Image Engine
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Autodesk® Maya®

When you're working on massive, high-profile projects like Rise of the Planet of the Apes, there just isn't a lot of time or latitude for errors or extensive problem solving. The things you can do in a straightforward way with Maya are absolutely critical to our pipeline and to our success.

—Shawn Walsh
Visual Effects Producer
and Partner
Image Engine

Image is everything.

Image Engine uses Autodesk software for blockbuster films.

The Thing: © 2011 Universal Pictures.

Summary

Vancouver, Canada based Image Engine now bills itself as providing "Visual Effects for Film," though they had originally started out creating visual effects for television. You can tell that the company's focus has shifted decisively to the film market by taking a look at its latest projects.

In 2011, Image Engine provided many of the complex visual effects for Hollywood blockbusters: Bill Condon's The Twilight Saga: Breaking Dawn; Tarsem Singh's Immortals; Matthijs van Heijningen Jr.'s The Thing, nominated for a Visual Effects Society Award for Outstanding Animated Character in a Live Action Feature Motion Picture; and Rupert Wyatt's Rise of the Planet of the Apes, 2012 Academy Award® nominee in the category of Best Visual Effects. For all these films, the company relied on Autodesk® Maya® 3D animation software.

"When you're working on one massive, high-profile project like Rise of the Planet of the Apes, let alone four such projects, there just isn't a lot of time or latitude for errors or extensive problem solving," says Shawn Walsh, visual effects producer and partner at Image Engine. "The things you can do in a straightforward way with Maya are absolutely critical to our pipeline and to our success."

The Challenge: Apes and Other Things

The Naked Apes

Hardcore fans of the old rubber-mask versions of the original Planet of the Apes films would be hard-put to dislike the latest version. Starring Andy Serkis (Golem in Peter Jackson's Lord of the Rings trilogy) as Caesar, the super-intelligent, scientifically-enhanced ape, Rise of the Planet of the Apes was a creative and technical success. Though the majority of the effects were accomplished by WETA Digital, the film's story arc is due in large part to the work of Image Engine.

"Kurt Williams, one of the producers on Rise, has worked with us before," says Walsh. "He knew from experience that Image Engine provides a broad range of services, including a research and development department that tailors services and application programming for particular projects. Kurt needed someone to partner with WETA and help them through the previsualization process. We have an in-house previz supervisor, Cameron Widen, and we were more than ready to help."

Rise required a crew of 10 on-set artists over a period of four months, a fully embedded team on the stages of Vancouver's Mammoth Studios. Working closely with producer, Williams; director, Rupert Wyatt; and WETA digital effects supervisor,

Dan Lemon, the Image Engine team used Maya to embark on the challenging task of envisioning the world as seen by both apes and humans.

"This was what I call 'presentation-style previz,'" says Walsh. "Previz is often used as a technical tool to help understand the limitations of certain camera setups or movements and framing shots. The previz we did on Rise was much broader and more creative. This went way beyond a simple, gray-shade look at the environment with carefully animated and textured scenes that sought to find the emotional register of the film. Our previz spoke to all levels of the film, from directorial, to producing, to interdepartmental communications. To do that, you need a high-level of polish on the work. Taking advantage of the tools in Maya, we were able to write a few simple scripts when we needed to customize things, and then just have our artists dive in and do what they do so well. Maya is hugely important to us in those situations for animation, and for things like modeling, texturing, and lighting, it is crucial."

Other Things

As big a challenge as Rise of the Planet of the Apes would present, it was a cinch in comparison to The Thing. A prequel to John Carpenter's 1982 campy remake of the 1951 sci-fi thriller The Thing from Another World, this Thing is a whole other animal. Full of very imaginative and terrifying cinematic creatures, the film required over 550 visual effects shots from the Image Engine team:

"The film required over 180 full-character shots, and they were some pretty freaky characters," says Neil Eskuri, digital effects supervisor at Image Engine. "There were four main creatures, and they were so imaginative, it was a difficult process to figure out how they would move if they actually existed. The creatures, if they were real, would weigh about 400 pounds, and had both human and insectoid tentacles and appendages. They had to be fast and deadly, fully understanding their own anatomy and balance. It was as if we were taking them through their own evolutionary process sometimes, consistently adapting and developing them into believable versions of the director's vision. We went through 100 or more versions of the locomotion tests before we arrived at something he really liked."

