

Open Inventor® 8.1

What's New?



OIV 8.1 Release Notes (1)

- **OpenGL extension API**
 - Determine which OpenGL extensions are available in a portable manner.
 - Enable/disable a specific extension for testing (Use GLEW)
- **New OpenGL context and cache management**
 - Better support of multi-viewer applications, context sharing, remote rendering, multi-threaded, multi-pipe rendering
 - May produce compatibility issues
- **New Device Properties API to retrieve the hardware information**
 - `SoDevice::getTotalMemory()`, `getDriverVersion()`, `getDeviceName`, ...
- **OpenCL support**
 - Computation API has been extended to support OpenCL
- **Support for compressed .iv files**
 - Transparent through `SoInput` reader (.ivz extension)
- **More text rendering attributes**
 - `SoTextProperty::style`, `styleColors` : Underline, striked, double striked, back frame, back frame line
 - `SoTextProperty::antialiasingFactor`, `textureQualityRange`; `SoComplexity::textureQuality`

OIV 8.1 Release Notes (1)

- **Support of Geo-referenced objects**
 - New nodes compatible with the X3D GeoSpatial (GeoVRML 1.1) specifications
 - Examples in `$(OIVHOME)\src\Inventor\examples\data\Models\GeoVRML`
- **MPEG recording Improved (SoMPEGRenderer)**
 - separate thread
 - Available in the Viewers GUI
 - `SoMPEGRecorder::start()`, `pause()`, `record()`
 - Real-time recording
- **FullScene anti-aliasing**
 - Can be activated from Viewer GUI
- **Windows RDP Support**
 - HW Acceleration will be disabled
 - OpenGL 1.1 only
- **Dynamic parameter refinement**
 - Low resolution rendering when interacting/moving the scene.
 - `SoComplexity::value`, `SoComplexity::textureQuality`
 - `SoShadowGroup::quality`, `SoShadowGroup::isActive`
 - VolumeViz dynamic parameters
 - See `SoInteractiveComplexity`

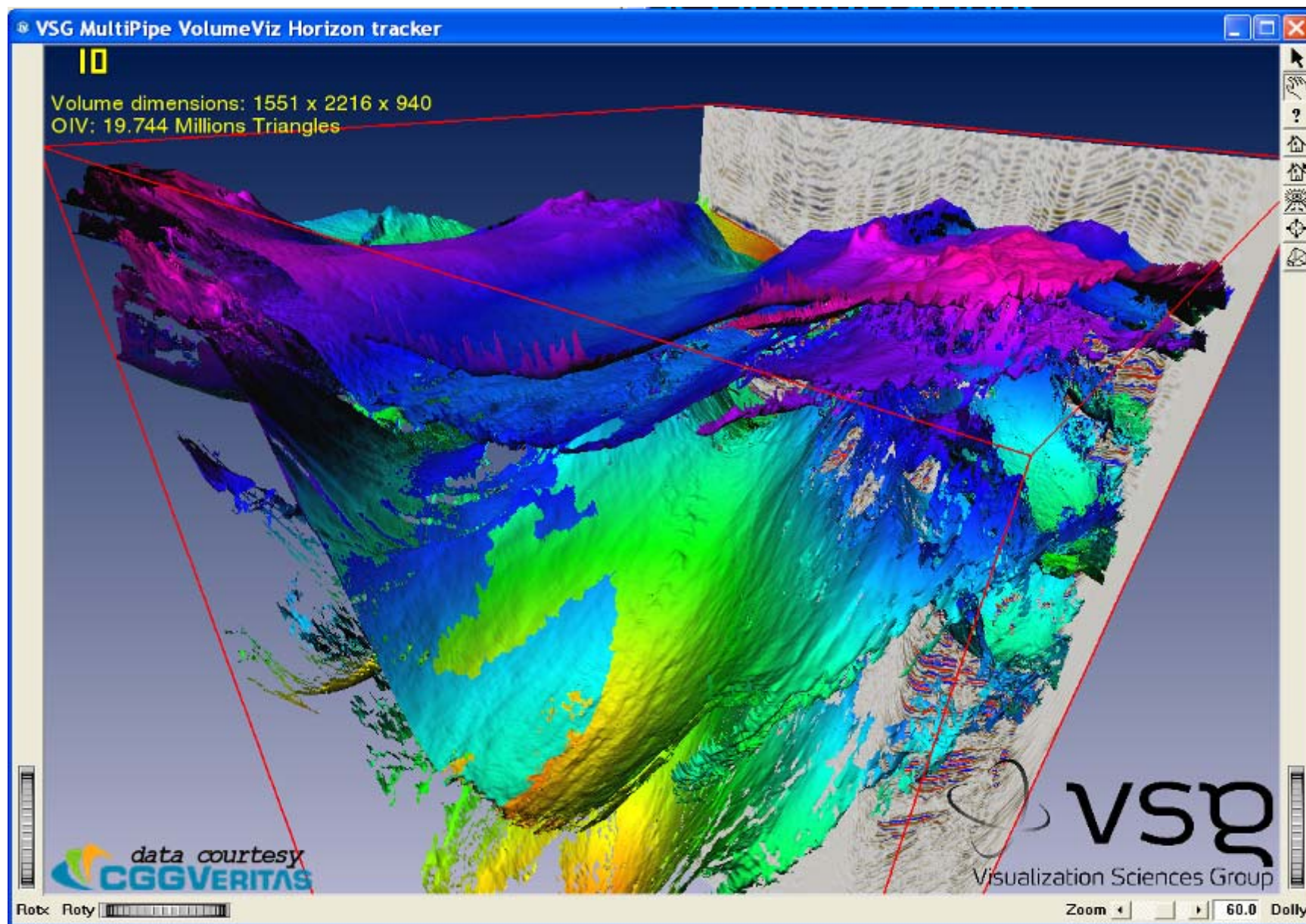
OIV 8.1 Release Notes (2)

