Success Story

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—Dr. Philip Paully, director, Graphics Engineering and Operations
NBC Olympics

SGI, Alias|Wavefront, and Harris Corporation Power NBC Olympic Winter Games' Broadcast Graphics

NBC, known for pushing the edge of sports broadcast graphics technology, is once again relying on SGI® hardware and Alias|Wavefront™ software for the 2002 Olympic Winter Games, airing from Salt Lake City, Utah, February 8 through February 24. NBC will create preproduction and live-to-air broadcast graphics using recently released Maya® 4 software from Alias|Wavefront, an SGI company, running on four Silicon Graphics® Onyx2® deskside visualization systems and two Silicon Graphics® Octane2™ visual workstations. The SGI systems will be housed in the graphics area of the NBC compound within the International Broadcast Center at the Salt Lake City Olympic site. Also new this year is Harris Corporation's contribution: photo-realistic 3D venues for fly-throughs created on Harris RealSite™ proprietary software, running on an SGI® Onyx® 3200 system.

According to SGI senior systems engineer Cynthia Marie Miles, who will lead the on-site 24x7 support team, "The four Onyx2 deskside systems will be used for a variety of applications, including direct-to-air graphics and 3D imagery serving. On the Onyx2 systems, NBC will run Maya 4 for rendering. The two Octane2 workstations are supercharged with the 128MB VPro™ 12, our highest end desktop graphics engine, and will build intros, outros, segment IDs, templates, and 3D animations running Maya 4, which has just been qualified for Octane2." SGI® Origin® 200 servers are being used for the render farm.

"After using Silicon Graphics Onyx2 systems at the Sydney 2000 Olympic Games, we decided to ramp up our graphics capabilities with the Octane2 with VPro 12, which offers twice the graphics performance of other desktop visualization systems," said Dr. Philip Paully, director, Graphics Engineering and Operations, NBC Olympics. "The Octane2's high-speed, configurable graphics memory, coupled with Maya 4, allows us to create state-of-the-art broadcast graphics. We are creating a vast array of templates, graphics, and 3D animations that must be available immediately for play out to air. During the Games we will be creating even more graphics, rendering all night. For this mission-critical application, graphics power and digital video capabilities are paramount to our success, and we already know we can depend on the power of SGI."

SGI is also working with NBC and Harris Corporation, which has created 3D models of the Olympic venues taken from satellite and aerial photography. Harris RealSite software has the ability to take in such very high resolution imagery, process the data through their SGI Onyx 3200 visualization system, and create a photo-realistic 3D model. Harris, which started work on the venue models last July, has used the same process only once before for television when it created 3D photo-realistic fly-throughs of New York City, before and after September 11, for MSNBC.

"We take the aerial shots, we register them—'orthorectify' them—and then run them through our RealSite modeling process," said Joe Nemethy, product manager for RealSite, and software engineer, Harris Corporation. "It's semiautomated; we have some user interaction, especially to pick out the tops of buildings. Once all the objects are delineated, RealSite generates all the geometry and all the polygons. Then we run it through an automated texture-mapping process. We load all the images into a giant database, and it finds the best picture for our needs."

Harris also uses another proprietary tool, InReality™, which can measure the polygons and the actual objects in the 3D scene, accurate to within one meter. "The reason they're so accurate is that we use the original imagery to generate the model, so once we process the source data, it's as accurate as the original," explains Nemethy. "When we do our RealSite modeling we prefer the SGI Onyx 3200 system because of its speed, performance, and advanced texture-mapping capability. It's the only UNIX® OS-based system that we know of that can handle the amount of textures and the amount of polygons we require," Nemethy concludes. "Once we run the models for NBC through our automated texture-mapping application, we render on Onyx 3200 in Alias|Wavefront Maya. We can only do that on SGI Onyx systems because we're pushing the limit: all textures are original imagery and not duplicated. Onyx 3200 enables us to handle the size and complexity of these geospatially accurate models."

Once NBC receives the models from Harris, artists use Alias|Wavefront Maya to define and record animation paths for fly-throughs, add lighting effects and animation scripts, and then perform batch-process rendering. Finished 3D models will be available to producers from still stores, to be played out to air at any time during the Olympics broadcast.

Mark Sylvester, ambassador, Alias|Wavefront (which has been part of NBC's coverage of the Olympics since 1985), notes, "A broadcaster can work for a long time ahead of an event to get things ready, as NBC does, but when you're being asked to produce in real time—to put elements together in different ways—you need software that is very 'fluid,' software you can work with very quickly and efficiently. Those are the kinds of enhancements we added in Maya 4. For the artists and producers at NBC for the 2002 Olympic Winter Games, it's about the power of visualization as a communications tool—how you give the viewer a real sense of place—and in sporting events, the visualization power of SGI and Alias|Wavefront is just a natural. We're all very proud to contribute to another great graphics package for the Olympics."

NBC

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