

Amira 5.5

Advanced Visualization and Data Analysis

Release Notes
Version 5.5

Release Notes Amira 5.5

Dear Amira User: This document informs you about the most important changes in this version. Please read these Release Notes carefully. We would appreciate your feedback regarding this version. If you encounter problems but also if you have suggestions for improvement, please contact us at vsghotline@fei.com. We would like to thank you in advance for your efforts.

September 2013, the Amira and Avizo team

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Support for Mac OS X 64-bit

Amira now supports the 64-bit programming interface of Mac OS X. This means that users can load and analyze data larger than 4 GB, provided the computer has sufficient physical memory installed.

User Interface Components

Enhanced *Help Browser*

The *Help Browser* has been enhanced for a nicer display of the help topics.

Improved Modules

OrthoSlice with bump mapping

This integrates the former module *BumpSlice* into the popular *OrthoSlice* module with which it shared most of its properties. Bump mapping is a technique that turns a gray map into visual relief by using local gradients to set shading highlights.

Isolines with annotations

This integrates features of the former module *AnnotatedIsolines* into module *Isolines*. It allows annotation of the iso-intensity contours with the isovalues. The user can specify that the annotation text be tangential to the lines or camera aligned.

CombineLandmarks now supports files on disk

This module can now read input files from disk, which facilitates working with a large number of landmark objects.

VolumeEdit support for RGBA color fields

This module can now be used to edit color fields. When connected to a color field a port *Color channels* allows selection of all channels (R, G, B, and A) or of the alpha channel alone. When *Alpha* is selected, the opacity (= alpha value) is set to the value given in port *Padding value* and thus allows manipulation of the visibility of the edited regions. If, for example, the opacity is set to 0, a volume rendering will display the contents of the edited regions fully transparent, which means that they visually disappear. In mode "All channels" the user can select a padding color using Amira's color dialog. In this case both transparency and color are changed in the edited region.

Arithmetic supports an arbitrary number of result channels

The drop-down menu *Result channels* has now an entry "n values (custom)". When this is selected, a port *NValues* appears that lets you set an arbitrary number of result channels. A corresponding number of *Expr* text fields are then displayed in the *Properties* area of the module.

TetraGen improved checks

The spreadsheet output by *TetraGen Check* option now contains three additional columns: triangle quality, dihedral

	angle, and tetra quality.
<i>AlignSurfaces</i> (Mesh Option)	A new connection port <i>Weights</i> allows the user to connect a surface scalar field where the value at each vertex represents its importance during alignment. A value of 0 means that the vertex is ignored.
<i>TubeView</i> , <i>SecStructureView</i> (Molecular Option)	A new port <i>Highlighting</i> allows the user to highlight selected parts of the visualization using either free hand drawing in the viewer or a dragger box.
<i>DisplayColormap</i>	A new connection port <i>Histogram</i> allows connection of a uniform scalar field, the histogram of which is drawn as an overlay on the colormap.
<i>Annotation</i>	The radio buttons of port <i>Position type</i> have been relabeled to clarify their meaning. Former “absolute” has been relabeled to “pixels” and former “relative” to “normalized screen coordinates (0..1)”. Port <i>Position</i> will display the current setting in parentheses.
DICOM export	The DICOM export now has a new Tcl parameter “-defaults” that suppresses the DICOM parameter dialog when saving data as DICOM from a script. The command “lobus.am save DICOM -defaults lobus.dcm” saves the object “lobus.am” as if the DICOM Export had been confirmed without any changes.

Filament Editor Improvements

New segment viewer	When toggled on, a third viewer at the bottom of the viewer panel appears. This viewer shows a slice along the currently selected segment, either as a thin curved slice or as a thick curved slice depending on the value of the “Thickness” slider. The viewer is useful to verify the accuracy of a tracing with the gray value data.
New tool <i>Convert Point to Node</i>	This tool allows the user to split a given segment into multiple segments by inserting nodes. To use this tool the user needs to activate “Segment Style” “Points”, highlight the desired point by clicking it with the <i>Select single ...</i> tool, and then press the <i>Convert Point to Node</i> button.
New slider <i>Point size</i>	When turned on, the size of the points shown in the 3D viewer can be set with this slider.
Keyboard shortcut “View all” for the 2D viewer	The space key is now also the shortcut for “View all” in the 2D viewer.

Segmentation Editor Improvements

Acceleration of selection tools

Various tools in the Segmentation Editor have been optimized for speed to facilitate working with large data. The following tools benefit from these improvements:

- Subtract selection
- Add selection
- Delete material
- Fill holes
- Save label field compressed (RLE)

Miscellaneous

New VRPN support (Virtual Reality Option, Windows and Linux only)

VRPN is an open source library to connect tracking and input devices to applications like AmiraVR. Amira now can be interfaced with all devices supporting this standard.

Auto-save network for snapshots

The snapshot dialog offers an option to automatically save the network. This allows you to easily recreate the visualization that appears in the snapshot.

New script object
ConvertTalairach.scro

This new script object helps to transform 3D volumes of the human brain into the Talairach space. The script object automatically creates a sagittal slice on which the user must specify three points with mouse clicks. On *Apply*, the transformation is calculated and set on the attached data set. Optionally, the transformation can be applied.

