

# Customer Profile: Industrial Light & Magic

Company: Industrial Light & Magic (ILM)  
Location: San Francisco, CA  
Products: Autodesk Inferno and Maya  
Project : Michael Bay's *Transformers*

## MORE THAN MEETS THE EYE

**Industrial Light & Magic brings Michael Bay's *Transformers* to life with Autodesk Inferno and Autodesk Maya software.**

A military helicopter approaches a U.S. Air Force base. Unperturbed, base security requests standard identification from the already visible pilot but receives no response. A closer shot of the pilot reveals an ever-so-slight electronic flicker.

So goes the opening sequence of *Transformers*, director Michael Bay's big-screen take on what began as a line of toys in the mid-1980s. Created by the SABRE team at Industrial Light & Magic (ILM), the feast of 3D animation and visual effects that follows leaves little room for comparison. No sooner has the helicopter landed than it transforms into Blackout, a malicious, mechanical marauder who uses plasma blasts and advanced weaponry to lay waste to the base. And that is only the beginning.

"There were so many elements involved in that one sequence, let alone the entire film," explains Mark Casey, Inferno Lead on *Transformers*. "Visual overload is what Michael Bay does best, and we had the challenge

and the opportunity to block, time, and choreograph all that mayhem. The sheer number and complexity of shots would have made this movie an extremely daunting task without Inferno on our side."

Making interoperable use of Autodesk® Inferno® and Autodesk® Maya® software applications, a 30-plus-member team of digital artists created some 460 effects shots for the movie, not one of which was boring.

"There were no easy shots on *Transformers*," says Scott Benza, Maya lead, who worked on the production for more than two years. "Even before working on the opening sequence, complex models had to be built for the animators to work with. A complex previsualization was created at Bay Film using Maya, and Maya was used to create and rig all fourteen of the *Transformers* and their vehicle counterparts. Once the characters were rigged and ready to go for animation, we used Maya for 100 percent of the character animation in the movie, including facial animation."



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And make no mistake: these are no ordinary characters. Optimus Prime, the heroic leader of the Autobots, has no less than 10,108 moving parts and, in this movie, moving is definitely the operative word. With characters and scenes of this complexity, there is simply no time to be lost.

“The sheer complexity of these shots was mind-boggling at times,” says Casey. “Some included dozens of practical elements and background plates, all of which had to be stitched together with the animation. Pyrotechnic explosions shot on stage, smoke elements, lens flares, and all manner of other elements had to be combined into individual shots. With Inferno, we were able to tame the beast and pepper each shot with just the right elements to tell the story.”

The staggering amount of data required for every effects shot on the film might have caused the massive production to lag, but ILM artists were ready for that eventuality.

“We’ve never worked with models of this complexity, let alone with so many characters in one scene,” says Benza. “To speed up the process, we switched over to referencing in Maya. That allowed us to use lower-resolution versions of the characters as we created the scene. That reduced our animation time to roughly half of what it would have been using the original models. Maya increased our productivity a great deal.”



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On the Inferno side, Casey is quick to agree: “Inferno was the best tool for this job because of the system’s speed, flexibility, and ability to generate many iterations for the director. Often, the instructions we receive are pretty subjective, and Inferno gives us all the tools we need to keep trying until we get just what the director wants.”

Suffice it to say that, once again, Industrial Light & Magic transformed sheer mayhem into seamless entertainment.

*Autodesk Inferno and Autodesk Maya were absolutely the best tools for Transformers. Being able to import Maya animation into Inferno means we can leverage the animation work through the same file and with the same choreography in each shot. It is a very powerful, efficient, and streamlined way of working. That’s where these tools really shine.”*

– Mark Casey, Inferno Lead, Transformers  
Industrial Light & Magic