- More graphical primitives optimized to use VBOs and Vertex Array
 - SoFaceSet, SoIndexedQuadMesh, SoCube
 - SoIndexedTriangleStripSet and SoIndexedFaceSet
 - (SoShapeHits::creaseAngle > 0) AND (no crack) → use VBO
 - Example in `$(OIVHOME)\src\Inventor\examples\Features\VBO`
- Line, Line Sets, Points and Point Set improved
 - Support 3D texturing, multi-texturing and vertex attributes.
- Selection and highlight optimized for large scenes (SoExtSelection)
- Billboard improved
 - Bounding box caching improved for better performances
- New technique to optimize bounding box management (ObjectAlignedBoundingBox)
 - SoComplexity::bboxType
 - OIV_USE_OOB env variable
- Many Optimization for multi-core systems
 - Bounding Box computation
 - Normal Generation
 - OMP_NUM_THREADS environment variable to control number of threads

OIV 8.1 Release Notes (2)

- **IvTune improved**
 - Can save sub-scene graph
 - Improved Stability, Qt4 GUI, find, delete, move nodes
 - Performance Counters (first version, final target OIV 9.0)
 - `OIV_PERFCOUNTER_ENABLE = 1`
- **Windows 7 support**
 - GDI compatibility turned off by default on Windows 7
- **New Packaging**
 - Split of C++ installer in 3 parts (Bin, Demos, Doc)
 - Use of CMAKE for C++
 - SDK Documentation integrated with Visual Studio
- **Better error management**
 - SoMemoryError extended to support clean-up callbacks
 - SoErrorStack gives access to the program stack

Large Surfaces Optimizations



- Automatic default parameters

- Query devices using SoDevice API

- Dynamic parameters refinement

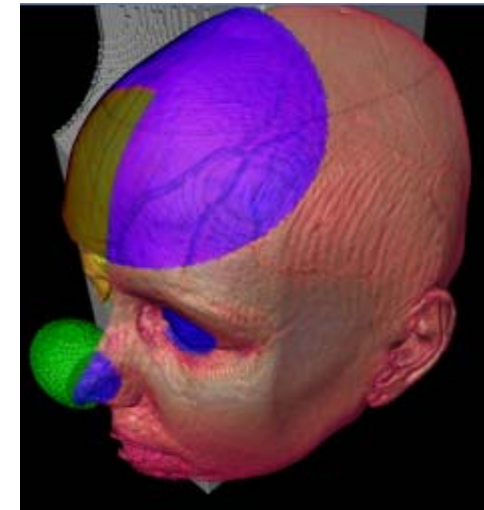
- Rendering quality can be reduced when interacting
- See SoInteractiveComplexity
- refinementDelay = 0.5
- SoVolumeRenderingQuality
 - gradientQuality, edgeDetect2D, lighting
 - edgeColoring, boundaryOpacity
 - numSlices, lowScreenResolutionScale

- Volume Editing (first version, final target OIV 9.0)

- On the fly modification of SoVolumeData
- SoVolumeData::startEditing(), finishEditing()
- undoEditing(), saveEditing()
- SoVolumeData::writeSubVolume(...), writeTile(...)

