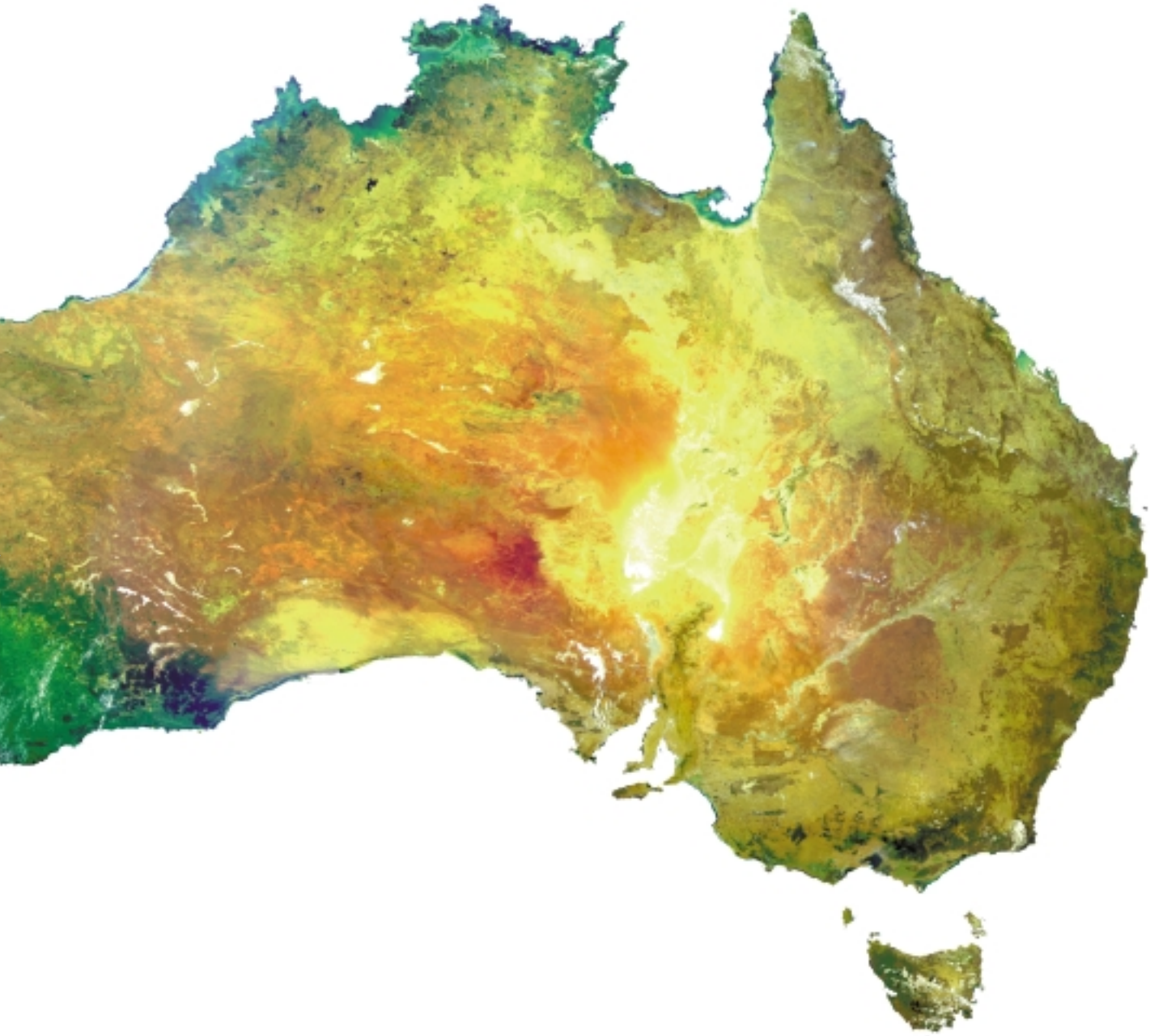
sgi™

Geospatial Imaging Solutions from SGI



SGI™ Geospatial Imaging

IKONOS image courtesy of Space Imaging, Inc.

Only SGI offers the combination of industry-leading bandwidth, compute power, scalability, and real-time graphics performance that it takes to handle today's geospatial imaging needs. Commercial, standards-based, off-the-shelf systems from SGI collect, process, and exploit data for GIS and defense organizations worldwide. They give defense establishments powerful tools to accelerate everything from photogrammetry and mapping to geodesy and battlefield visualization.

SGI technology is at work today in every step of the imaging process chain—in ground stations, digital archives, and data exploitation. Space Imaging, Inc., for example, uses SGI systems to collect, archive, and exploit data. Defense organizations use SGI™ Origin™ family servers to record data directly off satellite downlinks, process it, and archive it. Silicon Graphics® Onyx2®, Silicon Graphics® Octane2™, and Silicon Graphics® O2® workstations for IRIX® and Silicon Graphics workstations for Linux® and Windows NT® are being used to exploit data in GIS, photogrammetry, and remote sensing applications.

