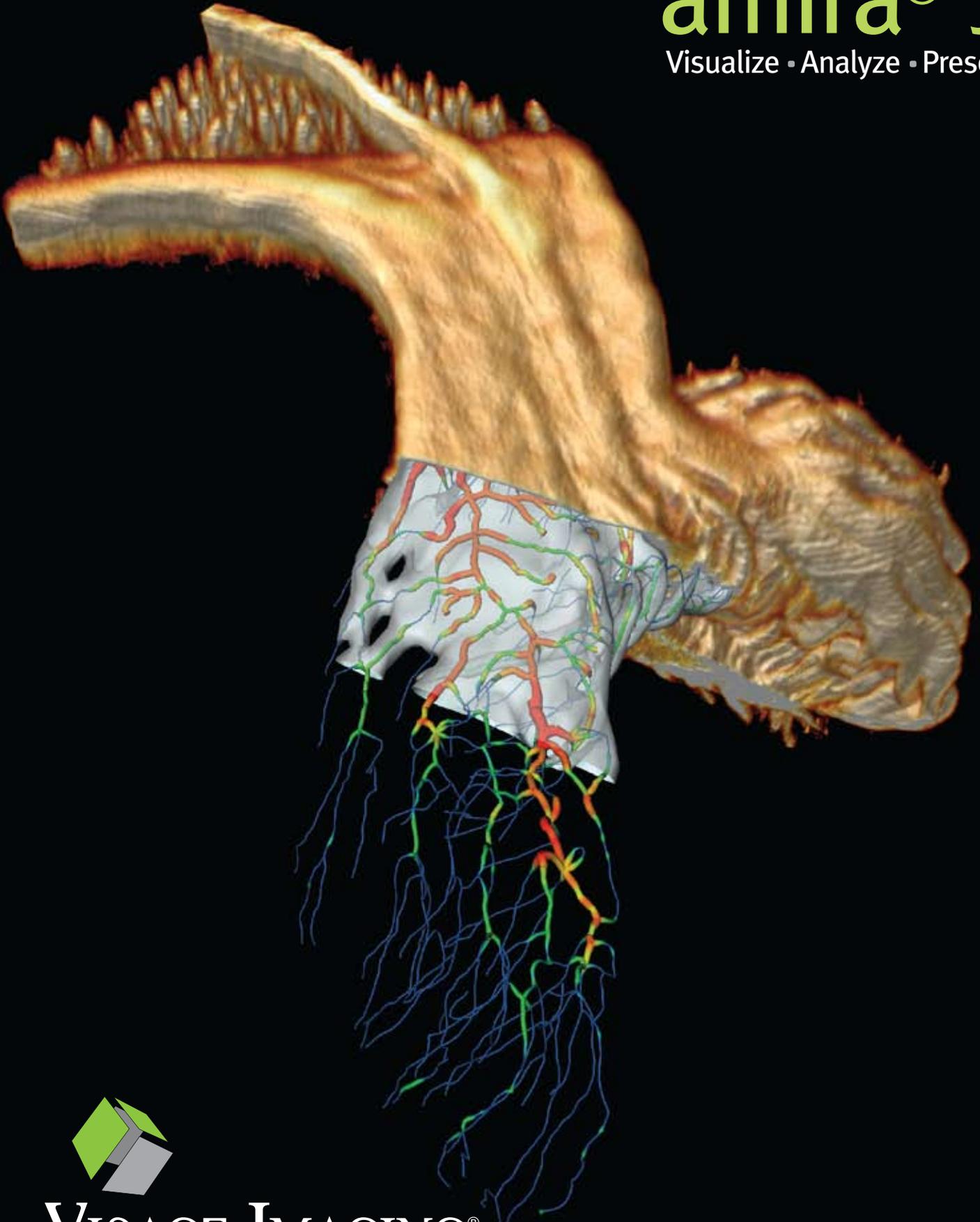


# amira® 5

Visualize · Analyze · Present



**VISAGE IMAGING®**  
*Visioneering Science for Life*

# Visioneering Your Ideas – Engineering Your Vision

Your research is inspired by knowledge, intuition, and a powerful vision. Yet you are facing many challenges when moving your ideas to results. You need flexible and efficient tools that meet the ever-increasing demands of your application domain. At Visage Imaging, vision and engineering come together to advance the state of the art and provide solutions that push the boundaries of what is possible today. Let us help you bring your ideas into reality.

