Related Action

Item Related Action in any given Data List View is only possible on currently selected item. If none is currently selected, it may be possible that some of the associated Tool Bar Buttons or Menu or Context Menu Items appear as inactivated, i.e. grayed in the user interface (see section 2.2.6 for Item Selection).

2.2.9 Hiding Screen Panels

Application screen panels can be hidden by selecting the panel top right cross button as described in the following figure:



Figure 3: Panel Close Button

3 MANAGING PATIENTS

3.1 Current Patient List


3.1.1 Definition

The Current Patient List is an instant view of the currently existing and active patients in the database. The user can filter this view.

Note: Patients marked as Removed are not visible in this view (see section 3.2).

The Current Patient List may be accessed via one of the following Trophy DICOM common options:

Table 5: Accessing Current Patient List Screen

Type	Entry	Context Sensitive
Main Menu Option	Folders / My Selection	No
Tool Bar Button		Yes
Explorer Tree Node	My Documents / My Selection	No

3.1.2 The Current Patient List Screen

The Current Patient List Screen is described in the following figure:

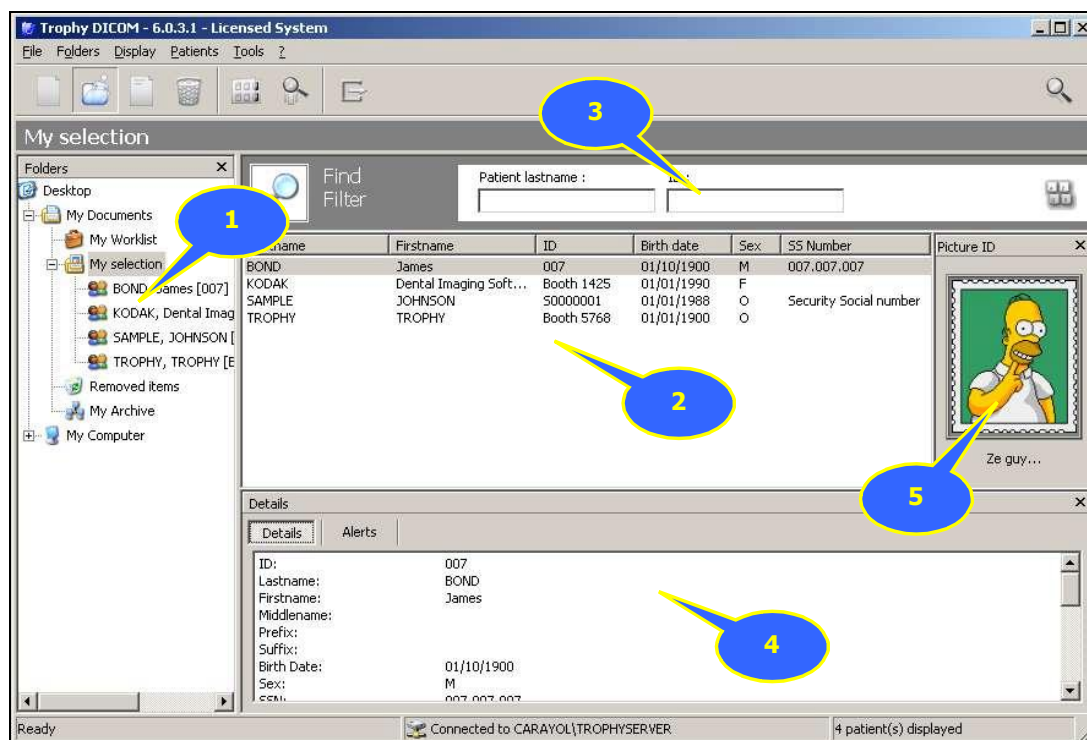


Figure 4: Current Patient List Screen

3.1.2.1 Screen Components

The Current Patient List Screen consists of 5 main components as described in the following table:

Table 6: Current Patient List Screen Components

#	Component	Description	Document Reference
1	Data Explorer View	Provides quick access to all filtered patient data files.	See section 3.1.2.1.1
2	Data List View	Provides access to all patients in a table view according to Filter/Search criteria, if provided.	See section 3.1.3
3	Filter Panel	Provides the user with the ability to filter or search for specific patients.	See section 3.1.4
4	Details Panel	Provides selected patient detailed information and medical alerts.	See section 3.1.2.1.2
5	Picture ID Panel	Provides patient picture ID if available.	See section 3.1.2.1.3

3.1.2.1.1 Data Explorer View

The Data Explorer View is a Tree View of the Current Patient List. Last Name lists patients in alphabetic order. The following items define each node in the tree view:

Table 7: Patient Tree Node Information

Tree Node Patient Information items	<i>Last Name, First Name [Patient ID]</i>
-------------------------------------	---

3.1.2.1.2 Details Panel

The Details Panel provides a quick view of most of the patient information. Details Panel can be hidden or restored thru one of the options of the Main Menu, as described in Table 8 below.

3.1.2.1.3 Picture ID Panel

The Picture ID Panel presents to the user the picture of the currently selected patient of the Current Patient List, if available.


Picture ID can be assigned to a patient thru the Patient Property Window as described in section 3.3.







Picture ID Panel can be hidden or restored thru one of the option of the Main Menu, as described in Table 8 below.

3.1.2.2 Menu Options

The Current Patient List Screen Menu Options and Sub-Options are described in the following table:

Table 8: Current Patient List Screen Menu Options

Menu Option	Sub-Options	Description	Tool Bar Button	Keyboard Shortcut
		Document Reference		
File	All	See section 2.1.1.1	-	-
Folders	All	See section 2.1.1.1	-	-
Display	Filter	Shows/Hides Filter Panel. See section 3.1.4		-
	Picture ID	Shows/Hides Picture ID Panel.	-	-

	Details	Shows/Hides Details Panel.	-	-
Patients	Create	Creates a new Patient. See section 3.1.5		INS
	Modify	Modifies selected Patient. See section 3.1.6		ENTER (1)
	Remove	Removes selected Patient. See section 3.1.7		DEL
	Process	Processes selected Patient by launching The Trophy Imaging Software. See section 3.1.8		ENTER (1)
	Explore	Explores Patient files and images. See section 3.1.9		ENTER (1)
	Refresh...	Refreshes Current Patient List; Filters/Searches if applicable. See section 3.1.3		F5
Tools	All	See section 2.1.1.1	-	-
?	All	See section 2.1.1.1	-	-

(1) The Default Item Action can be configurable (see section 5).

3.1.2.3 Tool Bar Buttons

The Current Patient List Screen Tool Bar is represented in the following figure:




Figure 5: Current Patient List Screen Tool Bar Buttons

Refer to Table 2 and Table 8 for Tool Bar Button descriptions.

3.1.3 Displaying Patient List

The Current Patient List is automatically loaded when entering the Current Patient List Screen the first time at application startup. The Current Patient List may be manually updated via one of the following Current Patient List Screen options:

Table 9: Displaying Current Patient List Options

Type	Entry
Main Menu Option	Patients / Refresh...
Context Menu Option	-
Tool Bar Button	
Keyboard Shortcut	F5

Note: Currently defined Filter/Search criteria are applied, if any (see section 3.1.4).

Note: Current Patient List is emptied before proceeding to a new update.

Patient selection in the Current Patient List can be performed manually as described in section 2.2.6.

Note: Multiple Patient selections are possible in this Data List View, providing the user with the ability to proceed to multiple patient deletions when necessary (refer to section 3.1.7).

By default, Patients are listed by Last Name in alphabetic order. Each table line entry includes the following patient attributes:

Table 10: Current Patient List Table Columns


Column	Description	Value Range
Last name	Patient last name or family name.	N/a
First name	Patient first name.	N/a
ID	Patient institution main identifier.	N/a
Birth Date	Patient date of birth.	N/a
Sex	Patient sex	M = Male, F = Female, O = Other
SS Number	Patient Social Security Number	N/a
Folder	Patient data (sub) folder	N/a

Table lines can be sorted as described in section 2.2.5.

3.1.4 Filtering Patients

Filling filtering or search criteria into the Filter Panel performs Patient filtering in the Trophy DICOM Patient Database. Filter Panel may be accessed via one of the following Current Patient List Screen options:

Table 11: Filtering Current Patient List Options

Type	Entry
Main Menu Option	Display / Filter
Context Menu Option	-
Tool Bar Button	
Keyboard Shortcut	-

Note: de-selecting it may hide Filter Panel.

The Filter Panel provides the user with filtering or searching capabilities while loading the Current Patient List from the Trophy DICOM Patient Database. Filter/Search criteria are described in the following table:

Table 12: Current Patient List Filter Criteria

Criteria	Description
Patient Last name	Allows to filter/search on patient last name.
ID	Allows to filter/search on patient ID.

Filter/Search functionality is used for both extracting a subset of the current database patient list or walking thru the currently displayed list, based on the criteria entered by the user.

New Filter/Search requests, in the former case, are transmitted to the database using the refresh options described in section 3.1.3.


Filter/Search mechanism uses Wildcards Matching: Criteria are processed as "Starting With" criteria.

Filter/Search functionality is only used when the Filter Panel is visible. Filter/Search criteria are reset and discarded when Filter Panel is no more visible.

In order to prevent the user from being forced to use the regular keyboard to enter Filter/Search criteria, a "virtual" keyboard dialog window is available as described in section 3.4.

This Virtual Keyboard may be accessed via one of the following Current Patient List Screen options:

Table 13: Accessing Virtual Keyboard Options

Type	Entry
Main Menu Option	-
Context Menu Option	-
Tool Bar Button	 (1)
Keyboard Shortcut	-


(1) This button is only available into the Filter Panel.

3.1.5 Creating Patient

Patient creation is performed by filling the Patient Property Window as described in section 3.3.

Patient Property Window for patient creation may be accessed via one of the following Current Patient List Screen options:

Table 14: Creating Patient Options

Type	Entry
Main Menu Option	Patients / Create
Context Menu Option	Create
Tool Bar Button	
Keyboard Shortcut	INS


Note: Patients may be automatically created while processing Worklist Procedures (see section 4.2.8) or DICOMDIR Entries (see section 4.9.2) or during any DICOM image file import processes (See sections 4.3.7 and 4.7).

3.1.6 Modifying Patient

Patient modification is performed by updating the Patient Property Window as described in section 3.3.

Patient Property Window for patient modification may be accessed via one of the following Current Patient List Screen options:

Table 15: Modifying Patient Options

Type	Entry
Main Menu Option	Patients / Modify
Context Menu Option	Modify
Tool Bar Button	
Keyboard Shortcut	ENTER (1)

(1) The Default Item Action can be configurable (see section 5).

3.1.7 Removing Patient


Removing patient from the Current Patient List does not physically delete the patient from the Trophy DICOM Patient Database nor does it even remove the Patient Data Directory from the file system. The patient is actually just marked as removed and placed into the Removed Patient List (see section 3.2). The patient is then no more accessible in the Current Patient List.

Note: Multiple patient removals are possible by selecting with the mouse several patient entries in the list (refer to section 2.2.6 for more information about selection of multiple list items).

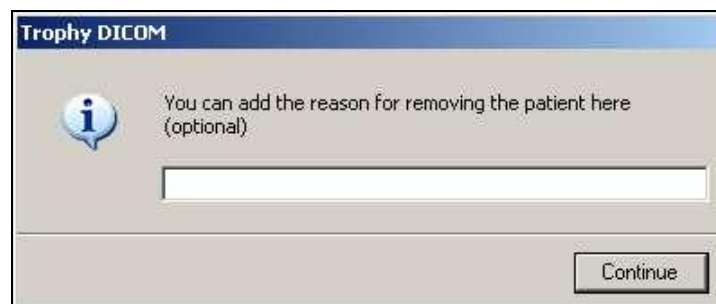
Note: This 2 steps logic is used to prevent the user from accidentally losing patients.

Patient may be removed via one of the following Current Patient List Screen options:

Table 16: Removing Patient Options

Type	Entry
Main Menu Option	Patients / Remove
Context Menu Option	Remove
Tool Bar Button	
Keyboard Shortcut	DEL

While removing a patient, the user is be able to enter the reason for removal as described in the following figure:

**Figure 6: Reason for Removing Patient Dialog Window**


The reason for removing the patient along with the date of removal will appear in the Removed Patient List as described in section 3.2.

3.1.8 Processing Patient

Processing Patient corresponds to starting the Trophy Imaging Software on the selected patient.

Processing Patient operation may be accessed via one of the following Current Patient List Screen options:

Table 17: Processing Patient Options

Type	Entry
Main Menu Option	Patients / Process
Context Menu Option	Process
Tool Bar Button	
Keyboard Shortcut	ENTER (1)

(1) The Default Item Action can be configurable (see section 5).

Note: When launching the application, the Trophy Imaging Software may start by opening automatically the images associated with the last saved context.


Note: Trophy Imaging Software functionalities presentation is outside the scope of this document.

3.1.9 Exploring Patient Data

Exploring Patient Data corresponds to reviewing the list of images and miscellaneous files attached to the selected patient or existing into his Patient Data directory as described in section 3.5.

Exploring Patient Data operation may be accessed via one of the following Current Patient List Screen options:

Table 18: Exploring Patient Options

Type	Entry
Main Menu Option	Patients / Explore
Context Menu Option	Explore
Tool Bar Button	
Keyboard Shortcut	ENTER (1)

(1) The Default Item Action can be configurable (see section 5).

Exploring Patient Data operation may be also accessed directly into the Explorer Component by selecting directly the desired patient tree node as described in the following picture:



Figure 7: Exploring Patient Data from the Explorer Component

Note: It may be necessary to develop the "My Selection" tree node to access the patient list by clicking on the "+" sign on the left of the tree node.


3.2 Removed Patient List

3.2.1 Definition

The Removed Patient List is an instant view of the currently marked as removed (inactive) patients in the Trophy DICOM Patient Database.

The Removed Patient List may be accessed via one of the following Trophy DICOM common options:

Table 19: Accessing Removed Patient List Screen

Type	Entry	Context Sensitive
Main Menu Option	Folders / Removed Items	No
Tool Bar Button		Yes
Explorer Tree Node	My Documents / Removed Items	No

3.2.2 The Removed Patient List Screen

The Removed Patient List Screen is described in the following figure:

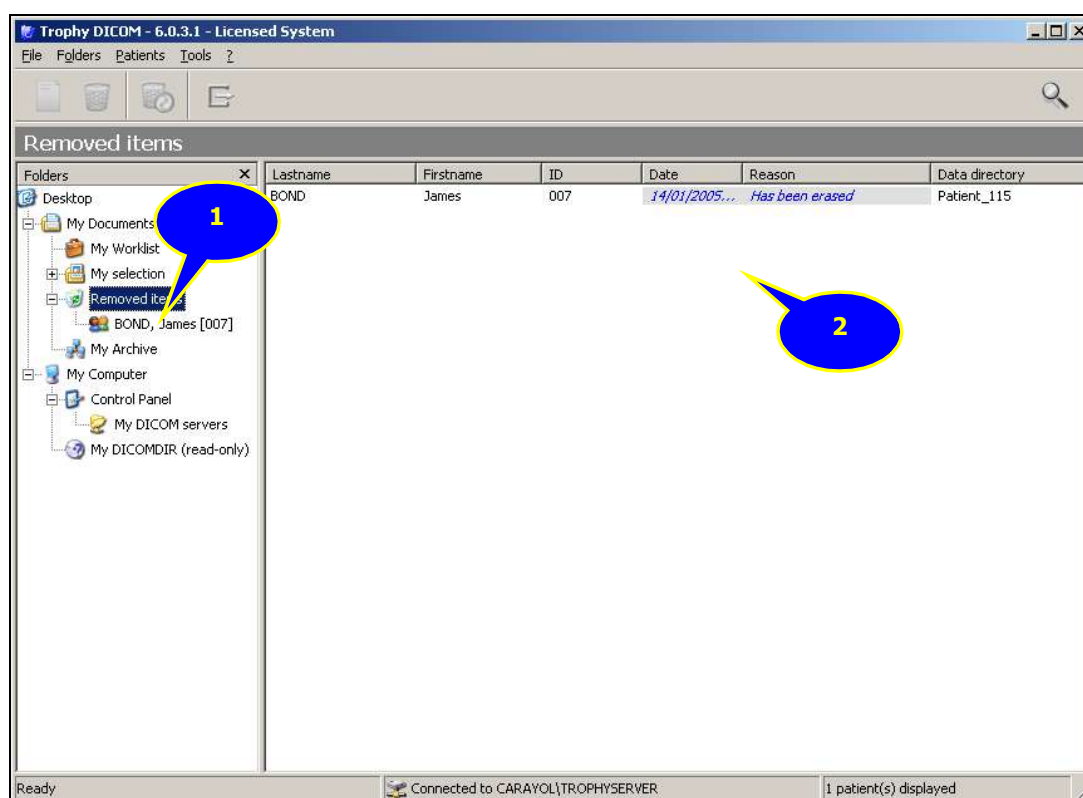


Figure 8: Removed Patient List Screen

3.2.2.1 Screen Components

The Removed Patient List Screen consists of 2 main components as described in the following table:

Table 20: Removed Patient List Screen Components

#	Component	Description	Document Reference
1	Data Explorer View	Provides quick access to all removed patient data files.	See section 3.2.2.1.1
2	Data List View	Provides access to all removed patients in a table view.	See section 3.2.3

3.2.2.1.1 Data Explorer View

The Data Explorer View is a Tree View of the Removed Patient List. Last Name lists patients in alphabetic order. The following items define each node in the tree view:

Table 21: Patient Tree Node Information





Tree Node Patient Information items	Last Name, First Name [Patient ID]
-------------------------------------	------------------------------------

3.2.2.2 Menu Options

The Removed Patient List Screen Menu Options and Sub-Options are described in the following table:

Table 22: Removed Patient List Screen Menu Options

Menu Option	Sub-Options	Description	Document Reference	Tool Bar Button	Keyboard Shortcut
File	All		See section 2.1.1.1	-	-

Folders	All	See section 2.1.1.1	-	-
Patients	Modify	Modifies selected Patient. See section 3.2.4		ENTER
	Delete	Definitely deletes selected Patient. See section 3.2.5		DEL
	Restore	Restores selected Patient in the regular Current Patient list. See section 3.2.6		-
	Refresh...	Refreshes Removed Patient List See section 3.2.3		F5
Tools	All	See section 2.1.1.1	-	-
?	All	See section 2.1.1.1	-	-

3.2.2.3 Tool Bar Buttons

The Removed Patient List Screen Tool Bar is represented in the following figure:




Figure 9: Removed Patient List Screen Tool Bar Buttons

Refer to Table 2 and Table 22 for Tool Bar Button descriptions.

