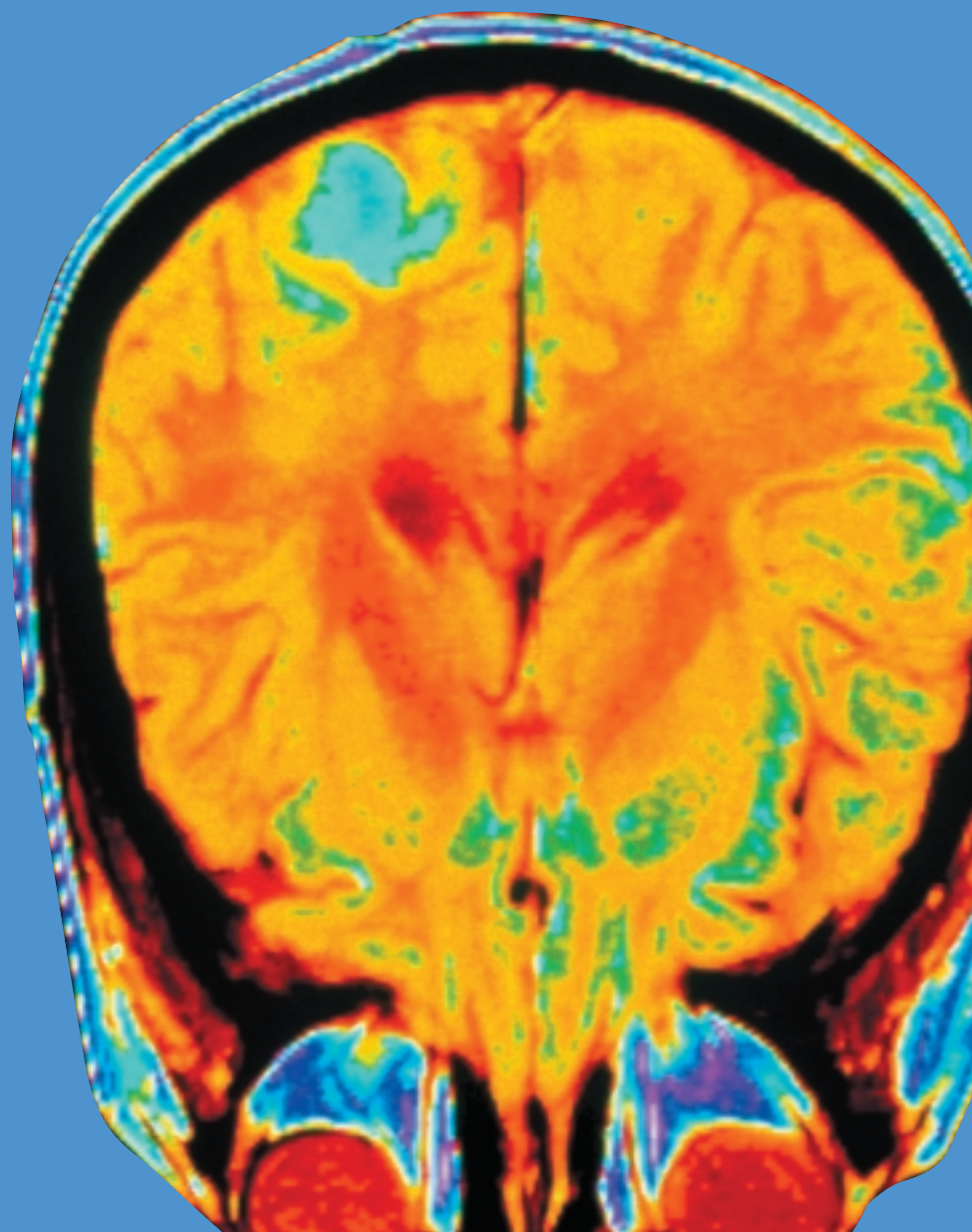
Industry Solutions

Solutions for Health Care and Medicine



SGI Technology Contributes to

Innovative Solutions

for Health Care Professionals

Commitment SGI offers technologies to solve today's medical challenges more quickly, reliably, innovatively, and cost-effectively. A dedicated in-house team of medical industry experts, medical physicists, physicians, and engineers coordinates the efforts of SGI in the medical market space. SGI focuses on three areas: diagnostic imaging, medical image management and communications, and computer-aided surgery and simulation. Close ties with the research community ensure that SGI technology evolves in step with the latest advances.

Technology SGI solutions provide medical professionals with the computer industry's most acclaimed high-performance visualization, computing, and archiving systems. Whether a project calls for a desktop visual workstation or a world-class supercomputer, SGI can meet current needs and scale to handle future requirements. SGI products have been proven to deliver reliable performance in a multitude of health care environments, from the radiology department to the university research center.