## Open Innovation

We collaborate with leading research institutions around the world—inspiring and promoting an atmosphere of Open Innovation. Together, with our partners from industry and research, a dynamic cross-pollination of knowledge and technology can leverage synergies to create innovative applications. We strongly believe that scientific and engineering excellence must be paired to create smart solutions, and that innovation is born out of true collaboration with talented and trusted partners.

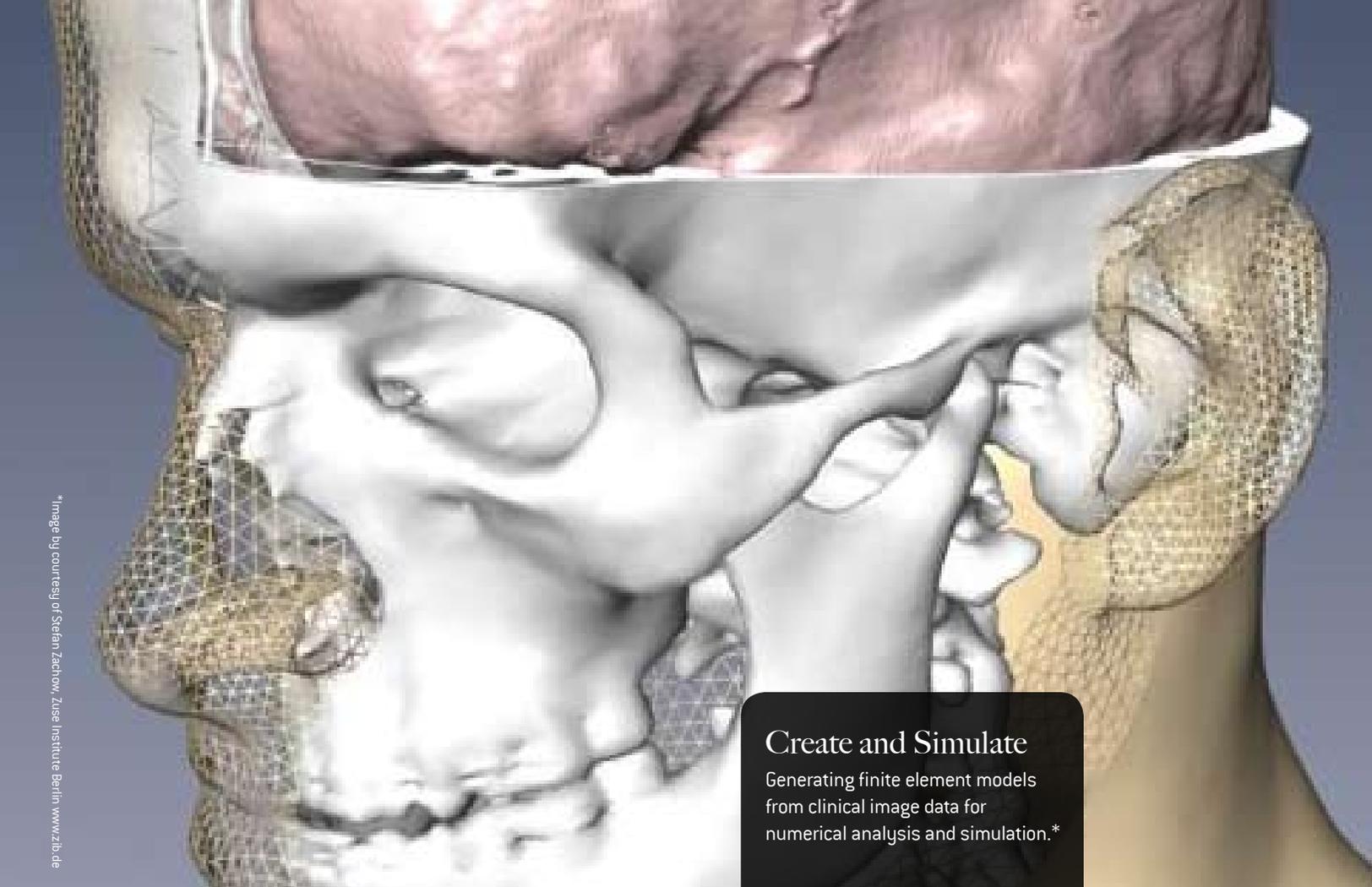
## Moving Ideas to Results

We invite you to join this exciting community: to share your ideas and technologies; to help to set new standards for scientific visualization research; to ensure that your ideas live on by integrating them with advanced