3.2.3 Displaying Removed Patient List

The Removed Patient List is automatically loaded when entering the Removed Patient List Screen. The Removed Patient List may be manually updated via one of the following Removed Patient List Screen options:

Table 23: Displaying Removed Patient List Options

Type	Entry
Main Menu Option	Patients / Refresh...
Context Menu Option	-
Tool Bar Button	
Keyboard Shortcut	F5

Note: Removed Patient List is emptied before proceeding to a new update.

Patient selection in the Removed Patient List can be performed manually as described in section 2.2.6.

Note: Multiple Patient selections are possible in this Data List View, providing the user with the ability to proceed to multiple patient restorations or definite deletions when necessary.

By default, Patients are listed by Last Name in alphabetic order. Each table line entry includes the following patient attributes:

Table 24: Removed Patient List Table Columns

Column	Description	Value Range
Last name	Patient last name or family name.	N/a
First name	Patient first name.	N/a
ID	Patient institution main identifier.	N/a
Date	Date of patient removal.	N/a
Reason	Reason for removal.	N/a
Data directory	Patient Data sub-directory of Trophy DICOM root directory.	N/a


Table lines can be sorted as described in section 2.2.5.

3.2.4 Modifying Patient

Patient modification is performed by updating the Patient Property Window as described in section 3.3.

Patient Property Window for patient modification may be accessed via one of the following Removed Patient List Screen options:

Table 25: Modifying Patient Options

Type	Entry
Main Menu Option	Patients / Modify
Context Menu Option	Modify
Tool Bar Button	
Keyboard Shortcut	ENTER


3.2.5 Deleting Patient

Deleting patient from the Removed Patient List physically deletes the patient from the Trophy DICOM Patient Database and the associated Patient Data Directory from the file system. All the images and files belonging to the patient are deleted.

Note: Patient Data Files are actually sent to the trashcan of the system.

Patient may be deleted via one of the following Removed Patient List Screen options:

Table 26: Deleting Patient Options

Type	Entry
Main Menu Option	Patients / Delete
Context Menu Option	Delete
Tool Bar Button	
Keyboard Shortcut	DEL

For safety reasons, Trophy DICOM requires a confirmation from the user before deleting a patient, as described in the following figure:




Figure 10: Delete Patient Confirmation Dialog Window

3.2.6 Restoring Patient

The user has the ability to restore a patient in the regular Current Patient List, if necessary. Restoring patient is done via one of the following Removed Patient List Screen options:

Table 27: Restoring Patient Options

Type	Entry
Main Menu Option	Patients / Restore
Context Menu Option	Restore
Tool Bar Button	
Keyboard Shortcut	-

3.2.7 Exploring Removed Patient Data

It may be possible to explore the data associated with a removed patient. The only option available is using the Explorer Component of Trophy DICOM. This operation provides exactly the same screen than for any regular patient. Refer to 3.1.9 for more information.

3.3 Patient Property Window

The Patient Property Window is a tab based dialog window form allowing the user to enter or modify information related to a patient as described in the following sections.

The Patient Property Window is accessible from both Current Patient List and Removed Patients screens. In the former case the reason for removal information is accessible into the window as described in section 3.3.4.

Refer to [1] for field's description and value length.

Note: Modification in this form can be validated by the OK button or cancelled.

3.3.1 General Tab

The General Tab of the Patient Property Window allows entering general and demographic information about the patient as shown in the following figure:

The screenshot shows the 'Trophy DICOM - Patient (Modification)' window with the 'General' tab selected. The 'Identification' section contains the following fields: Patient ID (007), Lastname (BOND), Firstname (James), Prefix (empty), Suffix (empty), Birth date (01/10/1900 with a checked checkbox), Sex (M selected, F and Unknown unselected), and SS number (007.007.007). To the right of these fields is a 'Picture ID' field containing a cartoon image of Homer Simpson. Below the picture is a 'Message' field with the text 'Ze guy...'. At the bottom of the window is a large 'Remarks' section with a 'Comments' text area. The 'OK' and 'Cancel' buttons are at the bottom right.

Figure 11: Patient Property General Tab

The set of information the user can enter is defined in the following table:

Table 28: Patient General Tab Information

Field	Max Size	Required	Notes
Patient ID	64	Y	Patient ID is the primary and single key for identifying patients in the DICOM world.
Last Name	64	Y	Patient Last Name is used as secondary key in Trophy DICOM when the Patient ID is not known (yet).
First Name, Middle Name, Prefix & Suffix	64	-	Refer to [1] for a description of Patient Name Components in DICOM.
Birth Date	-	-	The check box in the date picker graphical control has to be checked, otherwise the date is unknown.
Sex	-	-	Refer to [1] for more explanation about defined terms.
SS Number	64	-	Represents the Social Security Number of the patient.
Picture ID	-	-	Image File Formats supported for Picture ID are: BMP, GIF, JPEG, TIF. Picture ID file can be selected directly by clicking into the control or thru the Miscellaneous Information tab (see section 3.3.4).
Message	128	-	Picture ID short comments that will appear under the Picture ID in the Picture ID Panel of the Current Patient List Screen (see section 3.1.2).
Comments	10240	-	General comments on the patient.

3.3.1.1 Patient Matching

Patient ID and Patient Last Name are required in order to ensure proper patient identification into the overall information system of the user.

Patient Matching is performed using the Patient ID field only within Trophy DICOM.

When creating a new patient manually, control is performed to check if the Patient ID is unique.

Note: When processing Worklist Procedures (see section 4.2.8) or DICOMDIR entries (see section 4.9.2), or while importing images, a new patient is created if no matching found.

3.3.2 Contact Tab

The Contact Tab of the Patient Property Window allows entering contact and other identifier information about the patient as shown in the following figure:

The screenshot shows the 'Trophy DICOM - Patient (Modification)' dialog box with the 'Contact' tab selected. The 'Address & Phones' section includes text boxes for 'Address' (containing 'Some where in the Street'), 'Floor' (containing '007'), 'Zip' (containing '12345'), and 'City' (containing 'TheCity'). Below these are fields for 'Home Phone' (123.456.789), 'Mobile Phone' (987.654.321), and 'Business Phone'. The 'Other Identifiers' section features a list box with 'MI-6' and buttons for 'Add' and 'Remove'. 'OK' and 'Cancel' buttons are at the bottom right.

Figure 12: Patient Property Contact Tab

The set of information the user can enter is defined in the following table:

Table 29: Patient Contact Information Data

Field		Max Size	Required	Notes
Address (1)	Street1	24	-	First part of the address (Street, number...)
	Street2	12	-	Second part of the address (Building, floor...)
	Zip Code	10	-	-
	City	14	-	-
Home Phone		16	-	-

Mobile Phone	16	-	-
Business Phone	16	-	-
Identifiers	64*n	-	Identifiers are a multi-valued field and require special handling as described in section 3.3.2.1.

- (1) The total length of the Address field (including all its components) shall not exceed 64 characters as defined in the DICOM standard. Extra hidden characters are used as component separators

3.3.2.1 Identifiers Field

Editing Identifiers requires special user interactions as described in the following figure:

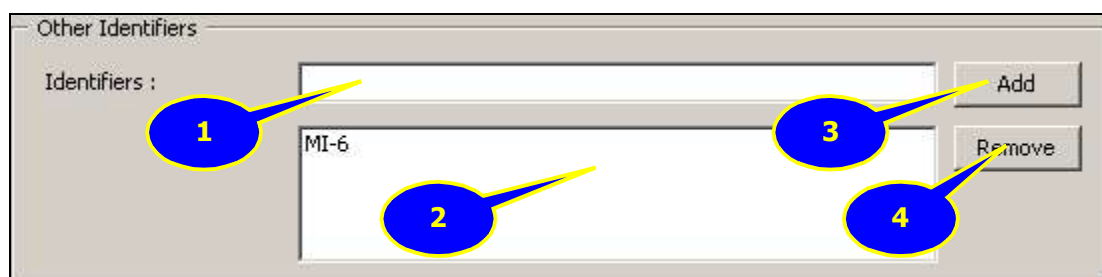


Figure 13: Editing Patient Identifiers

The following controls are involved when editing Identifiers:

Table 30: Editing Identifiers Control Usages

Control #	Type	Usage
1	Text Box	This Text Box is used for typing new Identifier.
2	List Box	This List Box is used for displaying all defined (already entered) Identifiers.
3	Button	This button is used for adding Identifier typed into the Text Box in the Identifier list.
4	Button	This button is used for removing the currently selected Identifier from the List Box.

3.3.3 Medical Tab

The Medical Tab of the Patient Property Window allows entering medical information about the patient as shown in the following figure:

Trophy DICOM - Patient (Modification)

General | Contact | **Medical** | Miscellaneous

Medical information

Alerts :

Big Problems...

Add Remove

Additional history :

What ever you want

Pregnancy status : ☒ No ☐ Possible ☐ Yes ☐ Unknown

Ethnic group :

OK Cancel

Figure 14: Patient Property Medical Tab

The set of information the user can enter is defined in the following table:

Table 31: Patient Medical Information Data

Field	Max Size	Required	Notes
Alerts	64*n	-	Alerts are a multi-valued field and require special handling equivalent to Identifiers ones as described in section 3.3.2.1.
Additional History	10240	-	-
Pregnancy Status	-	-	Only applicable if Female Sex selected into General Tab (see section 3.3.1).
Ethnic Group	16	-	-

3.3.4 Miscellaneous Tab

The Miscellaneous Tab of the Patient Property Window allows visualizing miscellaneous information about the patient record as shown in the following figure:

The screenshot shows the 'Trophy DICOM - Patient (Modification)' dialog box with the 'Miscellaneous' tab selected. The 'Directory and file' section contains 'Patient data directory : Patient_115' and 'Picture ID file : Patient_115.bmp' with a red 'X' icon. The 'Data control' section contains four fields: 'Creation : 19/10/2003 12:07:28', 'Data counter : 115', 'Last modification : 01/04/2004 16:16:27', and 'Data version : 000002106198'. The 'OK' and 'Cancel' buttons are at the bottom right.

Field	Value
Patient data directory	Patient_115
Picture ID file	Patient_115.bmp
Creation	19/10/2003 12:07:28
Data counter	115
Last modification	01/04/2004 16:16:27
Data version	000002106198

Figure 15: Patient Property Miscellaneous Tab (Regular Patient)

The screenshot shows the 'Trophy DICOM - Patient (Modification)' dialog box with the 'Miscellaneous' tab selected. The 'Directory and file' section contains 'Patient data directory : Patient_115' and 'Picture ID file : Patient_115.bmp' with a red 'X' icon. The 'Data control' section contains four fields: 'Creation : 19/10/2003 12:07:28', 'Data counter : 115', 'Last modification : 01/04/2004 16:16:27', and 'Data version : 000002114151'. The 'Removal information' section contains two fields: 'Removed by : 03/04/2004 19:22:13' and 'Reason : Has been erased...'. The 'OK' and 'Cancel' buttons are at the bottom right.

Field	Value
Patient data directory	Patient_115
Picture ID file	Patient_115.bmp
Creation	19/10/2003 12:07:28
Data counter	115
Last modification	01/04/2004 16:16:27
Data version	000002114151
Removed by	03/04/2004 19:22:13
Reason	Has been erased...

Figure 16: Patient Property Miscellaneous Tab (Removed Patient)

Most of the information in the Property Tab are "Read-Only" and used for Trophy DICOM internal control purposes only.

The set of information the user can visualize is defined in the following table:

Table 32: Patient Miscellaneous Information Data

Field	Max Size	Required	Notes
Patient Data Directory	-	-	Defines the actual Patient Data sub-directory of the Patient Database root directory. If configured at the Database level, this field can be editable (see 0 for more information).
Picture ID file	-	-	This field requires special handling as described in section 3.3.4.1.
Creation	-	-	Database patient record creation date.
Data Counter	-	-	Database patient record number: this parameter is used for defining unique Patient Data sub-directory.
Last Modification	-	-	Database patient record last modification date.
Data Version	-	-	Database Timestamp for defining patient record version.
Removed by (1)	-	-	Date of patient removal.
Reason (1)	-	-	Reason for removal.

(1) Removed By and Reason fields are only available when editing removed patient.

3.3.4.1 Picture ID File Field

Editing Picture ID File requires special user interactions as described in the following figure:

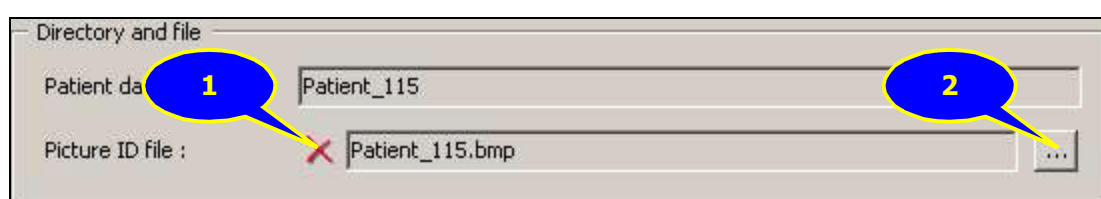


Figure 17: Editing Picture ID File

Note: Picture ID File can be directly selected in the General Tab as described in section 3.3.1.

The following controls are involved when editing Identifiers:

Table 33: Editing Picture ID File Control Usages

Control #	Type	Usage
1	Button	This button is used to reset the Picture ID File field.
2	Button	This button is used to open the regular Microsoft Windows File Selection dialog window.

3.4 Virtual Keyboard

Virtual Keyboard is a special dialog window that may be used when the regular keyboard is not available or forbidden, in order to help the user in typing in Filter/Search criteria using the mouse. Virtual Keyboard interactions are mouse based only.



Figure 18: Virtual Keyboard Dialog Window

Selecting a Key Button in the Virtual Keyboard dialog window copies the associated character in the current selected field of the Filter Panel. Field selection in the Filter Panel can be performed using the mouse.

Selecting the Virtual Keyboard Access Button again can hide virtual Keyboard. Virtual Keyboard window always stays on top of the others windows.

Note: Virtual Keyboard window is automatically hidden when the Filter Panel is no more visible.

