

Online 3D: Still Waiting After All These Years

Neal Leavitt, Leavitt Communications

Several years ago, online 3D technology was expected to change the face of the Web. Industry observers said the technology would transform the Web from a static two-dimensional world into a dynamic, interactive 3D world ideal for commercial applications.

However, the technology never found a killer app, never caught on with many users, and thus never became commercially successful, outside of video games.

"The industry has not yet defined a real need for 3D," said Jeremy Schwartz, a senior analyst for Forrester Research, a market analysis firm.

"The industry is mired in a slump right now, and there is no real surge of interest to utilize online 3D," added Jackie Fenn, vice president and research director for advanced technologies at the Gartner Group, an IT market research firm.

In addition, although many of the technology's early shortcomings have been overcome, many users still face obstacles, such as bandwidth limitations and the high cost of authoring content.

Also, some users say VRML (Virtual Reality Modeling Language), the open standard designed for use in creating online 3D content, has not been effective.

Meanwhile, Microsoft's attempt to develop a 3D technology called Chrome fizzled. Chrome was supposed to be an



Despite its promise, online 3D technology has never been widely adopted.

add-on Windows media enhancement that turned 3D interface elements into scripts requiring little programming or bandwidth. However, Microsoft reportedly shelved Chrome after potential users expressed little demand for it. Microsoft declined to comment.

EXTENT OF USAGE

Companies are slowly beginning to utilize online 3D technology.

For example, Indigital Future Media cofounder Craig Peterson said his multimedia design company is using online 3D more frequently in its Web-site design projects, for such purposes as online product demonstrations.

"For our clients, it offers a richer Web experience for their clientele and will help them increase product sales," Peterson said.

Sandeep Divekar, senior vice president

and general manager for visualization strategy at Computer Associates, said the company is focusing its efforts on e-commerce applications.

For example, Computer Associates, a software and services vendor, has developed online 3D applications for the Ticketmaster event-ticketing company, the Sharper Image retail firm, and the Styleclick.com Internet-based clothing and gift outlet. On Ticketmaster's site (<http://my.ticketmaster.com>), for instance, you can use 3D technology to explore stadiums, concert halls, and other venues.

Silicon Graphics is also using online 3D for e-commerce. Entertainment and marketing manager Jeff Benrey said his company built the Lands' End clothing company's Web site, which features a "personal model." Users can try clothes on this virtual mannequin, whose size and shape can be adjusted.

Primarily because of the popularity of video games—the biggest source of 3D revenue—the online 3D industry will expand during the next few years, predicted Jon Peddie of Jon Peddie Associates, a digital-media technology market-research company. As shown in the figure on page 6, the firm estimates that spending on online 3D games alone will grow from about \$65 million in 1999 to \$720 million by 2001.

Outside of games, Peddie said, "Lots of Web sites have 3D stuff on them, but generally it's eye candy, and it's quickly pushed out of the way in search of real data."

He said many organizations—such as real estate companies, lending organizations, music studios, and even the federal government—have tried online 3D.

"It's like blinking lights," he said. "Attractive, fascinating to look at it for a while, and totally useless in terms of providing data or assisting commerce."

This has put a strain on the industry. For example, Platinum Technology, a 3D browser and tools vendor recently acquired by Computer Associates, announced layoffs of about 1,000 employees, mainly from its Intervista Software and Cosmo Software units, originally acquired for their 3D technologies.

Neither Platinum Technology nor
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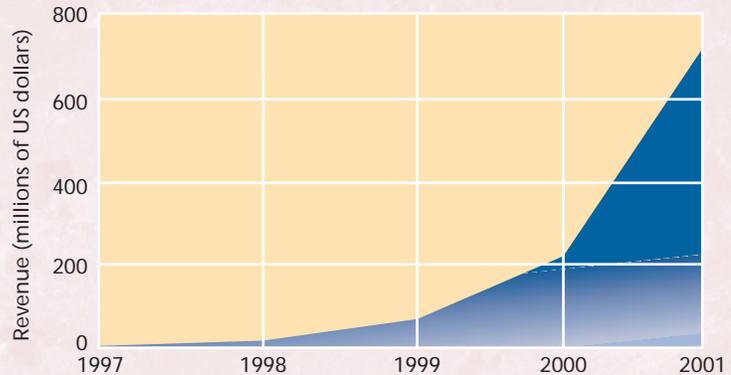
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Jon Peddie Associates, a market research company, estimates that the sale of software for online interactive 3D games, the biggest source of revenue for online 3D technology, will increase gradually through this year and then begin to grow rapidly.

Computer Associates would comment further about the layoffs.

BARRIERS TO ADOPTION

Users haven't adopted online 3D technology for several reasons.

Few important uses

One of the biggest hurdles facing online 3D technology is finding useful and commercially viable applications.

For example, there is no killer app for online 3D technology, noted Forrester's Schwartz.

Two years ago, industry observers identified several potentially key applications: games, e-commerce, collaborative projects, education and training, and visualizing complex data sets.

However, Schwartz said, the use of online 3D technology in these areas is only now starting to evolve.

Outside of games, the only practical uses for the technology today are in online product demonstrations and high-end CAD (computer-aided design) systems, said Neil Trevett, president of the Web3D Consortium and vice president for marketing of 3Dlabs, a vendor of high-performance computer-graphics technology.

Problems with VRML

Since technical experts developed VRML 1.0 in 1995, proponents touted the 3D-content development language as the ideal vehicle for launching online 3D technology. But that has not happened yet.