products and solutions. Become a Visioneer, and reach the thousands of clinicians and biomedical researchers who utilize the amira® and Visage™ products and solutions. Contact us today to explore the possibilities.

More information, downloads, demos, and documentation can be found at [www.amira.com](http://www.amira.com)

“I first used amira in 1997, when it was still a developing visualization platform from the Zuse Institute Berlin in Germany. I very much enjoy being part of the amira community and contributing to its maturation over time. Today we use amira as the main visualization and analysis tool for our 4D microscopy images in neurosciences.”

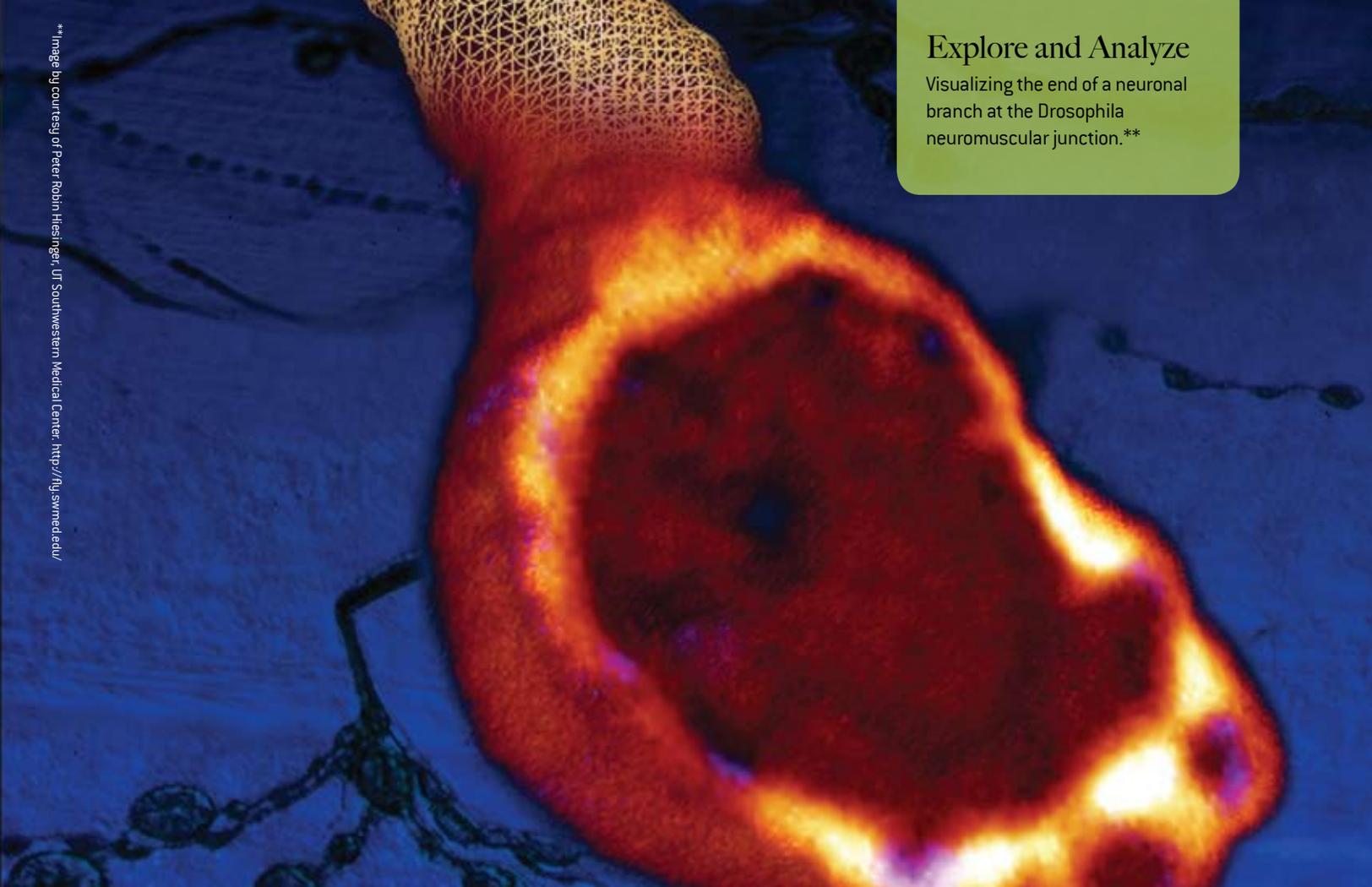
*-Dr. Peter Robin Hiesinger, Department of Physiology,  
UT Southwestern Medical Center*



