Making the Band

WEB

Aerosmith avatars rock the band's Internet site

By Karen Moltenbrey

There's isn't much that the members of the legendary rock band Aerosmith haven't accomplished in the music world. For decades the Boston-based group has been playing to sold-out venues, even appearing during the half-time festivities at the 2001 Super Bowl. Recently the band received an International Award of Achievement at the American Music Awards and was inducted into the Rock and Roll Hall of Fame. Now the members of Aerosmith are making their presence felt in the cyberworld as well.

On the group's newly redesigned Web site (www.aerosmith.com), lifelike virtual representations of the band members assume the identities of the actual musicians during scheduled interactive live chat sessions with fans. The avatars also make periodic "drop-in" appearances, increasing visitors' chances for a "star" sighting. "There's a lot of real-world psychology that applies to the virtual world, like the thrill of seeing a rock star, which personalizes the experience when visiting a Web page," says Thom Kidrin, CEO of Worlds.com, the 3D Internet portal that created the site. "The one big difference is that in the cyberworld, you can interact with the band members, which is extremely difficult to do in the real world. And, although you're interacting with 3D avatars, they are very realistic in their appearance, heightening the experience."

To create the digital alter egos of these highly recognizable rockers, Worlds.com animator Odette Plavinskas, working with Geometricks in London, built 3D models of all five band members using Discreet's 3D Studio Max. The key to creating the Web characters was keeping the resolution of the model textures to a minimum without lowering the detail quality. This was done through Worlds.com's Gamma Shaper software, which compresses special bitmapped textures created in Max, thereby reducing each image to about 2k, so the Internet user can easily render it.

Because the band members-especially front man Steven Tyler-are highly recognizable, it wasn't enough for the models to vaguely resemble the rock stars; they had to look just like them. "We wanted fans to have the experience of 'meeting' the band members on the site," Kidrin says. For this challenge the company collaborated with 3DMetrics, which used its 3DFlash digital imaging technology to capture the precise facial details of each band member.

The software works somewhat like a regular digital camera, only the results are in 3D. "All they had to do was look at the lens and smile," she says. "It was just like taking their pictures, but instead we got the full geometry of their faces with a single shot by flashing a patented red, blue, and green vertical line grid on the subject's face."

In a fraction of a second, 3DFlash captures both a standard two-dimensional bit-map image of the face and the underlying geometry mesh. The photograph is essentially laid on top of the 3D geometry, resulting in a completely realistic 3D model, says Jack Strange, 3DMetrics' president and CEO. "We use this process for biometric purposes so it has to be accurate-it's within two-tenths of a millimeter," he notes. "To get the same results manually would take a digital artist months." The resulting polygonal mesh is extremely dense. For this project, it contained nearly 10,000 vertices, although the detail can be higher if

To create a stylized version of the band's faces for another area of the site, 3DMetrics reduced the polygonal count of the facial geometry to between 2000 and 5000 vertices. "The underlying structure looked like a spider web, to which we applied the actual texture colors-not to the overall image itself but just to the little thin lines," says Strange. "The result was very cool."

Although a full 360-degree face and head image complete with realistic hair is possible with the technology, for this application, only the facial geometry was needed.

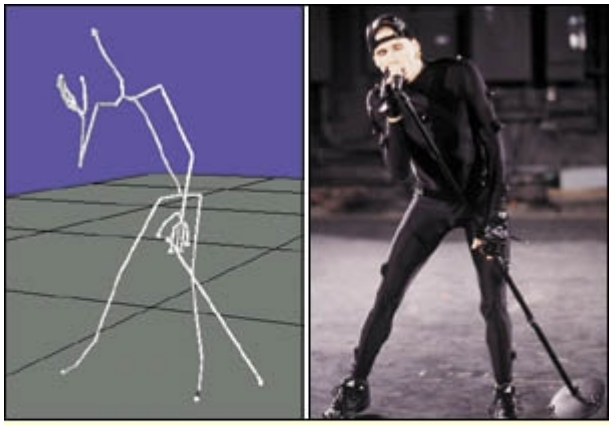
A French company contracted by 3D Metrics was to perform a Boolean weld to secure the facial geometry onto a universal head model, but the head model was not ready in time for the new Web site launch. As a temporary solution, Plavinskas created the facial structures in 3D Studio Max, then used textures from 2D photographs, which were stretched over the 3D shape. "My goal is to get those faces from 3DMetrics to work with our technology," Plavinskas says. "It's a small file, about 400 polygons, and the mapping is beautiful-it's extremely accurate, and they didn't lose any quality during the compression."

Musicians with Moves

Not only did the avatars have to look like the band members; they had to move like them as well. "Only one person can perform with a microphone stand like Steven Tyler, and that's Steven Tyler," says Matt Madden, director of R&D at Giant Studios, which captured the motion of the performers.

Using its proprietary optical Motion Reality System, Giant Studios captured a variety of movements, from simple hand waves and handshakes to more intricate dance motions.

"The band members were a little reserved at first, but once they saw how the technology worked, they really became receptive to it," says Madden. Giant Studios' system uses a real-time feature that maps the movement onto a customized human model, enabling the group to see the end result as they were performing. "Steven was amazing. He never did this before, but he just kicked right into the song and ignored the fact that he was being motion-captured, which made the performance look fantastic," he adds.



The Aerosmith avatars were animated using motion-capture files from Steven Tyler and the other band members, which made the 3D models move more realistically. (Photo courtesy Gene Kirkland.)

The motion files were then given to Plavinskas, who used Credo Interactive's LifeForms software to customize the motion and map the movements onto the fully articulated 3D models. She also added other animations that could be performed by the avatars. "It's not some cheesy animation-when you see Steven Tyler's avatar dancing; it looks like him dancing," Plavinskas maintains. To reduce the number of animation keyframes, she converted the LifeForms animation files into Credo's SEQ format, so the motion would run quickly and smoothly on the site. "It's the first time we used motion capture for our application, and we're very happy with the results."

Kidrin thinks many visitors will become star-struck if they happen to bump into one of the band members roaming the site. "Teenage girls will start instant messaging each other whenever one of the avatars appears, " he predicts.

Key Tools

3D Studio Max, Discreet (www.discreet.com)
3DFlash, 3DMetrics (www.3dmetrics.com)
Shaper, Worlds.com (www.worlds.com)

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