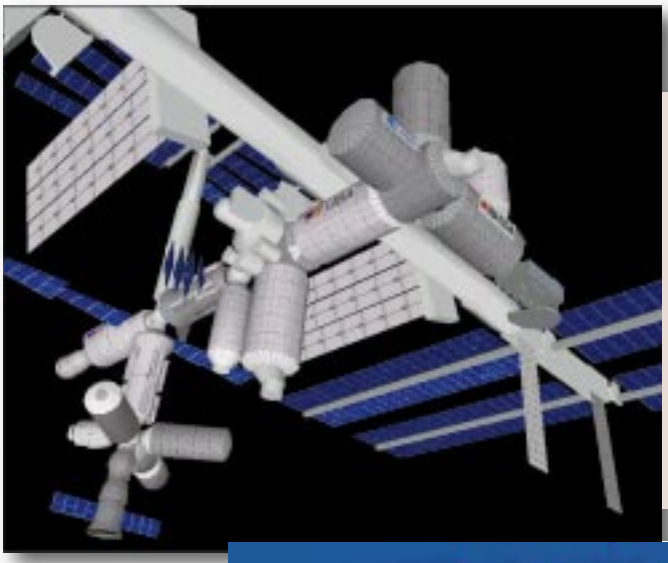
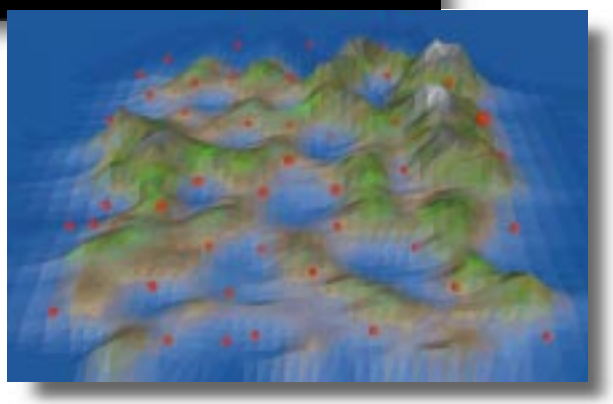
Low key 3D

Is VRML finished as a tool to bring 3D to the web? Benjamin Woolley considers the alternatives.

In February 1997 I wrote a column about the one type of content that no medium other than the internet could deliver: shared virtual worlds. Various companies had announced important-sounding initiatives which would establish a standard for this new form of entertainment. It was just, we confidently predicted, a matter of time; yet the past two years have been filled with false starts and unfulfilled promises.
A number of initiatives have come to nothing and 3D remains a low-key presence on the ever-spreading web. But it would be premature to think that 3D has no place on the net. This month, I want to consider some of the factors and ideas that look set to change its fortunes.



◀FIG 1 NASA'S VRML VERSION OF THE INTERNATIONAL SPACE STATION



▼FIG 2 THE VRML LANDSCAPE GENERATED FROM A WEB SITE BY BITTCO'S NEURALVRSITE

Always the bridesmaid?

When VRML, the 3D equivalent of HTML, was first introduced, some of its more enthusiastic supporters imagined that one day it would prove just as popular as its 2D equivalent. Like HTML it was platform-independent, accepted throughout the internet community and was relatively easy to implement. In some respects, it has been a success. For example, it now provides a convenient (if limited) file format standard for exchanging textured objects between different 3D packages, as the latest versions of nearly all of them include some sort of VRML conversion facility. There are limitations, of course. VRML does not support the more complex texturing and animation functions. Still, at least it's there if you are trying to swap 3D data and have no suitable alternative.

VRML has proved less successful when it comes to doing what it was designed to do: bring 3D to the web. VRML sites are still relatively rare. Where Java is now almost universal and even proprietary standards such as Flash and RealAudio are common, VRML, even where it would be appropriate, is still a novelty. There are sites devoted to various aspects of VRML, such as the very useful Repository at www.sdsc.edu/vrml/ and the excellent directory maintained by the portal company Miningco at vrml.miningco.com. There are also some interesting VRML sites to be found. NASA, for instance, has an excellent model of the new Space Station [Fig 1] at station.nasa.gov.

Companies are also still trying to find new uses for VRML. Bittco, at www.bittco.com, for example, has come up with the innovative idea of NeuralVRSite, a tool that will turn HTML sites into VRML versions. The red globes [Fig 2] represent links to bookmarked sites featured on the HTML page. It looks nice but seems rather pointless, as the depth of information which the third dimension provides is not actually put to any meaningful purpose.

