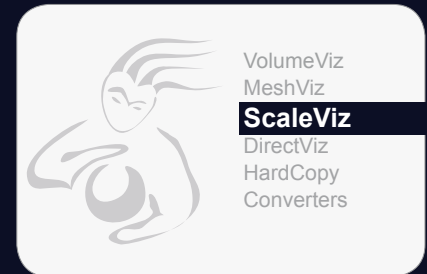


ScaleViz Extension

High-performance visualization for Open Inventor®-based applications

ScaleViz is a set of breakthrough technologies which implement distributed rendering on clusters and scene and image compositing to solve the most demanding requirements in visualizing very large data sets at interactive frame rates.

Seismic interpretation, reservoir modeling and simulation, and other geoscience tasks typically involve very complex scenes that combine large volumes and slices with large geometries for faults and horizons, complex meshes, and the like. Applications need to offer users an efficient way to interact with this data.



PLUG & SCALE:

The ScaleViz Plug-and-Scale concept enables you without changing your Open Inventor-based application code:

- To display on very high resolution display arrays
- To display x times faster at the same resolution
- To visualize very large datasets which do not fit in the memory of a single computer
- To drive immersive VR systems
- To perform remote visualization from a distant computer
- To perform parallel dynamic computation on your data while visualizing it

The ScaleViz extension is based on a distributed scene graph strategy. The application runs unchanged on the master node, and its scene graph is optimally distributed to the slave nodes, where render agents (Open Inventor Render Units) manage the parallelized rendering of portions of the total image. The master node manages scene graph synchronization with compact serialization and synchronization of rendering. A communication layer based on MPI is included, allowing you to take advantage of various network types, from TCP/IP to InfiniBand®.

REMOTE VISUALIZATION:

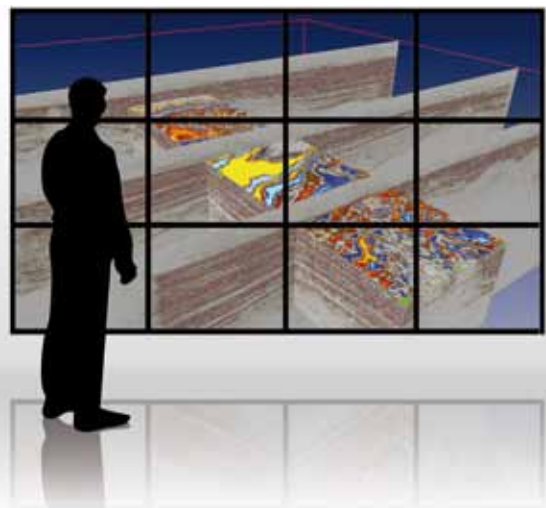
Embedded in the ScaleViz software, the Remote Visualization engine allows users to view and interact with very large datasets from almost any client machine located almost anywhere.

Distant users who need to access and visualize large data can take advantage of remote rendering to avoid bringing back data locally and overcome graphics limitations of their workstation or laptop. The ScaleViz-enabled data server generates images with high performance, and those images are transported effectively across the network by remote rendering.

EASILY MAKE YOUR APPLICATION VR AWARE

Immersive VR systems with 3D interaction are the ultimate facilities for highly interactive applications. The Open Inventor toolkit helps you to create, migrate, and cost-effectively maintain a VR-aware application. ScaleViz takes care of display configurations, parallelized rendering, head-tracked visualization, 3D device events, and interaction with the scene.

Through simple configuration files, ScaleViz can support multi-monitor desktops, panoramic and stereo displays, immersive workbenches, high-resolution image walls, and VR rooms.



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The high level of data synchronization, caching and management enable ScaleViz to provide unparalleled transparency for the best possible scalability with any combination of CPU, GPU, channels, memory, storage and network resources.

ScaleViz implements various advanced strategies to deliver optimized distributed computation solutions:

TILED DISPLAY

Display very high resolution images

ScaleViz distributes and synchronizes 3D rendering on the nodes of a cluster. Each node renders a portion of the scene using all the pixels on its attached display. This allows display of a very large image (high number of pixels) on a logical display composed of many individual displays arranged in an array.

TILED COMPOSITING

Dramatically increase frame rate

ScaleViz can direct each node of the cluster to render a portion of the scene using only the corresponding subset of its available pixels. All the parts of the image are composited together to get the complete image displayed on a single client display. Reducing the number of pixels rendered on each node reduces performance bottlenecks due to volume rendering and complex shader programs.

DEPTH COMPOSITING

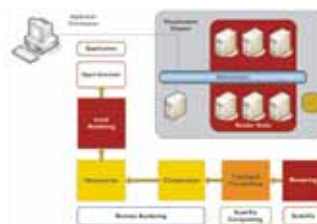
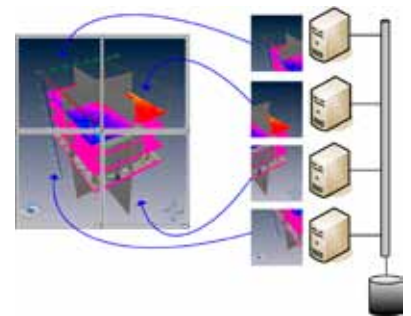
Distribute the 3D Scene Graph

By distributing the scene graph so that each node loads and renders only a part of the 3D database, ScaleViz delivers even greater performance savings, especially for scenes comprising a very large number of polygons.

REMOTE VISUALIZATION

Interactively visualize terabytes of data on a distant laptop computer!

Combining the distribution of 3D rendering with compositing capabilities and a unique high-level image compression method, ScaleViz fully implements the concept of a 3D Visualization Server, and delivers one of the most advanced and flexible solutions to remotely visualize and interact with gigabytes of 3D data.



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