\*Image by courtesy of Stefan Zachow, Zuse Institute Berlin [www.zib.de](http://www.zib.de)

### Create and Simulate

Generating finite element models from clinical image data for numerical analysis and simulation.\*



### Explore and Analyze

Visualizing the end of a neuronal branch at the *Drosophila* neuromuscular junction.\*\*

\*\*Image by courtesy of Peter Robin Hiesinger, UT Southwestern Medical Center: <http://rlu.swmed.edu/>

# A single platform for all your visualization needs

Life Sciences is undergoing a rapid technology evolution, producing an ever-growing number of multidimensional data sets that you need to process, visualize, analyze, and present with an integrated set of efficient and accurate tools. amira® is the the leading software solution that satisfies even your most demanding needs to work with clinical or preclinical image data, nuclear data, optical or electron microscopy imagery, molecular models, vector and flow data, simulation data on finite element models, and all types of multidimensional image, vector, tensor, and geometry data.

## Import and Export

- Standard bitmap formats
  - TIFF (multichannel and multiframe) BMP,
  - JPEG, PNG, SGI
- Microscopy-specific formats
  - Leica, Zeiss, BioRad, Olympus, MRC
- Medical image formats
  - DICOM, Analyze 3D
- Neuroscience formats
  - Nifti, HOC, SWC
- Finite element modeling
  - FIDAP, I-DEAS, Fluent
- Geometric modeling and CAD
  - DXF, STL, VRML, Inventor, CATIA 4/5, IGES
- Full flexibility and extensibility
  - Flexible raw data import
  - Powerful AmiraMesh format
  - Write your own I/O modules using AmiraDev

## Process

- 2D and 3D image filtering
- Surface generation
- FEM grid generation
- Interactive and automatic segmentation
- Interactive and automatic slice alignment
- Image registration and morphing
- Tensor computation
- Skeletonization and tracing of neural and vascular networks
- Deconvolution and Z-drop correction
- Powerful scripting interface
- Dedicated editors for segmentation, tracing and fusion

## Visualize

- Orthogonal and oblique slicing
- Volume rendering
- Surface rendering
- Isolines and isosurfaces
- Multichannel imaging
- Image fusion
- Vector and tensor visualization
- Structured network visualization
- Support of structured / unstructured grids
- Molecular simulation and visualization

## Analyze

- Volume, area, and distance measurements
- Densitometry (gray value statistics)
- Filament network statistics
- Co-localization analysis
- Component separation and counting
- Arithmetic operations on images, vector fields, and unstructured grids
- Direct integration of the MATLAB® compute engine

