Superior simulations

Industry-leading developer creates realistic flight simulation applications with the help of Adobe® Photoshop® CS4 Extended software

Flight simulators have come a long way in the last 20 years. One company that is very familiar with advances in modeling and simulation is Aechelon Technology, Inc. A leader in real-time computer graphics applications for the training, simulation, and entertainment markets, Aechelon Technology provides commercial off the shelf based (COTS-based) high-resolution, multi-channel, geo-specific image generators for flight simulation, visual and correlated sensor databases, and integration services. The company’s image generators are field proven, and are delivered with full logistics support and documentation.
Adobe Photoshop CS4 Extended helps streamline the process of merging images and models to create realistic environments that simulate specific aircrafts and how they fly.

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Nacho Sanz-Pastor, CEO, Aechelon Technology

Graphics quality is a key competitive advantage for Aechelon Technology’s flight simulators. Adobe Photoshop CS4 Extended software plays an integral role in helping the company create highly realistic simulations that its customers need to train and prepare for any situation.

Realistic image generation
Throughout its ten year history, Aechelon Technology has maintained an unparalleled track record, delivering over 100 trainer visual systems for the U.S. Department of Defense and the U.S. State Department Foreign Military Sales program. Aechelon serves a diverse, demanding community that includes The Boeing Company, Marine Aircraft Groups, Marine Attack Squadrons, Naval Air Stations, the Air Force Research Laboratory, and the 9th Spanish Armada Squadron.

Aechelon Technology customers use flight simulators to learn how to fly an aircraft, get up to speed on a new system, or prepare for a mission, so it is important that the technology is as true to life as possible. “Our customers rely on us for realistic image generation in tactical training, foreign-area familiarization, and mission rehearsal applications,” says Nacho Sanz-Pastor, CEO of Aechelon Technology.

Pilots appreciate lifelike and compelling visuals in flight simulators, but equally important is the scientific accuracy of the simulations. Companies in this specialized market tend to take either a scientific or an artistic approach. Aechelon Technology prides itself on balancing the two to create the most accurate and photorealistic simulations available.

The company’s pC-NOVA™ image generator and C-RADIANT™ plug-in module for multi-sensor image generation support have established a new standard for realistic image generation. Customer databases included with pC-NOVA feature detailed moving models, training routes, and various landing environments, including carriers and airfields. The stunning realism and real-time paging of texture, terrain, and cultural features provide maximum fidelity flight training.
Advanced 3D capabilities
To achieve the photorealism and complex detail desired for its flight simulators, designers use Photoshop CS4 Extended. Aechelon Technology uses satellite and aerial images to create 3D environments that mimic the real world and to simulate a particular type of airplane and how it flies. These images must be edited to make them usable in the computer simulations. Photoshop CS4 Extended helps streamline the process of merging images and models and helps Aechelon Technology follow a more natural workflow, without constantly switching between applications.

Aechelon Technology appreciates how the enhancements to the 3D capabilities in Photoshop CS4 Extended will shorten the production cycle and help the company create even more accurate, realistic simulations. Scene images taken at different times of year are rendered in the 3D modeling software and then taken into Photoshop CS4 Extended for editing, color correction, and balancing with other images in the scene. This process enables Aechelon Technology to offer ultra high-resolution terrain images, and lifelike scenery for different environments and seasons.

“We use multiple sources for images and Adobe Photoshop CS4 Extended helps us unify all of them into a cohesive result,” explains Sanz-Pastor. “Rather than using specialized 3D paint programs, the ability to have an artist use the 3D painting enhancements in Adobe Photoshop CS4 Extended to paint directly on a 3D model simplifies our process and saves a great deal of time.”

Next, Aechelon Technology creates buildings, trees, and houses that add more dimension and realism to the simulations. Photoshop CS4 Extended is integral to building these environments; it is considered the de facto standard in the industry. New features in Photoshop CS4 Extended—including the easily accessible Adjustments panel, automatic alignment and blending technology, and Rotate View tool—all contribute to a smoother, more intuitive workflow for Aechelon Technology.

Competitive landscape
The company’s technical team has an extensive background in computer graphics, gaming, simulation, and special effects production. By following advancements in the computer graphics industry, the company is able to apply the latest knowledge and technology to its projects.

Company
Aechelon Technology
San Francisco, California
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Challenge
• Create photo-realistic flight simulation models
• Balance environmental images for consistency
• Add dimension and realism to simulations

Solution
• Paint directly on 3D models using Adobe Photoshop CS4 Extended
• Edit, color correct, and balance satellite and aerial images in Adobe Photoshop CS4 Extended
• Streamline overall workflow with new Adobe Photoshop CS4 Extended features

Benefits
• Saves valuable time in the production workflow
• Eliminates the need to use a separate 3D paint program and switch back and forth between applications
• Creates ultra high-resolution terrain and life-like scenery images for different environments and seasons

Toolkit
• Adobe Photoshop CS4 Extended
“Adobe Photoshop CS4 Extended will help us continue to push the envelope on realistic flight simulation models that truly make a difference in armed forces training environments.”

Nacho Sanz-Pastor, CEO, Aechelon Technology

“Just a few years ago flight simulators were not as realistic, compelling, and interesting, as they can be today,” explains Sanz-Pastor. “Over the last three to five years a threshold has been crossed and pilots have stopped questioning the quality. We’ve reached the point where they are able to suspend their disbelief and become truly immersed in the simulation.”

According to the National Training and Simulation Association, training effectiveness is closely linked to the degree of fidelity of a simulation and it is assumed that pilots will more readily transfer training if the conditions in the simulation are close to real-world conditions. This is why Aechelon Technology is committed to delivering the most realistic simulations that will help trainees prepare for the broad range of situations they may encounter.

With many more geographic environments and models to create, Aechelon Technology sees a busy future ahead. “Adobe Photoshop CS4 Extended will help us continue to push the envelope on realistic flight simulation models that truly make a difference in armed forces training environments,” concludes Sanz-Pastor.