



VolView

An open source, portable, and extensible web application for cinematic rendering and annotating medical images

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30 September - GNU Health/Orthanc conference

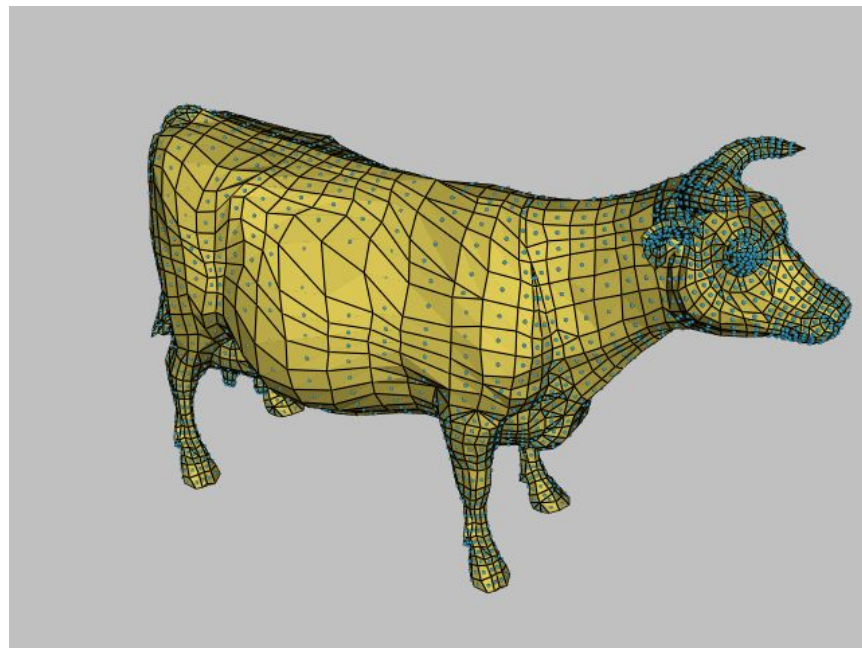


Kitware

Delivering Innovation

VTK ?

