



ONE-MAN VFX SHOP USES MULTIPLE GPUs TO DELIVER STUDIO-CALIBER WORK

INSOMNIA 3D
CASE STUDY

Insomnia 3D is Carlos Fueyo's visual effects shop for feature films. As a one-man-shop, Fueyo both freelances as an independent VFX Supervisor on blockbusters such as *Super 8* and *Mission: Impossible – Ghost Protocol* and also works on independent projects via the Insomnia 3D banner. Fueyo's clients count on him to deliver Hollywood-caliber work on par with effects shots created by much larger teams at high-profile facilities. With no employees to fall back on to meet client demands and deadlines, Fueyo relies heavily on the speed and reliability of his hardware and software pipeline.

CHALLENGE

Director David Karlak recently tapped Fueyo for a two-month project: to help develop a teaser trailer for his sci-fi film *Rise*, as a tool to market and secure additional studio funding. The first 20 seconds of the trailer are entirely CG, and showcase a vast robot factory where the film's protagonist is introduced. The sequence required very large geometry backdrops, many factory machines and robot components, and complex textures and lighting – that all needed to look photo realistic. With lots of metallic surfaces in the sequence, it was critical for Fueyo to efficiently test various light, shadows and reflections throughout the robot factory environment. At 24 frames per second (FPS), Fueyo needed to create 480 frames for this sequence alone.

For this project – which required quick turnaround– he knew that he needed the ability to work interactively on the complex lighting shots and large CG models in order to use time as efficiently as possible. With his pre-existing CPU-based workflow – which could take anywhere from 5 to 30 minutes to render a single frame in V-Ray – that just wouldn't be possible.



Image courtesy of Insomnia 3D

SOLUTION

- > **Lenovo D30 Workstation**
- > **NVIDIA Quadro K5000 + Tesla K20**
- > **Chaos Group's V-Ray RT**

Fueyo, a longtime V-Ray user, upgraded to a new Lenovo D30 workstation with an NVIDIA Maximus dual-GPU configuration including a Quadro K5000 and a Tesla K20. The Maximus configuration, built on NVIDIA's latest Kepler GPU architecture, scaled up the compute power needed for rendering. With dual-GPUs, Fueyo also switched from using V-Ray to V-Ray RT, which specifically leverages GPU acceleration for ultra-fast and flexible rendering and raytracing. With V-Ray RT, Fueyo could manage model scenes with roughly 20 million polygons while significantly shrinking render times, giving him the added benefit of being able to test different camera angles and lighting in real time.

IMPACT

Once Fueyo switched from the CPU to a Maximus GPU configuration, each photorealistic iteration went from up to 30 minutes to mere seconds. Fueyo also utilized a dual-monitor setup to run V-Ray RT on one monitor and view the final ray-traced image on the other, which allowed him to simultaneously make and view changes in real time.

"I need between 20 and 30 iterations before I get the desired look – each time you change the lighting you have to also adjust the shadows and the reflections, and it's a delicate balance to achieve a realistic look without overloading your renderer," explained Fueyo. "With my old setup each render could take up to 30 minutes. Now with V-Ray RT running on Maximus, I can light my scene and get instant feedback. All that render time gets completely taken out of the equation. It's priceless. We're talking about days of saved time for lighting and shading tests. This hardware can handle anything and my workflow is not impacted – I don't even have to think about polygon count or texture count."

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In addition to considerable time-savings, Maximus also allowed Fueyo to work with much greater accuracy. Real light consists of many colors, so even the slightest change in lighting can impact details across an entire scene. Fueyo previously would have to resort to shortcuts such as only rendering one part of a scene and hoping the rest of it would look okay on the final render, because he simply didn't have the time or graphics capacity to render the full scene over and over.

"GPUs allow lighting and shading to be a much more interactive and accurate process, instead of a slow, painful process," Fueyo concluded. "Now it's more about the art, and less about the task of rendering. The director can stand over your shoulder and make changes in real time and get exactly what he wants. If someone had taken away my Maximus system during *Rise*, it would have been truly devastating. I'm about to get started on a project soon at a major visual effects studio, and the first thing I asked them for was a Maximus workstation. If studios want to get the most out of their artists' time, NVIDIA Maximus is definitely the way to go."



Image courtesy of Insomnia 3D

To learn more about NVIDIA Quadro, go to www.nvidia.com/quadro

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