Success Story

Summer Games
ATHENS 2004

SGI® Delivers High-Performance Broadcasting and Graphics at the 2004 Summer Games

"We continue to use SGI hardware because it delivers the consistency and performance, the tremendous power, speed and efficiency in building our broadcast graphic elements."

— Dr. Philip Paully, director of graphics, engineering and operations for NBC Olympics

At the 2004 Summer Games in Athens, SGI® high-performance visualization systems and SGI® InfiniteStorage systems are impacting broadcast graphics, digital broadcasting and 3D virtual environments for a variety of long-time SGI customers.

- To create new and differentiated eye-popping broadcast graphics throughout its coverage in Athens, NBC, for its fifth Games broadcast in a row, has chosen SGI visualization systems, including Silicon Graphics® Tezro, the most powerful visual workstation Silicon Graphics has created to date.

- Danish Broadcasting Corporation (DR) purchased a broadcast system from Silicon Graphics—nicknamed "a digital TV station in a box"—that will allow its sports and news teams to cover the Games by working with a smaller clone extension of the complete digital workflow environment used in Copenhagen. For the first time, DR will digitally transmit coverage via SGI® Media Server™ for broadcast systems.

- The Foundation of the Hellenic World—a not-for-profit cultural institution in Athens, Greece—has expanded its permanent virtual exhibits by opening an immersive 3D virtual reality (VR) tour of the ancient city of Olympia, created on and powered by a selection of Silicon Graphics high-performance visualization systems, including an SGI® Onyx2® visualization system.

Image courtesy NBC.

Summer Games Athens 2004

SGI Serves NBC at Five Games in a Row

For more than a year and a half, 3D and graphic artists at NBC headquarters in New York have been using SGI systems to create the interstitial content, including show opens and closes, intros/outros and a huge variety of graphic treatments, including the building of massive amounts of 3D models for technical animations, slated to explain many events and detail the equipment used by the athletes. NBC has used SGI® IRIX® OS-based workstations and servers for pre-build and on-site broadcast graphics creation since the 1992 Barcelona Games and on through Atlanta, Sydney, and Salt Lake City.

"We continue to use SGI hardware because it delivers the consistency and performance, the tremendous power, speed and efficiency in building our broadcast graphic elements," said Dr. Philip Paully, director of graphics, engineering and operations for NBC Olympics. "I've been working with SGI hardware since Barcelona, and there have been no failures, no downtime. If we ran these programs on other platforms, we wouldn't be finished in time. To create the complexity of the 3D modeling that we do, you need a computer as powerful as an SGI system. Another key issue: SGI equipment integrates so well with the existing graphics network for all the other devices—we do a lot of work with character generators and still stores, too—that we have no problems with file interchange between any of them."

The same SGI systems used to pre-build NBC's Olympics broadcast graphics are now up and operational in the International Broadcast Center (IBC) in Athens, for use throughout NBC's coverage. The systems include: two 2-processor Silicon Graphics® Octane2™ visual workstations, one Silicon Graphics Octane2 running Discreet® flame® and one running Alias® Maya® software, a 4-processor SGI Onyx2 visualization system for rendering output from Discreet flame and Alias Maya, and four compact, 2-processor SGI® Origin® 200 servers for Maya remote rendering, clustered together using SGI® NUMAlink™ cables into two 4-processor systems.

Making their debut are two 4-processor Silicon Graphics Tezro visual workstations running Discreet flame software, configured with SGI® VPro™ V12 graphics and SGI® DMediaPro™ DM2 and DMediaPro™ DM5 graphics options. These options provide NBC with the highest quality, high-definition and standard-definition multi-format real-time video input and output. Using the Tezro equipped with DM2 and DM5, NBC already has already created the on-hand HD graphics to compliment the planned HD broadcasts and has the ability to easily create new HD/SD broadcast graphics for air during the Games. The Athens Games marks the first time NBC is adding Silicon Graphics Tezro visual workstations and the first time they are using Discreet's high-end SD/HD flame.

Image courtesy NBC.

Tezro is expected to thoroughly meet and surpass expectations in Athens, as well as for the Winter Games in Turin.

Danish Broadcasting's "Digital TV Station In A Box"

Danish Broadcasting Corporation (DR), whose newsroom of tomorrow was designed by SGI in 1999 to meet its specifications for a digital workflow, was so pleased with its purchase, the broadcaster again chose SGI to take another leap into the future of broadcasting by supplying the rugged, robust and powerful SGI components at the heart of its traveling digital newsroom. DR conceived the idea of a "digital TV station in a box" last October as it began preparations for coverage. The digital broadcasting environment assembled in Athens after extensive testing in Copenhagen is based on a compact SGI® Origin® 300 server, two SGI Media Server™ for broadcast systems, and one SGI® InfiniteStorage TP9300S 6TB SATA storage drive. DR will be able to store from 200 to 400 hours of content, depending on whether the ingest format is DVCPRO25 or DVCPRO50.

Image courtesy Danish Broadcasting Corporation.

"While most broadcasters are bringing traditional analog equipment, we decided that since our journalists, editors and technicians were familiar with the applications they now run and they were all very happy with the ease of use and the immediate shared access of the SGI product—implemented digital workflow, DR would construct a smaller version of our digital broadcast operations and ship it to Athens—all connected to DR in Copenhagen," said Ivan Bang, Technical Projects Manager at DR Sporten. DR has been testing the traveling system for several months and according to Bang everything is working very well together. "We are excited to see if everything works as planned. It's a little thrilling to try to take this concept of an all-digital workflow from our Copenhagen studios on through to an outside broadcast environment. We had to do it," he added, with a chuckle,

"because everyone is so used to doing everything digitally that they've forgotten how to use analog equipment."