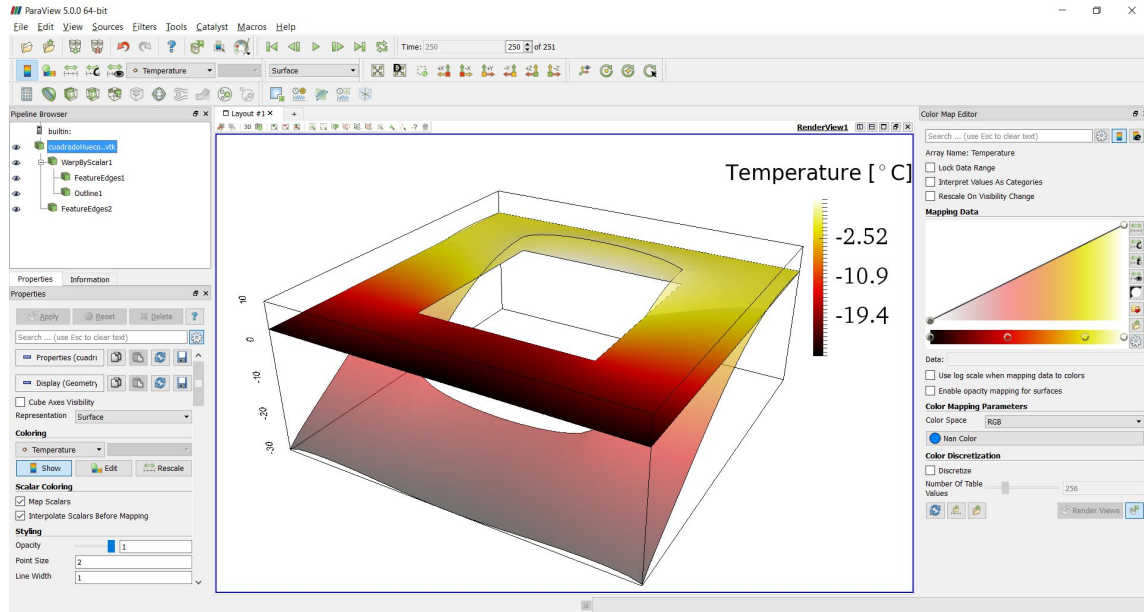
VTK



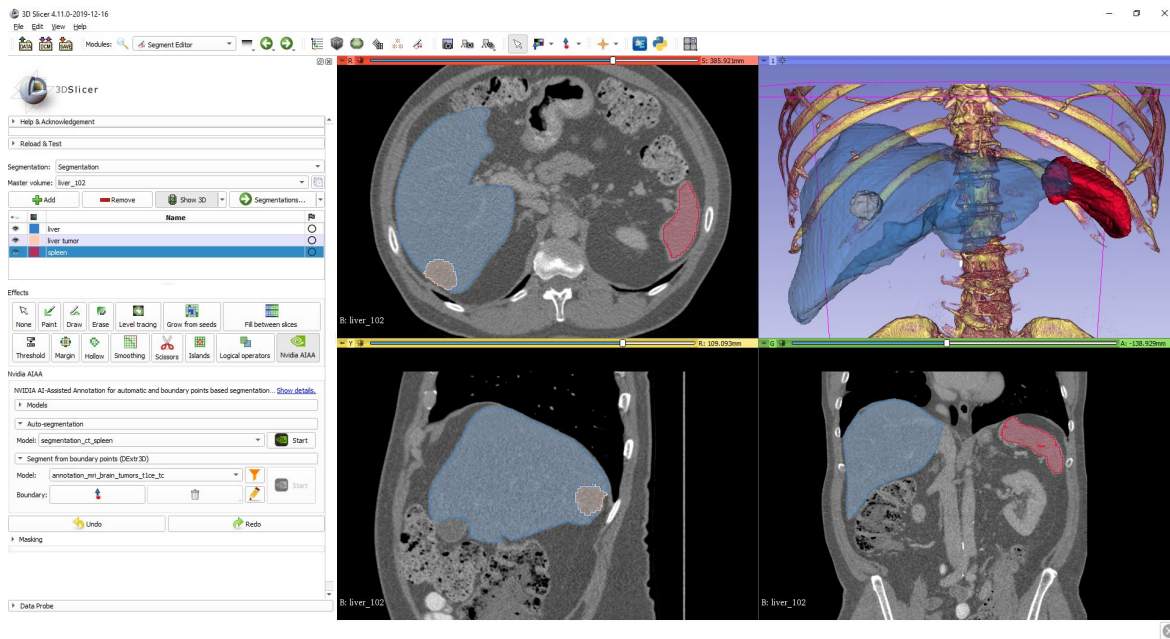
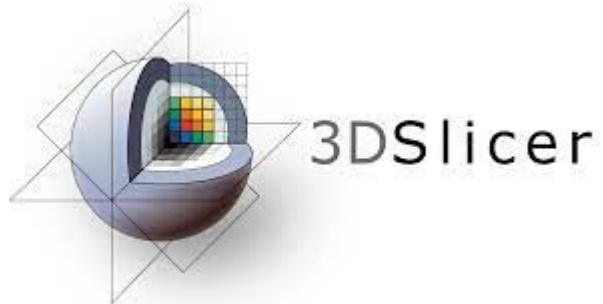
Paraview ?



ParaView



3DSlicer ?



CMake ?