The following table summarizes Virtual Keyboard special keys:

Table 34: Virtual Keyboard Special Keys

Key	Description
<- Bck	Backspace: removes the last entered character.
Del	Delete: removes all the characters entered previously.


3.5 Patient Data List

3.5.1 Definition

The Patient Data List is a specific Data View screen, providing the user with the ability to list, review or process of all existing images, volumes or files attached to the patient and existing in his Patient Data directory or sub-directories (for volumes).

The Patient Data List may be accessed when exploring the current patient via one of the following Trophy DICOM common options:

Table 35: Accessing Patient Data List Screen

Type	Entry	Context Sensitive
Main Menu Option	Patients / Explore	Yes
Context Menu	Explore	Yes
Tool Bar Button		Yes
Explorer Tree Node	My Documents / My Selection / Patient Node	No

3.5.2 The Patient Data List Screen

The Patient Data List screen is described in the following figure:

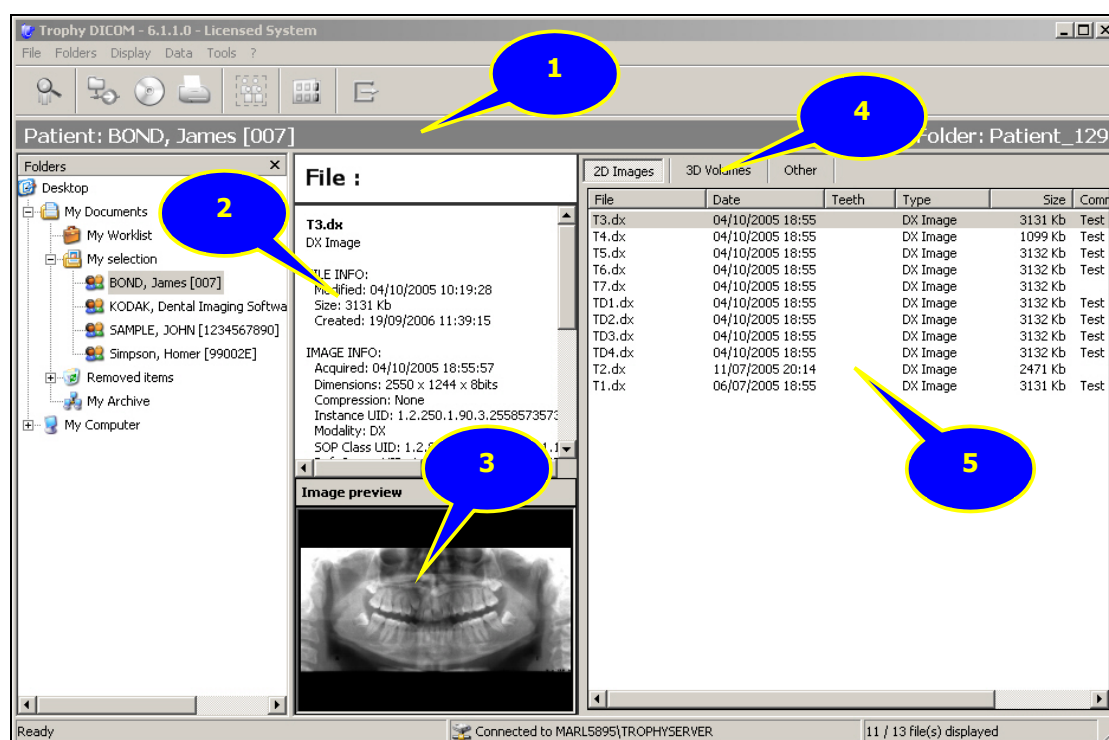


Figure 19: Patient Data List Screen

Note: 3D Volumes are created by the Trophy Imaging application in separate subdirectories of the patient data directory, whose name starts with "VOL_".

Note: Displayed Tabs can be configured within Trophy DICOM. This feature allows the user to best fit her needs based on the connected acquisition system. Refer to section 5.3 for more information on configuring visible tabs.

3.5.2.1 Screen Components

The Patient Data List screen consists of 5 main components as described in the following table:

Table 36: Patient Data List Screen Components

#	Component	Description	Document Reference
1	Data View Title	Provides information about the selected patient and the associated directory.	See section 3.5.2.1.2
2	Preview Panels	Provides summary information about the selected object in the Data List View.	See section 3.5.2.1.2
3	Preview Image or Frame Panel	Part of the Preview Panel, provides preview of the selected image or volume reference frame in the Data List View.	See section 3.5.2.1.2
4	Object Type Tabs	Provides the ability to switch from 2D images to 3D volumes to other files objects in the Data List View.	See section 3.5.3
5	Data List View	Provides access to all objects in a table view according to selected Object Type Tab.	See section 3.5.3

3.5.2.1.1 Data View Title

The Data View Title area provides summary information about the current patient and the associated data sub-directory of the Trophy DICOM Patient Database root directory (refer to [3] for more information about Trophy DICOM Patient Database root directory).

Table 37: Data View Title Information

Patient Information	<i>Last Name, First Name [Patient ID]</i>
Folder	<i>Patient's Sub-directory name</i>

3.5.2.1.2 Preview Panels

The Preview panels provide a quick view of the selected object in the Patient Data List. The Preview Image or Frame Panel is actually part of the Preview Panel itself. Preview Panel can be hidden or restore thru one of the options of the Main Menu, as described in 3.5.2.2 below.

3.5.2.2 Menu Options

Menu options are depending on the current Object Type Tab selected.






Note: Context Menu is only available for "2D Images" and "3D Volumes" Tabs.

3.5.2.2.1 "2D Images" Tab Selected

The Patient Data List screen menu options and sub-options when "2D Images" Tab is selected, are described in the following table:

Note: Multiple selections are possible in this list (refer to 2.2.6 for more information related to multiple selection in a list).

Table 38: Patient Data List Screen Menu Options (2D Images Tab)

Menu Option	Sub-Options	Description Document Reference	Tool Bar Button	Keyboard Shortcut
File	All	See section 2.1.1.1	-	-
Folders	All	See section 2.1.1.1	-	-
Display	Preview	Shows/Hides Preview Panel.	-	-
Data	Detail (1)	Displays selected image in a separate window. See section 3.5.4		-
	Transfer (2)	Transfers selected image(s) to a DICOM Storage Server using DICOM Store Service. See section 3.5.5		-
	DICOMDIR Export (2)	Exports the selected image(s) into a DICOMDIR File Set. See section 3.5.6		-
	Print (2)	Prints selected image(s) onto a DICOM Printer using DICOM Print Service. See section 3.5.7		-
	Process (2)	Processes selected image(s) by launching the Trophy Imaging Software. See section 3.5.8		ENTER
	Refresh...	Refreshes Patient Data image, volume and file lists.	-	F5

Tools	All	See section 2.1.1.1	-	-
?	All	See section 2.1.1.1	-	-






- (1) Only single image selection is possible.
 (2) Multiple image selection is possible.

3.5.2.2.2 "3D Volumes" Tab Selected

The Patient Data List screen menu options and sub-options when "3D Volumes" Tab is selected, are described in the following table:

Note: Multiple selections are NOT possible in this list.

Table 39: Patient Data List Screen Menu Options (3D Volumes Tab)

Menu Option	Sub-Options	Description	Document Reference	Tool Bar Button	Keyboard Shortcut
File	All		See section 2.1.1.1	-	-
Folders	All		See section 2.1.1.1	-	-
Display	Preview	Shows/Hides Preview Panel.		-	-
Data	Detail (1)	Displays selected volume "reference" frame in a separate window. See section 3.5.4			-
	Transfer	Transfers selected volume to a DICOM Storage Server using DICOM Store Service. See section 3.5.5			-
	DICOMDIR Export	Exports the selected volume into a DICOMDIR File Set. See section 3.5.6			-
	Print	Not applicable for volumes (refer to 3D Module application to perform this functionality)			-
	Process (2)	Processes selected volume by launching the Trophy 3D Module Software. See section 3.5.8			ENTER
	Refresh...	Refreshes Patient Data image, volume and file lists.		-	F5
Tools	All		See section 2.1.1.1	-	-
?	All		See section 2.1.1.1	-	-

(1) Only the "reference" frame is presented: Reference frame is the frame located in the middle of the volume cube.

(2) When no volume entry is selected, the Trophy Imaging application is launched, allowing the user to proceed to another 3D acquisition if necessary.

3.5.2.2.3 "Other" Tab Selected

The Patient Data List screen menu options and sub-options when "Other" Tab is selected, are most of them the same as the options described in Table 38, except those specific to image manipulations.

A Mouse Double-Click or an ENTER key launches the default application associated with the selected file, as configured into the underlying Microsoft Windows system.

3.5.2.3 Tool Bar Buttons

The Patient Data List Screen Tool Bar is represented in the following figure:



Figure 20: Patient Data Screen Tool Bar Buttons

Refer to both Table 2 and Table 38 or Table 39 for Tool Bar Button descriptions.

3.5.3 Displaying Data List

The Patient Data lists are automatically loaded and updated when entering the Patient Data Screen. The Patient Data lists may be manually updated via one of the following options:

Table 40: Displaying Patient Data List Options

Type	Entry
Main Menu Option	Data / Refresh...
Context Menu Option	-
Tool Bar Button	-
Keyboard Shortcut	F5

Object selection in the Patient Data lists can be performed manually as described in section 2.2.6.

Multiple Image selection is only possible for some specific operations as described in Table 38 and Table 39.

By default, Patient Data objects are listed by object creation date in anti-chronological order (more recent first). Each table line entry includes the following information:

Table 41: Patient Data List Table Columns

Column	Description	Value Range
"2D Images" Tab Selected		
File	Image File Name.	N/a
Date	Image Acquisition Date.	N/a
Teeth	Teeth included in the image	N/a
Type	Image Type	N/a
Size	Image File Size	N/a
Comments	Image Comments	N/a
"3D Volumes" Tab Selected		
Directory	Volume Directory Name.	N/a
Date	Volume Acquisition Date.	N/a
Type	Volume Type	N/a
Size	Volume Size (#columns x #rows x #frames / #bits)	N/a
Voxel	Voxel Size (width x height x depth)	N/a
Exposure	Exposure Information	N/a
Dose	Dose Information	N/a
"Other" Tab Selected		
File	Object File Name	N/a

Date	Object File Creation Date	N/a
Size	Object File Size	N/a
Type	Object File Type	N/a

Table lines can be sorted as described in section 2.2.5.

3.5.4 Previewing Images or Volume Reference Frames

Image or Frame Preview provides the user with the ability to display the selected image or volume reference frame in a stand-alone window without having to start Trophy Imaging Software, as described in section 3.6.

Image or Frame Preview may be accessed via one of the following Patient Data Screen options:

Table 42: Previewing Image Options


Type	Entry
Main Menu Option	Data / Detail
Context Menu Option	Detail
Tool Bar Button	
Keyboard Shortcut	-


Image or Frame Preview is also accessible by clicking on the icon image in the Preview Panel of the Patient Data Screen.

3.5.5 Transferring Images or Volumes

Image or Volume Transfer provides the user with the ability to transfer the selected image(s) or volume to one or more DICOM Store Servers. This transfer is performed using the DICOM Store Service provided by the CSDServices background process (refer to [5] for more information about CSDServices). The servers can be any DICOM Store SCP like a PACS system. See section 4.1 for configuring DICOM Store Servers.

Image or Volume Transfer may be accessed via one of the following Patient Data Screen options:

Table 43: Transferring Image Options

Type	Entry
Main Menu Option	Data / Transfer
Context Menu Option	Transfer
Tool Bar Button	
Keyboard Shortcut	-


Destination DICOM Store Servers can be configured by the user as described in section 4.5.

3.5.6 Exporting Images

Image Export provides the user with the ability to export into a DICOMDIR File Set one or more selected image(s) or volume. This export is performed using the DICOM Removable Media Service Class. Refer to [2] for more information about DICOMDIR implementation.

Image Export may be accessed via one of the following Patient Data Screen options:

Table 44: Exporting Image Options

Type	Entry
Main Menu Option	Data / DICOMDIR Export
Context Menu Option	DICOMDIR Export
Tool Bar Button	
Keyboard Shortcut	-

The user as described in section 4.6 can select a DICOMDIR directory location.


3.5.7 Printing Images

Image Printing provides the user with the ability to print one or more images per sheet on a given DICOM Print Server. This printing is performed using the DICOM Print Management Service Class. See section 4.1 for configuring DICOM Print Servers.

Note: At the date of this document, Image Printing does not work for Volumes.

Image Printing may be accessed via one of the following Patient Data Screen options:

Table 45: Printing Image Options

Type	Entry
Main Menu Option	Data / Print
Context Menu Option	Print
Tool Bar Button	
Keyboard Shortcut	-


Print session and printer parameters can be configured by the user as described in section 4.4.

3.5.8 Processing Images or Volumes

Processing Images corresponds to starting the Trophy Imaging Software on the selected images or directly the Trophy 3D Module application on the selected volume.

Processing Images or Volumes operation may be accessed via one of the following Patient Data Screen options:

Table 46: Processing Image Options

Type	Entry
Main Menu Option	Data / Process
Context Menu Option	Process
Tool Bar Button	
Keyboard Shortcut	ENTER

Note: When launching the application, the Trophy Imaging Software may start by opening automatically the images associated with the last saved context too.

Note: When no volume is actually selected in the list, this operation launches the Trophy Imaging Software and not the Trophy 3D Module Software. This provides the user with the ability to proceed to another 3D acquisition if necessary for the same patient.

Note: Presenting the Trophy Imaging or 3D Module Software functionalities are outside the scope of this document.

3.6 Image Preview Window

When requesting Image or Volume Reference Frame Preview, the following resizable window is presented to the user:



Figure 21: Image Preview Dialog Window



WARNING: The Image or Volume Reference Frame Preview shall not be used for diagnostic purposes.

4 WORKING WITH DICOM

4.1 Configuring DICOM Servers

Please refer to [4] for more information on configuring DICOM remote or local servers in Trophy DICOM.

4.2 Retrieving Worklist Procedures from RIS Systems


4.2.1 Definition

The Worklist Procedure Screen provides the user with the ability to query a remote system (generally a RIS system) for Worklist. Such request is performed using the Modality Worklist SOP Class of the DICOM Basic Worklist Management Service Class.

Please refer to [2] for more information on Modality Worklist functionality implementation in Trophy DICOM.

The Worklist Procedure Screen may be accessed via one of the following Trophy DICOM common options:

Table 47: Accessing Worklist Procedures Screen

Type	Entry	Context Sensitive
Main Menu Option	Folders / My Worklist	No
Tool Bar Button		Yes
Explorer Tree Node	My Documents / My Worklist	No

Refer to [1] for DICOM Modality Worklist Information Model – FIND concepts and terminology.

Refer to [2] for Trophy DICOM implementation and attribute management.