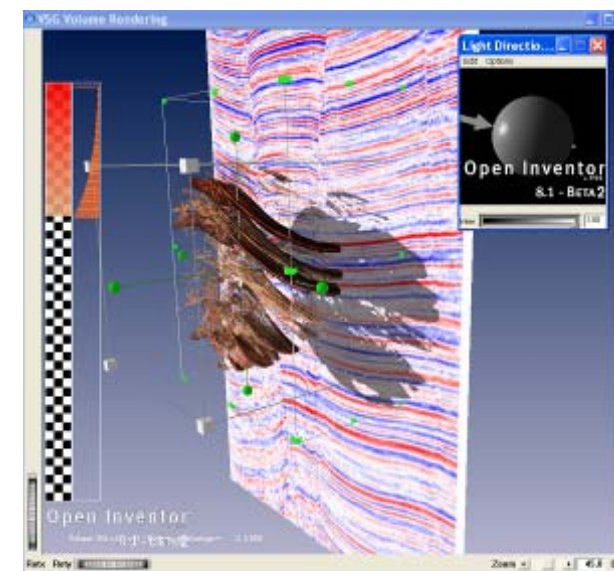
API Call	8.1 default value
SoLDMGlobalResourceParameters::setMaxMainMemory	50% of CPU free memory
SoLDMGlobalResourceParameters::setMaxTexMemory	75% of GPU memory
SoLDMGlobalResourceParameters::setTex3LoadRate	10 tiles
SoLDMGlobalResourceParameters::setTex2LoadRate	64 * tex3LoadRate
SoLDMGlobalResourceParameters::setMax2DTextures	5% of GPU Memory
SoLDMGlobalResourceParameters::setLoadNotificationRate	50 tiles

- **SoVolumeMask**
 - Specifies a sub-region of a SoVolumeData to apply specific rendering techniques
 - Region is defined as an LDM binary mask
 - Each voxel is marked as 0 or 1
- **SoVolumeMaskDrawStyle**
 - Specifies the rendering style of the current mask
 - VOLUME_RENDER : use SoTransferFunction
 - MASK_BOUNDARY : use field boundaryColor
 - ISOSURFACE : use fields isoValues and isosurfacesColors,
 - Several styles can be combined
- **SoVolumeMaskGroup**
 - To group and co-render several masks
 - Follow LDM rules for multi-data co-rendering
 - To associate a colormap with a volume mask
 - VolumeMask::dataSetId ↔ SoTransferFunction::transferFunctionId



VolumeViz 8.1 Release Notes (3)

- **Real-time shadow casting (SoShadowGroup)**
 - Each shape in this group will be included in shadow casting
 - Mix shadows on geometry and volume rendering
 - SoShadowStyle to specify the style
 - NO_SHADOWING, CASTS_SHADOW
 - SHADOWED, CAST_SHADOW_AND_SHADOWED
- **Lighting artefacts reduction using gradient Normalization Control**
 - surfaceScalarExponent
 - unnormalizedGradientExponent
- **Large Slice Support for Skin**
 - Feature now available for SoVolumeSkin
 - Reduce memory required to display in full resolution
 - Synchronous loading
- **Texture Atlas for Skin**
 - Feature now available for SoVolumeSkin
 - Improve performances for large Skin and slices
- **Better support for multi-core systems**
 - Global performance improvement



VolumeViz LDM 8.1 Release Notes (1)

