

CyberEdge[®] JOURNAL

The World's Leading Newsletter of Virtual Reality

Issue #19, Vol. 4, No. 1

Entire contents © 1994. All rights reserved.

January/February 1994

The last chapter?

Thompson CSF to Purchase VPL Patents

By Kenny Meyer

VPL Research, Inc. will sell its assets, including its patent portfolio, to Thompson CSF for US\$150,000. The sale is part of a Chapter 11 reorganization that VPL filed in US Bankruptcy court on November 12.

VPL initially filed for Chapter 11 protection last March when it needed protection from numerous creditors and a foreclosure suit brought by Thompson. Thompson was foreclosing on loans that were collateralized with VPL's patent portfolio. *Continued next page.*

Thompson

Continued from previous page

The VPL patent portfolio includes two optical flex sensor patents, the glove control patent, "3D Swivel" licenses, and, at least, ten additional patent applications covering a range of key technologies. Many of the applications were filed in both US and Europe. These intellectual properties would give Thompson a strategic holding in the VR industry since they could bring considerable resources to bear in any patent protection suit.

As part of the proposed \$150,000 purchase, Thompson will forgive approximately \$2 million in loans to VPL. However, the plan allows Thompson to retain claim to a \$150,000 DIP loan (Debtor-in-possession) made last September. VPL used the DIP loan to cover the cost of maintaining the patent portfolio. Thompson will acquire VPL's assets free and clear without liens and encumbrances.

Unsecured creditors do not fair well under VPL's plan. Unsecured claims, totaling approximately \$1.5 million, will be paid \$0.05 on the dollar. Among the unsecured creditors is Tom Zimmerman who is owed \$212,000 for royalties on VPL's important glove control patent. Zimmerman invented the DataGlove and is listed as an inventor on several VPL patents.

After the sale of assets to Thompson, VPL will change its name and the company will be liquidated under Chapter 7. Neither VPL's president, Jean-Jacque Grimmaud, or Comptroller, Alan Defrenne, are planning to join Thompson or any new company formed by Thompson with the acquired assets.

The court is scheduled to approve the reorganization on February 16. A previous approval date was rescheduled because of objections from one of VPL's unsecured creditors.

The VPL reorganization will be covered in depth in the next issue of *CyberEdge Journal's Special Edition on Business.*

VR NEWS

VIRTUAL REALITY WORLDWIDE

Superscape soars to \$100 million market capitalisation

Fuelled by announcements of a marketing agreement with IBM Europe, of support for VRML 2.0, and of its first product for Silicon Graphics workstations, Superscape's share price rocketed during February, taking its market capitalisation to over £65 million (\$100 million), compared with around £10 million a year ago. If the company can sustain its current momentum, and take advantage of its higher profile to strengthen its industry connections, it looks very likely to become a significant player in the fast growing global VR software marketplace.

The announcements were incremental rather than breakthrough-class, but they were strongly presented and positively received. A feeling is starting to grow amongst the financial community that Superscape now has the right ingredients to become one of those runaway successes that no self-respecting investor should miss out on. IBM is still a good name, the agreement is a strong move for the company, and it will no doubt contribute usefully to future revenue growth. It will however be an even stronger move if and when it is extended to cover the USA. This is the third occasion in the past few years that IBM has announced a UK- or European-led marketing agreement with a British VR company, and they will no doubt be planning something more substantial than the low-profile market evaluation exercises which have seemed to be the outcome of these agreements up to now.

Also interesting, and more significant perhaps

than the press release indicated, was the unveiling of a version of Superscape's Visualiser product for the Silicon Graphics workstation range. Its purpose was stated to be to enable customers to use inexpensive PCs to develop virtual environments, which could then be transferred to high-performance SGI graphics workstations for operational use.