Crucial to the creation of believable movements were some elaborate rigs, which were created by the Image Engine team. Including the 180 full-character shots, the company created over 550 shots for the film, covering helicopters and snow machines, blazing fires and the vast arctic environment in which the film was set:

"We used Maya for cloth, hair, ripping flesh, and lots of environment work," says Aleksander Szkudlarek, effects technical director at Image Engine. "Maya nCloth was particularly helpful on ripping skin shots where rapid moving tentacles explode from inside of creatures. Set extensions and landing helicopter shots required a massive snow particle simulation where Maya nParticles comes into play. There is a shot of 'Juliet-thing' set on fire where we used nParticles for fire as well as for gore and liquid elements. Maya hair system was used to rig and animate exploding tentacles. Even more challenging were the scenes where the humans transform into these weird creatures. Their clothes and skin and muscles have to rip off to reveal these creatures who are all tentacles and fangs."

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>
> —Fred Chapman
> Rigging Supervisor
> Image Engine

All of the above required extensive, complex rigging from Fred Chapman's rigging team:

"Every part of the body required a separate rig," explains Szkudlarek. "The creatures were extremely complex and always changing. We were constantly using Maya to go from modeling to rigging to animation, texturing and lighting. It was amazing."

Since returning to Image Engine a few years back, rigging supervisor Fred Chapman has been hard at work creating a more streamlined rigging system he calls "Riglets":

"Rigging is complex, especially when it comes to creature work," says Chapman. "Creative briefs tend to change quite regularly as you work through shows. There is a huge amount of complexity, especially when trying to create organic movement out of lots of mechanical and mathematical movements. Building an efficient rig is a big job, but it's only part of the process. The rig then needs to be maintained and adjusted throughout the production; this potentially can be even more

The Thing: © 2011 Universal Pictures.

labor intensive than the initial build. That's where we use Maya to write a lot of custom nodes. Not only do they make the calculations and therefore the animation rigs more efficient, they also make the hypergraph very clean and clear so it becomes much easier to read all the connections and make vital adjustments."

Riglets is a modular system that effectively treats every body part as a separate rig. Each riglet consists of a single node containing all of the variables necessary to create that module. The modules can, in turn, be plugged together to form the larger rig. Such a simple process is particularly helpful if you're building characters with two spines, two heads, several multi-boned legs with hands for feet, and fearsome tentacles emerging from the chest.

"It really made sense to have a modular system where we could treat every part of the creatures' bodies as its own independent rig," says Chapman. "Maya is the tool of choice at Image Engine, and it helped us develop the precise system that we needed for all of our work. Maya is an excellent system, particularly for technical animators. As a rigger, I find the node-based system superior in every way...Maya is essential to our pipeline at Image Engine, and it has been essential to my career."

Putting It All Together

In addition to the Academy Award® nomination for Rise of the Planet of the Apes and the incredible realism of The Thing, Image Engine's stunning work with Maya provided the visual and narrative foundations for the films Breaking Dawn and Immortals. A sweeping panoramic view of a cliff face (and a magical arrow) in Immortals was created with Maya. The company is now hard at work on director Neill Blomkamp's Elysium, set for release in 2013, starring Matt Damon and Jodie Foster.

"We're really proud of the work that the team has accomplished," says Chapman. "Personally, I'm very proud of all the films. It is amazing the work that has come out of Image Engine. There is an excellent balance here. It's a small enough company that everybody knows each other. I can get a modeler, a rigger, a lighter, and whomever else around a table and, with the use of Maya, we can figure out how to approach the latest challenge. We make decisions and do turnarounds on the fly, we have a firmly established pipeline, and a superb research and development department. It's everything you could want in a visual effects company."

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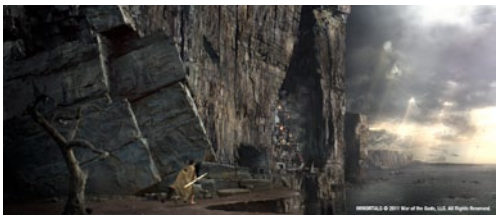

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