Rarely has a movie studio been under more pressure to get the vegetation right.

It was late spring in 2009, and Industrial Light & Magic (ILM) had just been asked to get a planet’s worth of virtual vegetation designed and rendered – quickly – for a science fiction film due in theaters in a short six months.

The customer? The famously exacting James Cameron, director of some of the biggest feature films of all time.

The movie? *Avatar*.

Richard Bluff, ILM Digital Matte department Supervisor, was in charge of getting Cameron the vegetation he wanted.

"James Cameron wasn’t going to settle for anything less than what he’d been envisioning," Bluff said. "He would talk about specific twigs and branches not being there, he would want a certain branch moved up three inches."

Cameron and his team had spent two years pre-visualizing Pandora, the lush planet where the movie takes place, and they’d asked ILM to help put their imagination on the big screen. Their vegetation designs were precise down nearly to the pixel, Bluff said, and they weren’t going to settle for anything less than perfect.

"You guys better be able to match everything," Bluff recalled being told.

Matching Cameron’s requirements wasn’t going to be easy, Bluff knew. "Our old methodology of doing trees was never going to work," he acknowledged. "We’d never been asked for such specific vegetation designs, and nothing we had on hand was up to the task."

"SpeedTree was simply the best choice for our work on Avatar. It’s as simple as that."
What challenges was ILM facing when you first considered using SpeedTree?
Avatar was due out in half a year and James Cameron needed us to create an exact match of the trees his team had spent two years pre-visualizing.

How long did it take you to evaluate SpeedTree?
I knew within 15 minutes that this was what we were looking for. After that, the decision to use SpeedTree was never questioned.

Did the decision to use SpeedTree facilitate the rapid development schedule?
SpeedTree was simply the best choice for our work on Avatar. It’s as simple as that.

Without SpeedTree, how would you have accomplished your trees “by hand”?
First, we would have had an entire team dedicated to the task. It would end up being tedious, expensive, and time consuming. Then, if any changes were necessary, it would take serious work to remodel them.

Can you provide any technical details on how SpeedTree fits into your workflow?
We were able to derive tons of simple background trees by randomizing the structure of a few base models. But SpeedTree wasn’t only used in the background. We used it for hero trees, too.

For one scene, I rigged up a network of deformers on a single tree for animating heavy rotor wash. We put one of our junior guys on rigging the rest of them. The animation was a task that we originally weren’t contracted to do, and that other contractors had to pass on due to the difficulty of the shot, but it turned out great.

We were able to manipulate our trees to the exact specifications of a film where every scene had been pre-visualized by Mr. Cameron’s team.

Were there any other key features of SpeedTree that were crucial to development?
The ability to randomize a single model into infinite derivatives was the only way we were able to get enough variation to create a convincing Pandora. SpeedTree provided this with a simple button click.

Were you supported by the SpeedTree staff during your evaluation?
At the time of our evaluation, a few of the key hero trees weren’t yet available in the provided model library. However we were able to work with the SpeedTree art department to quickly get an exact match based on our concept photos.

Do you expect to use SpeedTree again?
Yes, Lucasfilm Ltd. (the parent company of Industrial Light & Magic) has licensed SpeedTree for projects underway in both their San Francisco and Singapore studios.

About Richard Bluff
Richard Bluff joined Industrial Light & Magic (ILM) in 2003 as an artist in the digital matte department and has most recently taken on the supervision for the group.

Prior to joining ILM, Bluff served for three years as a digital artist and supervisor at Venice, California-based Blur Studio, where he worked on numerous projects including video game cinematics, 3D ride-films for theme park attractions, and the feature film Bullet Proof Monk. Bluff’s career began in 1997 when he was hired at Revolution Software in the U.K. as a CG Trainer. A short time later he was promoted to Lead Artist overseeing the studio’s work on a variety of video games such as In Cold Blood. Bluff is currently working as a digital matte supervisor on Transformers: Dark Side of the Moon. Bluff has worked on more than a dozen other feature films, including Iron Man 2, Transformers: Revenge of the Fallen, Indiana Jones and the Kingdom of the Crystal Skull, Transformers, The Chronicles Of Narnia, Star Wars Episode III and Peter Pan.

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