4.2.2 The Worklist Procedures Screen

The Worklist Procedures screen is described in the following figure:

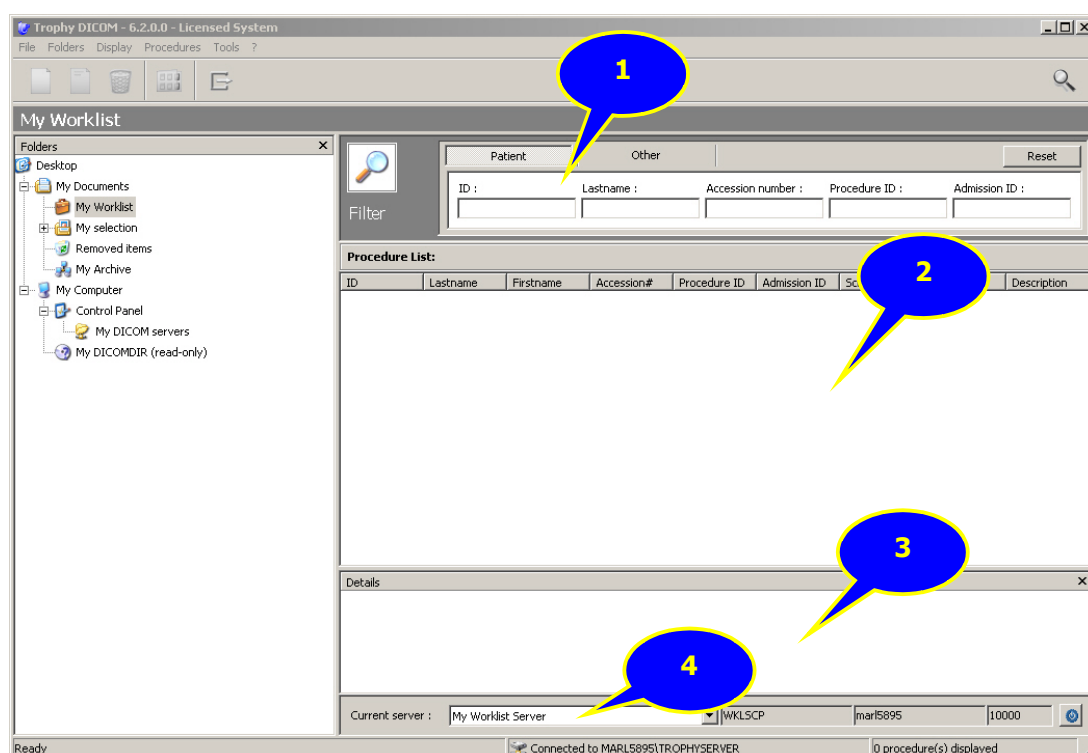


Figure 22: Worklist Procedures Screen

4.2.2.1 Screen Components

The Worklist Procedures Screen consists of 4 main components as described in the following table:

Table 48: Worklist Procedures Screen Components


#	Component	Description	Document Reference
1	Filter Panel	Provides filtering capabilities for Worklist requests.	See section 4.2.4
2	Data List View	Provides access to all Worklist Procedures in table view.	See section 4.2.3
3	Details Panel	Provides quick view of the selected Worklist Procedure information.	
4	Server Panel	Provides information about current DICOM Worklist server, and the ability to switch servers.	See section 4.2.2.1.1

4.2.2.1.1 Server Panel

The server's panel is described in the following figure:



Figure 23: Worklist Screen Server Panel

The current configured default DICOM Worklist Server is displayed in this panel. The user can test the connection to the server via a DICOM Verification request by selecting the test button  on the right side of the panel.

The combo-box control of this panel allows the user from switching between pre-configured DICOM Worklist Servers. This functionality provides the user with the ability to specify her






preferred server in a centralized, multi-sites configuration. The system keeps, for each user, the last selection as default for the next time.

Note: switching from server resets the current Data List View content.

4.2.2.2 Menus Options

The Worklist Procedures Screen Menu Options and Sub-Options are described in the following table:

Table 49: Worklist Procedures Screen Menu Options

Menu Option	Sub-Options	Description Document Reference	Tool Bar Button	Keyboard Shortcut
File	All	See section 2.1.1.1	-	-
Folders	All	See section 2.1.1.1	-	-
Display	Filter	Shows/Hides Filter Panel. See section 4.2.4	-	-
	Details	Shows/Hides Details Panel.	-	-
	Server	Shows/Hides Server Panel See section 4.2.2.1.1	-	-
Procedures	Create	Creates a new Worklist Procedure. See section 4.2.5		INS
	Modify	Modifies selected Worklist Procedure. See section 4.2.6		-
	Delete	Deletes selected Worklist Procedure. See section 4.2.7		DEL
	Process	Processes selected Worklist Procedure by launching the Trophy Imaging Software See section 4.2.8		ENTER
	Refresh	Refreshes Worklist Procedure List by initiating a new DICOM Worklist request See section 4.2.3		F5
Tools	All	See section 2.1.1.1	-	-
?	All	See section 2.1.1.1	-	-

4.2.2.3 Tool Bar Buttons

The Worklist Procedures Screen Tool Bar is represented in the following figure:




Figure 24: Worklist Procedures Screen Tool Bar Buttons

Refer to Table 2 and Table 49 for Tool Bar Button descriptions.

4.2.3 Displaying Worklist Procedure List

The Worklist Procedure List is manually updated via one of the following Worklist Procedure Screen options:

Table 50: Displaying Worklist Procedure List Options

Type	Entry
Main Menu Option	Procedure / Refresh...
Context Menu Option	-
Tool Bar Button	
Keyboard Shortcut	F5

Note: Worklist Procedure List Update is only available if a current default DICOM Worklist Server is defined (see section 4.1).

Note: Currently defined Filter/Search criteria are applied, if any (see section 4.2.4).

Worklist Procedure may be also manually created as described in section 4.2.5.

Worklist Procedure selection in the Worklist Procedure List can be performed manually as described in section 2.2.6.

Note: Multiple Worklist Procedure selections are not possible in this Data List View.

By default, Procedures are listed by Patient ID in alphabetic order. Each table line entry includes the following attributes:

Table 51: Worklist Procedure List Table Columns

Column	Description	Value Range
ID	Patient institution main identifier.	N/a
Last name	Patient last name or family name.	N/a
First name	Patient first name.	N/a
Accession Number	Patient accession number.	N/a
Procedure ID	Requested Procedure ID.	N/a
Admission ID	Patient admission ID.	N/a
Sched. Date	Scheduled Procedure Step Start Date.	N/a
Status ID	Study Status ID	Refer to [2]
Description	Requested Procedure Description.	N/a

Table lines can be sorted as described in section 2.2.5.

4.2.4 Filtering Worklist Procedures

Filling filtering or search criteria into the Filter Panel performs Worklist Procedure filtering onto the DICOM Worklist Server. Filter Panel may be accessed via one of the following Worklist Procedure Screen options:

Table 52: Filtering Worklist Procedure Options

Type	Entry
Main Menu Option	Display / Filter
Context Menu Option	-

Tool Bar Button	-
Keyboard Shortcut	-

Note: simply deselecting it can hide Filter Panel.

The Filter Panel provides the user with filtering or searching capabilities while requesting procedures from the DICOM Worklist Server.

Two levels of queries are available:

- Patient Based Query (query at a patient level).
- Broad Modality Query (query at an acquisition station level).

Filter/Search criteria are described in the following table:

Table 53: Worklist Procedure Filter Criteria

Criteria	Description
Patient Based Query	
ID	Allows to filter/search on Patient ID.
Patient Last name	Allows to filter/search on Patient last name.
Accession number	Allows to filter/search on Patient Accession Number.
Procedure ID	Allows to filter/search on Requested Procedure ID.
Admission ID	Allows to filter/search on Patient Admission ID.
Broad Modality Query	
Date	Allows to filter/search on Scheduled Procedure Step Start Date.
Modality	Allows to filter/search on Modality.
Station AE Title	Allows to filter/search on Scheduled Station AE Title.

Note: Refer to [2] for supported Matching mechanisms.

Note: Multiple criteria may be applied to a single query. Multiple criteria query is only possible within one query type.

Filter/Search functionality is only used when the Filter Panel is visible. Filter/Search criteria are reset and discarded when Filter Panel is no more visible or by selecting the "Reset" button as described below.

Refer to [2] for more information on DICOM Modality Worklist Information Model – FIND implementation in Trophy DICOM.

The user as presented in the following figures can enter Filter/Search criteria:

Figure 25: Patient Based Query Criteria

Figure 26: Broad Modality Query Criteria

Note: A Date criterion is activated only if the DateTimePicker control Check Box is checked.

Note: "<" Button Control may be used to retrieve local Station AE Title as defined into the associated default DICOM Worklist Server configuration (see section 4.1).

Note: The "Reset" button may be used to remove all criteria at a time.

The user is graphically informed if filtering criteria have been entered as described in the following figure:



Figure 27: Filter Criteria Application Warning


4.2.5 Creating Worklist Procedure

Worklist Procedure may be manually created, if for example network connection to the Worklist server is not available.

Filling the Worklist Procedure Property Window as described in section 4.2.9 performs Worklist Procedure creation.

Worklist Procedure Property Window for procedure creation may be accessed via one of the following Worklist Procedure Screen options:

Table 54: Creating Worklist Procedure Options


Type	Entry
Main Menu Option	Procedures / Create
Context Menu Option	Create
Tool Bar Button	
Keyboard Shortcut	INS

4.2.6 Modifying Worklist Procedure

Updating the Worklist Procedure Property Window as described in section 4.2.9 performs Worklist Procedure modification.

Worklist Procedure Property Window for procedure modification may be accessed via one of the following Worklist Procedure Screen options:


Table 55: Modifying Worklist Procedure Options

Type	Entry
Main Menu Option	Procedures / Modify
Context Menu Option	Modify
Tool Bar Button	
Keyboard Shortcut	-

4.2.7 Deleting Worklist Procedure

Worklist Procedure may be deleted via one of the following Worklist Procedure Screen options:

Table 56: Deleting Worklist Procedure Options

Type	Entry
Main Menu Option	Procedures / Delete
Context Menu Option	Delete
Tool Bar Button	
Keyboard Shortcut	DEL

4.2.8 Processing Worklist Procedure


Processing Worklist Procedure corresponds to starting the Trophy Imaging Software on the associated patient with all the parameters provided by the selected procedure.

Note: The set of parameters will be integrated into newly created images as described in [2].

New patient may be automatically created into the Trophy DICOM Patient Database if not already existing. Patient matching is based on the Patient ID attribute of the patient as provided into the selected Worklist Procedure.

Processing Worklist Procedure may be accessed via one of the following Worklist Procedure Screen options:

Table 57: Processing Worklist Procedure Options

Type	Entry
Main Menu Option	Procedures / Process
Context Menu Option	Process
Tool Bar Button	
Keyboard Shortcut	ENTER

Note: When launching the application, the Trophy Imaging Software may start by opening automatically the images associated with the last saved context.

Note: Presenting the Trophy Imaging Software functionalities is outside the scope of this document.

4.2.9 Worklist Procedure Property Window

The Worklist Procedure Property Window is a tab based dialog window form allowing the user to enter or modify information related to a procedure as described in the following sections.

Refer to [1] for field's description and value length.

Note: Modification in this form can be validated by the OK button or cancelled.

4.2.9.1 General Tab

The General Tab of the Worklist Procedure Property Window allows entering information related to the patient and her visit as shown in the following figure:

Trophy DICOM - Procedure properties (Creation)

General | Procedure

Patient

Patient ID : 007

Lastname : BOND

Firstname(s) : James

Prefix : Suffix :

Birth date : ☒ 01/01/1900

Sex : ☒ M ☐ F ☐ Unknown

Weight (Kg) : 100

State :

Medicales alerts : Big Problems...

Special needs : A gun

Visit

Admission ID : 111

Accession number : 700

Service : Radiology

Requesting physician : Dr NO

Referring physician :

Study Status ID : ARRIVED

OK Cancel

Figure 28: Worklist Procedure Property General Tab

The set of information the user can enter is defined in the following table:

Table 58: Worklist Procedure Property General Tab Information

Field	Max Size	Required	Notes
Patient ID	64	Y	Patient ID is the primary and single key for identifying patients in the DICOM world.
Last Name	64	Y	Patient Last Name is used as secondary key in Trophy DICOM when the Patient ID is not known (yet).
First Name, Middle Name, Prefix & Suffix	64	-	Refer to [1] for a description of Patient Name Components in DICOM.
Birth Date	-	-	The check box in the date picker graphical control has to be checked, otherwise the date is unknown.
Sex	-	-	Refer to [1] for more explanation about defined terms.
Weight	-	-	-
State	64	-	-
Medical Alerts	64*n	-	List of Patient Medical Alerts
Special Needs	64	-	-
Admission ID	64	-	-
Accession Number	16	-	-

Service	64	-	Current Patient Location.
Requesting Physician	64	-	Read-Only: see section 4.2.9.3 for more information about changing person name.
Referring Physician	64	-	
Study Status ID	-	-	Refer to [1] for more explanation about defined terms.

Note: Person Name can be updated using the Person Name Window. Accessing to Person Name Window is done by selecting the "... " Button Control on the right side of the control.

4.2.9.2 Procedure Tab

The Procedure Tab of the Worklist Procedure Property Window allows entering information specific to the related Procedure and Procedure Step as shown in the following figure:

Figure 29: Worklist Procedure Property Procedure Tab

The set of information the user can enter is defined in the following table:

Table 59: Worklist Procedure Property Procedure Tab Information

Field	Max Size	Required	Notes
Procedure ID	16	-	Requested Procedure ID.
Description	64	-	Requested Procedure Description.
Priority	-	-	Requested Procedure Priority.

Transportation Mode	64	-	Patient Transport Arrangements.
Study Instance UID	64	-	Read-Only: provided by DICOM Worklist Server.
Step ID	16	-	Scheduled Procedure Step ID.
Description	64	-	Scheduled Procedure Step Description.
Start Date / Time	-	-	Scheduled Procedure Step Start Date and Scheduled Procedure Step Start Time.
Modality	-	-	-
Performing Physician	64	-	Read-Only: See section 4.2.9.3 for more information about changing person name.
Location	16	-	Scheduled Procedure Step Location.
Station Name(s)	16*n	-	Scheduled Station Name List.
AE Title(s)	16*n	-	Scheduled Station AE Title List.

Note: Person Name can be updated using the Person Name Window. Accessing to Person Name Window is done by selecting the "... " Button Control on the right side of the control.

Note: Local Station Name can be retrieve by selecting the "<" Button Control on the right side of the control.

Note: Local Calling AE Title, as defined in the configuration of the current DICOM Worklist Server can be retrieve by selecting the "<" Button Control on the right side of the control.

4.2.9.3 Person Name Window

Person Full Name can be entered in the Person Name Window as shown in the following figure:

Figure 30: Person Name Window

4.3 Retrieving Images from PACS Systems

4.3.1 Definition

The Archive Screen provides the user with the ability to query a remote system (generally a PACS system) for patient or data list and to retrieve selected image set. Such request is performed using either the Patient Root or the Study Root SOP Classes of the DICOM Query/Retrieve Service Class.

Refer to [2] for more information on Query/Retrieve functionality implementation in Trophy DICOM.

Note: Trophy DICOM provides both instance retrieval or forwarding options.

The Archive Screen is designed to simplify user interactions: Instead of forcing the user to deal with all the different levels of the associated Q&R Information Model, the Archive Screen proposes a simple two level presentation using two linked Data List Views:

- The **Root Level Data List View**, corresponding to the list of matching entities of the associated Information Model root level (i.e. PATIENT Level for the Q&R Patient Root Information Model and STUDY Level for the Q&R Study Root Information Model) returned by the Q&R Server.
- The **Instance Level Data List View**, corresponding to the list of matching entities of the associated Information Model IMAGE level returned by the Q&R Server.

The content of the second Data List View depends on the currently selected item in the first Data List View. Therefore item selection in the second Data List View is only possible if an item is currently selected in the first one as described in section 4.3.3.

When the user requests Instance Level Data List View update for a given entity in the Root Level Data List View, Trophy DICOM automatically and recursively performs all the required requests from the Root Level down to the Image Level of the associated Information Model. The resulting item list presented in the Instance Level Data List View actually contains information returned by the Q&R Server for all such sub-requests performed below the Root Level.

Depending on the current Q&R Information Model setup for the associated Q&R Server, Trophy DICOM reconfigures automatically the Archive Screen user interface components, as described in the following sections.

See section 4.1 for more information on Q&R Information Model configuration in Trophy DICOM.

4.3.1.1 Difference between Query and Retrieve operations

It is important to understand the difference between Query and Retrieve operations in DICOM:

- Querying a server is used to get the list of matching entities belonging to a given level of the Information Model: no instance is actually moved from the server, just information about entities.
- Retrieving instances is used to request the server to physical send selected instances to a given Storage Server.

This distinction is very important to better understand the set of options provided by Trophy DICOM.