The software was demonstrated on a High Impact workstation and was impressively fast. One of the demonstrations showed an updated version of Superscape's well-known dodgem cars world. This shows a dozen miniature cars travelling at speed around a chess-board, with headlights accurately illuminating anything in their path, colliding with each other and with the surround, bouncing off and resuming their activities. It is a good demonstration of Superscape's rendering speed and quality, and its ability to handle multiple concurrent fast-moving objects each with its own motion dynamics, collision detection, viewpoint switching, and complex lighting models.

Superscape are obviously also going to launch a version of their authoring software for Silicon Graphics in due course. The 'develop on PC/run on SGI' idea is valid, but of comparatively restricted market appeal, and it seems likely that the decision to unveil the visualiser now would have been prompted more by financial PR considerations. It followed swiftly on the heels of an announcement that Superscape, along with 50

or so other companies, almost all of which are American, plans to support the SGI/Sony/Netscape dominated VRML 2.0 standard for Internet-based VR.

This is the area where Superscape's moves and announcements will be most closely watched by knowledgeable investors. They will have bought into Superscape for capital growth rather than short-term profits and safe dividends, and they will afford the company a lot of leeway in its financial results for a while, provided there are top-line indications of a growing market, and evidence that the company is being positioned strongly in a rapidly developing industry. Superscape has a mature and functional product, but that by itself will provide no defence against well-positioned, well-financed and strongly marketed newcomers. The history of the computer industry is littered with epitaphs for erstwhile market leaders who imagined that years of accumulated experience and solid professional product development provided some sort of immunity against upstarts. Most of the other 50 companies on the SGI list, not to mention those in the Microsoft camp, are targetting the same virtual world authoring marketplace as Superscape, and there will inevitably be an industry shake-out, and casualties, at some stage. Few of Superscape's competitors have \$100 million market capitalisations however, or substantial international distribution networks, or as experienced – and well led – a senior management team as Superscape.

VR NEWS

VIRTUAL REALITY WORLDWIDE

Superscape climbs to \$6.2 million sales, losses reach \$4.6 million

Superscape's results for the year ended 31 July 1996 were announced during October. Sales turnover had increased by a factor of 2.45 compared with the previous year, with the pre-tax loss reaching \$4.6 million. The loss was in line with the company's disclosed plans for accelerated investment in staff, marketing and R&D. Sales growth was somewhat ahead of expectations, particularly since there is still a \$2.5 million tranche of the Nortel software licensing agreement to be brought into future accounting periods. The balance sheet remains strong, with cash balances in excess of \$13 million at year end.

From external appearances at any rate, Superscape is on track so far. The plan is to position and resource the company so that when the VR software marketplace starts to take off, at some point in the next couple of years, it has everything in place to ride the wave. This will need to include a voracious global distribution network, partner relationships which bind it into the major industry initiatives, sustained high-profile market visibility, and strong product differentiation and competitiveness. On global distribution it has made good progress, with North American sales rising from 38% to 53% in the last two financial years, and 15-20% of its business now coming from Japan/Asia. A whole series of partnering relationships has been announced, involving Netscape, IBM, Intel and others, and culminating in an arrangement for Superscape's Viscape to be included on Microsoft's Internet Starter Kit CD-ROM. As to 'high-profile market

visibility', suffice it to say that the announcements of these relationships have not been understated.

It is in the area of product differentiation and competitiveness that Superscape's future strategy is not yet clear. There is no problem at present. The company has been successfully promoting as an alternative to VRML its own proprietary format, accessible only via Superscape's authoring and browsing software. One reason why it has been successful is that most of the available VRML tools operate only on VRML 1.0, which is highly restrictive compared to Superscape's alternative.

From 1997 however, the market will be awash with VRML 2.0 based software. The principal browsers will have built-in VRML 2.0 support, plus a range of plug-ins for the main VRML 2.0 proprietary extensions, covering such things as object behaviours, avatars, streaming video textures, etc. A lot of industry and market momentum, and a very rich range of functionality will rapidly build up around VRML 2.0, and it is difficult to see how a single vendor proprietary initiative could survive. Assuming that Superscape has been busy converting its products to run 'native' VRML 2.0, for launch during 1997, they would start out with a considerable lead over most competitors simply because they have been at it for around 10 years. This means that they not only have a lot of accumulated functionality, but also that they have already hit the structural brick walls, and been through the successive redesigns, that newcomers have yet to face.

