

# Surveying for the Movies

by Christine L. Grahl

**Creating visual effects (commonly known as VFX) with digital technologies and computer-generated imagery (CGI) is spawning a massive new industry, one that holds substantial promise for filmmakers and data wranglers alike. In March 2012, science fiction author Edgar Rice Burroughs' vision finally came to life on the big screen in Disney's highly anticipated blockbuster *John Carter* – thanks in small part to the skills of several surveyors with VFX expertise. Other opportunities are quickly emerging on the visual effects horizon as well.**

The push to achieve ever-more-stunning visual effects in films and video games is creating new opportunities for surveyors and other spatial data management experts.

## **A High Demand for Visual Effects**

As the demand for visual effects has exploded, so has the need to create these effects in ways that are faster, better, and cheaper. The result is a host of emerging opportunities for individuals who are

highly skilled in spatial data management and the broad world of data wrangling. “VFX work in film and television is, fundamentally, coordinate geometry,” said Duncan Lees, co-owner and director of 4DMax, a prominent VFX and forensic geomatics firm headquartered near London. “We take real-world objects and spaces and create accurate computer versions of them. Sometimes this is done photographically, sometimes with lasers, sometimes with GNSS receivers or total stations, but mostly with a combination of several types of kits. The data we deliver is used quickly and to the limits of both its precision and accuracy, so there is a real requirement for quality data.”

Lees, who was part of the visual effects team for *John Carter* and has worked on other big-budget Hollywood films such as *Captain America*, *X Men First Class*, and the *Narnia* films with 4DMax co-owner Louise Brand, notes that any increase in the quality of data, the speed of its delivery, or the integration of geometry and movement improves the end product and increases the viewing experience for the moviegoer – a key factor in boosting ticket sales. These requirements, along with an increasing push





toward 3D, have led to a surge in demand for laser scan data in particular. To meet this demand, 4DMax has invested heavily in state-of-the-art software and hardware, including the acquisition of a Leica ScanStation C10 earlier this year. The company aims to be a one-stop shop for all 3D VFX data, providing an integrated response to the varied VFX workload through a single contract.

"In theory, a lot of people with a survey background could work effectively in some areas of VFX," Lees said. "But in reality, it is not just the technical know-how that is essential; it is also the networking and people skills that secure the work and keep people happy. No jobs or contracts in VFX are advertised anywhere. It is all word of mouth. It has taken us 10 years to be able to run a thriving VFX 3D data capture and modeling business."

### **A Highly Rewarding Experience**

Besides needing the right connections, VFX professionals must be able to work in an extremely demanding environment. "VFX teams have no use for paper plots of floor plans, sections or elevations", says Lees; all of the deliverables are purely

digital, and expectations for quality are ridiculously high. Deliveries are typically due in hours or days rather than weeks, extensive travel is required, and 14- to 16-hour days are typical. Lees describes how on two recent movie sets, his team set up and calibrated their equipment in one studio or sound stage; scanned people, props and places for 14 hours each day; and then took down and moved their equipment to another studio or sound stage in preparation for another 14 hours of work the next day. "Every job is exhausting and, at times, demoralizing," he said.

The flip side is that it's often a thrilling and highly rewarding experience. "We love working with creative and respectful and talented people who are prepared to let us be professional and who respond positively to our experience and informed problem solving," Lees said. "The work is difficult and challenging, but the respect is enormous."

For Will Haynes, a third-generation surveyor and owner of FX Surveys in Los Angeles, working in the film industry provides an artistic outlet for his skills. "It's fun being part of a creative team," said Haynes, who recently worked as a set surveyor for Universal's



*Fast Five* and Disney's *John Carter* after several years of strategic networking. "Even though you're working really hard and long hours, it goes by quickly. The work is often fun, social and interesting – you're part of a pretty tight-knit visual effects team when you're on set. And you're also helping to create an artistic product, even though it's in a highly technical way.

### **Realistic Scenes for Video Games**

Technology continues to evolve at a rapid pace. The emergence of lower-cost laser scanners such as the Leica ScanStation C5 is making it easier for professionals to acquire 3D data capture technologies. Meanwhile, the general public is learning to appreciate point clouds thanks to technologies like Microsoft's Kinect, which captures 4D point cloud data for use with the Xbox 360 gaming system; at the same time, developments in open-source software are facilitating the manipulation of data for a wide variety of creative applications.

Such advances are already occurring, as evidenced by games like Activision's *Call of Duty*, which has broken numerous sales records largely due to its abil-

ity to fully immerse players in the realistic scenes. Other developments involve the use of laser scanning to create games that are easily scalable for a wide range of gaming systems and handheld devices.

In the highly competitive world of films and video games, each new effect will undoubtedly spur other directors and developers to go even further in their quest for a superior experience. Surveyors looking for a new adventure would do well to keep their eyes on both the big screen and consumer gaming devices. "Everyone is looking for more and more visual effects, and it seems like everything is in 3D," said Haynes. "I don't see things slowing down in this industry anytime soon." ■

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*About the author: Christine Grahl is the editor of POB and GeoDataPoint.com. ([pobeditor@bnpmedia.com](mailto:pobeditor@bnpmedia.com))  
Duncan Lees: [duncan@4dmax.co.uk](mailto:duncan@4dmax.co.uk)  
Will Haynes: [will@mydesk.me](mailto:will@mydesk.me)*



■ 4DMax scanned the Taj Mahal for a VXF production.