CMake

```
-- The C compiler identification is Clang 12.0.0
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/bin/clang - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- CMAKE_INSTALL_PREFIX=/usr
-- CMAKE_BUILD_TYPE=RelWithDebInfo
-- MIN_LOG_LEVEL not specified, default is 3 (ERROR) for release builds
-- Replacing -O3 in CMAKE_C_FLAGS_RELEASE with -O2
-- Performing Test HAS_ACCEPTABLE_FORTIFY
-- Performing Test HAS_ACCEPTABLE_FORTIFY - Failed
-- Unsupported _FORTIFY_SOURCE found, forcing _FORTIFY_SOURCE=1
-- Removing --sort-common from linker flags
-- Performing Test HAVE_EXECINFO_BACKTRACE
-- Performing Test HAVE_EXECINFO_BACKTRACE - Success
-- Performing Test HAVE_BUILTIN_ADD_OVERFLOW
-- Performing Test HAVE_BUILTIN_ADD_OVERFLOW - Success
-- Performing Test HAVE_WIMPLICIT_FALLTHROUGH_FLAG
-- Performing Test HAVE_WIMPLICIT_FALLTHROUGH_FLAG - Success
-- Performing Test HAS_WVLA_FLAG
-- Performing Test HAS_WVLA_FLAG - Success
-- Performing Test HAS_FSTACK_PROTECTOR_STRONG_FLAG
-- Performing Test HAS_FSTACK_PROTECTOR_STRONG_FLAG - Success
-- Performing Test HAS_FSTACK_PROTECTOR_FLAG
-- Performing Test HAS_FSTACK_PROTECTOR_FLAG - Success
-- Performing Test HAVE_FNO_COMMON
-- Performing Test HAVE_FNO_COMMON - Success
-- Performing Test HAS_DIAG_COLOR_FLAG
-- Performing Test HAS_DIAG_COLOR_FLAG - Success
-- Found PkgConfig: /usr/bin/pkg-config (found version "1.7.3")
-- Looking for dlopen in dl
-- Looking for dlopen in dl - found
-- Looking for kstat_lookup in kstat
```

CMake...



CMake

```
x@ubuntu: ~/blender_git/blender
-- Could NOT find Jack (missing: JACK_LIBRARY JACK_INCLUDE_DIR)
-- JACK not found, disabling WITH_JACK
-- Could NOT find Pulse (missing: LIBPULSE_LIBRARY LIBPULSE_INCLUDE_DIR)
-- PulseAudio not found, disabling WITH_PULSEAUDIO
-- Found PkgConfig: /usr/bin/pkg-config (found version "0.29.1")
-- Checking for module 'xkbcommon'
--   No package 'xkbcommon' found
CMake Error at build_files/cmake/macros.cmake:1243 (if):
  if given arguments:

    "NOT" "AND" "ON"

  Unknown arguments specified
Call Stack (most recent call first):
  build_files/cmake/platform/platform_unix.cmake:670 (set_and_warn_library_found)
  CMakeLists.txt:1067 (include)

-- Configuring incomplete, errors occurred!
See also "/home/x/blender_git/build_linux/CMakeFiles/CMakeOutput.log".
See also "/home/x/blender_git/build_linux/CMakeFiles/CMakeError.log".
make: *** [GNUmakefile:354: all] Fehler 1
x@ubuntu:~/blender_git/blender$
```

Kitware / Leader in AI & scientific open source solutions

Software development

Based on open source tools
300+ active projects worldwide



Sustained Growth

Since creation of the company
100% employee-owned



230 employees Worldwide

6 offices across USA/Europe



65% staff with PhD or Master

High Level customer expertise



20+ years of expertise

Kitware USA, 1998
Kitware Europe, 2010



Revenue 2020

\$39M consolidated



Customers / Various fields of application

Academics

70+ academic institutions worldwide

Government agencies

50+ government agencies and national laboratories

Commercial companies

Over 500 commercial customers

Medical

Image processing, multimodal visualization, image registration & segmentation, assisted surgery, custom software...

