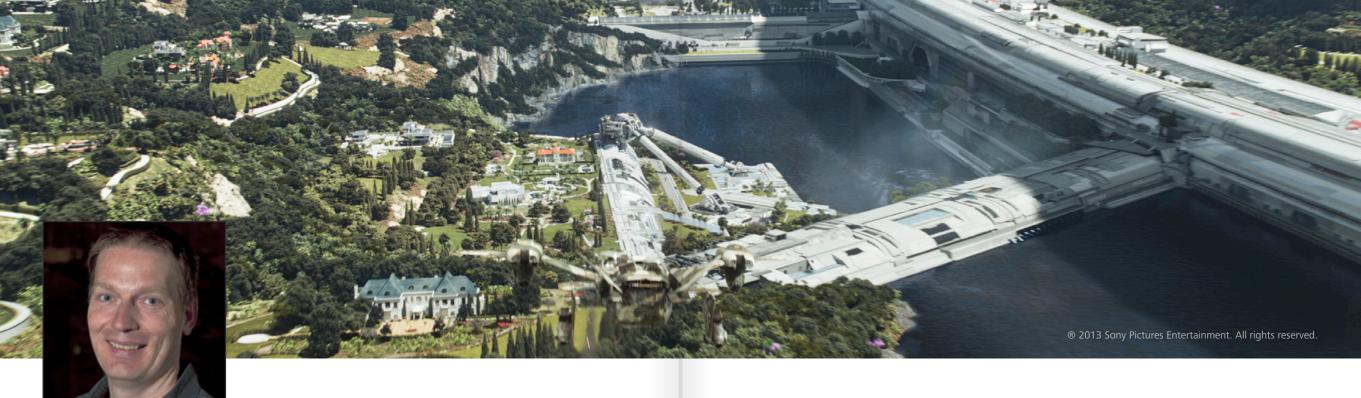# Between Earth and Elysium

Vancouver-based Image Engine leads team creating sci-fi film's stunning CG effects

In the year 2154 planet Earth is an overcrowded wasteland plagued by violence, pollution, and disease. To escape these horrors, the wealthy elite takes refuge in a paradise called Elysium, an immense space station orbiting high above the Earth. The drastic division between the two worlds seems secure—until one Earth-bound man, driven by desperation, dares to challenge the sanctity of Elysium, eventually forcing the privileged to share their bounty with the rest of humanity.

Peter Muyzers

Such is the premise of *Elysium*, a sci-fi motion picture written and directed by Neill Blomkamp, which has wowed audiences and critics with its striking depictions of a dystopian future. Bringing Blomkamp's extraordinary visions to the screen required almost 1,000 computer generated visual effects created by a team of world-renowned effects studios. Leading the team was Image Engine Visual Effects of Vancouver B.C., the same effects studio that worked with Blomkamp on his Academy Award®-nominated 2009 film *District 9*.

Peter Muyzers, partner and visual effects supervisor at Image Engine, was excited to take on what would become his company's most ambitious and extensive feature film CG project. "When Neill started to describe what he wanted to see in *Elysium*, it became clear that it would be a huge challenge," comments Muyzers. "The space station scenes would be all-CG

environments, as well as the multiple vehicles that fly around on Earth and in between Earth and Elysium. And there would be a range of digital droids performing various duties on both Earth and Elysium. When you're asked to design—in great detail—worlds that don't exist, it's definitely an artistic and intellectual challenge."