For sheer power, bandwidth, and flexibility, no other platform comes close to SGI. That's why SGI technology is widely used to handle the most demanding geospatial imaging assignments on the planet.

"Space Imaging uses satellites to capture digital images and bring them back to the ground for processing and the creation of information products using a variety of SGI computer equipment. We have been able to lower the cost per unit of what we produce and make it feasible to bring high-resolution data to the commercial marketplace using commercial off-the-shelf computer technology available from SGI."

—John R. Copple
CEO
Space Imaging

scalability

"The SGI GroupStation proved itself in operation, something no amount of testing can match. An urgent Department of Defense request for 3D maps, terrain data, and target analysis for a special mission in Kosovo prompted us to draft the GroupStation into active duty from an agency evaluation program."

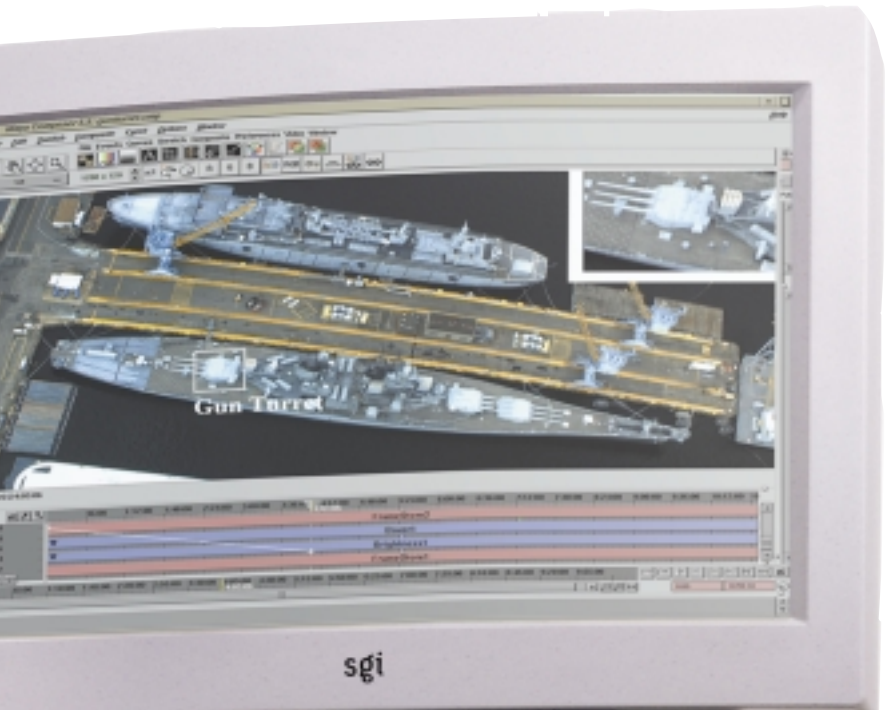
—National Imagery and Mapping Agency (NIMA) spokesman

SGI's Unique Combination of Computational Power and Bandwidth

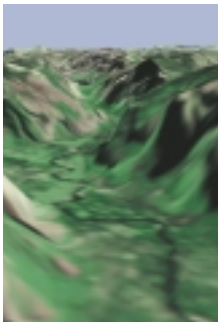
Today's ground stations demand extraordinary bandwidth to collect massive amounts of satellite imaging data and the computational power to process it in real time. Only SGI combines high bandwidth and processing muscle in a single system: the SGI™ 3000 family. The benefits of bandwidth and compute power explain why most large commercial satellites use SGI servers to collect and process data, why SGI 3000 family technology drives the Space Imaging satellite ground station, and why companies such as Orbital Imaging and IRS (Indian Remote Sensing) chose SGI servers for their high-performance ground station solutions.

The Advantages of Unlimited Scalability

The acquisition of geospatial information quickly creates mountains of data. As data accumulates, the demand for storage capacity grows exponentially. The challenge here is to create an archival system that can grow easily, cost-effectively, and continuously with no boundaries. Only SGI delivers the kind of scalability that is virtually open-ended. SGI™ Origin™ 3000 series servers, for example, scale from two to 512 processors with the simple, risk-free addition of NUMAflex™ building blocks. NUMAflex is an innovative approach to computing, combining the third generation of the SGI™ NUMA architecture and a modular hardware design that isolates the various components of today's servers into "bricks" that can be easily reconfigured or upgraded. For digital archives of geospatial data, the SGI Origin 3000 series provides the opportunity to start at any compute level and expand easily as databases and networking needs grow.



