

Discovering Keops

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Discovering Keops Guide

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Introduction

Keops provides a secure, efficient and easy to use solution to collect, analyze, process and store high-quality digital media of pre-clinical or clinical studies.

Keops features a distributed system to manage digital assets of pre-clinical or clinical studies. The main features of Keops are comprised of:

- Connectivity to imaging instruments to capture digital media. Digital still cameras, analog video camera and digital video cameras are currently supported.
- Management of pre-clinical or clinical studies with several treatment groups.
- Management of users and modifications in compliance with FDA regulations. All changes related to clinical study data are recorded and can be viewed in an audit log.
- A comprehensive set of in-depth searching capabilities.

Scope

This document is intended to help you discover Keops main features in less than 30 minutes. This is not a tutorial or a training document since you will not discover all features in details, but rather a document to see Keops in action without going through the full setup required for production use.

Before you begin

Throughout this document, we will guide you through the installation of Keops in Demonstration Mode (10 minutes), the utilization of Keops main features (30 minutes) and the removal of Keops installation (5 minutes).

Getting Started

Installing Keops in Demonstration Mode

You must install the **.NET Framework version 2.0 Redistributable** Package prior to installing Keops. If it is not already installed on your computer, download the most recent Microsoft .NET Framework from Microsoft web site and proceed with the installation.

When the .NET 2.0 Framework is installed, double-click the program file for the Keops installer in the local directory where you downloaded it. The name of the file varies depending on the release: for release 1.0.0, it is `keops100.exe`.

The installation program automatically adds the `%MATISSE_KEOPS_DEMO%` System environment variable that controls Keops Demonstration Mode. By default, this environment variable is set `Yes`.

Launching Keops

To launch Keops, select `Keops` in the `Matisse Life Science` folder in the `Start All Programs` menu on your machine.

You will be prompted for login and password to enter into the application.

Keops in Demonstration Mode is loaded with a predefined administrator (username: `john`, password: `keopsdemo`) and a predefined operator (username: `bill`, password: `keopsdemo`).

Log as an operator (username: `bill`) to start the demonstration.

Managing Studies

The `Studies` Tab is selected and shows a set of studies predefined for the demonstration.

NOTE: the data are purposely inaccurate.

In Keops, a Study is defined by a set of observed animals for which a set of observations has been recorded. A picture shot is associated to each recorded observation.

Viewing Studies

All recorded studies are listed in the `Select a Study Number` menu selection. Click on the `Select a Study Number` scrolling list to view the detailed information about a study. Then to navigate through the hierarchy of data, click on the `Select an Animal ID` scrolling list or on the `Select an Animal Study ID` scrolling list to switch from one animal to the next in the list. Then for a selected animal, the observations are listed in an image list viewer. Selecting an examination presents the observation details including photos and diagnostics.

Study Operations

The demonstration skips the creation, update and delete of studies as well as the creation, update and delete of animals to focus on the capture of observations from connected instruments. All these operations can easily be accessed from the menu-bar or the toolbar.

NOTE: If you can spend more time with the demonstration (5 minutes), we recommend that you create a new study then a new animal before moving to the next section.

Recording an Observation

An Observation recorded in Keops always contains a picture to support the operator diagnostic. The process for recording an animal observation implies that the operator takes meaningful pictures to document its findings.

To record an observation, click on the `Capture Media` button in the toolbar. The *Capture Media* dialog window appears. The operator can then capture images of an animal under observation.

From the *Capture Media* window, you can independently manage observed animals and imaging instruments.

Managing Animals

Observed animals, which are parts of studies are listed in the `Animal Initial ID` scrolling list. When the *Capture Media* window is opened, the selected animal is the one selected in the `Study` Tab. The operator can switch animals by clicking on the `Animal Initial ID` scrolling list.

If the animal is not yet present in the list, click on the `Create new animal` button from the toolbar to create a new animal.

