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Web tech splices filmmakers' global divide

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Behind the making of the upcoming animated film *Happy Feet* is a tale of two film producers struggling to work together from different continents.

Like most global team efforts, the story features off-hour conference calls and a lot of email trickling in overnight. But for a small digital-effects house like San Francisco's Giant Killer Robots, it also meant sending large, bandwidth-hogging digital video files to the director's company, Animal Logic, in Sydney, Australia.

That's not an easy task when you're a little company that can't afford fibre optic lines into the office. But if an innovative joint university-government project works out, global filmmaking teams like the one behind *Happy Feet* -- due in US cinemas 17 November -- could have an easier time getting their jobs done.

A small group of engineers in San Francisco is developing a Web browsing tool for use over a high-speed fibre network that would allow animation and film producers to co-produce a movie in real time. The application, called Sebastian, would work over a dedicated, point-to-point Internet connection, or so-called dedicated light paths, and would let remotely located artists do things like mark up frames, edit video and change colour palates as if they were in the same room.

It would make a huge difference to smaller outfits like Giant Killer Robots. When the two *Happy Feet* teams were collaborating over broadband from different time zones, using a QuickTime video editing tool called CineSync, the video clips were more like watching a YouTube clip than a high-resolution wide-screen shot, making it hard for the director to form an educated opinion. That sometimes painful process, suffice to say, slowed the filmmaking process.

"It's a two-cans-and-a-string-in-between-them kind of problem. You're really trying to break down the walls of globalisation. And it all depends on really wide pipe," said Pete Oberdorfer, co-owner of Giant Killer Robots.

Sebastian is under development at the Digital Sister Cities Lab, a research and development team that's part of San Francisco's Digital Sister Cities Initiative (DSCI). DSCI is focused on connecting cities and promoting economic development through advanced technologies.

One of the major goals of the organisation is to get high-speed fibre connections beyond universities and big companies -- who are right now about the only people who can afford them. By first working with data-intensive businesses like film companies, they hope to begin seeding a market and sparking demand that will eventually convince big telecommunications companies to decrease their sometimes dizzying fibre line rates.

In other words, build the market, and just maybe the carriers will come. Of course, it won't be easy, but the DSCI researchers see their project in two parts. First give filmmakers the tools to collaborate remotely. The second, and probably more difficult step -- give them the high-speed network to make real-time collaboration possible.

"Cisco and (Industrial Light & Magic) can burn thousands of dollars to create infrastructure themselves," said Oberdorfer. "Companies (like us) don't have that option. As this progresses, we see it scaling so that anyone can get access to it."

A key to this project is the Corporation for Education Network Initiatives in California (CENIC), which operates California's high-speed fibre network for education and research purposes.

Since DSCI has access to the network, Sebastian's developers can work on it in a high-speed environment. For companies to participate in the Sebastian development process, however, they also need access to a fibre-optic network. That's where's CENIC comes in. Sebastian's core team hopes to extend the network to small production houses, have them come to a California university campus to try it out, or acquire their own fibre network

There's little question fibre connections are making modern filmmaking easier.

For example, Lucasfilm's San Francisco office has a 10-gigabit-per-second fibre network, which it uses on some filmmaking projects, according to Joaquin Alvarado, director of DSCI. Of course, the studio behind the *Star Wars* movies isn't exactly a little company, and therein lies the challenge -- getting small outfits access to fibre.

That's a problem, because it isn't cheap. Large telecommunications carriers typically charge between $15,000 and $20,000 (£8,000-£11,000) per month for these services. Warner Brothers can afford that. So can other big production houses.

Michael Mages, former lead developer of Apple's Final Cut Pro, is heading up the development of Sebastian, which is named after one of Mages' favourite musicians, John Sebastian.

"We're developing a product to enable the next generation Internet... That's available in a research capacity right now, but we have early access to it, so we can build one of the first working tools for creative professionals," said Mages.

Alvarado believes that DSCI needs to develop compelling applications for business collaboration. Hence, the work with filmmakers.

"Filmmakers want to collaborate with people directly, and either you buy a dedicated line, which is mostly not accessible to low and mid-level production houses, or you don't. We're going to build a ubiquitous tool that's inexpensive, runs on standard platforms and allows people to preview video and film content remotely and interactive with each other," said Alvarado.

Sebastian will work like a Mosaic or Safari browser with a secure IP connection, according to Mages. The tool might offer the user a selection of production houses to link to from a list of menu options, and then once selected, it would connect the two companies in real time, with about an eighth of a second latency, Mages said.

An editor in San Francisco, for example, might select a video clip for review, and the director in Paris, could mark it up with suggestions. The two sides will also be able to talk over separate pipes designated for voice conferencing and over-the-shoulder video conferencing. With the tool, producers can also record the connected session for later review. Sebastian's player engine will support the film-editing tools Apple Final Cut Pro and QuickTime.

Mages said the lab plans to complete a prototype within the next year, developing it in partnership with production houses from San Francisco and international cities like Paris. Ultimately, he said, DSCI hopes to license the technology or sell it as software for around $149 (£79).

So far, several film and animation producers in San Francisco have agreed in principal to test the software. Giant Killer Robots' Oberdorfer said he hopes to eventually work with the technology. Wild Brain, another San Francisco digital-effects company, said it is in preliminary discussions with DSCI about using the technology, according to a company representative. And according to Alvarado, engineers from Lucasfilm and several animation companies in Paris have also signed up to the project.

"This is our pilot project," Alvarado says of Sebastian. "Our focus is this network and what kind of intellectual property we can build on top of this that incubates the students' and the city's relationship with all these other tech centres and companies. It's the next level of globalisation."