That's the trend -
Cost Effective high quality desktop graphics and video

By Virtually Real

Hong Kong's new airport is arguably the biggest news in the territory aside from 1997 itself. It is one of the world's largest infrastructural projects, involving the reclamation of an area equivalent in size to the Kowloon Peninsula, the creation of a major international airport, a massive new road and rail system, port facilities, and even a fully functioning town.

Visualising and promoting a series of projects of this magnitude and complexity is also quite an undertaking. This is where Virtually Real and 3D Studio have become involved. Darren Richter of Virtually Real explains: "To date Virtually Real has been involved in three projects for the new airport, beginning with the production of a new promotional film for the Provisional Airport Authority. This was intended to highlight the design of the new airport's passenger terminal."

The Hong Kong New Airport

The production of the film entailed filming live footage of passengers and compositing them with Virtually Real's graphics to give the illusion of a fully functioning airport before construction even began. Wei Lee of Virtually Real: "All the architectural models were imported from the PAA's CAD department's computer system, and we painstakingly reconstructed the entire airport within 3D Studio. We divided the entire airport CAD model into smaller sections to make handling the files easier, but even so some of the files were in excess of 20Mb and required an hour of rendering per frame even on a Pentium with 64Mb of RAM!"

The aim of the film was to provide a realistic view of the airport as it would be once construction is complete. To do this Virtually Real and the director Stanley Orzel approached the project cinematically. Nick Gross of Virtually Real explains: "Long sweeping camera moves in the computer graphics were kept to a minimum, instead we used short shots and static backgrounds - the way a typical passenger would view the airport. In the end we built over 20 static backgrounds, and over 12 animations, which totalled around 4 minutes were rendered. Perspectives of live action and computer graphics were matched exactly by using the computer graphics to guide the shooting. Simple composition frames of backgrounds were generated initially and overlayed over the video monitor on the set. The passengers and camera were then arranged to match the composition dictated by the graphic.

In adding detail to the graphics, photographs of shops and photographs of people were scanned in and mapped into the animations. Samples of flooring, wall cladding and liveries of aircraft were also scanned. Other details were made in either 3D Studio or Photoshop.

Through the whole project Virtually Real used 3D Studio for all 3D Models, Adobe Photoshop was also used for creating and adjusting texture maps. The final compositions of live action and computer graphics were produced using CoSA After Effects and Ultimatte on a Macintosh Quadra. "We made full use of 3D Studio's network rendering capabilities over a system that at the time comprised 3 Pentiums and 6 486DX2s." Says Wei Lee. "In the end we generated a total of 48 master mesh files averaging around 15Mb each."

The project stretched Virtually Real's resources to

the limits," says Darren Richter, "but in achieving the deadline, we demonstrated some of the real advantages of 3D Studio and the PC platform. Of course the rendering quality of 3D Studio made it easily capable of this project from the point of view of quality. 3D Studio also allowed us to translate CAD files relatively painlessly, which cut down on a lot of construction time." But by allowing network rendering on PCs the program really showed its benefits when a tight deadline is looming. Virtually Real was able to calculate the time needed for rendering and adjust the amount of computers committed to rendering according, or even find more computers if necessary. Darren Richter: "The relatively low cost of 3D Studio also allowed us to run several cost-efficient computers for design and construction, work was shared out among six animators, in this way it allowed us to run several tasks in parallel."

MTRC Airport Express

The second of the projects handled by Virtually Real was commissioned by the Mass Transit Railway Corporation (MTRC). This project was for a promotional film on the new airport express route. The project was very similar to the PAA film, involving compositing live action with 3D graphic representations of the various buildings that make up the project.

Nick Gross: "The greatest challenge with this project was a "fly-over" animation which showed the entire railway route from Central to the new airport. This involved "constructing" both the Central and Kowloon districts, Tsing Yi, the Ching Ma

bridge, new towns envisioned on Lantau, and of course the airport itself."

The topography of the land was provided as a CAD file, but no building were present and none of the reclaimed areas. Virtually Real set about reconstructing all the major buildings in Central and Kowloon, the Ching Ma bridge, visualising buildings for the reclaimed areas, and rebuilding the new MTR buildings from the CAD models. Wei Lee: "We made a lot of use of texture and bump maps derived from photographs of Hong Kong buildings. This allowed our models to be kept as simple as possible. And for parts of the city appearing in the background, we used satellite and aerial photos of Hong Kong."

To achieve this animation extensive use was made of 3D Studio's Video Post module and several IPAS routines, notably the lens flare and smoke which were used to make clouds. By using four Pentium 90MHz computers and four 486 DX2's, together with careful segmenting of the master files into smaller sections this animation was rendered in relatively short time.

HACTL - New Air Cargo Terminal

The third project related to the airport was for Hong Kong Air Cargo Terminals Limited (HACTL). This was designed to part of a promotional film for HACTL's plans for a huge new air cargo terminal. Darren Richter: "This job again involved convert-

ing CAD files into 3D Studio, but this time we were dealing a relatively simple model - a air cargo terminal. The challenge with this was the details: aircraft, lifting gear, sundry vehicles and so on. We had to make it look like an efficient working terminal."