4.3.2 The Archive Screen

Based on the current Q&R Server supported Information Model, the Archive screen is described in the following figures:

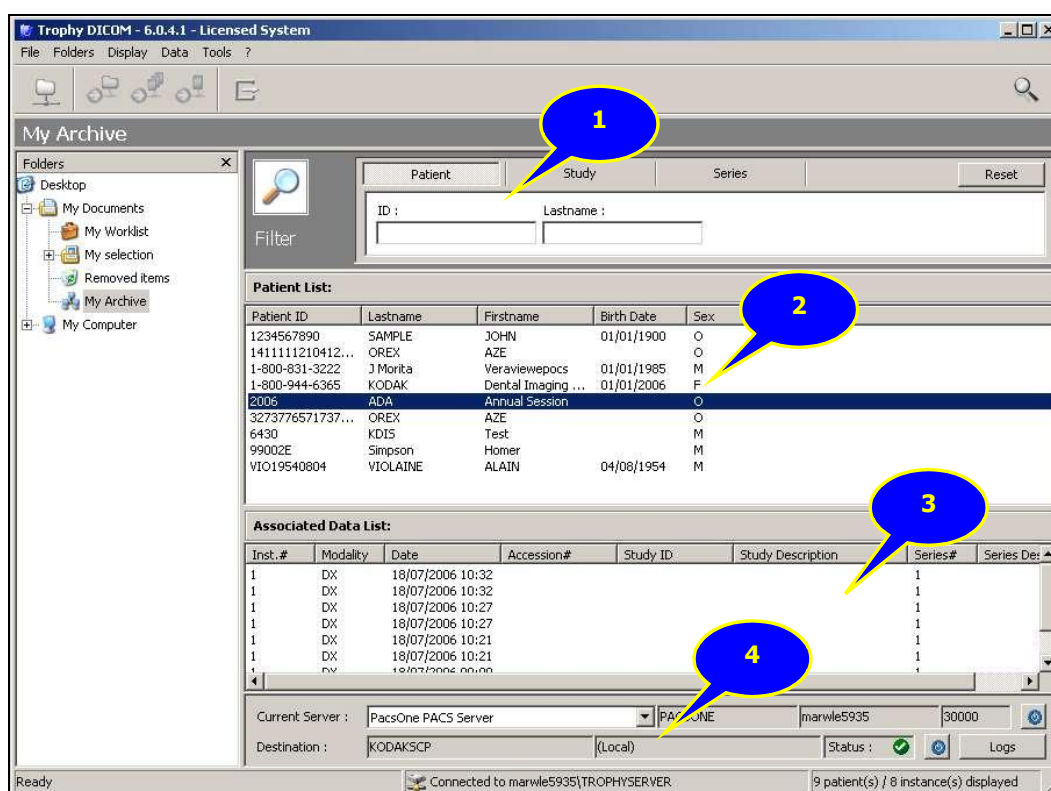


Figure 31: Archive Screen - Patient Root Information Model

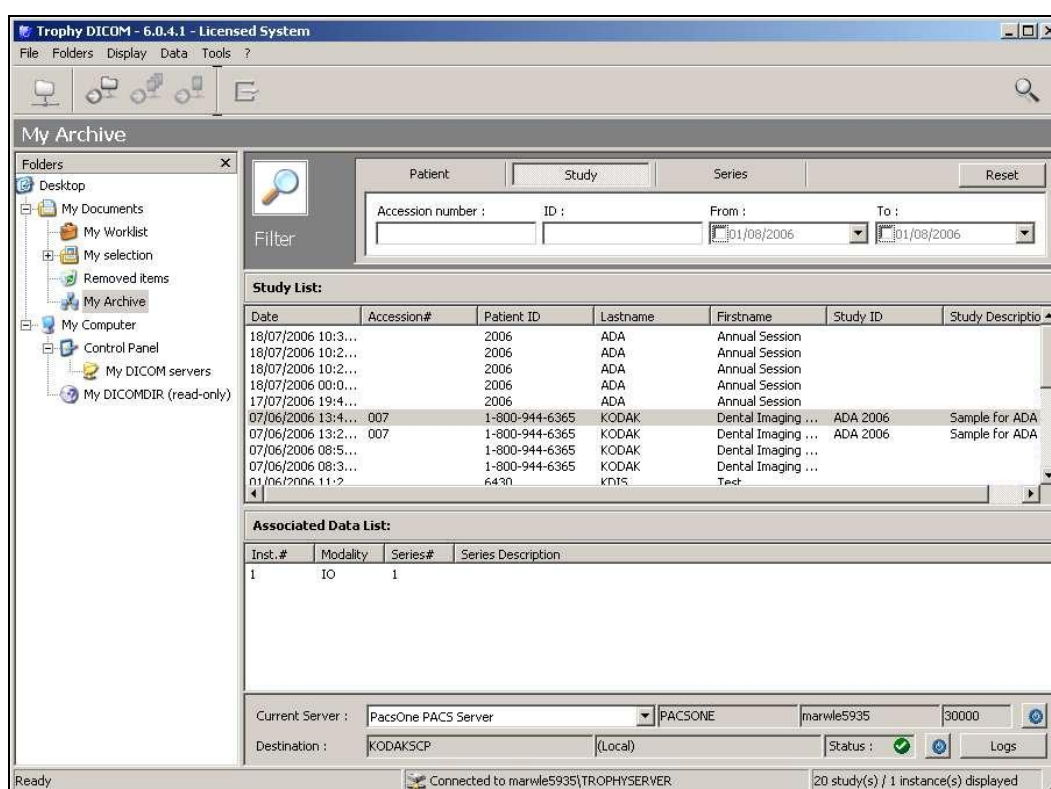


Figure 32: Archive Screen - Study Root Information Model

4.3.2.1 Screen Components

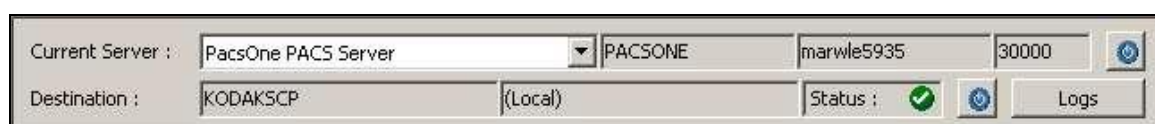
The Archive Screen consists of 4 main components as described in the following table:


Table 60: Archive Screen Components

#	Component	Description	Document Reference
1	Filter Panel	Provides filtering capabilities for Q&R requests.	See section 4.3.4
2	Root Level Data List View	Provides access to all entities of the Information Model Root Level in table view.	See section 4.3.3
3	Image Level Data List View	Provides access to all entities of the Information Model Image Level in table view.	See section 4.3.3
4	Servers Panel	Provides information about current DICOM Q&R and Destination Storage server, and the ability to switch servers.	See section 4.3.2.1.1

4.3.2.1.1 Servers Panel


The servers' panel is described in the following figure:

**Figure 33: Archive Screen Servers Panel**

The current configured default DICOM Q&R Server is displayed in this panel. The user can test the connection to the server via a DICOM Verification request by selecting the associated test button  on the right side of the panel.

The combo-box control of this panel allows the user from switching between pre-configured DICOM Q&R Servers. This functionality provides the user with the ability to specify her preferred server in a centralized, multi-sites configuration. The system keeps, for each user, the last selection as default for the next time.

Note: switching from server resets the current Data List View content.





The Servers Panel also displays the current final destination Storage Server configured for retrieving selected images into the Trophy DICOM Patient Database (see section 4.1 for local DICOM Storage Server configuration). The user can test the connection to the server via a DICOM Verification request by selecting the associated test button  on the right side of the panel. The user can also have access to the Import Process log file from within this panel.

4.3.2.2 Menus Options

The Archive Screen Menu Options and Sub-Options are described in the following table:

Table 61: Archive Screen Menu Options

Menu Option	Sub-Options	Description	Document Reference	Tool Bar Button	Keyboard Shortcut
File	All		See section 2.1.1.1	-	-
Folders	All		See section 2.1.1.1	-	-
Display	Filter	Shows/Hides Filter Panel.	See section 4.3.4	-	-

	Server	Shows/Hides Server Panel See section 4.3.2.1.1	-	-
Data	Query	Queries for Information Model Root Level entity list update. See section 4.3.3		F5
	Retrieve (1)	All Study Data Retrieves all instances belonging to the currently selected item Study. See section 4.3.5.1		-
		All Series Data Retrieves all instances belonging to the currently selected item Series. See section 4.3.5.2		-
		Selected Data Retrieves all selected instances. See section 4.3.5.3		ENTER (2)
	Forward (1)	All Study Data Forwards to a given Storage Server all instances belonging to the currently selected item Study. See section 4.3.6	-	-
		All Series Data Forwards to a given Storage Server all instances belonging to the currently selected item Series. See section 4.3.6	-	-
		Selected Data Forwards to a given Storage Server all selected instances. See section 4.3.6	-	-
Tools	All	See section 2.1.1.1	-	-
?	All	See section 2.1.1.1	-	-

- (1) Access to sub-menu items may depend on current Data List View selections.
 (2) Only applicable in the Image Level Data List View (see section 4.3.5).

4.3.2.3 Tool Bar Buttons

The Archive Screen Tool Bar is represented in the following figure:



Figure 34: Archive Screen Tool Bar Buttons

Refer to Table 2 and Table 61 for Tool Bar Button descriptions.


Note: The first button on the left of the Tool Bar is used to Query all Image Level entities (i.e. composite instances) of the selected entry in the Root Level Data List View. This functionality is the default for this list view: Associated Keyboard Shortcut is ENTER (see section 4.3.3).

4.3.3 Displaying Data List

The Root Level Data List View may be manually updated via one of the following Archive Screen options:


Table 62: Displaying Root Level Entity List Options

Type	Entry
Main Menu Option	Data / Query

Context Menu Option	-
Tool Bar Button	
Keyboard Shortcut	F5

After selecting an entry in the Root Level Data List View, the Image Level Data List View may be manually updated via one of the following Archive Screen options:

Table 63: Displaying Image Level Entity List Options

Type	Entry
Main Menu Option	-
Context Menu Option (1)	Query Patient Data Or Query Study Data
Tool Bar Button	
Keyboard Shortcut	-
Mouse Double Click (1)	Query Patient Data Or Query Study Data

(1) Depending on the Q&R Server Information Model setup and in the Root Level Data List View only.

Note: List Updates are only available if a current default DICOM Q&R Server and final destination Storage Server are defined (see section 4.1).

Note: Currently defined Filter/Search criteria are applied, if any (see section 4.3.4).

Entity selection in both Data List Views can be performed manually as described in section 2.2.6.

Note: Multiple entity selections are only available in the Image Level Data List View.

By default, Root Level entities are listed by Patient ID in alphabetic order for the Patient Root Information Model and by Study Date in anti-chronological order for the Study Root Information Model. Each table line entry includes the following attributes:

Table 64: Root Level List Table Columns – Patient Root Information Model

Column	Description	Value Range
Patient ID	Patient institution main identifier.	N/a
Last name	Patient's last name	N/a
First name	Patient's first name	N/a
Birth Date	Patient's birth date	N/a
Sex	Patient's sex	M = Male, F = Female, O = Other

Table 65: Root Level List Table Columns – Study Root Information Model

Column	Description	Value Range
Date	Study date	N/a
Accession#	Accession number	N/a

Patient ID	Patient institution main identifier.	N/a
Last name	Patient's last name	N/a
First name	Patient's first name	N/a
Study ID	Study ID	N/a
Study Description	Study description	N/a

By default, Image Level entities are listed by Instance Number in alphabetic order for both Information Models. Each table line entry includes the following attributes:

Table 66: Image Level List Table Columns – Patient Root Information Model

Column	Description	Value Range
Inst.#	Composite instance number	N/a
Modality	Instance series modality	Refer to [1]
Date	Instance study date	N/a
Accession#	Instance accession number	N/a
Study ID	Instance study ID	N/a
Study Description	Instance study description	N/a
Series#	Instance series number	N/a
Series Description	Instance series description	N/a

Table 67: Image Level List Table Columns – Study Root Information Model

Column	Description	Value Range
Inst.#	Composite instance number	N/a
Modality	Instance series modality	N/a
Series#	Instance series number	N/a
Series Description	Instance series description	N/a

Table lines can be sorted as described in section 2.2.5.

4.3.4 Filtering Data

Filling filtering or search criteria into the Filter Panel performs Queries filtering onto the DICOM Q&R Server. Filter Panel may be accessed via one of the following Archive Screen options:

Table 68: Filtering Queries Options

Type	Entry
Main Menu Option	Display / Filter
Context Menu Option	-
Tool Bar Button	-
Keyboard Shortcut	-

Note: simply deselecting it can hide Filter Panel.

The Filter Panel provides the user with filtering or searching capabilities while requesting entities from the DICOM Q&R Server. The user can add or modify filtering or searching criteria any time during the whole instance retrieval process: obviously such criteria will only apply for related Information Model Level requests.

Three levels of Filter/Search criteria are available as described in the following table:

Table 69: Queries Filter Criteria

Criteria	Description
Patient Level	
ID	Allows to filter/search on Patient ID.
Last name	Allows to filter/search on Patient last name.
Study Level	
Accession number	Allows to filter/search on Patient Accession Number.
ID	Allows to filter/search on Study ID.
From	Allows to filter/search on Date posterior to a given date.
To	Allows to filter/search on Date anterior to a given date.
Series Level	
Modality	Allows to filter/search on Series Modality.

Note: DICOM does not provide really Filter/Search capabilities at the Image Level.

Filter/Search functionality is only used when the Filter Panel is visible. Filter/Search criteria are reset and discarded when Filter Panel is no more visible or by selecting the "Reset" button as described below.

The user as presented in the following figures can enter Filter/Search criteria:

Figure 35: Patient Level Query Criteria
Figure 36: Study Level Query Criteria
Figure 37: Series Level Query Criteria

Note: A Date criterion is activated only if the DateTimePicker control Check Box is checked.

Note: The "Reset" button may be used to remove all criteria at a time.

The user is graphically informed if filtering criteria have been entered as described in the following figure:

**Figure 38: Filter Criteria Application Warning**

4.3.5 Retrieving Data

Trophy DICOM provides the user with the ability to retrieve composite instances at three different levels:

Table 70: Retrieving Data


Retrieve Level	Description
Study	Allows retrieving all composite instances belonging to the same study than the currently selected item in the Archive Screen.
Series	Allows retrieving all composite instances belonging to the same series than the currently selected item in the Archive Screen.
Instance	Allows retrieving all composite instances associated with the currently selected items in the Archive Screen.

Note: Trophy DICOM does not allow Patient Level retrieval: this is to prevent the user from making unexpected long operation while connecting to a large PACS system.

4.3.5.1 Retrieving Study Data

Retrieving Study Data may be accessed via one of the following Archive Screen options:

Table 71: Retrieving Study Options


Type	Entry
Main Menu Option	Data / Retrieve / All Study Data
Context Menu Option	Retrieve all Study Data
Tool Bar Button	
Keyboard Shortcut	-

Availability and location of such options within the Archive Screen may depend on the Information Model currently setup for the selected Q&R Server: Retrieving Study Data may apply to either the Root Level Data List View, or the Instance Level Data List View.

4.3.5.2 Retrieving Series Data

Retrieving Series Data may be accessed via one of the following Archive Screen options:

Table 72: Retrieving Series Options


Type	Entry
Main Menu Option	Data / Retrieve / All Series Data
Context Menu Option	Retrieve all Series Data
Tool Bar Button	
Keyboard Shortcut	-

Retrieving Series Data only applies to the Instance Level Data List View.

4.3.5.3 Retrieving Selected Data

Retrieving Selected Data may be accessed via one of the following Archive Screen options:

Table 73: Retrieving Instance Options

Type	Entry
Main Menu Option	Data / Retrieve / Selected Data
Context Menu Option	Retrieve all Selected Data
Tool Bar Button	
Keyboard Shortcut	ENTER

Retrieving Selected Data only applies to the Instance Level Data List View.

4.3.6 Forwarding Data

Trophy DICOM provides also the user with the ability to forward to a user defined third-tier Storage Server composite instances.

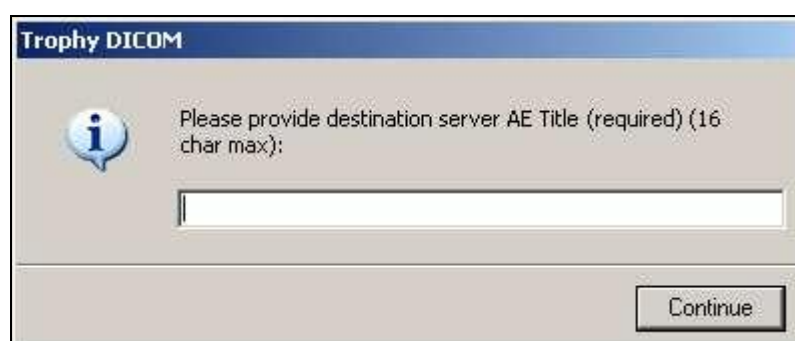
See section 4.3.5 for a description of the different levels of forwarding supported by Trophy DICOM.