## Present

- Easy-to-use interactive 3D navigation
- Automation of complex animations and demonstrations
- Embedded tools for movie generation
- Active and passive 3D stereo vision
- Virtual reality navigation tools
- Single and tiled screen display
- Single or multipipe rendering
- Support for tracked input devices
- Support for auto-stereoscopic displays

“We have been using amira intensively during the last 5 years and developed a neurosurgical project for clinical routine application. The excellent and fast visualization and segmentation capabilities convinced us and helped a lot during this time”

- Prof. Dr. A. Brawanski, Director Department of Neurosurgery,

# Optimizing amira<sup>®</sup> for your needs

The amira<sup>®</sup> software is organized in functional modules, consisting of a base package plus optional add-on packages that allow you to optimize your investment by customizing the product to fit your exact needs.



Mesh Option

Adds tools for the generation of 3D finite element (FE) meshes from segmented image data, as well as support for many state-of-the-art FE solver formats. High-quality visualization of simulation results using scalar, vector, and tensor field display modules.



Very Large Data Options

Adds support for the visualization of image data that exceeds the available main memory of your computer using efficient out-of-core data management. Extends the use of many standard modules such as orthogonal and oblique slicing, volume rendering, and isosurfacing.



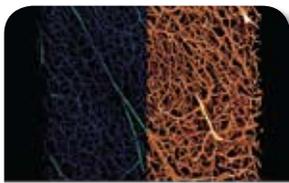
Microscopy Option

Base package for microscopy users, including specific readers for microscopy data and deconvolution. Allows exploration of 3D imagery obtained from virtually any microscope. Edit and extract filament networks from your microscopy images.



Quantification+ Option

Adds high-level image processing capabilities and advanced tools for the quantification of image data, as well as advanced features for cell counting, object separation, and statistical and geometrical measurement.



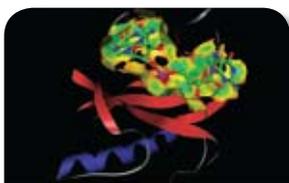
Skeletonization Option

Adds tools for reconstruction, analysis, and skeletized representation of neural and vascular networks and their quantification with regard to parameters such as segment length and diameter. Supports skeletonization of very large image stacks.



Developer Option

Lets you create new custom components for visualizing or processing data, file readers or writers, using the C++ programming language. Includes a development wizard for getting started quickly.



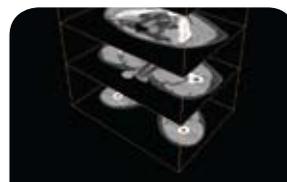
Molecular Option

Adds advanced tools for the visualization of molecule models. Combines hardware-accelerated volume rendering with a powerful molecule editor and specific tools for complex molecular visualization.



VR Option

Enables the visualization of your data on large tiled displays or in immersive Virtual Reality (VR) environments. Supports 3D navigation devices as well as fast multithreaded and distributed rendering.



Specialized Readers

Several specialized readers are available to satisfy the challenging requirements of specific environments, such as DICOM and CAD (IGES, CATIA 4/5, STEP).

# amira® 5

## Specifications

### Supported Platforms

Windows® 2000/XP/Vista, 32-bit and 64-bit editions  
Mac OS® X 10.5 (Leopard)  
Red Hat Enterprise Linux 5.0 for x86\_64 or compatible

### System Requirements

Graphic cards with hardware-accelerated texture mapping capabilities and OpenGL support are required.

Some visualization modules require graphics hardware with recent vertex and fragment shader support.

amira® is intended to be used for research applications, and is not a medical device.

More information, downloads, demos, and documentation can be found at [www.amira.com](http://www.amira.com)

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### **US Headquarters**

Visage Imaging Inc.  
1815 Aston Avenue - Suite 105  
Carlsbad, CA 92008-7340, USA  
Phone: +1 760 494 9690  
Fax: +1 760 494 9640

### **European Headquarters**

Visage Imaging GmbH  
Lepsiusstr. 70  
12163 Berlin, Germany  
Phone: +49 30 700 968 - 0  
Fax: +49 30 700 968 - 11

For a list of office locations and contact information,  
visit our web site at [www.visageimaging.com](http://www.visageimaging.com).

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