Creating two divergent worlds

To solve these challenges, Image Engine and its collaborators pulled out all the creative stops and explored every possible resource, including vintage NASA footage for analyzing the motion of real space vehicles. The biggest visual effects challenge was creating the vast orbiting Ferris wheel that would be Elysium, which was designed by famed concept artist Syd Mead. The Image Engine team, collaborating with Whiskytree of San Rafael, Calif., spent several months creating each physical component of the Elysium torus, detailing the ring interior with landscapes and mansions referenced
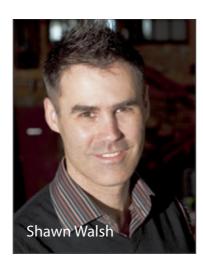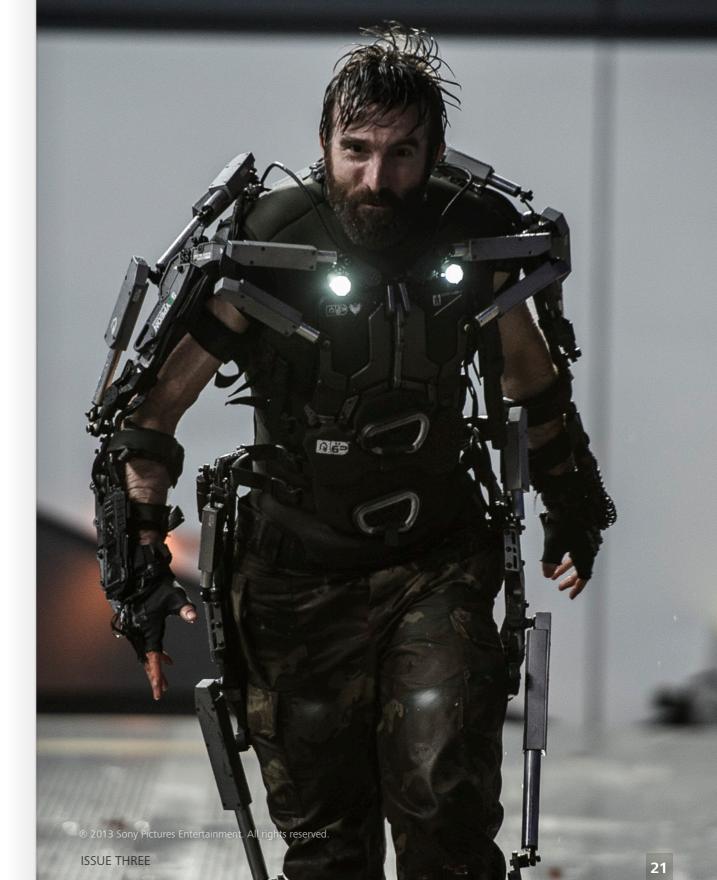
from aerial views of the exclusive Malibu and Bel Air communities. The final geometry of the Elysium environment proved enormously complex, containing approximately 3 trillion polygons, and took over a year in post production to finish.

While Elysium was to be paradise, Los Angeles in the 22nd century was to be anything but: a decayed, ruined city policed by brutal droids watching over hapless, over-worked humans. Depicting the droids on screen with the realism and fluidity envisioned by director Blomkamp engendered its own special challenges, solved by motion capturing actors in gray suits and marrying finished graphics and animation to those motion paths. To depict space vehicles landing and kicking up the dust, the film crew shot real helicopters landing on set in a garbage dump. The resulting footage then became the background plate for composting the futuristic crafts during landing.

Familiar, yet highly effective tools

For creating many of the film's visual effects, Image Engine and its team members turned to some familiar, yet highly effective tools, namely Autodesk® Maya® and Autodesk® MotionBuilder® software. "The tools making up the core of our pipeline for creating the droid scenes were Maya for animation and MotionBuilder for motion capture integration," explains Shawn Walsh, partner and visual effects executive producer at Image Engine and visual effects producer on the

Shawn Walsh

Elysium project. "These tools were absolutely crucial for Image Engine to be able to coordinate the different approaches used in this film—motion capture, keyframing, and compositing over live action—into a streamlined workflow for animating the droids in *Elysium*."

The versatility of Maya and its familiar interface were huge assets for the animators. "Using Maya on this project was beautiful for the animators," says Earl Fast, senior animator at Image Engine. "Essentially our rigging team and all the other teams did a great job using the Maya open architecture to give us rigs and assets that were very usable. We really didn't need to create too many custom tools. We used the tried and true tools within Maya to pull out just the performances that we needed to get, very quickly and with very high quality. Maya made it simple so we could do it right."

Empowering groups of artists and designers

Films like *Elysium*, with its extraordinary blending of animation and visual effects techniques, spotlight the unique collaborative capabilities found within the Autodesk® Entertainment Creation Suite. Not only does the Autodesk suite give the artist a finely meshed toolset on a single desktop, but it empowers groups of dispersed artists and designers to work together within a unified, collaborative workflow that helps foster more creativity, encourages better problem-solving, and can yield spectacular on-screen results in the finished film. As demonstrated in *Elysium*, Image Engine and their team were more than successful in achieving all of these goals through their collective use of Autodesk tools.

"When I look back on *Elysium* I'm really proud of the variety of work we did on the project," recalls visual effects supervisor Muyzers. "I think that after *District 9*, a lot of people were wondering where Image Engine would go next. I think that *Elysium* has definitely demonstrated our ability to handle a wider scope and volume of work." ▪

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