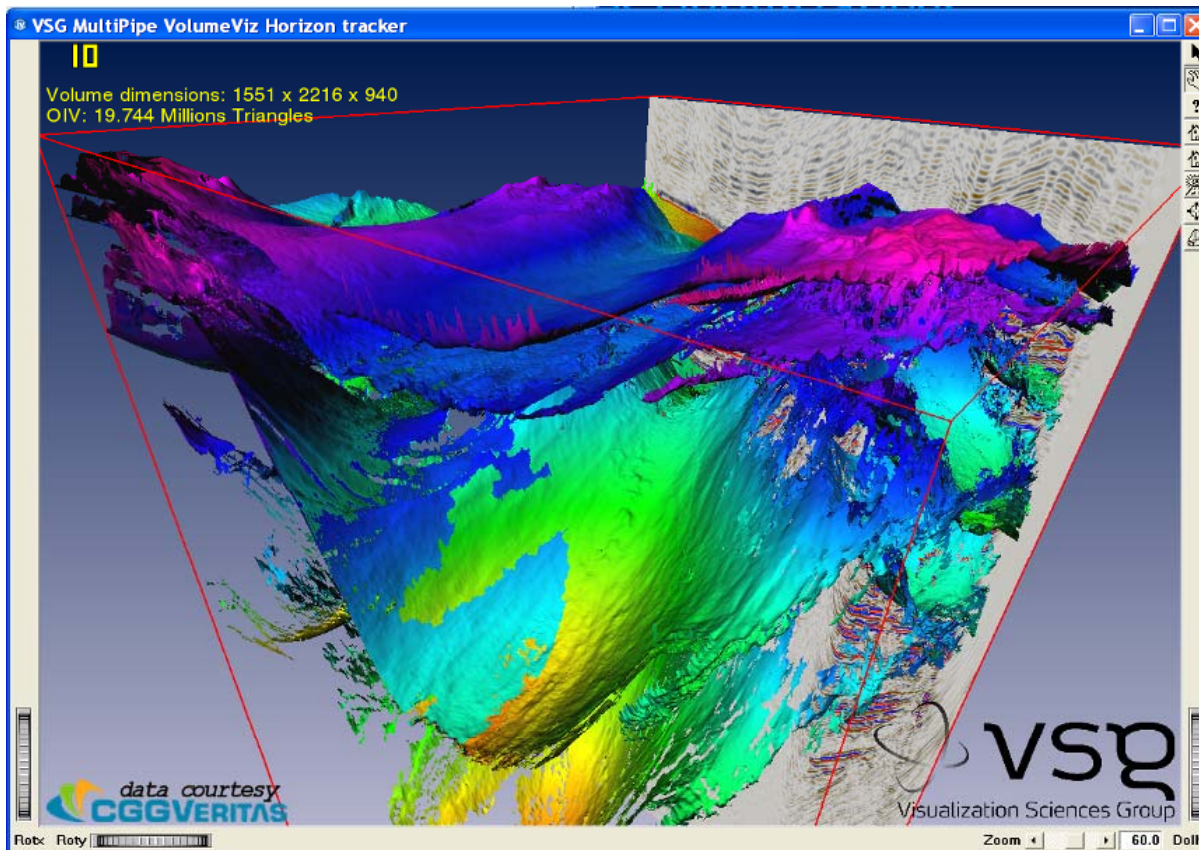
- LDM converter
 - DICOM conversion
 - LDM conversion
- New API to control conversion parameters
 - Replace old style argc/argv parameters
 - UNICODE file names support
- Optimized LDM loading
 - Faster loading of Volume tiles
 - Full resolution loaded much faster

MeshViz 8.1 Release Notes

- **Mesh Skin**
 - Enhancement for quadratic meshes
 - `MiSkinExtractUnstructured::extractLineSkin()` method extracts the outlines of the cells in the skin as an unstructured line mesh.
- **Probing**
 - Significant optimization for intensive probing
 - New environment variables are introduced, allowing to tune the octree involved in the probing
- **New tools for dataset conversion**
 - New extractors converting datasets bound per cell into a dataset bound per node
- **Isosurface and slice optimization on multi core systems**
- **New clip line node**
 - Displays the intersection line between a plane and a surface mesh.
- **Point probe node**
 - New node that triggers a callback each time the position changes.
- **Cell shape node:**
 - New fields `offset` and `relativeOffset` to shift the display of the node names away from the node coordinates.
- **Skin extraction on structured meshes:**
 - Significant optimization of skin extraction on very large structured meshes without cell filtering and dead cells.

ScaleViz 8.1 Release Notes

- Multi-GPU Depth Compositing support for OpenInventor
 - Native implementation available on Linux and Windows.
 - Optimized performances on NVIDIA Quadroplex using the NVIDIA Complex tool.



Thank you



More information about
Open Inventor 8.1 release notes on

www.vsg3d.com