In some cases, the operator may capture images of an animal that is not yet registered into the study and then decide after the picture shots examination that the animal needs to be added to the study. In this context, the operator needs to select the `Unregistered` value in the `Animal Initial ID` scrolling list or needs to click on the `Observe an unregistered animal` button from the toolbar.

If the `Unregistered` animal is selected, the operator will be prompted to create a new animal prior to recording an observation. And the remaining captured images will be associated to the newly created animal.

The demonstration skips the creation of a new animal in this context.

Managing Imaging Instruments

Imaging instruments connected to the acquisition workstation are listed in the `Instrument` scrolling list. When the *Capture Media* window is opened, the selected instrument is the first one in the `Instrument` scrolling list. The operator can switch instruments by clicking on the `Instrument` scrolling list. Next to the `Instrument` scrolling list is displayed the status of the instrument.

A set of instruments are predefined for the demonstration. Keops supports connectivity to the following 3 types of imaging devices:

Canon EOS Digital Camera

Keops supports the Canon EOS Digital SLRs with DIGIC II processors connected for example to a non-mydrriatic digital fundus camera (e.g. a Canon EOS20D connected to a Canon CR66Dgi).

FlashBus Spectrim Video Board

Keops supports the FlashBus Spectrim product family, a high-performance, PCI bus-mastering video frame grabber designed to capture composite, S-

Video, or RGB video in real time. For example, the video board can be connected to an analog video indirect ophthalmoscope.

Sony 1394 Digital Video Camera

Keops supports the Sony “FireWire” digital video cameras (Color models only) including the XCD-SX910CR/X710CR series. For example, a Sony 1394 digital video camera can be mounted on a digital video slit lamp.

NOTE: Since Keops installation in demonstration mode does not cover the driver installation to access these devices, we recommend you use only the Demo Image Grabber instrument which simulates the image capture from a connected instrument.

Select the `Demo Image Grabber` instrument and click on the `Connect and Go Live` button from the toolbar, the instrument status is now indicating `Live`.

The `Take a Picture` button in the toolbar is enabled. The `Take a Picture and Save` button is also enabled.

Click on The `Take a Picture` button or press the F6 key until you have captured at least 6 images.

Choosing Pictures

When multiple images of the same observation have been taken, the operator may need to review the images in detail and compare them before deciding for the more relevant picture shots.

To review and compare images, click on the `Select Media` button in the toolbar. The *Select Media* dialog window appears so the operator can review and compare images side by side.

To help the operator with the comparison, selected images can be displayed in single, dual or quad mode.

Click on the `Set quad-image mode` button, then click `Set dual-image mode` button and resize the *Select Media* dialog window as you see fit.

Creating an Observation

Saving a captured image displays the *Add an Exam* dialog window allowing the user to associate a diagnostic to this image.

To create a new observation, click on the `Save selected image` button in the toolbar of the *Capture Media* or *Select Media* windows or right-click on a thumbnail image or a full-size image when the multi-image mode is selected.

The *Add an Exam* dialog window appears. You can then enter a diagnostic, note and change the examination date. Optional fields include diagnostic and note.

You can also create multiple observations that share the same diagnostic and related information in a single operation. In order to do so, select multiple capture images and click on the `Save selected image` button in the toolbar of the *Capture Media* or *Select Media* windows. The *Add an Exam* dialog window appears. You can then enter a diagnostic, note and change the examination date associated to the first selected image. Then an observation with the exact same diagnostic will be created for each of the remaining selected images.

The `Take a Picture and Save` button combines the acquisition of an image and the creation of an observation in a single operation.

Now, select the image of your choice and click on `Save` and then enter your diagnostic.

Deleting Captured Images

Captured images are associated with the observed animal until they are explicitly deleted.

To delete captured images, select one or more images in the captured image list viewer and click on the `Delete selected image` button in the toolbar of the *Capture Media* or *Select Media* windows. The *Delete an Image* dialog window appears so you can confirm your selection before proceeding with the removal of the images.