Neuro Option tutorial data are now part of the distribution

Previously, to perform the tutorials of the Neuro Option it was necessary to download a ZIP file with sample data. The data has now been integrated into the main distribution so that an extra download is no longer required.

Neuro Option tutorial update

The Brain-to-Brain mapping tutorial of the Neuro Option User's Guide now describes an alternative, automatic method to create the brain mask by using module *SegmentBrain*. Since *SegmentBrain* requires a Neuro Option license the manual method is still part of the tutorial.

New commands *app memAvail* and *app memTotal*

Tcl commands to query the total and available physical memory of the system optionally in bytes, kilobytes, megabytes, or gigabytes.

Bug Fixes

Besides adding new features and improvements, we have spent great effort in fixing issues and bugs. The following section presents a selection of those issues.

<i>Arithmetic</i>	A memory leak could produce a memory overflow after several usages.
<i>SpatialGraphView</i>	Clipping was not possible with <i>Tubes</i> as segment style.
<i>ColorWash</i>	Removing <i>ColorWash</i> could crash Amira.
CSV reader	When a CSV file contained columns of variable length, the CSV reader crashed
Pack&Go network save	Saving a network as Pack&Go to the root of a drive (e.g., "C:\") stored absolute paths in the *.hx script (e.g., "C:/Untitled-files/glow.col" instead of "\${SCRIPTDIR}/Untitled-files/glow.col").
<i>AlignSlices</i>	Reloading a network where port <i>Reference</i> was connected to an object with alignment transforms could crash the application.
<i>CannyEdgeDetector</i>	This module only supports uniform coordinates but could be connected to a stacked coordinates data object, which crashed the application. This has been fixed by disabling connection with stacked coordinates data objects.
SpreadSheet objects	Saving spreadsheet objects (HxSpreadSheet) as .txt crashed the application.
<i>SplineProbe</i>	The number of control points in a spline was limited to 99. This limit has been removed.
<i>Colorwash</i>	Connecting the <i>Data</i> port with a field of type uint32 (unsigned integer 32 bits) crashed the application. <i>Colorwash</i> now supports the uint32 data type.
<i>SurfaceView</i>	Colorizing a surface with an RGBA color field did not work when fast (i.e., non-legacy) surface rendering was used.
<i>Vectors</i>	When navigating to another time step in a time series, but also when reconnecting the module with another data set in the Pool, the factor in port <i>Scale</i> was always reinitialized. This has been fixed so that the scale factor is initialized only when the module is instantiated.
Filament Editor	The line width parameter of the 3D viewer was reset each time another data set was selected in the <i>Graph Data</i> pull-down menu while the slider remained at the altered position.
Quantification	Results of some measurements were incorrect because of a

voxel size error.

Nifti reader

Nifti files were imported with incorrect transformation.

Crop Editor

Just deselecting “Replicate” was not sufficient to disable replication of boundary slices. In addition, it was necessary to enter a value in field “Pixel value”. Now this field is automatically filled with the minimum value of the data set.

Technical Information

Supported Platforms

Windows – Windows XP (SP3 or newer), Windows Vista, Windows 7, Windows 8, 32-bit and 64-bit editions

Mac OS X 10.7, 10.8 64-bit

Linux – Red Hat Enterprise Linux 5.5 for x86_64 or compatible. The software may work on other distributions too, but it has not been tested and is not supported.

Developer Option Requirements

Windows

- XP/Vista/7, 32-bit: Microsoft Visual Studio 2005 (VC++ 8), with Visual Studio 2005 SP1
- XP/Vista/7, 64-bit: Microsoft Visual Studio 2008 (VC++ 9)

Mac OS

- GCC 4.2.x for all supported versions of Mac OS X

Linux

- RHEL 5.5: GCC 4.1.x

Hardware Requirements

A CPU supporting SSE2 instruction set (Intel Pentium 4 and above or compatible). On Mac OS X an Intel CPU is required. *PowerPC processors are no longer supported.*

At least 2 GB RAM.

A graphics card with OpenGL support and hardware accelerated texture mapping. Some visualization modules require graphics hardware with the following vertex and fragment shader support:

GL_ARB_shader_objects GL_ARB_shading_language_100

GL_ARB_fragment_shader GL_ARB_vertex_shader

Recommended Hardware

CPU: Multi-core CPU with ≥ 2 GHz

Main memory: ≥ 4 GB

Graphics card: A current desktop card from one of the main vendors (NVIDIA or ATI) with at least 512 MB video RAM. If

OpenGL stereo support is needed (e.g., stereo projection or AmiraVR), an NVIDIA Quadro or an ATI FireGL / FirePro card with the appropriate driver must be installed.

Installation Notes

Windows runtimes installation The installer for both Microsoft Windows distributions provides a mechanism to install the appropriate runtime libraries.

License Manager Due to security mechanisms in modern operating systems (e.g., Microsoft Windows User Account Control) Amira needs to run with administrator privileges in order to be able to change the license file. When Amira is launched at the end of the installation procedure this is automatically the case so that saving the license file from the License Manager is possible. For all subsequent changes of the license file, Amira needs to be explicitly started with administrator privileges (right-click the Amira icon, select “Run as administrator” from the context menu).

Note: Some virus scanner software can significantly slow down installation. If you observe stalling during installation, this is likely to be caused by a virus scanner program. Turning off the virus scanner when installing Amira usually solves the issue.

Manufacturer Information

Manufacturer Address

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