Forwarding Data may be accessed via one of the following Archive Screen options:

Table 74: Filtering Queries Options

Type	Entry
Main Menu Option	Data / Forward / *
Context Menu Option	-
Tool Bar Button	-
Keyboard Shortcut	-

When forwarding instances to a Storage Server from a Q&R Server, the following dialog window is presented to the user for entering the destination Storage Server AE Title:

**Figure 39: Forwarding Instances Dialog Window**

Note: The last AE Title used is proposed by default.

Note: The Q&R Server has to be configured to accept that AE Title: such configuration is outside the scope of this document.

4.3.7 Received Instance Decoding Process

When the DICOM Storage Server is configured locally on the current system, Trophy DICOM provides the user with a Main Screen Status update for each decoded instance file as described in the following:

Importing new Image File received...

The message appears during the decoding process itself: it may be displayed very shortly.

The user has the ability to access to Import Process log file as described in section 4.3.2.1.1.

Note: see section 4.1 for more information about configuring the DICOM Storage Server.

Note: when 3D volumes slices that have been initially acquired using one of the Trophy 3D equipments is received, Trophy DICOM moves that 3D slice into a specific sub-directory of the patient data folder, in order to ensure proper grouping of all related slices of a volume for later processing by the Trophy 3D Module application. In such case, after identification of the equipment that created the 3D slice, grouping is performed based on the DICOM Series Instance UID attribute found within the associated DICOM file. This Series Instance UID is used to generate the name of the volume sub-directory as described in section 3.5.2.

4.4 Printing Images

4.4.1 Definition

Trophy DICOM provides the user with the ability to defined several print parameters when printing images.

Refer to [2] for more information on Trophy DICOM printing capabilities.


Refer to [6] for more detail information on how to print within Trophy DICOM.

All current printing and configuration parameters setup by the user in a print session are kept into the Trophy DICOM Patient Database for the next print session.

As described in section 4.1, the same physical DICOM Printer may be configured within Trophy DICOM as many time as necessary for different print session parameters.

Image Printing may be accessed, if applicable for current application screen or data view (see section 2.1.1), via one of the following screen options:

Table 75: Accessing Image Printing

Type	Entry
Main Menu Option	Data / Print
Context Menu Option	Print
Tool Bar Button	
Keyboard Shortcut	-

Note: At the date of this document, printing is not available for volume datasets. Refer to Trophy 3D Module application to print volume datasets.

4.4.2 Printer Setup Dialog Window

The Printer Setup dialog window allows the user to setup general printing parameters. When initiating a print session, the following Printer Setup dialog window is presented to the user:

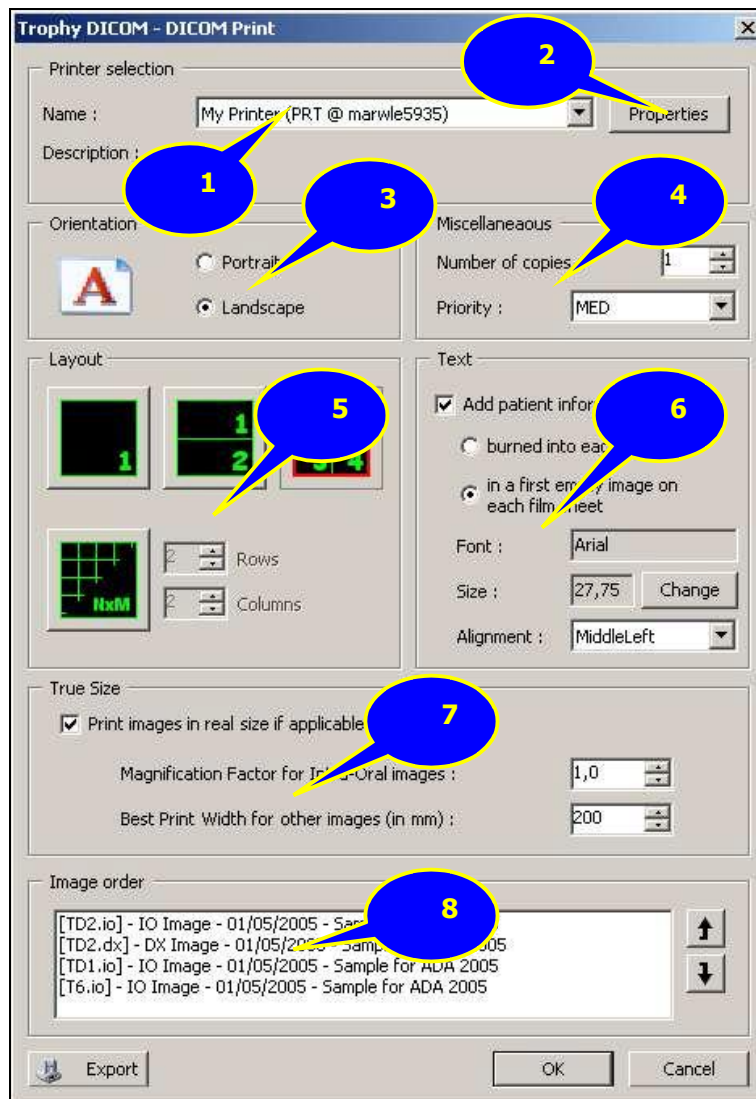


Figure 40: Printer Setup Dialog Window

The user has the ability to perform the following actions in this Printer Setup dialog window:

Table 76: Printer Setup Actions

Action#	Description
1	Select the destination printer from the configured DICOM Print Server list. See section 4.1
2	Modify current printer properties. See section 4.4.3
3	Select Film Orientation.
4	Select Number of Copies and Print Priority.
5	Select Film layout. Film layout can be used when several images are to be printed on the same Film sheet. See section 4.4.4
6	Select whether or not Patient information has to be added: either "burned" into each image or in a separate first image box on each film sheet See section 4.4.5

7	Select whether or not images have to be printed in True Size mode, using a given magnification factor, or with at a given width. See section 4.4.6
8	Select image order when several images are to be printed on the same Film sheet. See section 4.4.4

Note: The "Export" Control Button may be used to save the current printing parameters as a template file: see section 4.1 for more information about Printer Template management.

4.4.3 Printer Property Dialog Window

The Printer Property Dialog Window allows the user to configure printer specific parameters.

When selecting the Properties Button for the currently selected printer, the following Printer Property dialog window is presented to the user:

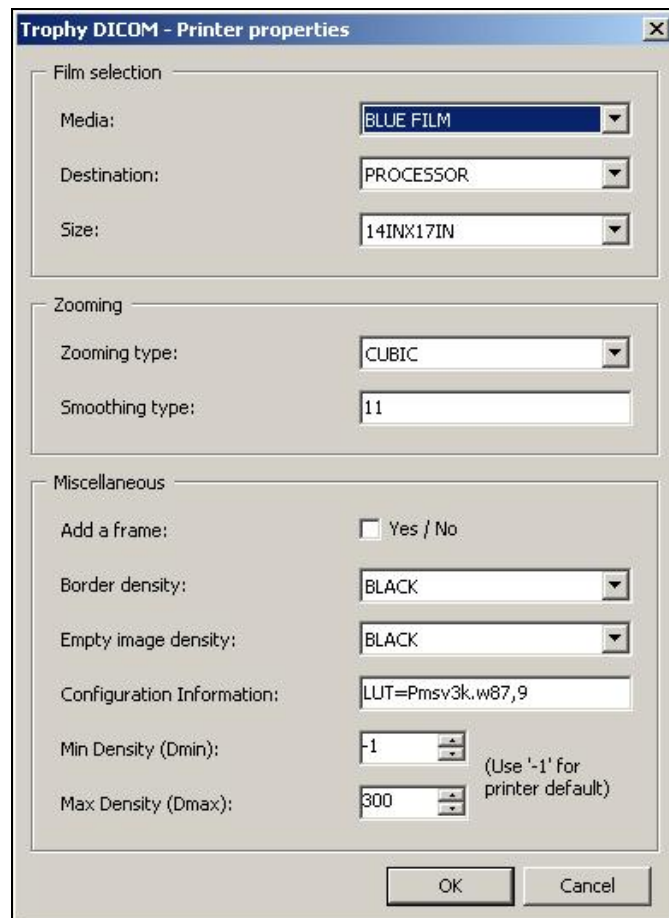


Figure 41: Printer Property Dialog Window

Refer to [1] for definition of those parameters. Refer to [2] for supported parameter value ranges.

4.4.4 Arranging Film Layout

When printing more than one image on the same film, the user has the ability to defined the desired layout on the sheet, as shown in the following figure:

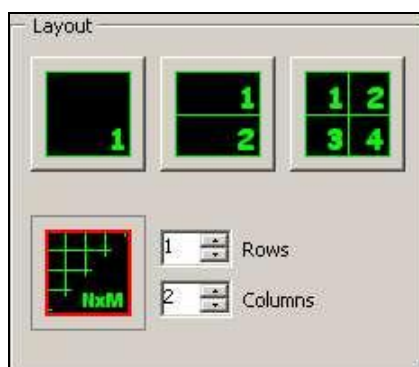


Figure 42: Print Film Layout

Note: The current selected layout appears with a red border.

When selecting the NxM mode, the user has to define the number of rows and columns necessary: Images are then printed in a row by row sequence, i.e. first image in the top left image box, last image in the bottom right image box.

In order to adjust the image sequence to the selected layout, the user can configure the image order as shown in the following figure:

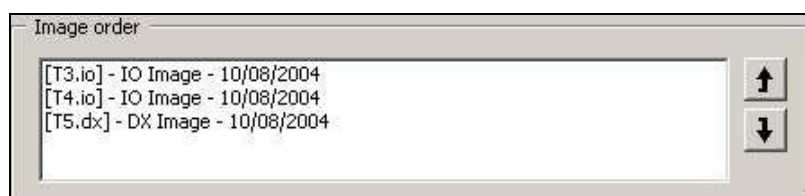


Figure 43: Print Image Order

The 2 arrows on the right side can be used to move up and down the selected image in the list.

4.4.5 Adding Patient Information

Trophy DICOM provides the user with the ability to add patient and image information when printing images as described in the following figure:

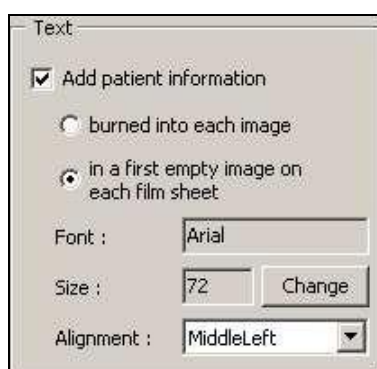


Figure 44: Print Information

Patient and image information may be added (burned) directly into the image pixels sent to the DICOM Printer, or in a separate first film sheet image box sent to the DICOM Printer.

Note: Trophy DICOM does not support DICOM Image Annotation.

In the first case, image information is related to the selected image. In the second case, image information is not relevant (more that one image are printed on the same film sheet): in that case, printing information is used.

Refer to [2] for more information on the set of information printed in each case.

The user can change the font in order to adjust the result to the image size and also defined the text alignment.

When patient information is added in a separate image box on each film sheet, Trophy DICOM automatically insert such annotation image box in the image sequence sent to the DICOM Printer.

4.4.6 Printing in True Size Mode

Trophy DICOM provides the ability to print certain type of images in True Size mode, using a magnification factor of the image real size, or to print other type of images using a given width, as described in the following figure:

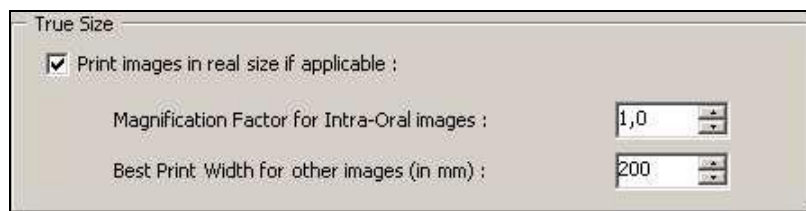


Figure 45: Printing True Size

Note: Printing in True Size mode is only possible for Intra-Oral images: in that case the Imager Pixel Spacing image attribute if available. For all other non Intra-Oral images a desired print width on sheet can be specified.

4.5 Transferring Images or Volumes

4.5.1 Definition


Trophy DICOM provides the ability to send to a user configurable list of remote Storage Server a set of selected images or a volume.

This transfer is achieved thru the CSDServices background process. When images are selected for transfer, Trophy DICOM actually creates one transfer request per image. When a volume is selected for transfer, Trophy DICOM creates one single transfer request for all frames (i.e. slices) of the volume. Refer to [5] for more information about CSDServices.

Note: At the date of this document, slices or frames representing a volume are created by the Trophy Imaging application as separate CT image files. Refer to [2] for more information.

Image or Volume Transfer may be accessed, if applicable for current application screen or data view (see section 2.1.1), via one of the following screen options:

Table 77: Accessing Image Transfer

Type	Entry
Main Menu Option	Data / Transfer
Context Menu Option	Transfer
Tool Bar Button	
Keyboard Shortcut	-

4.5.2 Selecting DICOM Store Servers

When initiating Image or Volume Transfer, the user has the ability to change the default destination servers as shown in the following figure:



Figure 46: Image or Volume Transfer Server Selection

This selection window provides a list of all configured DICOM Store Servers in the system, and pre-selects all DICOM Store Servers member of the configured distribution list per default. The user can change this pre-selection before sending the image.

Note: See section 4.1 for more information on default distribution list configuration.

Note: At the date of this document, the only way to check the completion of previously submitted transfer requests is thru CSDServices. Refer to [5] for more information.


4.6 Exporting Images to DICOMDIR

4.6.1 Definition

Trophy DICOM provides a specific Dialog Window for exporting a set of selected images or volume into a DICOMDIR File Set.

Image Export may be accessed, if applicable for current application screen or data view (see section 2.1.1), via one of the following screen options:

Table 78: Accessing Image Transfer

Type	Entry
Main Menu Option	Data / DICOMDIR Export
Context Menu Option	DICOMDIR Export
Tool Bar Button	
Keyboard Shortcut	-

Multiple images can be exported at the same time, but only one volume. Each export session adds the selected images or volume in a new sub-directory of the DICOMDIR File Set.

When exporting images the user can select the root directory or the mount point of the associated DICOMDIR File Set and the DICOM Application Profile as described in the following figure:

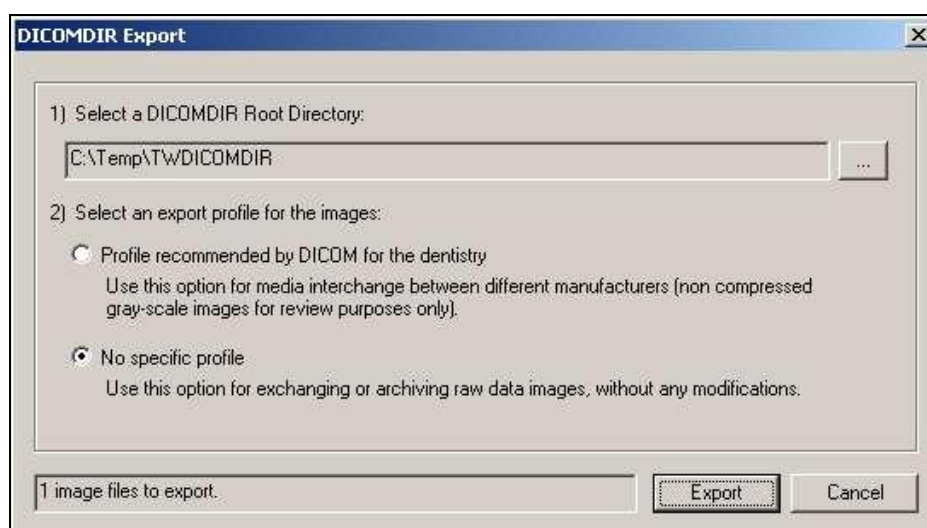


Figure 47: DICOMDIR Export Dialog Window

Refer to [2] for more information about the DICOMDIR export functionality.

4.7 Importing Manually DICOM Part 10 Compliant Image Files

4.7.1 Definition

Trophy DICOM provides the ability to import manually a DICOM Part 10 compliant file as a new patient object into the Trophy DICOM Patient Database.

The DICOM File Import Dialog Window may be accessed via one of the following Trophy DICOM common options:

Table 79: Importing DICOM File Dialog Window

Type	Entry	Context Sensitive
Main Menu Option	File / DICOM Import / DICOM File	No
Tool Bar Button	-	-
Explorer Tree Node	-	No

Selection of the desired DICOM File is performed using the underlying Windows Open File Dialog Box.