Despite these efforts, VRML remains on the margins. Part of the problem is that so many sites seem reluctant to use the standard in a standard form. Many insist that you view their VRML world using CosmoPlayer (which can be downloaded from cosmosoftware.com). Cosmo supports a number of non-standard features which make scenes written specifically for the Player incompatible with other viewers. This would be fine if Cosmo looked likely to become a *de facto* standard, but its original developer, SGI, has just sold it off to a much smaller company, Platinum, which is apparently interested in developing it as a more business-orientated tool.

Other sites have rejected VRML altogether, such as the one advertising the Millennium Dome Experience <www.dome2000.co.uk> [Fig 3] . This uses Superscape's Viscape which is like VRML but can only be viewed using Superscape's viewer (which now also supports VRML but not, in my view, very effectively).

One could argue that VRML's bumpy development is related to the lack of hardware needed to see it in its full glory. Like USB devices, there is always the hope that majestic herds of VRML sites will come thundering onto the scene just as soon as there is a sufficient number of systems out there to run real-time 3D at decent frame rates (i.e. Pentium II/AMD K6-2 systems with 3D acceleration).

Commercial content

In fact, the arrival of more powerful 3D hardware seems to have muddied the waters. Suddenly, the commercial possibilities of online 3D content are looking far too promising to leave to a non-commercial standard. We now have 3D initiatives popping up all over the web, each promising to provide the technology that will bring the third dimension to the internet.

In a commendable display of pragmatism, the VRML Consortium, which is responsible for maintaining the VRML standard, has decided to reflect this by balloting members about a fundamental change in its charter. No longer will it be concerned with a single standard, but with the development of online 3D technologies in general; issues such as "streaming" (which allows content to be rendered progressively as it is sent down the line), file compression (essential to 3D's successful development, as textured object data remains such a fat media type), and integration with the successors to HTML, XML and DHTML (the eXtensible and Dynamic Hypertext Markup Language standards).

To reflect these radical alterations, the VRML Consortium proposes changing its name to the Web 3D Consortium, thus making it clear that its existence is no longer solely about VRML. Indeed, it may even presage VRML's eventual replacement with a more elaborate API along the lines of Open-GL or DirectX.

Interestingly, and encouragingly, there are also moves for the Web 3D Consortium to support the open source-code movement pioneered by Linux. It plans to promote the source code for 3D technologies to be made public on a similar basis. Sun has already set the ball rolling by making the source code for its Java3D-based VRML 97 browser freely available via its web site (at the time of writing, it could be found at the Java developer site developer.java.sun.com/developer/.

◀FIG 3
SUPERSCAPE'S RENDITION OF THE MILLENNIUM DOME

▼FIG 4
A CHROME TUBE, SQUISHED USING SQUISHYFX

The Consortium's move is a wise one because the 3D arena is quickly fragmenting into an unmanageable series of incompatible initiatives. Needless to say, the company which seems to have been instrumental in accelerating this process is Microsoft. As reported in the October '98 *3D Graphics* column, Microsoft issued dark mutterings about the inadequacies of VRML and has since started to push an alternative approach.

Chrome again

It was initially called Chrome and has since been renamed Chromeffects. It is concerned with more than 3D content and will enable developers to "deliver compelling new content enhanced with Chromeffects and powerful new tools and capabilities to catalyse innovation and new market opportunities," as the press release pretentiously puts it.

A few examples of the types of effect Chrome will deliver have been put on the Microsoft web site at www.microsoft.com/windows/chromeffects/ and they are undoubtedly impressive. One is called Metastreams. Developed by Metacreations, it enables 3D objects to be "streamed" over the line, so the low-resolution object you view initially, progressively becomes more detailed as more data arrives.

My favourite rejoices in the name SquishyFX. This is a technology which enables a form of physics to be added to 3D objects that appear on a web page [Fig 4]. It is brilliantly implemented, enabling, among other effects, all sorts of bouncy, wiggly and squishy deformations to be applied to a simple model, in response to the user's mouse movements. It can even render the results using such advanced features as environment mapping (i.e. reflections).

I urge anyone who wants to see how much fun you can have with 3D to visit the Squishy web site at www.squishyfx.com and download the demo.

Commanding presence

The problem with Chromeffects is that it will only work with Windows — why else do you suppose Microsoft would develop it? Fortunately its competitor, Java, may even draw strength from Microsoft's presence. A set of platform-independent 3D commands have now been added to the language and it must surely only be a matter of time before they become widely used.

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