# *One*

Introduction

1.1 OSIRIX

The goal of OsiriX is to deliver the best possible viewer for images produced by radiology equipment, such as MRI, CT, PET, PET–CT, SPECT-CT, Ultrasounds, etc. Its key features are: displaying, reviewing, interpreting and post-processing the images. OsiriX is an image processing software dedicated to DICOM images (*.dcm* extension).

Several versions of OsiriX are available. If you plan to use OsiriX in a medical environment, you will require a certified version for primary diagnostic imaging. Using OsiriX as a primary diagnostic workstation also requires the use of certified monitors for medical imaging.

OsiriX is the result of more than 5 years of research and development in digital imaging. OsiriX fully supports the DICOM standard for an easy integration in your workflow environment. OsiriX offers advanced post-processing techniques in 2D and 3D. OsiriX offers a complete integration with any PACS, including the well known open-source project: dcm4chee[1]. OsiriX supports 64-bit computing and multithreading for the best performances on the most modern processors. By adopting OsiriX you have made the right choice: it meets normal requirements, it is simple to use, it has unlimited power and the ability to evolve!
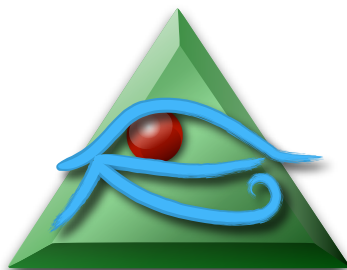
1.1.1 About DICOM

DICOM is a standard for handling, storing, printing and transmitting information in medical imaging [9]. The DICOM standard has now become the uncontested standard for the exchange and management of biomedical images. OsiriX is fully compliant with the DICOM standard for image communication and image file formats. DICOM is regularly updated through the DICOM committee. The up-to-date version of this standard is available on the DICOM website[2].

1.1.2 History

The OsiriX project started in November 2003. The first version was developed by Antoine Rosset MD, a radiologist from Geneva, Switzerland. He received a grant from the Swiss National Fund[3] to spend one year in UCLA, Los Angeles, with Prof. Osman Ratib, to explore and learn about medical digital imaging.

At first, the goal of the OsiriX project was to simply write a small software program to convert DICOM files to a QuickTime movie file, in order to help a radiologist friend, Luca Spadola MD, to create a teaching files database. He spent more than two weeks searching a Java library for DICOM management and image manipulation. Indeed he

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[1] `www.dcm4che.org`
[2] `dicom.nema.org`
[3] `www.snf.ch`

wanted to create a cross-platform software program for Windows, Mac OS and Linux. But at that time, Apple had just released Mac OS X 10.3, the first usable release of their UNIX-based OS. It became obvious that Mac OS X was the best choice to quickly create a robust and modern DICOM viewer:

One DICOM viewer to rule them all

This small project became the unique obsession of this young radiologist. A Source-Forge account[4] was created in January 2004 to develop OsiriX as an LGPL software.

The first public version was released in April 2004, version 0.1a, on Antoine Rosset's personal homepage[5]. This first version was developed in less than 6 months: it offered a basic database and a simple DICOM viewer, without post-processing functions or measurement tools.

In October 2004, Antoine Rosset went back to the Geneva University Hospital in Switzerland, to continue his career as a radiologist, but his obsession with OsiriX remained strong.

The reference article about the OsiriX project was written in April 2004 and published in June 2004 in the Journal of Digital Imaging [12].

Joris Heuberger, a mathematician from Geneva, joined the project in March 2005 on a voluntary fellowship of 6 months in UCLA, Los Angeles. During this period, while working on plugins for OsiriX, he added the first *Fly Through* algorithm to the Surface Rendering and Volume Rendering viewers.

In June 2005, during Apple's Worldwide Developer Conference (WWDC) in San Francisco, OsiriX received two prestigious Apple Design Awards: *Best Use of Open Source* and *Best Mac OS X Scientific Computing Solution* (Figure 1.1).

Figure 1.1: The two prestigious Apple Design Awards

Osman Ratib, Professor of Radiology in UCLA, returned to Geneva at the end of 2005 as the chairman of the Nuclear Medicine service. He was the first and unconditional supporter of the OsiriX project. Thanks to his commitment, OsiriX became the official DICOM viewer for the Radiology Department of the Geneva University Hospital in 2009.

At this time, Antoine Rosset and Joris Heuberger became the core team of OsiriX software. Over the years, OsiriX has benefitted from many external contributors. The most

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[4]www.sourceforge.net/projects/osirix/
[5]homepage.mac.com/rossetantoine/osirix/

active external contributor was Lance Pysher MD, a US radiologist. He notably added the foundation for the DICOM Network protocol, through the DCMTK library (Offis) and wrote an Objective-C framework for DICOM files management (DCM Framework).

In March 2009, Antoine Rosset, Joris Heuberger and Osman Ratib created the *OsiriX Foundation*[6] to promote open-source in medicine. This non-profit foundation offers grants to students for developing open-source software in medicine. The foundation also organizes awards with prizes to stimulate development in digital imaging and post-processing. Most of these projects are based around OsiriX.

Figure 1.2: From left to right: Osman Ratib, Joris Heuberger and Antoine Rosset

In February 2010, Antoine Rosset and Joris Heuberger created the company Pixmeo[7] to continue to promote open-source solutions in medical imaging, including OsiriX development. The major goal of this company is to certify OsiriX as a FDA cleared product and offer commercial support for open-source solutions, such as OsiriX or dcm4chee.

Today, Antoine Rosset is working as a radiologist in La Tour[8] private hospital, as well as CEO of Pixmeo. Joris Heuberger is now CTO of Pixmeo.

Their commitment to the OsiriX project is intact, thanks to the support of more than 40,000 users throughout the world. From a student project, OsiriX is today a mature and professional project, benefiting from experienced developers and users and used by thousand of institutions, including the most prestigious medical centers.

The first iPhone (iOS) version of OsiriX was released in November 2008, developed by Joris Heuberger. OsiriX for iOS quickly became a major success.

In December 2010, a new version of OsiriX for iOS became available, including support for iPad devices.

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[6] www.osirixfoundation.com
[7] www.pixmeo.com
[8] www.latour.ch