New patient may be automatically created into the Trophy DICOM Patient Database if not already existing. Patient matching is based on the Patient ID attribute of the selected DICOM File. Therefore, newly imported instance file may not appear in the current Patient Data List Screen, if not properly matching.

4.8 Importing Images from DICOMDIR

4.8.1 Definition

Trophy DICOM provides a specific application screen for accessing DICOMDIR File Set from removable media.

The DICOMDIR Screen may be accessed via one of the following Trophy DICOM common options:

Table 80: Accessing DICOMDIR Screen

Type	Entry	Context Sensitive
Main Menu Option	File / DICOM Import / DICOMDIR	No
Tool Bar Button	-	-
Explorer Tree Node	My Computer / My DICOMDIR (read-only)	No

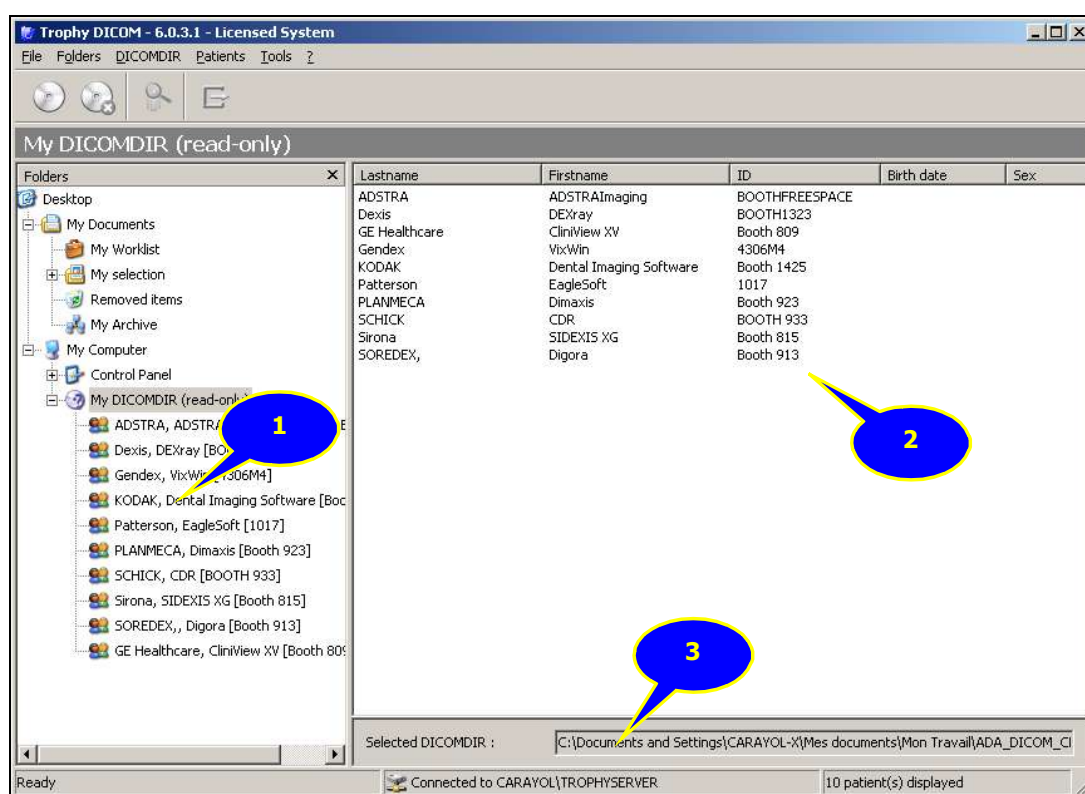
The DICOMDIR Screen provides the user with the ability to parse a DICOMDIR dataset, retrieve patient list and preview or process images.

Refer to [1] for a definition of the terms and concepts used regarding DICOMDIR.

Refer to [2] for supported DICOM Application Profiles.

4.8.2 The DICOMDIR Screen

The DICOMDIR Screen is described in the following figure:

**Figure 48: DICOMDIR Screen**

4.8.2.1 Screen Components

The DICOMDIR Screen consists of 3 main components as described in the following table:

Table 81: DICOMDIR Screen Components

#	Component	Description	Document Reference
1	Data Explorer View	Provides quick access to all patients found in the DICOMDIR dataset.	See section 4.8.2.1.1

2	Data List View	Provides access to all patients found in the DICOMDIR in a table view. See section 4.8.3
3	DICOMDIR Panel	Provides DICOMDIR file location information.

4.8.2.1.1 Data Explorer View

The Data Explorer View is a Tree View of the DICOMDIR Patient List. Last Name lists patients in alphabetic order. The following items define each node in the tree view:




Table 82: DICOMDIR Patient Tree Node Information

Tree Node Patient Information items	<i>Last Name, First Name [Patient ID]</i>
-------------------------------------	---

4.8.2.2 Menu Options

The DICOMDIR Screen Menu Options and Sub-Options are described in the following table:

Table 83: DICOMDIR Screen Menu Options

Menu Option	Sub-Options	Description Document Reference	Tool Bar Button	Keyboard Shortcut
File	All	See section 2.1.1.1	-	-
Folders	All	See section 2.1.1.1	-	-
DICOMDIR	Open	Opens a new DICOMDIR dataset. See section 4.8.3		-
	Close	Closes the currently opened DICOMDIR dataset. See section 4.8.2.2.1		-
Patient	Explore	Explores selected patient data files. See section 4.8.4		ENTER
Tools	All	See section 2.1.1.1	-	-
?	All	See section 2.1.1.1	-	-

4.8.2.2.1 Closing DICOMDIR

The DICOMDIR Patient List is cleared when closing an opened DICOMDIR.

4.8.2.3 Tool Bar Buttons

The DICOMDIR Screen Tool Bar is represented in the following figure:




Figure 49: DICOMDIR Screen Tool Bar Buttons

Refer to Table 2 and Table 83 for Tool Bar Button descriptions.

4.8.3 Displaying Patient List

The DICOMDIR Patient List is manually loaded while opening a DICOMDIR dataset via one of the following DICOMDIR Screen options:

Table 84: Displaying DICOMDIR Patient List Options

Type	Entry
Main Menu Option	DICOMDIR / Open
Context Menu Option	-
Tool Bar Button	
Keyboard Shortcut	-

Note: DICOMDIR Patient List is emptied before proceeding to a new update.

When opening a DICOMDIR dataset, the following Open dialog window is provided to the user:

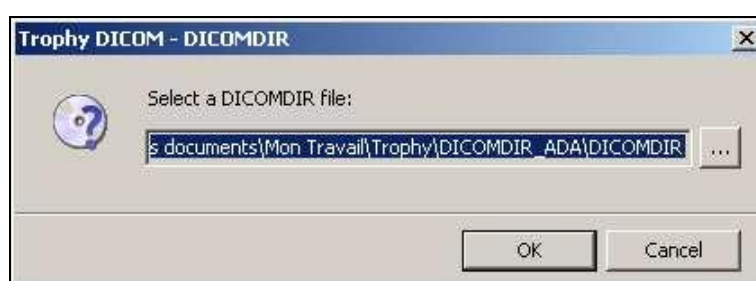


Figure 50: DICOMDIR Open Dialog Window

Note: Trophy DICOM always keeps in memory the last opened DICOMDIR location.

Patient selection in the DICOMDIR Patient List can be performed manually as described in section 2.2.6.

Note: Multiple Patient selections are not possible in this Data List View.

By default, Patients are listed by Last Name in alphabetic order. Each table line entry includes the following patient attributes:

Table 85: DICOMDIR Patient List Table Columns

Column	Description	Value Range
Last name	Patient last name or family name.	N/a
First name	Patient first name.	N/a
ID	Patient institution main identifier.	N/a
Birth Date	Patient date of birth.	N/a
Sex	Patient sex	M = Male, F = Female, O = Other

Note: Information in this Data List View is extracted from the selected DICOMDIR file. No image decoding is performed at this step yet.


Table lines can be sorted as described in section 2.2.5.

4.8.4 Exploring Patient Data

Exploring Patient Data corresponds to reviewing the list of images files attached to the selected patient into the DICOMDIR dataset as described in section 4.9.

Exploring Patient Data operation may be accessed via one of the following DICOMDIR Screen options:

Table 86: Exploring Patient Options

Type	Entry
Main Menu Option	Patients / Explore
Context Menu Option	Explore
Tool Bar Button	
Keyboard Shortcut	ENTER

Exploring Patient Data operation may be also accessed directly into the Explorer Component by selecting the desired patient tree node as described in the following picture:

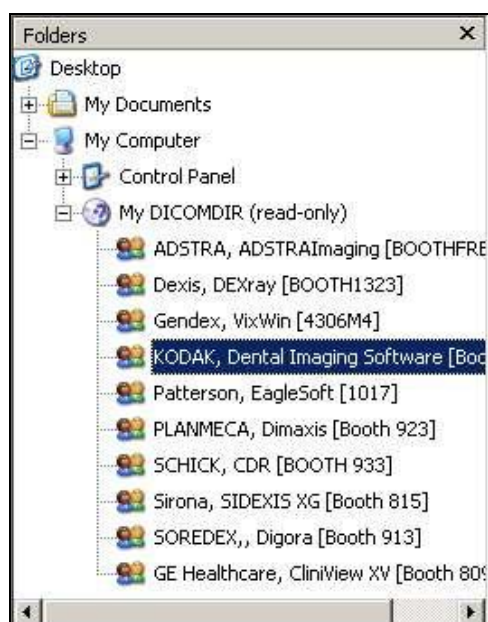


Figure 51: Exploring Patient Data from the Explorer Component

Note: It may be necessary to develop the "My DICOMDIR" tree node to access the patient list by clicking on the "+" sign on the left of the tree node.


4.9 DICOMDIR Patient Data List

4.9.1 Definition

The DICOMDIR Patient Data List is a specific Data View screen, providing the user with the ability to list, review or process of all existing images attached to the patient as described into the DICOMDIR dataset.

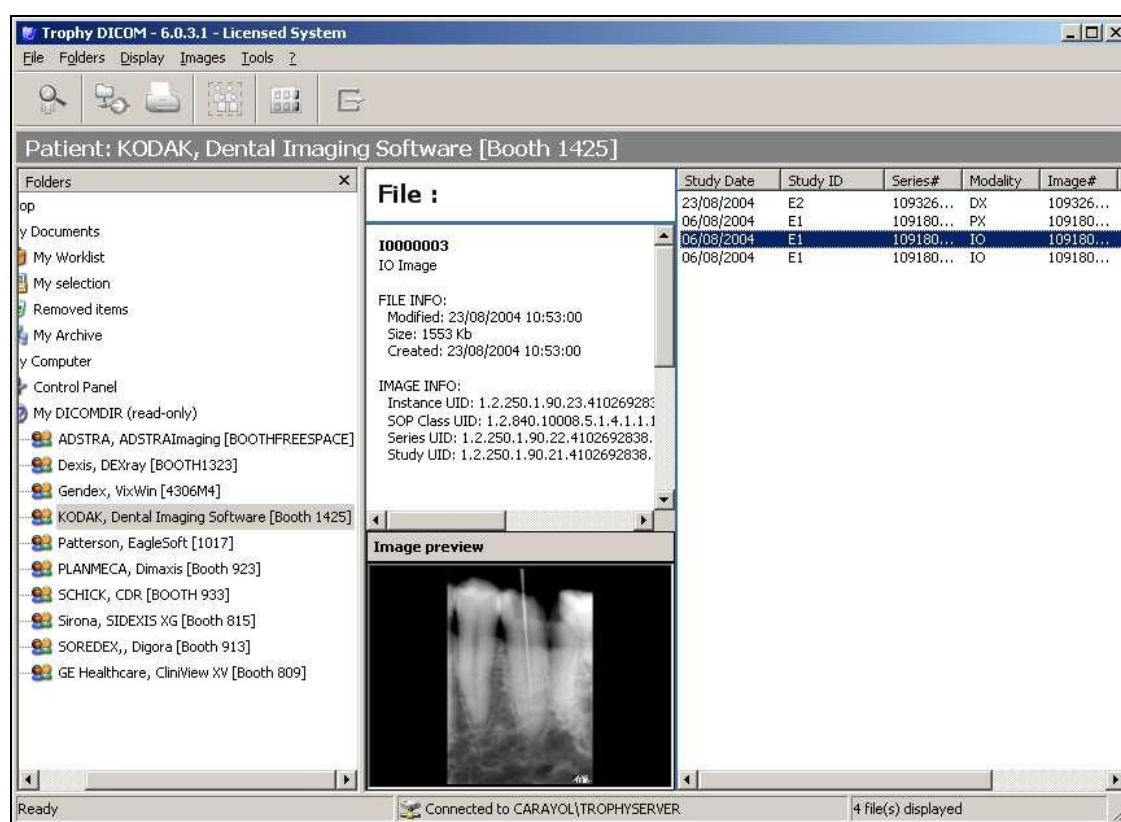
The DICOMDIR Patient Data List screen may be accessed, when exploring the current patient, via one of the following Trophy DICOM options:

Table 87: Accessing DICOMDIR Patient Data List Screen

Type	Entry	Context Sensitive
Main Menu Option	Patients / Explore	Yes
Context Menu	Explore	Yes
Tool Bar Button		Yes
Explorer Tree Node	My computer / My DICOMDIR / Patient Node	No

4.9.2 The DICOMDIR Patient Data List Screen

The DICOMDIR Patient Data List screen is described in the following figure:

**Figure 52: DICOMDIR Patient Data List Screen**

Trophy DICOM provides in the DICOMDIR Patient Data List Screen the user with the same type of functionalities than for regular Patient Images of the Trophy DICOM Patient Database. Refer to section 3.5 for more information.

Note: Multiple Image selections are not possible in this Data List View.

New patient may be automatically created into the Trophy DICOM Patient Database if not already existing. Patient matching is based on the Patient ID attribute of the patient as provided into the underlying DICOMDIR dataset.

4.10 Accessing DICOM Log Files

Trophy DICOM provides some log files for all DICOM related functionalities. Such log files may be useful for debugging or diagnostic purposes.

See section 4.1 for more information on accessing DICOM Log Files in Trophy DICOM.

5 CONFIGURING USER PREFERENCES

5.1 Definition

Trophy DICOM provides the user with the ability to configure some user parameters. Some parameters can be specific to one user while others can be common to all users using the target system. In this former case, user has to be member of the Administrator group of the Microsoft Windows operating system, in order to be able to setup such parameters.

Note: Some of the Trophy DICOM parameters may be common with The Trophy Imaging Software user preferences.

Application Parameters dialog window may be accessed via one of the following Trophy DICOM common options:

Table 88: Accessing Application Parameters Screen

Type	Entry	Context Sensitive
Main Menu Option	Tools / Parameters	No
Tool Bar Button	-	-
Explorer Tree Node	-	-

Application Parameters dialog window is a tab based dialog window form as described in the following sections

Note: Modification in this form can be validated by the OK button or cancelled.

