

Horos User Guide



Version 0.5

**Copyright © 2023 Purview
All Rights Reserved**

**Release date: 24 January 2019
Revision date: 9 November 2023**

 **PURVIEW**
2001 Tidewater Colony Drive
Suite 203
Annapolis, MD 21401
www.purview.net
www.horosproject.org

About

This Horos User Guide was developed to assist users with the operation of Horos, a Free Open Source Software (FOSS) program. All information is provided without warranty of any kind and has been produced on a best efforts basis, as the code for Horos continues to change and evolve. The version you are using is current as of the date indicated. This electronic document is licensed, not sold. New updates are available electronically to users who pay the then current annual fee and is valid for a period of twelve months from their original purchase.

This is a copyrighted work. All rights are reserved. You are prohibited from copying, sharing, or selling the original document, the information contained herein or any copy thereof.

This document was created by a joint effort of the following professionals who spent a great deal of time, effort and diligence to create this work.

Dr. Naomi J. Booth, veterinarian in the United Kingdom

Dr. James Ryan, Biology Department, Hobart and William Smith Colleges, Geneva, NY 14456

Dr. Ryan teaches human anatomy and neurobiology at Hobart & William Smith Colleges. He uses Horos in his courses to teach clinical case studies. He is also the co-author, along with Dr. Jeremy Cushman from the University of Rochester Medical Center, on “iAnatomy,” <https://www2.hws.edu/article-id-17114/> an eBook comprised of 20 case-based, interactive exercises that reinforce human anatomy and physiology concepts while engaging readers with the clinical relevance of anatomical details. His current research uses microCT scanning technology to study embryonic development in bats. Ryan earned his Ph.D. from The University of Massachusetts, Amherst; an M.S. from The University of Michigan, Ann Arbor; and a B.A. from The State University of New York at Oswego.

Les Trachtman, Managing Director of Purview

Please report any errors or suggestions to improve this document to:

Support@purview.net

Table of Contents

ABOUT	II
TABLE OF CONTENTS	IV
CHAPTER 1	1
The History of Horos	1
Horos Today.....	1
Using Horos	1
System Requirements	2
Backing up your Data	2
Downloading the Software.....	2
Plug-Ins and the Horos Cloud	3
Plug-Ins.....	3
Horos Cloud (Optional).....	3
CHAPTER 2	5
Setting Up Horos.....	5
Basics.....	6
CHAPTER 3	35
Menus and Navigation	35
THE HOROS MENU SYSTEM	35
CHAPTER 4	77
Managing Data.....	77
The Database Window	77
CHAPTER 5	105
Displaying Images	105

CHAPTER 6	109
2-D Viewer.....	109
Displaying Images.....	130
Navigating Between Studies And Series.....	135
Workflow.....	137
Viewing Tools Details	144
ROI Quantification Tools.....	164
Reconstruction Tools.....	183
CHAPTER 7	189
3-D Image Processing.....	189
THE 3D VIEWER.....	190
THE 3D MPR VIEWER.....	191
THE 3D CURVED MPR VIEWER.....	198
Curved MPR Engine.....	199
THE 2D ORTHOGONAL MPR VIEWER	206
THE MIP/VR VIEWER	212
THE 3D MIP/VR VIEWER DETAILS.....	226
CHAPTER 8	245
Movies and Fly-Thrus	245
CHAPTER 9	251
Using Horos in a Network and General Concepts.....	251
Introduction.....	251
PACS Network.....	251
Auto-routing	270
Setting up Horos as a PACS (Picture Archiving and Storage)	271
WADO.....	275
Database Sharing	275
HTTP Web Server	279
Notifications	281
XML-RPC.....	285
Building a JPEG 2000 Network.....	293
Setting up and using Horos as a PACS Server.....	294
Conclusion	297
APPENDIX A.....	301
Default Hot Keys	301
INDEX.....	303

Chapter 1

The History of Horos

Horos was originally released on the 14th of February 2015, Valentine's Day in many parts of the world. It arose as a fork of the OsiriX project. Version 5.8 of OsiriX™ was its predecessor code base. Horos was born out of the desire to continue to perpetuate a fully open source professional medical image viewer. Named after Horus who was the son of Osiris and was thought to be made from his body parts, Horos was similarly originally constructed from the open source code of OsiriX as well as several other projects.

Horos Today

Horos continues to be an open source project. It is licensed under the GNU LGPL 3 license, specifically inviting community involvement in improving and adding to its capabilities. Software developers have added plug-ins that they provide (either at a charge or free) to the community.

