

Beware! It's a jungle out there

A new breed of film animators is giving Pixar and Dreamworks a run for their money - and wowing Cannes. Mark Harris reports from the red carpet

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Away from the famous directors and stars striding the red carpets, a quiet revolution is taking place at this year's Cannes Film Festival. In a small viewing-room at the American Pavilion, the technology giant HP is showcasing a dozen short films that have the potential to turn the world of animated film production on its head.

With impressive 3D graphics, creative storylines and natural fur and water effects, these films look similar to Hollywood productions such as Dreamworks' summer blockbuster Madagascar. The production of Madagascar required more than 1,000 dual-processor computers, an army of professional animators and cutting-edge Virtual Studio technology, and had a multimillion-dollar budget.

In contrast, the 12 films being shown at Cannes have been created in the UK by tiny companies, or even individuals, some of them working with a single home computer.

The films were made possible by the SE3D project, a joint venture by the Bristol media group Watershed and HP, using the concept of utility computing. Just as none of us filters our own water or generates our own electricity, utility computing aims to use remote computers to outsource the processing of data, whether it's for financial analysis, gene sequencing or even car-crash testing.

The latest 3D animated films are well suited to utility computing because of the enormous amount of computing power required for rendering - the process of turning basic wire-frame figures into fully textured and realistically illuminated objects.

"Two Fellas was a film I wanted to make for a while," says Dan Lane, its director, "although I initially planned on doing it all myself. Each of the film's 5,500 frames would have taken over an hour to render on my own computer. I was looking at 18 months just to render my four-minute film. That's assuming my computer worked round the clock and nothing went wrong."

SE3D offered Lane and other UK-based animators free access to HP's utility rendering service (URS) in Palo Alto, California, which is home to more than 100 powerful servers. "SE3D made it infinitely easier to achieve my goal," Lane says. "I simply installed some software, logged in and sent the source files over the internet, and got the rendered images back, sometimes in a matter of minutes."

Peter Toft, the project manager at HP Labs in Bristol, points out that utility services, and even render "farms" serving animators, aren't new. About 95 per cent of all animated films are made using 3D software, and HP has been working with the major studios for some time. When making Shrek 2, Dreamworks used a URS from HP consisting of 500 dual-processor servers running Linux, each configured with 4Gb of memory and fed by a 4 terabyte NFS storage system. More than a million frames were rendered, consuming more than 100 processor "years" and contributing around 10 per cent of frames used in the final film. This was the first time a major animation studio had outsourced its rendering.

Toft believes the advantages of utility computing for large studios have been proven. "Animators can call on extra capacity when they need it: for rush jobs, to meet theatrical deadlines, or if a rendering job is larger than expected." But HP's scaling down of the technology for use by makers of smaller-scale films is a real step forward, he says. "Most render-farm technology is immature and doesn't work well over low bandwidths, such as regular consumer broadband. We've developed compression and management technologies that make the best use of the limited bandwidth, and we use strong encryption to prevent the finished frames ending up in the wrong hands.

"Another problem is managing a multi-user environment. How do you decide who gets the computing power? SE3D uses a market system where users are allocated processor time on the basis of bids in a succession of auctions - a little like eBay. The more you pay, the faster your job gets done."

Although the experimental SE3D system used virtual cash to give independent film-makers access to the technology, HP believes that a commercial launch of its URS will cost studios only about one-tenth as much as buying, installing and maintaining their own render farms.

This cost reduction can't come too soon for European studios, whose animated features typically have budgets just one-tenth the scale of their Hollywood rivals, and who are struggling to attract audiences to their cheaper, less computer-intensive 2D films. American studios largely abandoned 2D films following Disney's high-profile 2D flop Treasure Planet (2002), prompting the studio's chief executive Michael Eisner to proclaim: "The 2D business is coming to an end, just like black and white came to an end."

The introduction of affordable utility rendering services could ensure that there's a future for smaller animation houses - or it could make the big studios irrelevant altogether, suggests Peter Toft of HP. "Today, animation is largely in the

context of a production house," he points out. "But with widespread utility computing, virtual communities could come together from all over the world to attack large projects."

Tim Westcott, an analyst at Screen Digest, is more sceptical. "Distribution is incredibly important in the movie business. If you don't have one of the major studios behind you and aren't able to get distribution in the US, you face an uphill battle. Animation, even low-budget animation, is very expensive to make. Most people funding animation are looking for a mainstream hit if they can get it."

While it seems unlikely that a lone animator or virtual studio will be scooping the Palme d'Or at Cannes next year, utility computing could at least ensure that home-grown animators have a better chance to compete with Hollywood. As the film-maker Dan Lane says: "This technology opens up the possibility for small, independent companies to make stuff that just makes people go, 'Wow!'" And if films such as Shrek 2 are anything to judge by, where wows go, success soon follows.

Future of Animation discussion at the Cheltenham Science Festival, Friday 10 June, 8.15pm, £6/£5 (01242 227 979; www.cheltenhamfestivals.co.uk)