

ADVANTAGES

- » **High automation of 3D reconstruction**
Save a vast amount of time in your reconstruction workflow (speed up from 2 days to 15 minutes for one data set).
- » **Software-based 3D reconstruction**
You can reconstruct 3D volumes using virtual slide scanners – no additional expensive hardware setup is required.
- » **Ease of use**
Non-IT personnel can easily use the software without major training or specific knowledge. An intelligent wizard concept quickly guides users through the workflow.
- » **3D whole slide imaging**
Access extremely large volumes (>500GB) on all magnification levels and all regions – 3D field of view can be defined after imaging instead of setting it previously as with confocal or multi-photon imaging.
- » **Fast volume measurement**
Save up to 70% time when using Voloom instead of other software for volume quantification due to increased automation.

INPUT/OUTPUT

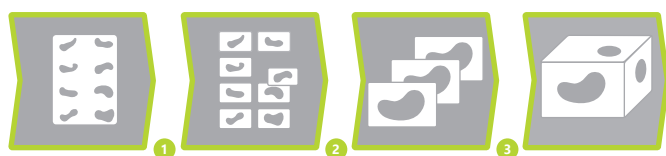
- » Support for virtual slide formats (3DHISTECH, Aperio, Hamamatsu, Huron, Leica, Nikon, Olympus, Perkin-Elmer, Roche-Ventana, TissueGnostics, Zeiss)
- » Support for basic image file formats (.jpg, .tif)
- » Support for 3D basic image file formats (.mhd, .mha, .nii)
- » Video capture and export
- » Screenshot capture and export

ALIGNMENT

- » Alignment of a set of (serial) sections
 - › Reconstructions of sections of any thickness (best chosen according to the tissue of interest)
 - › Unlimited number of slides
- » Very fast (semi-) automatic process for alignment
 - › Automatic section separation and section ordering
 - › Automatic initial alignment
 - › Manual alignment adjustments possible
- » Independence of staining and image modality
- » Alignment on bright field, fluorescence, and electron microscopy data sets

RECONSTRUCTION

- » Reconstruction of a 3D image from a set of consecutive sections
- » Automatic color adjustment for homogeneous results
- » Compensation of deformations
- » Robustness to large deformations (tears and folds in the tissue)
- » Avoidance of drifts or torsions in the stack due to a minimum error propagation technology
- » No memory size limits: Reconstruction of more than 1000 sections (>500 GB) possible and feasible
- » Reconstruction on any magnification level, up to the scanner resolution

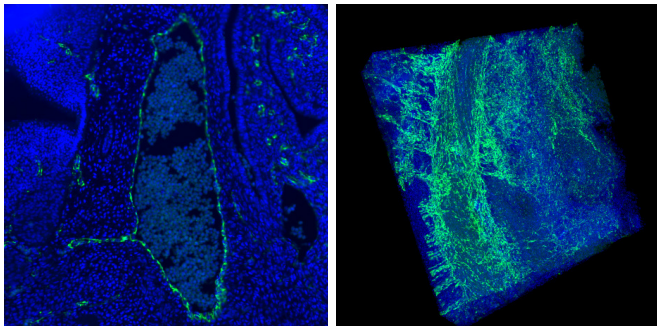


Reconstruction workflow

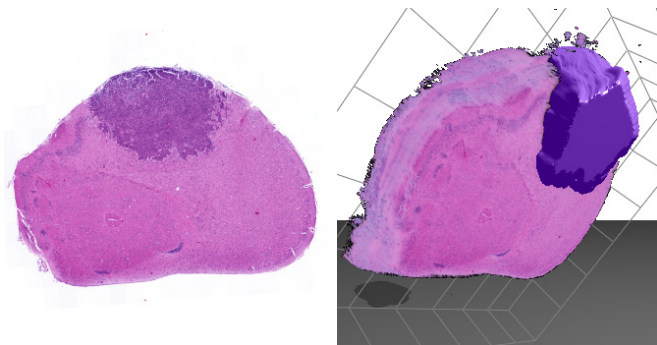


Scan this QR code to obtain additional information and request a **free trial** version of Voloom.

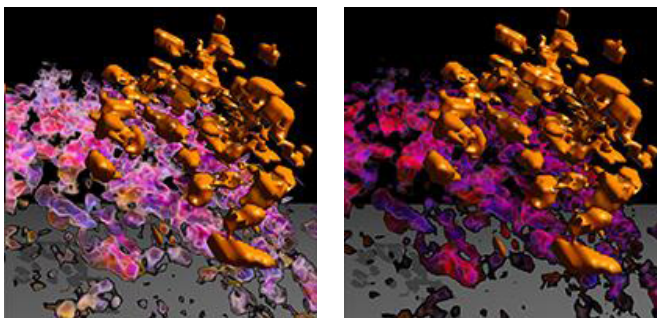
<https://micro-dimensions.com/voloom>



Reconstruction of a heart for vessel analysis



3D segmentation and volumetric quantification of a tumor



3D reconstruction of iMATES

VISUALIZATION

- » Spatial resolution up to the scanner resolution (e.g. 40x or 0.25 μm per pixel)
- » Rendering of arbitrarily angled (virtual) cut planes
- » 3D volume rendering of reconstructed 3D image volumes (direct volume rendering and maximum intensity projection)
- » Real-time 3D navigation (rotation, panning, zooming, fly-through) in 3D images
- » Free adjustment of color mapping (brightness/contrast/gamma and selected color-window) and transparency
- » Stain separation through color deconvolution
- » Virtual scene and scene manipulation for 3D visualization
 - > Volume grid visualization for metric orientation
 - > Projection of 2D virtual sections into 3D visualization
 - > Arbitrary clipping planes
 - > Virtual floor, rear wall, light, and shadow projection

ANALYSIS

- » Object measurements
 - > 3D tape measurements
 - > Visualization in 2D section view and 3D volume view
- » Segmentation of objects
 - > Thresholding
 - > Region growing
 - > Segmentation technique for advanced object selection
 - > Interactive adjustments of segmentation results
 - > Segmentation on full color space, or on selected channels
- » Segmentation of multiple objects
 - > Visualization of multiple objects in a 3D volume scene
 - > Adjustment of color per 3D object
- » Volume analysis
 - > Connected components (used e.g. for cell counting)
 - > Volume size in μm^3 per segmented object
 - > Export to e.g. Microsoft Excel via enhanced copy & paste functionality
- » Data export of reconstructed 3D image for further analysis as
 - > .tif series
 - > .mha series
 - > Imaris .ims series or volume

SYSTEM REQUIREMENTS

- » Windows® 7 (SP1), 8, or 10 (64 bit versions only)
- » 4GB RAM minimum, 8GB RAM recommended
- » Intel® Core™ i7 processor or comparable
- » OpenGL® 3.3 capable graphics processing unit (with dedicated video memory of 512MB minimum, 1GB recommended), such as from AMD/ATI™, Barco, Intel®, or NVIDIA®