Horos may come from several different sources. Be sure you know which version you are downloading. The authentic and curated latest version of Horos can be found exclusively at www.horosproject.org

Horos operates on an Apple Macintosh computer running OSX Version 10.11 or later. It is intended to be a viewer for medical images produced by virtually any modality that generates a DICOM format image including MRI, CT, PET, PET-CT, SPECT-CT, Ultrasound, Nuclear or X-ray. Horos enables the display, review, interpreting, post-processing, reporting and routing of medical images studies.

Using Horos

Horos is not FDA approved or otherwise certified for use as a primary diagnosis tool. An effort is underway to gain certification. However, until that is available, Horos is not intended to be used for that purpose. However, as a secondary viewer, a display tool, a teaching tool, for veterinary use, forensics, or otherwise, Horos can be very useful.

System Requirements

Horos only runs on an Apple Mac running Mac OS X. It will not operate on a Windows-based PC or Linux system.

The minimum system requirements are as follow

*Mac OS X 10.11 or later
4GB of RAM (8 GB recommended)
Minimum of 1280 × 1024 pixels*

Horos supports the use of two display monitors.

Backing up your Data

No matter how many images or studies you handle, we always recommend you have a backup solution (offsite preferably) in the event of a disaster, whether natural or man-made. As such, we suggest you connect your Horos viewer to a proper PACS (Picture Archive and Communication System) in the cloud or locally usually configured with a RAID or similar resilient storage option.

Downloading the Software

The latest version of the Horos software is available at www.horosproject.org. By pressing the DOWNLOAD button near the top of the screen, you will be redirected to enter your information so that you become registered as a user and then the software will be downloaded to your DOWNLOAD folder on your Mac.

If you double click on the downloaded file icon you will then see the Horos Software License. After carefully reading the license you may proceed by pressing the **AGREE** button. That will display the screen shown below on which you can drag the Horos icon near the left over the Applications Folder Icon on the right to complete the installation process.

If you already have an earlier version of Horos on your computer, it will ask if you want to replace that version. You can do this without any risk of losing your prior data. Once Horos is installed on your computer, you can access it from the Applications Folder. From there you can either open Horos or drag it to your application bar at the bottom of your screen so that it is more easily available.

Plug-Ins and the Horos Cloud

Plug-Ins

From time to time the Horos community as well as Purview, publish small applets that can extend the functionality of Horos. These may be found in the Horos pull-down menu at the top of the Horos screen under “Plugins.” Any plugins that are already installed will be indicated. Available plugins not yet installed, will display in the “Plugins Manager” selection, by choosing that selection and then clicking on the up/down carats at the right of the display box.



Figure 1.1

Horos Cloud (Optional)

The Horos Cloud is a specialized plugin that provides a set of additional functionality for Horos. Today, it has three functions. The first is a **cloud repository for generating and storing radiological reports**. Reports can be created in a web browser environment and then emailed to recipients or securely stored and archived. The cloud also is a way to **share studies**. With the Horos cloud an email with a secure pointer to the study can be sent to anyone, whether or not they are using Horos, to enable them to view the study. And third, the cloud may be used as a **storage, offsite PACS or archive**.

The Horos cloud, once enabled, should appear to the left of the menu icons on the main Horos screen.

Chapter 2

Setting Up Horos

To set up Horos for the first time, or make subsequent modifications, pull down the Horos menu tab and select Preferences. Horos Preferences will enable you to set defaults for how your Horos desktop will operate. These are detailed below.

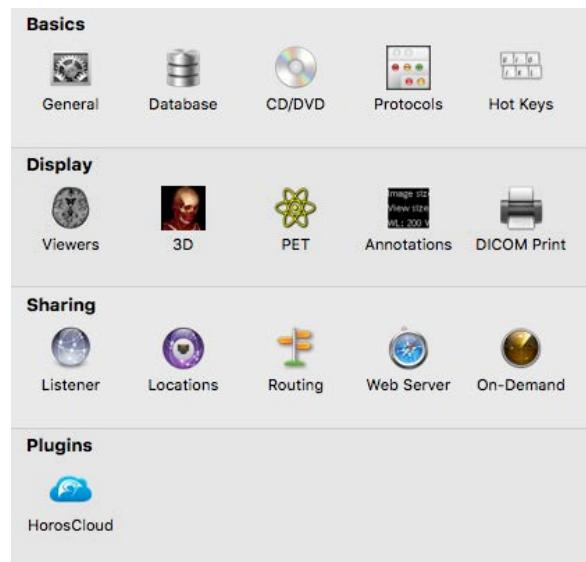


Figure 2.1