# web sights

## Quick march to VRML 2.0's beat

For more than a year and a half, the VRML Architecture Group has been trying to put the "reality" into virtual reality. Its first attempt at creating three-dimensional documents on the World Wide Web was the VRML 1.0 specification, a set of ASCII codes and commands for designing simple 3-D environments.

When VRML (pronounced "vermel" by the *cognoscenti*) was first covered by Web Sights, a host of engineering and other companies were experimenting with 1.0 documents [this page, November 1994]. But while VRML 1.0 went a long way toward allowing Web page designers to create 3-D environments, it was handicapped by limited interaction and the inability to provide animation, or make things move.

One of the more ambitious experimental VRML 1.0 sites, complete with vermel files, belongs to Ziff-Davis Publishing Co. At its Terminal Reality Web site, a dirigible hangs elegantly in the air and an ocean liner sits at a dock ready to debark. But the scene is suspended in time—the ship will never leave port, and the dirigible will never land. Today the Web is dotted with such VRML ghost towns, images waiting for signs of life.

The VRML Architecture Group may soon put an end to the suspense. This aggregate of eight technical experts who helped develop VRML also serves as a focal point for the VRML community. Last October they sent out a request for proposals for the next VRML standard—one that would incorporate animation, interaction, the ability to specify backdrops, and in short, everything needed to make virtual reality on the Web really move.

About five VRML 2.0 proposals were submitted, some by companies such as Microsoft, Apple Computer, and Silicon Graphics that are battling for Internet dominance on other fronts The winning spec was to be selected by a vote, by e-mail, of anyone interested, though the Original Eight asked that voters have a working knowledge of VRML. (Actually, votes were cast by almost 300 of the world's leading VRML developers.)

In short order, Microsoft turned the VRML community off by using a heavy-handed, almost take-it-or-leave it approach in presenting its Active VRML. Then Apple dropped its own proposal, in favor of the Moving Worlds specification, which Silicon Graphics developed in conjunction with companies such as Sony and WorldMaker. The results were decisive: Moving Worlds was overwhelmingly adopted as the 2.0 standard. (Microsoft's Active VRML received the most votes against, as the developers happily checked the "Strongly Against" box on their ballot forms.)

Mark Pesce, one of VRML's creators and a member of the VRML Architecture Group, hailed Moving Worlds as the technology that will revolutionize VRML.

"The difference is as basic as Web pages before and after Java," Pesce told *IEEE Spectrum*. "Before...Web pages were entirely static affairs—they never changed. Afterward, it became possible to make Web pages interactive and active on their own. The same thing is now happening with VRML."

Many VRML developers are undoubtedly expecting a revolution. Web "storefronts" will probably receive an immediate boost from the new technology as users will finally be able take a hands-on approach to shopping and virtually pick up and inspect would-be purchases. And experimental sites such as Terminal Reality are likely to draw renewed interest as users link in to see just where that ocean liner is headed.

On the research front, VRML 2.0 is perceived as becoming a useful tool for information exchange, a task VRML 1.0 was never quite suited for. The ability to create 3-D models that can be manipulated and utilized in real time by multiple users, regardless of their physical whereabouts, opens up new possibilities for representing data in dozens of research fields.

But the change is not quite imminent. As a specification, VRML 2.0 still has some way to go. Developers were expected to release preliminary versions of 2.0 applications last month, with test versions following later this month. Final VRML 2.0 development applications and viewers are due in August, and that's when most developers will really have access to the tools they need to use VRML.

So don't expect to virtually walk into the *Spectrum* Web site and thumb manually through our latest issue just yet. But by the time this sees print, Pesce said, many users are likely to have already encountered VRML 2.0 examples on the Web.

## Picture it—a cheap Web cam

It looks like a golf ball sitting on an art deco stand with the all-seeing eye of the Hal 2000 computer from *2001: A Space Odyssey* stuck in the center. And now the camera comes in color, instead of merely black-and-white. The Color QuickCam from Connectix is a serious digital camera with a low-budget price tag and the software needed to make it a useful World Wide Web tool.

The QuickCam has 640-by-480-pixel resolution, the ability to focus from under 2.5 cm to infinity, and 24-bit color depth—respectable performance for low-end digitals. Combine that performance with software that lets users create time-lapse sequences, digital movies of up to 24 frames per second, and auto-capture files, and the Color QuickCam becomes the perfect vehicle for sharing live photography over the Web.

A number of educational sites use videocameras to broadcast live pictures to their Web pages. At the Tele-Garden Site, for instance, users can remotely operate a robot arm that tends a small garden at the University of Southern California. Whenever the arm is moved, a camera mounted on the end of the arm automatically takes a digital picture of the garden. Every time that happens, the digital file is uploaded directly to a Web page at the Tele-Garden site, where users can see it using a Web browser. Other sites use cameras to check the weather by simply pointing the camera up at the sky and uploading the latest images to their Web pages.

But while camera sites are fairly straightforward to set up, many require costly video boards, unreliable shareware programs and, of course, some type of camera to capture images. Homemade solutions with reasonable quality generally started at about $500, and many cost far more. depending on the hardware.

Instead, the QuickCam offers plug-and-play simplicity and all the right hard- and software for a street price of $200. With a 5-minute set-up time and the promise of inexpensive third-party add-ons, the camera is a cheap solution for users who want to put pictures of their sites on the Web.

You can see the QuickCam in action on the public access section of *IEEE Spectrum*'s site at http://www.spectrum.ieee.org/publicaccess/spechome.html.