Energy

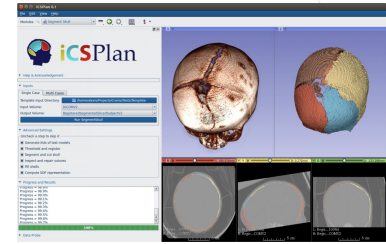
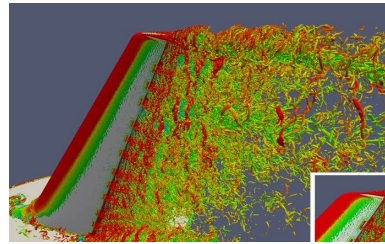
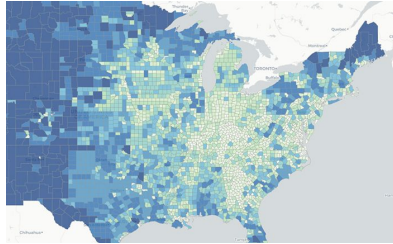
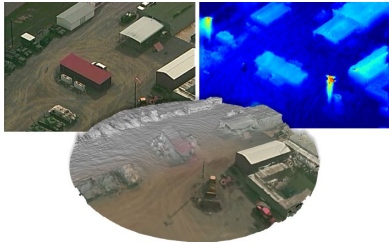
HPC, in-situ simulation, scientific visualisation, particle flow, fluid mechanics, ground exploration...

Intelligence

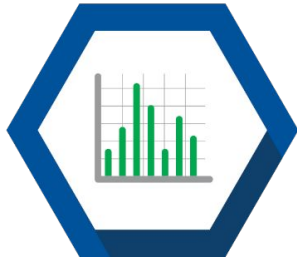
Scene analysis, big data analysis, scientific visualization, flow analysis...



Areas of expertise / Built on open source



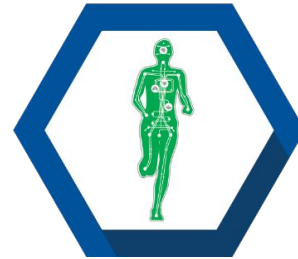
Computer
Vision



Data and
Analytics



Scientific
Computing

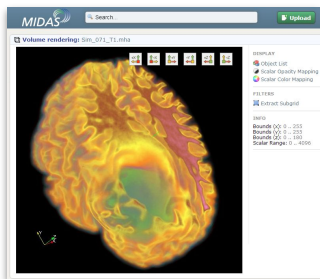


Medical
Computing

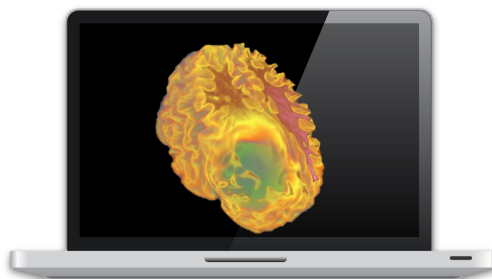


Software
Solutions

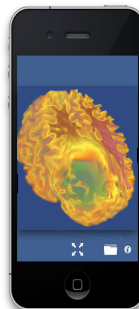
Applications / Universal Platforms



Web



Desktop



Mobile



Cloud /HPC

kitware
Platforms



3D Slicer



ParaView



KWIVER



mstk



VTK



Pulse
Physiology Engine



CMake



Resonant



tomviz



STK

Kitware / Services



TRAINING



SUPPORT



DEVELOPMENT



GRANT
COLLABORATION

What is Orthanc?

- **Open-source** lightweight DICOM server
- Easily **store** and **transfer** DICOM files
- **Fast** and **standalone**
- Provides a **RESTful API**
- **Easily customizable** with plugins

The logo for Orthanc, featuring the word "ORT" in blue, a stylized "H" in a dark blue square, and "ANC" in blue.

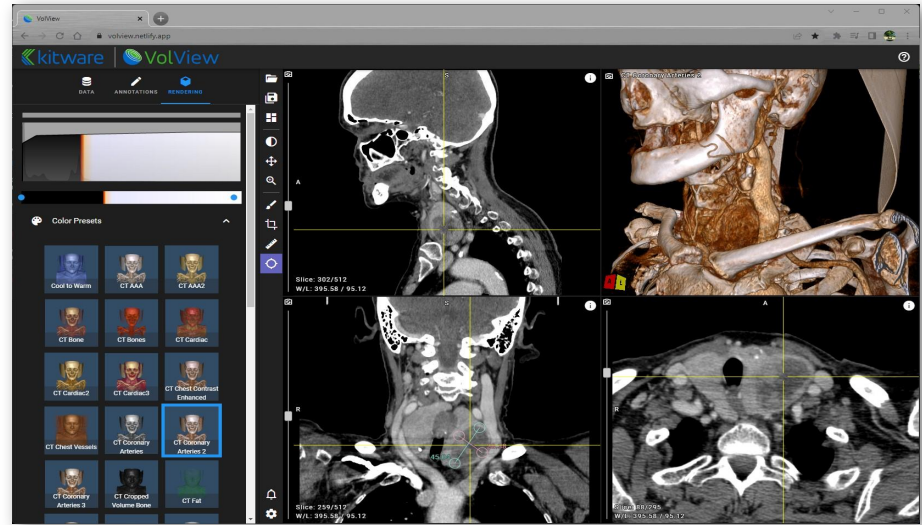
What is VolView?