5.2 Personal Tab

The Personal Tab of the Application Parameters dialog window allows entering user specific parameters as shown in the following figure:



Figure 53: Application Parameters Dialog Window Personal Tab

The set of information the user can enter is defined in the following table:

Table 89: Personal Tab Information

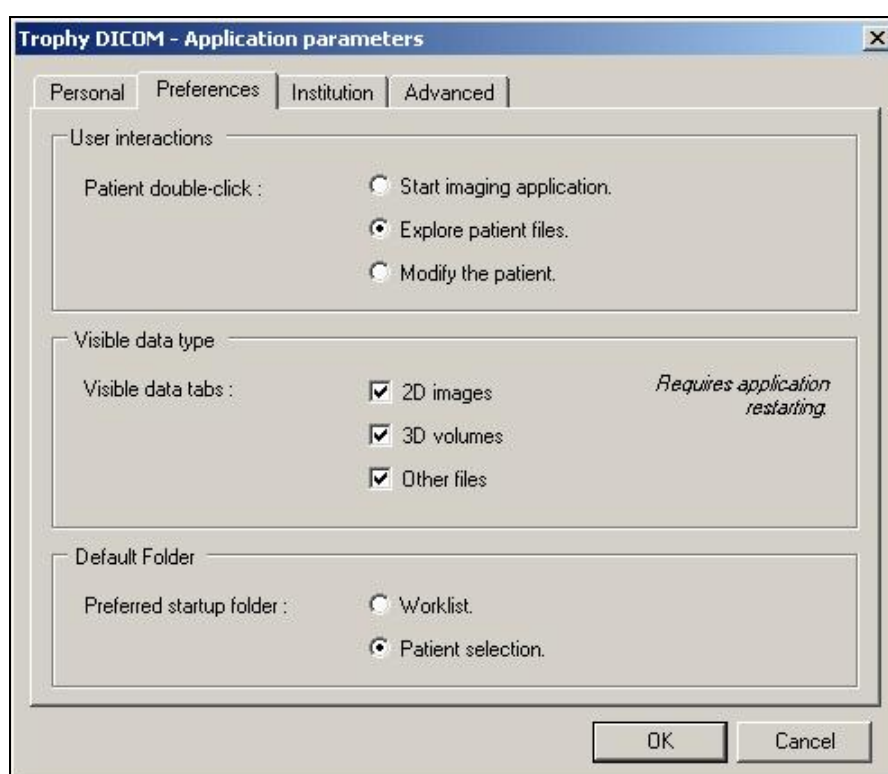
Field	Max Size	Common with Trophy Imaging Software	Notes
Doctor Name	256	Y	User personal identifier.
Application	-	Y	Trophy DICOM and Trophy Imaging Software GUI Culture.
On-Line Help	-	-	Trophy DICOM On-Line Help culture.
Tooth Numbering	-	Y	Trophy DICOM and Trophy Imaging Software Tooth Numbering.

5.3 Preferences Tab

The Preferences Tab of the Application Parameters dialog window allows configuring:

- 1) The default action when selecting a patient entry in the Current Patient List underlying Data List View (see section 3.1).
- 2) The visible tabs to display in the Patient Data List View (see section 3.5).
- 3) The default displayed view when starting Trophy DICOM (see section 2.1.1).

As shown in the following figure:

**Figure 54: Application Parameters Dialog Window Preferences Tab**

Note: Default action is also the result of pressing the ENTER key or Mouse Double-Clicking the currently selected patient.

5.4 Institution Tab

The Institution Tab of the Application Parameters dialog window allows entering institution specific parameters as shown in the following figure:

Figure 55: Application Parameters Dialog Window Institution Tab

Institution parameters shall be common to all users on the target system.

Note: User shall be member of the Administrator group in order to be able to modify those parameters.

The set of information the user can enter is defined in the following table:

Table 90: Institution Tab Information

Field	Max Size	Common with Trophy Imaging Software	Notes
Hospital Name	256	-	Hospital or Institution name.
Department Name	256	-	Institution Department name.
Station Name	256	-	User defined station name; this name is not the system hostname.

5.5 Advanced Tab

The Advance Tab of the Application Parameters dialog window allows reviewing currently installed Trophy Imaging Software version information as shown in the following figure:

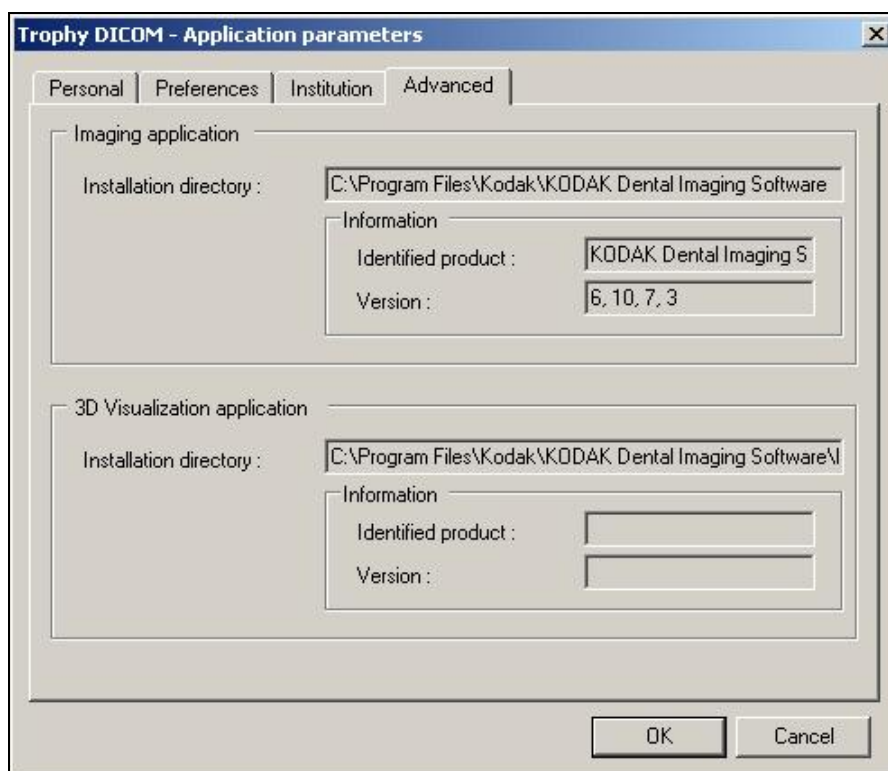


Figure 56: Application Parameters Dialog Window Advanced Tab

6 MISCELLANEOUS

6.1 Online Help

Online Help is available within Trophy DICOM via one of the following options:

Table 91: Accessing Online Help

Type	Entry
Main Menu Option	? / Help
Context Menu Option	-
Tool Bar Button	-
Keyboard Shortcut	F1

The existence of Online Help for a given culture is based on the presence of the corresponding help file in Trophy DICOM installation directory. The Online Help file for a given culture shall have a file name in the form of: TdXxx.chm (Xxx being the culture identifier, like "Fra" for French or "En" for English).

Culture for Online Help can be configured as described in section 5.

6.2 About License

Trophy DICOM is a licensed application. The licensing mechanism is system based and applies to all the users using the target system. DICOM functionalities are covered by the license and are only available for registered systems. The licensing mechanism offers a 30 days grace period for trial purposes and for registering the system.

6.2.1 Operating Modes

As described in 0 a control is performed each time Trophy DICOM is started and access to DICOM functionalities are setup according to the status of the license as described in the following sections:

6.2.1.1 Grace Period

After installing Trophy DICOM, the user has a 90 days grace period for testing and registering Trophy DICOM on a given system. The following error message will appear once every day when starting Trophy DICOM, as long as Trophy DICOM is not registered for the target system.



Figure 57: Grace Period Error Message

The Trophy DICOM main window title bar reflects this status by displaying the following message:

Table 92: Grace Period Title Bar Message

Trophy DICOM – 6.0.4.1 – Grace Period (-30 days)

Note: The number of days left is updated accordingly.

6.2.1.2 Limited Mode

If the grace period has expired or after entering a wrong license number, the user is no more allowed to continue using Trophy DICOM on the target system. In such case, neither DICOM functionalities nor Trophy Imaging Software are accessible from within Trophy DICOM. The user has to register or enter a valid license number again.

In the first case, the following error message will appear:

**Figure 58: Expired Grace Period Error Message**

In the second case, the following dialog window will appear:

**Figure 59: Wrong License Code Error Message**

The Trophy DICOM main window title bar reflects this status by displaying the following message:

Table 93: Limited Mode Title Bar Message

Trophy DICOM – 6.0.4.1 – Limited (System not licensed)

Note: Access to Trophy DICOM itself is not forbidden: the user can still manage patients and preview images.

6.2.1.3 Registered System

When the target system has been properly registered, the Trophy DICOM main window title bar reflects this status by displaying the following message:

Table 94: Registered System Title Bar Message

Trophy DICOM – 6.0.4.1 – Licensed System

6.2.2 Registering Trophy DICOM

Note: Only members of the Microsoft Windows operating system Administrator Group can proceed to license information setup.

6.2.2.1 Definition

Registering Trophy DICOM is required for using Trophy DICOM on a target system.

Registering Trophy DICOM consists in filling and sending a request form to Trophy in order to get back a valid license number for the target system as described in the following sections.

License information shall be entered thru the License Property Window, which may be accessed, via one of the following Trophy DICOM common options:

Table 95: Accessing License Property Window

Type	Entry
Main Menu Option	? / About License
Context Menu Option	-
Tool Bar Button	-
Keyboard Shortcut	-

6.2.2.2 License Property Window

The License Property Window shall be used for requesting a license number:

Trophy DICOM - About License

License Codes

Installation Key: 63573 License Number: 159006


User Information

User Name: James BOND

Practice Name: My Office

Address: Somewhere in my street, 007 TheState

Country: United Kingdom

Telephone: 

Fax: 111.222.334

Email Address: james.bond@mi6.gov

Vendor Name: Dental Depot, 999 South Highway

Product Information

Serial Number: RLLJ000


Installation Date: 16 05 2005

License Number Request

Email Request Print Request Save Request

OK Cancel

Figure 60: License Property Window

All fields marked with the  icon are required for requesting a license number. The license request form may be sent to Trophy either by Email or on paper.

After receiving her license number from Trophy, the user shall enter that number in the "License Number:" field of the License Property Window in order to configure the target system.

The user shall restart Trophy DICOM in order to get her modifications applied.

6.2.2.3 Sending License Request by Email

The user may send the license request by Email, by selecting the "Email Request" button in the License Property Window. A default Email application shall be setup for the user on the target system. The following Email message will be sent in that case to Trophy:

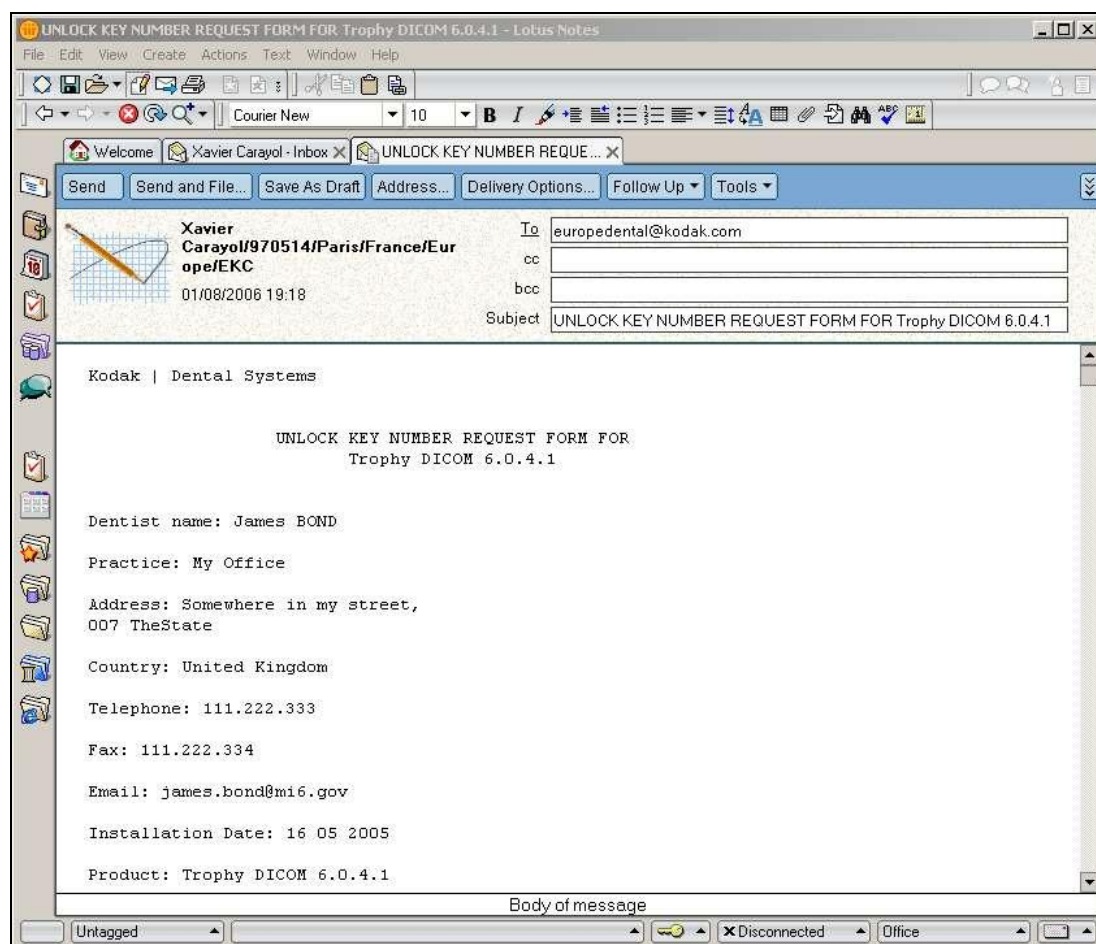


Figure 61: License Request Email Message

Note: The Trophy DICOM version number may be different than currently shown in this figure.

6.2.2.4 Printing License Request

The user may also print the license request by selecting the "Print Request" button in the License Property Window. The following page will in that case be printed out:

```
Kodak | Dental Systems

                                UNLOCK KEY NUMBER REQUEST FORM FOR
                                Trophy DICOM 6.0.4.1

Dentist name: James BOND
Practice: My Office
Address: Somewhere in my street,
007 TheState
Country: United Kingdom
Telephone: 111.222.333
Fax: 111.222.334
Email: james.bond@mi6.gov
Installation Date: 16 05 2005
Product: Trophy DICOM 6.0.4.1
Serial Number: RLLJ000
Vendor: Dental Depot,
999 South Highway
```

Figure 62: License Request Print Message

Note: The Trophy DICOM version number may be different than currently shown in this figure.

This printing may be used for faxing or mailing the request.

6.2.2.5 Saving License Request as a Text File

The user may save the license request as a text file locally on her system, by selecting the "Save Request" button in the License Property Window. This creates by default a RequestForm.txt file containing the user request.

6.3 About

The About dialog window provides version information about Trophy DICOM and its components as show in the following figure:



Figure 63: About Dialog Window

Note: The Trophy DICOM version number may be different than currently shown in this figure.

6.4 Working with Trophy Imaging or 3D Module Software's

Presenting and describing the Trophy Imaging and 3D Module Software functionalities is outside the scope of this document. Nevertheless, the following considerations have to be taken into account when working with the Trophy Imaging or 3D Module Software's from Trophy DICOM:

- Trophy Imaging and 3D Module Software's have to be install on the system in order to be able to interact with Trophy DICOM (refer to [3]).
- Trophy Imaging or 3D Module Software's shall not be executed outside the control of Trophy DICOM, in order to prevent data loss in Trophy DICOM.
- The user has the ability to switch back and forth between The Trophy Imaging or 3D Module Software's and Trophy DICOM without closing The Trophy Imaging or 3D Module Software's first.
- When starting The Trophy Imaging Software, it might be possible that the last saved context of the selected patient is also displayed.
- When new images or volumes are acquired and/or saved inside The Trophy Imaging Software, Trophy DICOM might update automatically the Patient Data Screen (refer to section 3.5.3).
- When new images or volumes are acquired and/or saved into The Trophy Imaging Software, Trophy DICOM might initiate automatically DICOM transfers of the images, if configured (see section 4.1).

Note: At the date of this document, there is no way for Trophy DICOM to access to any intermediate result created directly by the Trophy 3D Module application.

6.5 DSIO Export

Note: This part applies specifically for French users.

Note: Only members of the Microsoft Windows operating system Administrator Group can perform DSIO Export.

6.5.1 Definition

It may be possible to export all the patient information maintained by the Trophy DICOM Patient Database in a file format compatible with DSIO (*Données Standard Informatique en Odontologie*) recommendations.

Per default DSIO Export functionality is not available when installing Trophy DICOM. This operation may be performed only when required as many time as necessary.

In order to enable access to it, the user shall first register the functionality by "executing" the **ExportDSIO.reg** file located in the Trophy DICOM installation directory.

DSIO Export dialog window may be accessed, via one of the following Trophy DICOM common options:

Table 96: Accessing DSIO Export Functionality

Type	Entry
Main Menu Option	Tools / Database / DSIO Export
Context Menu Option	-
Tool Bar Button	-
Keyboard Shortcut	-

6.5.2 DSIO Export Dialog Window

The DSIO Export Dialog Window shall be used for exporting patient information to a file compatible with the DSIO specifications:



Figure 64: DSIO Export Dialog Window

The user shall specify first the output file location before proceeding to the data conversion by selecting the "..." button control on the right side. This button opens the regular Microsoft Windows operating system file selection dialog window. Export process can be initiated then by pressing the Start button control.

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