At this stage their main positioning problem is likely to be in the area of pricing. Many highly functional VRML 2.0 authoring products will appear, and will be very aggressively marketed, in the \$95 - \$495 price range. By historical standards, there may not be enough market activity to justify this kind of pricing, because the volume applications have yet to materialise. However, such companies can keep their costs low by selling and distributing via the Internet, and they could make it difficult for more substantial organisations to maintain the higher pricing they have traditionally needed. The answer here must lie in taking advantage of the flexibility of the Internet - plus the micro-transaction payment systems expected soon - to introduce new pricing strategies, based perhaps around software rental (by the hour, day, week etc.), coupled to innovative merchandising (for example, listing Internet-accessible modules on the authoring software's pull-down menus).

Ultimately however, Superscape must seek to maintain a competitive advantage by adding product functionality. The best strategy here is likely to be a series of market-specific and generic additions, part home-grown and part third-party plug-ins. A strong move into the training marketplace, for example, with a range of functionality specific to the authoring and monitoring of training programs might be an obvious choice. It is a very large potential market, and it shouldn't be too difficult to find partners already in the CBT or multimedia-based training business who could develop the necessary plug-ins.

VR NEWS

VIRTUAL REALITY WORLDWIDE

Virtuality in administration, Virtual i-O in Chapter 11

On February 11th Virtuality Group plc obtained a High Court order for the appointment of administrators to protect it from its creditors. Fifteen days later, Virtual i-O carried out the equivalent manoeuvre in a US context by entering Chapter 11. Both companies are now up for sale, in whole or in part. Virtuality has a strong IPR portfolio, and looks the better bet to resume trading in some form. They are currently being run by a team from Arthur Andersen, who are quoted as saying; "There is little doubt that Virtuality has world beating technology, it was the first company to bring virtual reality to market. Now it is leading the commercial development of virtual reality technology for the consumer market. However, the costs of having developed that technology combined with a significant downturn in its old entertainment machinery business have drained the company of cash."

This summary of Virtuality's problems is partly accurate, though the administrators' reliance on the support of senior company personnel made it unlikely they would point out too forcibly that serious management errors were at the root of the problems. The R&D program which the company has sought to undertake since its highly successful flotation in October 1993 would have stretched the resources of a much larger company. It included not only the professional and consumer headmounted displays, which is where Virtuality's principal technical strengths and IPR lie, but also the Pladar optical tracker, the V-Flexor hand-held navigational device, the Elysium

Ultrascaler VR system marketed for a while by IBM, the PIX VR/multimedia add-in board, a real-time operating system and a substantial suite of VR authoring software. All this in addition to a continuing R&D investment in further development of its arcade systems and games software titles, plus its '3rd generation' development program, of which more below.

Some of this was funded, one way or another, by intending licencees – including Sega, Atari, IBM, Takara, and presumably Philips. None of these arrangements came to substantial fruition, however.

Early entrants to new technology-based markets often see themselves as having little choice but to develop the essential subsystems they can't buy in. This would certainly have been true in the late 1980s, when Virtuality built its first systems. However, a much more focused R&D program, supplemented by alliances with suitable technology partners, should certainly have been possible over the past few years and would have enabled Virtuality to conserve its cash resources, and benefit from the momentum and connections of its partners. Each new product developed not only consumes R&D resources, it also needs to be commercialised, and the various development, engineering and marketing programs all require planning and management. In smaller companies with over-ambitious R&D programs, product engineering, marketing, planning and program management are invariably under-resourced,

typically leading to quality and delivery problems.