- **Open-source** radiological viewer in the browser
- Fast and **interactive** visualizations
- **Secure** and local DICOM viewer
- Built on **VTK.js** and **ITK-wasm**
- **Customizable** for your workflows



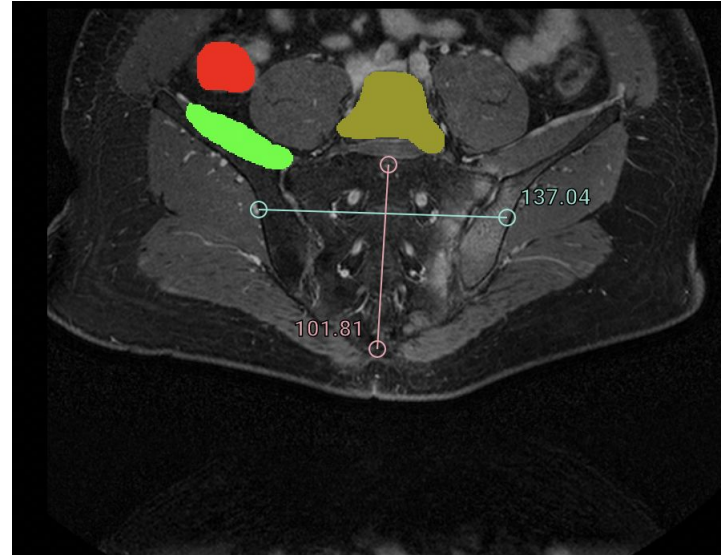
VolView Features

- Cinematic Volume Rendering
- Local DICOM loading
- Preset Colormaps
- Annotations
- Layouts
- Customizable
- ...and more!



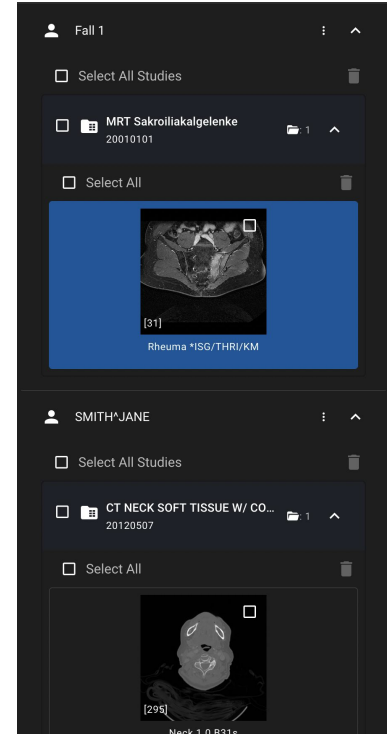
Annotations

- Measurements
- Segmentation masks
- ...more on the horizon
 - Contouring
 - Angle, Bi-dim
 - ROI