Left: Gun Turret image courtesy of Naval Research Lab (NRL). Right: Terrain data image courtesy of U.S. Geological Survey.



USA image courtesy of TriFid Corp.

GIS

Greece image courtesy of Landsat 7

Remote Sensing

Rosslyn, VA image courtesy of BAE SYSTEMS Mission Solutions

Photogrammetry

Unequaled Real-Time Graphics Performance

Defense imaging teams are now using the graphics, bandwidth, and processing power of SGI Onyx 3000 series visualization systems to fuse real-time data sets from a range of sources into a single 3D image. SGI Onyx 3000 series systems easily process signals from satellite ground stations and merge geospatial data, 2D or 3D real-world imagery, real-time video, and 3D terrain data to display images of real-world locations that provide mission-critical decision support.

SGI Onyx 3000 technology provides a cost-effective platform for imagery exploitation, mission planning, situation assessment, simulation, and command, control, communication, computers, and intelligence (C4I). Situational awareness, decisions, and response time improve dramatically. As imagery, C4I, visual simulation, and mission planning continue to merge, only SGI Onyx 3000 technology has the power to unify defense and intelligence data by combining a high frame rate with high-resolution images.

SGI also brings real-time graphics to the desktop in the form of powerful, deployable, cost-effective workstations using the UNIX®, Linux, or Windows NT operating system.

Powerful Solutions for Geospatial Imaging

SGI has developed packaged solutions for specific imaging applications. They include the Geospatial Exploitation System, the Video Acquisition and Exploitation Solution, and the Geospatial Archive Solution. The Geospatial Exploitation System (GES) is a collaborative, shared-data GroupStation that uses an SGI Onyx 3000 series system to speed analysis and reduce analyst fatigue through smooth, high-performance image handling. The GES can combine data archives, compute capabilities, and graphics systems to eliminate bottlenecks and lost time during downloads. It enables real-time analysis of image mosaics 50GB and larger and is scalable to multiterabyte databases. The Video Acquisition and Exploitation Solution can acquire video in real time or offline from handheld cameras, unmanned aerial vehicles (UAVs), and other sources. The Video Acquisition and Exploitation Solution allows operators to review data during real-time acquisition and perform secondary exploitation functions of nonlinear editing, electronic light table (ELT) functionality, and pixel tracking. The Geospatial Archive Solution is a customizable solution to process, serve, and archive multilayered databases to geospatial professionals. The Geospatial Archive scales to support the world's largest databases and client demands.

real-time performance

visualization

powerful solutions

"Our typical file sizes could be anything from 250MB to 2GB. So we need the power of Silicon Graphics workstations not just to manage that data, but to present it in real-time form to the users. SGI is the only company we've dealt with that really understands the needs of the geographic imaging marketplace."

—John W. Allan
Director of Sales and Marketing
ERDAS

imaging

Cover images: OrbView-2 image courtesy of Orbital Imaging Corp. U2 image courtesy of John Clark/Check Six 2000. This page: San Diego image courtesy of Space Imaging, Inc.

Systems at a Glance

	**Silicon Graphics® 230 Silicon Graphics® 330 Silicon Graphics® 550 Silicon Graphics® Zx10**	Windows NT workstation: GIS, desktop remote sensing, product generation, desktop access to GIS and imagery databases, cartography, and networked/thin client
	**Silicon Graphics O2**	Personal workstation: GIS, desktop remote sensing, product generation, desktop access to GIS and imagery databases, cartography, and networked/thin client
	**Silicon Graphics Octane2**	Power workstation: high-end GIS and remote sensing, product generation, photogrammetry, small-scale site model visualization, and CAD models
	**SGI Onyx 3000 Series/GroupStation**	Visual supercomputer: high-end visual exploitation, photogrammetry, large-scale site model creation and exploitation, video exploitation, large mosaic analysis, product generation, scalable visualization, imagery database, and imagery server
	**SGI Origin 3000 Series**	Scalable server: data ingestion and acquisition, image formation, database server and archive, compression/decompression services, and scalable automated processing

Solutions at a Glance

	**Geospatial Exploitation System**	Customizable SGI solution for high-end geospatial exploitation users; 2 to 16 users configured as a GroupStation clustered environment; remote sensing, photogrammetry, and large data exploitation
	**Video Acquisition and Exploitation System**	Customizable SGI solution for acquiring and viewing real-time video data with exploitation software; software can perform data preview, with standard ELT type functionality, image stabilization, and pixel tracking
	**Geospatial Archive System**	Customizable SGI solution for data ingestion, large imagery databases and archives, and scalable automated processing systems

To obtain more product, application, and solution information, visit our Web site at *www.sgi.com*

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