



UCSD Engineers Build World's Highest-Resolution Computer Display

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By Antone Gonsalves, [InformationWeek](#)

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Engineers at the University of California, San Diego, have built the world's highest-resolution computer display, a 55-panel screen capable of zooming in on a live picture of a human brain to give a clear image of a nerve cell.

The [system](#) located at the UCSD division of the California Institute for Telecommunications and Information Technology (also known as Calit2) has a screen resolution up to 220 megapixels, which is 100 times higher than a high-definition TV, Falko Kuester, Calit2 professor for visualization at UCSD's Jacobs School of Engineering, told *InformationWeek* Friday.

The UCSD system is linked to a 50-panel high-resolution display in UC Irvine through a fiber optic Ethernet cable that can carry data at 2 Gbps. The latter system was the previous record holder at 200 megapixels.

Together, the systems, called the Highly Interactive Parallelized Display Space, or HIPerSpace, deliver real-time rendered graphics simultaneously across 420 million pixels. Researchers use the combined systems as a kind of collaboration workspace.

Scientists in both facilities can see the same picture, different pictures, or a hybrid in which research groups are viewing their own graphics, while sharing others with different groups. Pictures are displayed across panels. "The system acts as one display to users," Kuester said.

Calit2 makes the displays available to teams of scientists or engineers in the earth sciences, climate prediction, biomedical engineering, genomics, and brain imaging. The higher-resolution displays allow researchers to take in both the broad view of images and the minutest details at the same time, Kuester said.

The UCSD system uses the San Diego Supercomputer's grid-computing middleware known as Rocks, which was released early this month. The system also uses Calit2's Cluster GL software for handling graphics in the UCSD and UC Irvine systems. "The real meat is in the middleware that drives the systems," Kuester said of the high-resolution research.

For hardware, both systems use 80 Nvidia Quadro FX 5600 graphics processing units. The UCSD system, however, consists of 55 Dell displays driven by 18 Dell XPS PCs. The Irvine system uses 50 Apple 30-inch Cinema Displays, powered by 25 Power Mac G5s running the Mac OS X operating system.



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