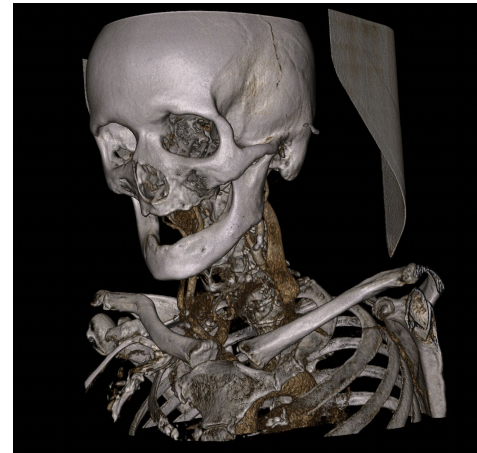
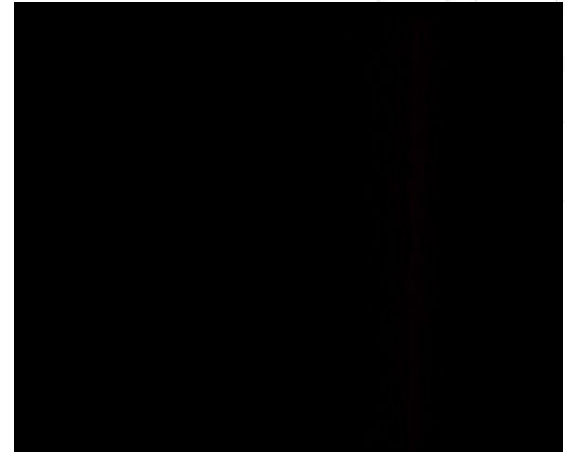
Native DICOM support

- Drag and Drop your DICOM datasets
- Connect to PACS via DICOMWeb
- Splits into Patient, Study, and Series
 - Designed to give a general overview of your data
- No data sent to any servers!



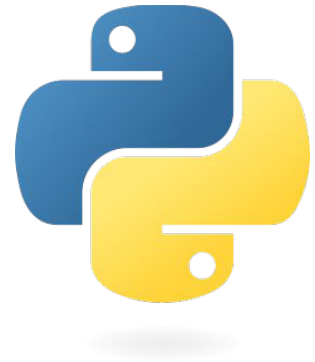
Realistic Volume Rendering

- Interactive and customizable
Cinematic Volume Rendering
- Enables high-quality volume visualization
- All in the browser!



Python Integration

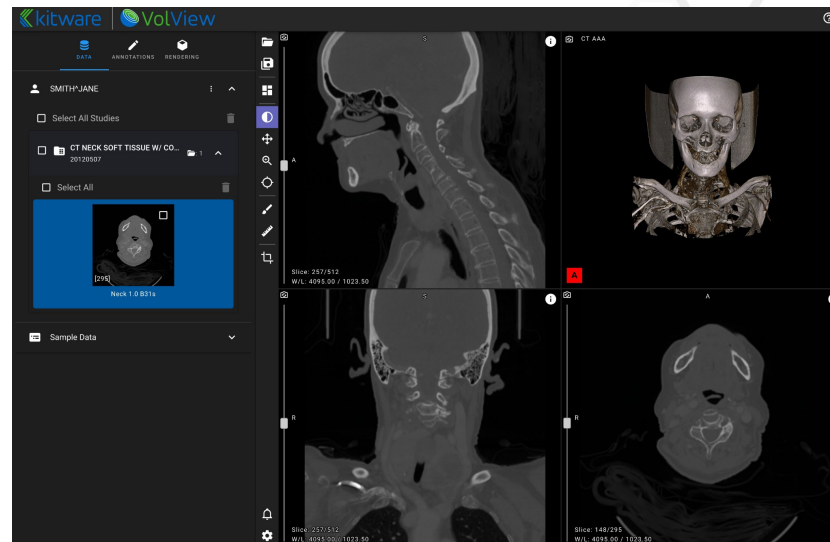
- Python integration enables:
 - Interface to segmentation, AI, etc. algorithms
 - Load server-side datasets
 - Entrypoint to application customization
 - Bundling into a single application



VolView Demo

<https://volview.netlify.app/>

<https://volview.kitware.app/>



```
docker run -p 4242:4242 -p 8042:8042 --rm jodogne/orthanc-plugins
```

Next steps for VolView

- Integration of Total Segmentator and MONAI Label
- Improved segmentation tools
- Loading of DICOM Seg and RTStruct
- And more ...



Thank you !

Questions ?