Although Dr Jonathan Waldern, the company's CEO for most of the period since flotation, was the main driving force behind the R&D program, responsibility for its consequences on the company's cash flow must rest collectively with the board of Virtuality. Dr Waldern may not have developed a large personal fan club within the VR community, but he delivered the technological farsightedness, breadth of vision and communications skills required of CEOs in early high-tech markets: it is almost a cliché to point out that these attributes need to be balanced by effective fiscal and operational board-level controls. Much easier said than done, usually, but failure on the part of the board to discharge that responsibility brings consequences which are well known, inescapable, and in the case of Virtuality now all too painfully obvious. A more immediate consequence for Dr Waldern was his removal from operational responsibility for the company in late summer 1995.

The "significant downturn in (Virtuality's) old entertainment machinery business" was also offered by Arthur Andersen as a reason for the company's difficulties. This has been a common media explanation, but matters are not quite so simple. The worldwide high-tech arcade business has been on a well-documented downward slide since around 1992. Until early 1996, it appeared that immersive VR entertainment systems, 80% of which were being shipped by Virtuality, might reverse that trend. *(cont. on page 22)*

VR NEWS

VIRTUAL REALITY WORLDWIDE

Virtuality sell-off nearing completion

Heads of Agreement have been signed between Virtuality's administrators and a management buy-out team led by Dr Jonathan Waldern, co-founder and former CEO. In broad terms, the agreement relates to the acquisition by the MBO team of the consumer HMD business and patents, together with the '3rd generation' HMD project outlined in our March issue. Other parts of Virtuality's business where disposal is complete or near-complete include the residue of the entertainment systems stock, the Visette Pro professional HMD business, and the company's Japanese subsidiary, Virtuality KK.

The disposals will probably raise something over £1 million, a disappointingly low offset against the £15 million-plus deficit which emerged at the time the company entered administration. The largest creditor of Virtuality Ltd, the trading company where the deficit was accumulated, is its parent company, Virtuality Group plc. Any sums raised by the disposals, net of the administrators fees, can be expected therefore mainly to benefit Virtuality's directors and shareholders, leaving very little for the external unsecured creditors.

A substantial proportion of the entertainment systems stockpile has been sold internationally at knock-down prices through Virtuality's distribution channels, with Holger Timm's Cybermind AG acquiring most of the European units. It is widely known around the VR industry that both Virtual Research and nVision have been negotiating for the Visette Pro business - there is also a general

expectation that nVision's position as a NASDAQ-quoted company, and their need for a mid-range HMD product, will lead them to outbid Virtual Research.

Virtuality KK is understood to have been bought complete with the right to continuing using the name in Japan - by its highly-respected General Manager, Koji Fukuhara. The company is operating as a broadly-based VR product distributor, systems integrator and application developer, and could be a useful and well-connected partner for Western VR companies seeking entry to the Japanese marketplace.

The Waldern-led MBO is believed to have raised something over \$5 million in initial funding, with Dr Waldern himself as a substantial investor. The other members of the management team are (in the UK) Richard Holmes, one of the world's top HMD designers and Ben Vaughan, marketing and corporate communications; with Mike Adams looking after US marketing. If the buy-out proceeds as planned, the new company will own the HMD design licensed to Takara as the Dynovisor unit, of which Takara is believed to have sold some tens of thousands.

The inclusion of Mike Adams in the team is particularly significant since he was largely responsible for negotiating the pre-collapse deal with Philips North America. This was expected at the time to lead to sales of 100,000 Virtuality consumer HMDs by Philips. If Philips decides to have

a second try, it's likely to start out more as a market testing exercise than a full-scale high volume national sales campaign. One factor which might however influence Philips's views is the market reaction to Sony's expected launch in the USA of a sub-\$500 Glasstron headworn personal TV this summer - possibly at E3. This will be targetted at the high-disposable-income end of the consumer marketplace, and customer reaction to the image quality will be all-important. The new Glasstron will display a lower-resolution image than a conventional TV, and given Sony's reputation for quality, it's very likely that, like Virtuality/Takara, they will have used some advanced form of depixelation technology.

