

Chromium: Parallel Visualization



THE LLNL TECHNOLOGY

Software that permits clusters of PCs to graphically communicate and synchronize their commands. Graphics and visualization applications have not been able to take full advantage of cluster technology, because graphic cards on PCs are designed for stand-alone operation. Chromium has effectively addressed the problem of providing a scalable pathway between visualization applications and parallel rendering capabilities.

With Chromium, a cluster of PC's can create a single enormous image with their combined resources. In high-performance computing, scalability is a critical issue. Chromium can simultaneously scale upward along three critical axes: the quantity of data an application can process, the drawing or rendering performance, and the size in pixels of a single image.

COMPANY

LLNL is distributing Chromium through the Open Source community. Thousands of copies are in use today.

PRODUCTS

Chromium is a system for interactive rendering on clusters of graphics workstations. Chromium is the first graphics library to allow both parallel and serial graphics applications to generate images in parallel.

IMPACT

Chromium's usefulness has resulted in numerous parallel visualization projects. Not only does Chromium provide a way for graphics processing to take advantage of commodity clusters, but it has abilities that its developers had not envisioned. Chromium can perform remote simultaneous rendering operations from clusters to personal data assistants or to large networked displays. Chromium can also help debug graphics applications and serve as a custom acceleration mechanism for desktop applications. It can easily change the look of a rendering. It can modify, delete, or replace commands in graphics streams, allowing 3D graphics programs to be changed as they run. Chromium can make a rendering look like a blueprint, or it can break up a scene into floors to look like an architectural walk-through—all without modifying the original application. Feedback from numerous system suppliers and application developers indicates the Chromium infrastructure has significantly advanced the commercial adoption, acceptance, and exploitation of an entirely new class of expandable supercomputer--the distributed, graphic super cluster.

