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## **Mova® And Gentle Giant Studios Show First-Ever Moving 3-D Sculpture Of Live-Action Performance**

### ***3-D Zoetrope on Display at SIGGRAPH 2007 Brings to Life Physical Sculpture of Speaking Face***

(Aug. 6, 2007 – SAN DIEGO -- SIGGRAPH) Performance capture studio Mova and Gentle Giant Studios are unveiling a unique 3-D Zoetrope that uses persistence of motion to bring to life a series of 3-D models of an actor's face captured live by Mova's Contour Reality Capture System in booth 1229 at SIGGRAPH in San Diego this week.

Two-dimensional Zoetropes, a precursor to motion picture technology, have been around since the 1800's, and recently 3-D Zoetropes have shown animated characters in motion, but this 3-D Zoetrope is the first to show a live-action, natural 3-D surface in motion. The resulting effect is a physical sculpture of a speaking human face that comes to life with perfect motion, faithful to the original actor's performance down to a fraction of a millimeter.

"Just as the 2-D Zoetrope offered a glimpse of the coming future of full-length 2-D movies, in our lifetimes we'll be seeing not only 3-D live-action movies, but 3-D interactive experiences that look as physically real as this 3-D Zoetrope," said Steve Perlman, founder and president of San Francisco-based Mova. "Contour Reality Capture will eliminate the restriction of a single camera viewpoint, allowing us to freely move around and into a live action scene, while still maintaining complete photorealism."

"The 3-D Zoetrope is an example of capturing a live performance, digitizing it and then returning to the physical form to create a type of real-time, stop motion animation," said Brian Sunderlin, vice president of operations of Gentle Giant Studios in Burbank, California. "Gentle Giant Studios provides an integral component to visual effects creation for feature film via 3-D scanning of actors. Combined with the revolutionary

process that is the Mova Contour Reality Capture System, we envision a seamless integration of true, motivated performances that will wow audiences worldwide.”

The Zoetrope on display at SIGGRAPH consists of thirty 3-D models of a face in motion. The models spin on a wheel and a strobe light illuminates each as it passed by a viewing window, much as still frames projected intermittently are perceived as a moving image. To the viewer, it looks like one 3-D face in continuous motion.

Mova used the Contour Reality Capture System to capture the live performance of an actor using an array of cameras with shutters synchronized to lights flashing over 90 times per second, beyond the threshold of human perception.

The glow from phosphorescent (“glow in the dark”) makeup sponged onto the actor is captured by the camera array. Triangulation and frame-by-frame tracking of the 3-D geometry is then used to produce over 100,000 polygons to create a 3-D face, to an accuracy of a fraction of a millimeter.

Gentle Giant Studios used the captured 3-D surface geometry and formed 30 individual models with the help of a 3-D stereolithography printer, which creates the models layer-by-layer using a plastic resin. Gentle Giant designed and fabricated the actual Zoetrope mechanism.

The apparatus is presented in an enclosure at SIGGRAPH to keep out extraneous light with a window to look in to see the 3-D sculpture in motion.

With Contour, every subtle detail of a human performance—from an arching eyebrow to widening eyes to a sly smile—is recorded in real time, offering directors and producers a level of creative control that has never existed before. In essence, Contour ties together the traditional world of cinematography with digital computer animation, expanding the possibilities for both motion picture and video game makers.

Contour’s high-definition, 3-D volumetric capture of the action can be imported, modified, manipulated or retargeted to other characters using off-the-shelf CGI animation software. Contour can quickly and easily import true human behavior in all its distinct complexity into the virtual realm and works well with both marker-based motion capture and key frame animation systems.

Traditional marker-based motion capture is used to create incredibly realistic performances for skeletal captures, but was never designed to capture the intricacies of soft tissue motion, like pursing lips or billowing fabric. Contour captures the motion of any 3-D surface, deformable or not, with sub-millimeter precision at up to 120 frames second, at a resolution of over 100,000 polygons per frame. The result is a totally real, digitized performance that requires minimal manual clean up.

Due to the enormous costs involved, most attempts to create photorealistic Computer-Generated (CG) humans have been limited to big-budget films with long production

schedules. In some cases, literally tens of millions of dollars are spent trying to create photoreal CG humans, using production processes that may require the director to wait weeks or months to see the results from a live shoot. Contour not only carves out a huge chunk from a photoreal production budget, but it provides the director with photoreal CG still previews on set, and high resolution motion 3-D previews the morning after a shoot, eliminating the large delay currently associated with “Digital Directing”, all the while maintaining unprecedented image quality and realism. In fact, Contour results in such a dramatic reduction in photoreal production costs, it opens the door to using photoreal CG characters in a wide range of motion picture, video game, television and commercial productions as well as other yet to be imagined applications.

Contour is compatible with popular animation software and hardware systems, including Autodesk Maya, Autodesk Motion Builder, Autodesk 3D Studio Max, Softimage|XSI, Softimage|Face Robot, all Vicon software, and the Vicon MX family of motion capture hardware. Contour data can also be exported as OBJ, C3D, or Autodesk Point Cache 2 files and synchronizes with SMPTE time-codes.

SIGGRAPH attendees can see the 3-D Zoetrope at the Mova booth #1229

### **About Mova**

San Francisco, CA-based Mova provides 3-D performance capture services and technology for feature films and video games. Mova’s clients include Digital Domain, Rhythm & Hues, Electronic Arts and Vivendi Universal. Mova has worked on such projects as the Electronic Arts’ *The Godfather* and *From Russia With Love* and Vivendi Universal’s *Eragon* as well as major motion pictures currently in production. Mova was founded by Steve Perlman within the Rearden™ creative and technology incubator, which also incubated Ice Blink Studios, that Steve Perlman co-founded with Doug Chiang (production designer, *The Polar Express*, *Beowulf*). Ice Blink provided visual effects and art direction for Sony Pictures’ Academy Award®-nominated performance capture feature, *Monster House* and art and production design for Warner Bros’ upcoming performance capture feature *Beowulf*.

### **About Gentle Giant Studios**

Burbank, CA-based Gentle Giant Studios was created by Karl Meyer over ten years ago. Beginning his journey as a practical model maker, he quickly realized that the digital age needed to be embraced and incorporated into the world of toy and collectable development. By adopting 3-D scanning and 3-D printing technology, he not only revolutionized the toy industry, he opened many doors of opportunity within the realm of digital visual effects.

Today, Gentle Giant has teams of concept artists, traditional and digital sculptors creating content for television, feature film and video games. As visual effects (VFX) studios continue to raise the bar in their efforts to impress audiences, 3-D scanning and modeling have become an integral part of their methodology. Productions such as the *Lord of the Rings* trilogy, the *Spiderman* trilogy, all six *Harry Potter* features and over

one hundred others have all sought out Gentle Giant Studios for its expertise in those arenas. As greater demands are placed upon VFX teams to deliver incredible visuals, the need for highly accurate data becomes that much more integral. Gentle Giant continually meets these challenges by developing and acquiring new technology on a regular basis.

Gentle Giant Studios works with Industrial Light & Magic, Rhythm & Hues, Sony Imageworks and many others.

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Patents pending.