If Philips is planning to launch a Takara-like HMD in North America later in the year, it will be at a much lower price than the Glasstron, and will only use a single LCD (the Glasstron is a binocular design). An important part of the Virtuality IPR the new company would acquire is a solid-looking patent covering the optical subsystem required to bring a single image source to both eyes, and this could give Waldern's company an important pricing edge. However, as we have consistently pointed out in VR NEWS, regardless of price, consumers won't switch en masse to headworn TVs unless the picture they see is at least comparable in quality to what they are used to. Even so, as in Japan, it is possible that some tens of thousands of units might be sold in a year, particularly if Sony's market entry creates widespread interest in personal display devices.

VR NEWS

VIRTUAL REALITY WORLDWIDE

Superscape loses £5.96m on sales of £3.11m

Superscape's full year results to 31 July 1997 make fairly depressing reading, but there is a good chance that the low point has been passed – at any rate for a while. The company greatly over-expanded its cost base last year in anticipation of rapid growth in the 3D web authoring marketplace, and appears now to have cut back towards a more sustainable level. It will need some increase in turnover – to around £4 million perhaps – to reach its target of profitable operation by the end of its current financial year, but can no doubt trim its costs again if necessary.

The cash balance at 31 July stood at £3.35m, which looks somewhat tight. However, the required £4 million of turnover shouldn't be outside the bounds of possibility in 1997/98 – Superscape appears to have the product range and international sales channels comfortably to reach this level. Also, it is clear from recent press announcements that the company is currently taking on a lot of fee-earning project work – mainly custom web site developments – and this will make a useful contribution in the short term. From 1998 onwards, given that they plan to stay in the software products business, their prosperity – or survival – will depend on how they position themselves against proliferating competition from the new VRML/Java3D authoring systems now starting to appear. They will need to read the marketplace and the technological trends very carefully from now on.

In this context, the carefully worded statement

accompanying the results announcement is worth studying. It refers to Superscape's commitment to "support and work with all emerging standards, while continuing to develop the company's own SVR format". The need to continue to support existing SVR-dependant customers is clear – any software products manufacturer who has been around for a while accumulates a historical version support problem. The use of the word 'develop' rather than 'support' in relation to SVR is noteworthy however, and makes it clear that the company plans to continue to commit R&D and marketing resources to promoting its proprietary format.

While it may still perhaps be the case that SVR is in some respects a more mature and versatile format than VRML, it has no chance whatsoever of gaining broad industry support. VRML 2.0 is already going forward for adoption by the ISO, and some Microsoft-acceptable combination of VRML and Java3D will surely emerge before long as the de facto standard basis for 3D web content.

Comprehensive support for this standard will be a prerequisite for successful web tools developers, but will not of itself guarantee success, nor even survival. In addition to planning and executing a standards migration strategy – not at all an easy task in its own right, given that the target is still moving, developers should by now have identified market-relevant ways of differentiating their tools from the myriad of competitors who are bound to emerge.

The two strategies which have succeeded historically are to compete horizontally by offering comprehensively feature-rich generalisation, or to focus tightly on dominating one or more vertical markets of worthwhile size. The generalisation strategy depends absolutely on getting third-party developers to write plug-in modules and associated utilities. All high volume personal computer applications packages have attracted dozens or hundreds of such add-ons, and there is no prospect that a single developer could sustain competitive functionality using only its internal development resources. If Superscape plans to continue to offer a generalised VR/3D/web authoring system, it must consider how to make it compellingly easy and attractive for third-parties to develop and market plug-ins.

The vertical market strategy obviously depends on intimate knowledge of the application needs of the target markets, and for a company such as Superscape the best route is likely to be via partnerships with software developers already active in these markets. There should be no shortage of opportunities for such relationships. However, neither of these strategies is likely to be well served by a continuing overt commitment on Superscape's part to developing and promoting a proprietary format. The company must now distance itself from its proprietary past, and commit fully and openly to a technically sound intercept strategy which will give it a strong competitive position as the standards position crystallises, and which is attractive to prospective partners.