One of the many benefits of transporting the digital TV station in a box is that DR's three media outlets—TV, radio and Web—will all be able to interact and share content with each other. Plus, DR's team in Athens will be able to access the eight main SGI Media Server for broadcast systems, SGI Origin family servers, and the StorageTek® archive in Copenhagen to add, for example, footage from the previous Summer Games in Sydney to its current newscast as it is being edited in Athens. DR will connect its Athens facility within the IBC to Copenhagen with a DS3 fiber solution to transmit video feeds, 3 audio channels for radio, plus 8 audio TV commentary circuits from the venues. An Ethernet connection networks all of its

base systems and, since DR is now working in the SGI digital environment, it will be able to transfer some of the less time-sensitive video and audio material from Athens as file transfers (FTPs) to Copenhagen.

3D Immersive Tours of Ancient Olympia at FHW

Just in time for the Summer Games, the Foundation of the Hellenic World's (FHW) innovative cultural center/museum in Athens, Hellenic Cosmos, opened a new 3D immersive tour driven by an SGI Onyx2 system that allows visitors to explore the history of 30-plus temples and secular buildings of ancient Olympia, the birthplace of the Games. The dazzling 3D visualization capabilities of the cultural center, powered by SGI® technology, are also being used for an in-depth virtual tour of the Temple of

Image courtesy Danish Broadcasting Corporation.

"It's a little thrilling to try to take this concept of an all-digital workflow from our Copenhagen studios on through to an outside broadcast environment."

– Ivan Bang, Technical Projects Manager at DR Sporten
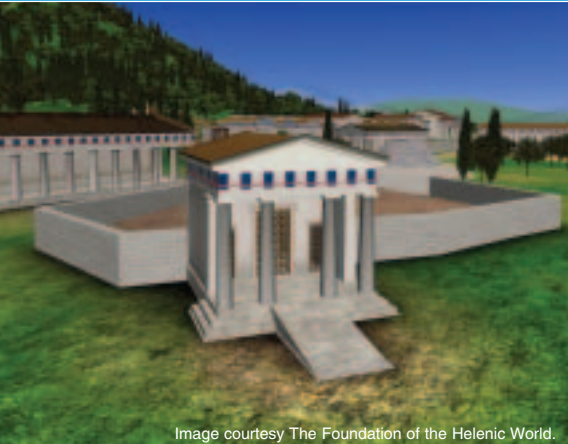
Summer Games
ATHENS 2004

Image courtesy The Foundation of the Helenic World.

> "We have relied on SGI's visualization power and expertise for many years because SGI is easily upgradeable and very scalable."
>
> *– Athanasios Gaitatzes, Head of the Virtual Reality Department, Foundation of the Hellenic World*

Zeus, ancient Olympia's largest building. The temple includes the ivory and gold statue of Zeus, one of the Seven Wonders of the Ancient World. Zeus' statue is also featured in a virtual visit to the workshop of Phidias, which shows how the sculptor created the seated Zeus, with a miniature of Nike, the goddess of victory, in his hand. Hellenic Cosmos is also premiering an immersive pentathlon powered by SGI technology, where the public can interact virtually with ancient Olympian athletes in five sports, including the 200-meter sprint, discus throwing, wrestling, the long jump and javelin throwing.

A long-time SGI customer, FHW's Hellenic Cosmos currently uses an SGI Onyx2 visualization system to power its ReaCTor immersive display with four SGI, InfiniteReality2™ graphics subsystems to power the cave-like virtual environment. A Silicon Graphics® Octane® visualization workstation runs Fakespace Systems Inc.'s Immersive Desk to display additional content. At FHW's main headquarters, located under the Acropolis, artists and software developers use the framework of C++ to write their own software for development of the environments on Silicon Graphics® O2® visual workstations and SGI Octanes, both running SGI® OpenGL Performer™, a real-time graphics programming toolkit; Softimage 3D and XSI are primarily used for modeling. Over the years, SGI visualization systems have been used to create the content of all of the Foundation's virtual reality environments, including the three new environments created especially to coincide with the 2004 Athens Summer Games.

"We have relied on SGI's visualization power and expertise for many years because SGI is easily upgradeable and very scalable," said Athanasios Gaitatzes, head of the Virtual Reality Department, Foundation of the Hellenic World. "We develop our virtual environments on O2 and Octane and run them on Octane and Onyx2. SGI Onyx2 is extremely reliable, which is a big plus, because almost every day during the winter we have about 300 children using the exhibits—we can't afford to have any down time. In terms of scalability, being able to use our applications from the O2 up to the Onyx2—without making any changes—is very efficient."

FHW is making a major addition to the Hellenic Cosmos cultural center that includes the development of 3D environments for a 128-seat domed theater. Construction will begin in early fall 2004, with the completion and grand opening projected for 2006.

From NBC broadcast graphics that rivet viewers to their seats, to Danish Broadcasting's innovative traveling newsroom, to the dazzling 3D tours at Hellenic Cosmos, SGI customers throughout the U.S. and Europe are discovering the robustness and reliability of SGI systems. The system architecture of SGI hardware is based on an open file system and industry standard video formats and file types, meaning that a huge variety of products from internationally known and trusted broadcast equipment and software application providers can be easily integrated. This is especially important to broadcasters, as the superior quality and efficiencies of digital and HD broadcasting rapidly becomes the norm.

sgi®

Corporate Office
1500 Crittenden Lane
Mountain View, CA 94043
(650) 960-1980
www.sgi.com

North America +1 800.800.7441
Latin America +55 11.5509.1455
Europe +44 118.925.7500
Japan +81 3.5488.1811
Asia Pacific +1 650.933.3000