Peddie said users found it awkward to use a VRML viewer in conjunction with other applications. Also, he said, once data was imported into a VRML viewer, users could no longer manipulate it.

Also, both Microsoft and Netscape initially supported proprietary versions of VRML 1.0 in their browsers. This hampered adoption of VRML because developers had to either write a version of their applications for each browser or write to just one browser.

Now, noted the Web3D Consortium's Trevett, "The vast majority of 3D content runs on either browser."

In fact, Trevett said, "There are no competitive technologies that compare with VRML, and it's the only open standard on the market."

"There is no real application out there for 3D on the Internet that isn't satisfied by the current standard," he said. "The quality and performance are fine with one exception: The current VRML standard does not include streaming."

However, he added, "3D is a new paradigm that is easy to use in a gimmicky way but takes experience and experimentation to figure out how to use in a genuinely useful way."

The Web3D Consortium is taking steps to encourage increased use of VRML (see the sidebar, "Tomorrow's VRML").

Technical limitations

While many of online 3D's technical obstacles have been resolved, some remain.

Bandwidth and latency. Bandwidth and latency are not as big a problem as they were just a couple of years ago.

However, noted the Gartner Group's Fenn, the adoption of online 3D technology has been slowed because many consumers who might want to view data-intensive 3D content still have slower analog modems, which increase download times.

Nonetheless, over time, said Forrester's Schwartz, "The latency issue will be moot as more people get cable modems and have access to DSL [digital-subscriber-line technology], and as smarter 3D technology begins taking advantage of more clever algorithms that better simplify objects."

Content authoring costs. In general, the industry has not developed substantial reusable object libraries for authoring 3D content. The inability to reuse objects adds cost to the development process.

"People in the industry talk about a

digital back lot like you have in the film industry," Schwartz said. "But the notion of having reusable assets in a similar vein is still in its infancy."

ndigital's Peterson predicted that usage of online 3D technology will increase.

"The 3D interface is the next evolution of our 2D Web world," Peterson said. "Sheer computing power and clear standardization will enable applications containing 3D content to become available to the mass market."

However, industry experts advise that there won't be a dramatic increase in the number of 3D Web sites in the next year or two.

Certain industries—such as automotive, apparel, and real estate—will make more use of the technology as it evolves, primarily for product presentation. For example, realtors could use their Web sites to give virtual 3D tours of houses.

In fact, Computer Associates' Divekar said product presentation will become the technology's killer app. "As the technology improves, you'll be able to sell more things, . . . ranging from cars to watches to clothing to handbags," he said. "It will also be inherently useful for Web-based training for a variety of applications, like furniture installation."

Forrester's Schwartz said, "Games are still the most prevalent arena and will continue to be for at least another 12 to 18 months. Beyond this period, we'll see a proliferation of the online 3D products that will have more widespread commercial applications."

For now, however, said Peddie, online 3D will remain great to look at but not widely useful. ♦

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Tomorrow's VRML

VRML (Virtual Reality Modeling Language) was developed and maintained by the VRML Consortium, which changed its name to the Web3D Consortium in February.

VRML, the 3D counterpart to HTML, is a multiplatform file-format standard that lets developers define the layout and content of 3D scenes.

VRML 1.0 specified static objects and scenes. VRML 2.0 specifies objects that can move and be interacted with. However, many developers have not supported VRML, citing various problems with the standard.

In recent months, the Web3D Consortium has initiated a number of measures to better promote VRML. For example, said Web3D Consortium President Neil Trevett, the organization changed its name because "there is an element of not wanting to be associated with just virtual reality. And a new name implies a lack of dogma that is refreshing. Of course, there is also the danger that in changing the name, it implies we're abandoning VRML, but that isn't true."

Meanwhile, the consortium plans to

submit an X3D (extensible 3D) standard to the ISO (International Organization for Standardization) in 2000. According to Trevett, the consortium launched X3D, originally called VRML-NG (next generation), to address some of VRML 2.0's shortcomings, such as complexity of use, application integration, stability, and performance.

Compared to its predecessors, Trevett said, X3D is simpler, smaller, helps applications run faster, and downloads more quickly.

He added, "X3D was designed to use the latest 3D hardware and rendering functionality, such as advanced texturing."

X3D is extensible and componentized, which means developers could incorporate only the parts of the technology they want to use. Some users had complained that earlier VRML versions were too monolithic and complex to incorporate into their projects.

X3D also includes a lightweight 3D runtime engine with state-of-the-art rendering capabilities and, like its predecessors, a platform-independent 3D file format.

In addition, X3D would describe application program interfaces that, unlike VRML 2.0's APIs, could work with a wide variety of applications.

Meanwhile, X3D integrates support for XML, a Web-based metalanguage that lets a set of users design its own customized markup language. XML was designed to make it easier for users to define document types, author and manage documents, and transmit them across the Web.

VRML faces some competition. For example, MetaCreations has cornered a share of the interactive online 3D market with a proprietary technology, MetaStream, that it developed with Intel.

MetaStream is a PC file format that doesn't require special servers to distribute and that adjusts to the client computer's speed, from 133 to 500 MHz.

MetaStream files are smaller and more compressed than VRML files, which results in faster viewing and downloading times. Content can be seen using MetaCreations' free plug-in viewer.

The Web3D Consortium and MetaCreations have discussed incorporating some aspects of MetaStream into X3D.