VR NEWS

VIRTUAL REALITY WORLDWIDE

Sun buys VPL patents

It was announced in February that Sun Microsystems had bought "the patent portfolio and other technical assets of the former VPL Research Inc., a pioneering firm in the field of virtual reality and networked 3D graphics, from Thomson CSF and Greenleaf Medical. Under the agreement, Sun has acquired the worldwide rights to more than a dozen key patents and related technologies."

Thomson's US venture capital company acquired title to the patents when VPL ceased trading five years ago. Greenleaf Medical had developed software based on the VPL Dataglove, and obtained a licence to continue its manufacture and supply following VPL's demise. There was something of a national outcry at the time, with the US media making much of the suggestion that Thomson, a French company, had got its hands very cheaply on a strategically important collection of American technology rights.

Examples of VPL's patents include:

Low Cost Virtual Reality System: "Apparatus is disclosed for viewing computer generated images and for tracking the positions of the user's head and hand. One alternative of the apparatus includes a frame element, versatilely mountable, with sensors for the head tracking of a user whose bodily movement is constrained to a small area. Short range and inexpensive sensors are deployed for tracking the position of the user's head; these sensors are deployed partly on the user's head and partly on the tracking frame . . . In another alternative of the tracking invention natural forces such as gravity, the Earth's magnetic field, and inertia are used"

Computer Data Entry and Manipulation Apparatus and Method: "Apparatus is disclosed for generating control signals for the manipulation of virtual objects in a computer system according to the gestures and positions of an operator's hand or other body part . . ."

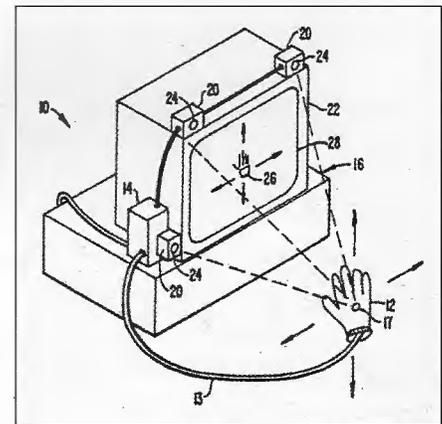
Method and Apparatus for Rendering Graphical Images: "A distributed animation comprising a plurality of processors wherein each processor is responsible for rendering only a portion of the entire image. After the plurality of processors compute their respective images, the image data is communicated to a buffer. The buffer also receives image data from other sources. The buffer combines the image data from all sources into a single image frame which is then stored in a frame buffer . . ."

Improved Method and Apparatus for Creating Sounds in a Virtual World: "A method and apparatus for creating sounds in a virtual world. The system provides signal processing capabilities to convert monaural sounds to fully spatialised sound sources. A user of the system wearing a pair of stereo headphones perceives live, computer generated, or recorded sounds as coming from specific locations in space, just as a listener does in the real world . . ."

Method and Apparatus for Rendering Graphical Images: "A distributed animation comprising a plurality of processors wherein each processor is responsible for rendering only a portion of the entire image. After the plurality of processors compute their respective images, the image data is communicated to a buffer. The buffer also receives image data from other sources. The buffer combines the image data from all sources into a single image frame which is then stored in a frame buffer . . ."

Method and Apparatus for Rendering Graphical Images: "A distributed animation comprising a plurality of processors wherein each processor is responsible for rendering only a portion of the entire image. After the plurality of processors compute their respective images, the image data is communicated to a buffer. The buffer also receives image data from other sources. The buffer combines the image data from all sources into a single image frame which is then stored in a frame buffer . . ."

It is very difficult to judge whether the patents will turn out to be worth the \$4 million Sun is rumoured to have paid. They have bought – for (continued on page 21)



The notorious VPL 'Glove Patent': explanatory diagram from US Patent No. 4988981, filed Feb. 28 1989: inventors Tom Zimmerman and Jaron Lanier, assigned to VPL Research, its applicability to other gestural glove developments was robustly asserted and contested in early 1990s disputes.