Wei Lee: "These three projects have kept us very

busy for a few months now, and we're very happy with the results. It can be very interesting working with the architects too. Very often they are seeing their designs come to life for the first time, and we often find the architects thinking about details they hadn't considered before. From this point of view alone we are offering a valuable service simply as visualisers."
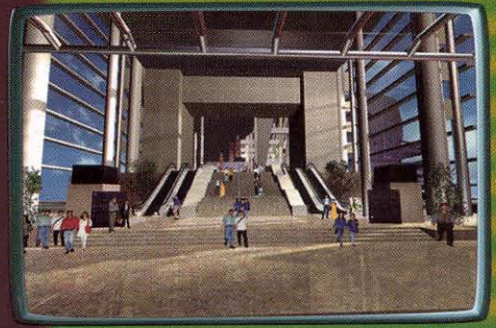
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VIRTUALLY REAL

As Real As It Gets

Huw Morgan Griffiths talks to Virtually Real, the computer graphics company best known for the production of 'Air & Light', the video depicting the design of Hong Kong's new airport terminal building.

Darren Richter

Virtually Real began life back in late 1992 when three friends decided they had found a profitable little niche in the animation and production of computer graphics as a marketing tool for a number of different clients. In the first year of operation, the company handled corporate advertisement videos and medical videos and other fairly low-profile work.

This changed in drastic fashion when in April 1994, the group secured the contract for what they modestly describe as a 'fairly large architectural visualisation project'. This production, named "Air & Light", was commissioned by the Provisional Airport Authority (PAA) and was a depiction of the new airport terminal building at Chek Lap Kok. Anyone who's spent any time in Hong Kong is likely to have seen this production.

Sound Marketing Tool

It served as not only an ideal marketing ploy for the PAA, but also for Virtually Real; a large portion of the work that's followed since then has come on the back of "Air & Light". Though it was a watershed for the company, it only came with considerable sweat and toil. "Between the confirmation of the contract and the delivery of the product, it took us five weeks to put the thing together. We worked eight days a week at the time," recalls Darren Richter one of the three partners of Virtually Real.

"But it certainly paid off. We got a lot of offers as a result of this."

From this, the company went on to complete a job for the Mass Transit Railway Corporation (MTRC), for the airport express railway. This time they worked under a London-based director who came over and recruited Virtually Real to produce the graphics. The two projects were innovative in that they involved compositing live images into the production. The MTRC project was somewhat easier given that the production headaches were not included in Virtually Real's brief.

Halfway through the production of this job they secured another large contract, this time from HACTL for their pitch to the PAA as part of their tender for their proposed installation in Chek Lap Kok.

As the company's architectural portfolio progressed, so did its experience in other sectors. Virtually Real was doing a lot of work for StarTV, for example, concurrently with these

large infrastructure renderings. "The big projects are best for us," continued Richter. "They last a long time and they're extremely high profile. We can work on corporate videos until we're blue in the face, but jobs like [Air & Light] are the ones that a wide range of people are going to see."

Software Packages

The skills that Virtually Real employ are channeled through the Autodesk 3D Studio package that works on a PC platform. This is used exclusively for all 3D animation. Any 2D animation is created through a program called 'After Effects', which is a special effects package that runs on the Macintosh platform. They're packages are all networked and depending on the specifications, the files are generally transferred backward and forwards between packages during the entire process.

Virtually Real's business depends on its ability to produce cutting edge graphics. There are a number of reasons why it can claim a sound, all-round knowledge of what's new. As a dealer for Autodesk software, all the latest software packages are brought to its attention. "We're also a dealer for external process plug-in software for 3D studio," expanded Richter. "We also have a sister company called Digital Media, which sells hardware and software to the video production industry. This is a desktop video editing system, called Media 100, that runs on a PowerMac. That's an entirely different

stream of technological information that we're exposed to. Aside from that, we read a lot too!"

Developers tend to be blissfully unaware of the technology that goes into these products. In many cases they find it difficult to verbally communicate exactly what it is they want incorporated into the graphics because they have no real idea of how breath-taking are the images Virtually Real is capable of producing. However, it's a steep learning curve once they've been given a demonstration. "After we've shown them what can be done the developers will form a clear idea of what they want remarkably quickly," explained Richter. "But dealing with a producer or director who has some experience of computer graphics is a good idea. A lot of them don't have experience in the production of architectural visualisations, it's normally done directly with the client."

Asia Ahead in Architectural Visualisations

The progress of the computer visualisation of future projects has been astounding over the last couple of years.

This is one particular, and rare, area of technology in which Asia is not behind the US and Europe. "In the US their visualisation in the entertainment industry is far ahead, and now they're starting to move into the architectural visualisation field. In Asia, we've done it the other way around."

Richter and his colleagues are aware that the competition for their niche is not that strong at the moment, neither is there the direct threat that architects will decide to do this type of work in-house

'Air & Light' brought in a deluge of new work

thereby stripping them of their living. The fact is that architects may not fully realise the potential of the software they have sitting in their offices, but experience so far has shown that they have neither the time or the inclination to use it its full extent. They're architects and not animators. Companies like Virtually Real are the specialists in putting together several images into a slick film that will keep the developers happy.

The company now has an associated company in Kuala Lumpur as well as one in Manila. Any requests for animation from these countries is now referred directly back to Hong Kong. Richter has also gone to Australia to set up a marketing office and the company is hoping to establish an office in Beijing at some point. Virtually Real's order books should be overflowing for the next few years, and a lot of this is thanks to the efforts they put into "Air & Light".

AAC