To complete the recording observation tour, click on the `Set thumbnail-image mode` button and right-click on `Delete all` and close the *Select Media* window and the *Capture Media* window.

Updating an Observation

A new observation has been added to the Observation thumbnail viewer in the `Studies` Tab.

To update an observation, click on the `Update selected exam` button in the toolbar. The *Update Exam* dialog window appears allowing you to update the examination date, diagnostic and note. Each property update requires the approval of an administrator.

An entry in the audit log is added to record the change of each property.

Now click on the `Update selected exam` button and update the Observation value then click on the `OK` button. In the *Approve Exam Changes* Window, enter the reason for change and click on the `Approve` button. You will be prompted for an administrator approval. Enter an administrator username and password and click on the `OK` button. Use the administrator `john` (password: `keopsdemo`) predefined for the demonstration.

Comparing Observations

When multiple observations have been recorded, the operator may need to review the images in detail and to compare them side-by-side.

To review and compare images, click on the `Open multi-image viewer` button in the toolbar. The *Examination Viewer* dialog window appears so the operator can review and compare images side by side.

To help the operator with the comparison, selected images can be displayed in single, dual or quad mode.

Querying the Studies Database

Keops provides a comprehensive set of in-depth searching capabilities to retrieve observations matching multi-criteria filters.

The query builder is accessed by selecting the `Search` Tab.

Building a Query

To build a query, you need to define a set of filters that match your search criteria.

To define a filter, select a property, an operator and enter a value that matches your search criteria. When entering a value in the `Value` text field, a tool-tip displays the format of the value to enter. Then click on the `Apply` button to add the filter to the list.

To combine multiple filters with logical operators (`AND`, `OR`), click on the appropriate toggle button.

The `Edit` and `Remove` buttons allow you to respectively modify or delete the selected filter from the filter list.

To execute the query, click on the `Execute query` button in the toolbar. The result can be viewed in a table format in the `Result` Tab. The `Messages` Tab provides detailed information about the query execution.

NOTE: In Keops Demonstration Mode, the result is predefined. Whatever filters you have defined, it always produces the same result.

Exporting a Query Result

Query results can be exported into Excel type files.

To export the query result of the last query execution, click on the `Save result` button in the toolbar.

Managing the Audit Records

Keops manages modifications in compliance with FDA regulations. All changes related to study data are recorded and can be viewed in an audit log. Most of the operations in the system are recorded for audit purpose.

Viewing the Audit Log

The audit records are listed in the `Audit` Tab. Select the `Audit` Tab to view the audit logs. The audit records can be filtered by operation type as well as by entity type.

To filter audit records, click on the `Operation` button or `Entity Type` button in the toolbar and select respectively the operations and entity type to be filtered.

Exporting the Audit Log

The audit records can be exported into an Excel type file.

Conclusion

You have now completed the guided tour of Keops main features in less than 60 minutes.

In summary, Keops provides a secure, efficient and easy to use solution to collect, analyze, process and store high-quality digital media of pre-clinical or clinical studies. Keops key benefits include:

- Uniquely designed for Managing Digital Media in Pre-clinical or Clinical Studies
- Management of Users and Modifications in Compliance with FDA Regulations
- Direct Connection to High Quality Imaging Instruments
- Secure, Efficient and Easy to Use

Many more features still remain to be discovered. If you have more time, you can continue on your own the exploration of the administration features.

Select the `Administration` Tab and enter an administrator username and password and click on the `OK` button. For the demonstration, use the predefined administrator (username: `john`, password: `keopsdemo`).

Uninstalling Keops

To uninstall Keops, select **Add/Remove Programs** from the **Control Panel** window. This brings up a window where you can select *Matisse Keops* and press **Change/Remove** button. Uninstalling Keops does not remove your data files, configuration files, or log files.