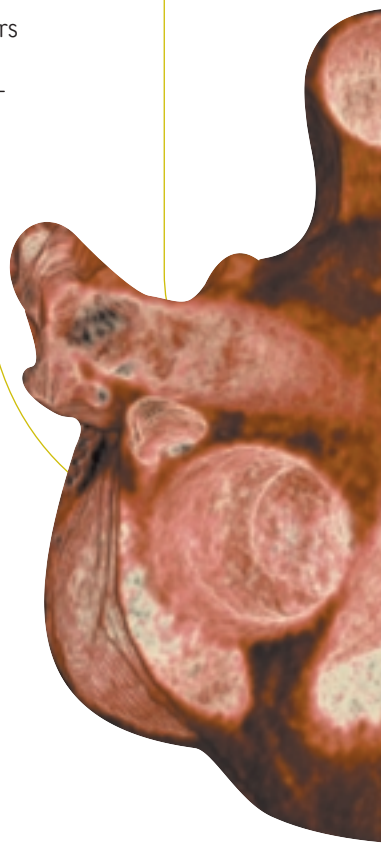
Experience SGI has long-standing working relationships with the medical industry's leading manufacturers and software providers. These relationships have yielded a broad range of SGI technology–based, differentiated solutions for the industry's most complex problems.

simulation

Technology for Solutions Providers

Many diagnostic imaging devices in use today are powered by SGI™ computers. Medical imaging device manufacturers and solution providers choose SGI computing platforms for their proven performance and reliability, their unmatched visualization capabilities, and the SGI commitment to the medical field.

The ongoing relationships between SGI and the premier medical original equipment manufacturers (OEMs) and solution providers also influence the SGI product offering. SGI tracks advances in medical devices and software applications, stays on course with its technology, and creates cost-effective capabilities for the medical community.



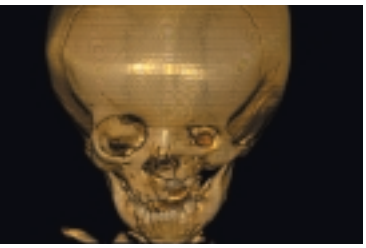
Diagnostic Imaging

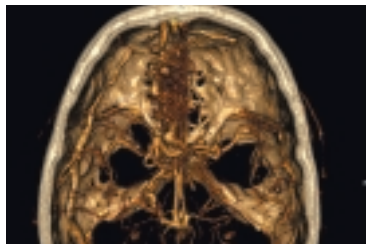
SGI systems deliver a unique blend of compute and visualization performance and enable unprecedented real-time capabilities for radiologists. Scanner manufacturers exploit the speed of SGI systems to power the new volume scan devices, such as multislice CTs. To make it possible to analyze the large number of images from these scanners, software providers also leverage SGI technology. SGI computers quickly process volumes of data and enable a variety of rendering and visualization tools that translate the data into 3D images.

Real-time imaging is driving the emerging fields of functional and interventional imaging. In functional imaging applied to brain research, for example, physicians and scientists can study the activated brain in real time. Interventional imaging allows surgeons to use real-time images for improved accuracy during procedures. Both areas demand SGI visualization and volumetric rendering capabilities.

solution

Top left: colonoscopy image courtesy of Sandy Napel, Christopher F. Beaulieu, David S. Paik, Shams Sheikh, R. Brooke Jeffrey, Jr., and the Stanford University Medical School.
Top right: brain mapping image courtesy of Dr. Arthur W. Toga, The Laboratory of Neuro Imaging, UCLA School of Medicine.



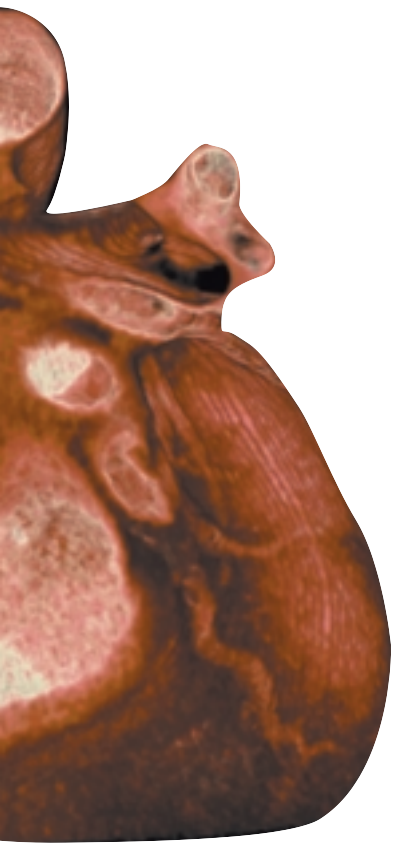


Skeletal images courtesy of Children's Hospital, Denver; UCLA Medical Center; and Vital Images, Inc.

Image Management and Communications

SGI systems integrate the capabilities required for the storage, display, and sharing of images across networks. Digital image management and picture archiving and communications solutions (PACS) accelerate a medical institution's access to patient data in a cost-effective way. High-end UNIX® servers from SGI provide terabyte-level storage capacity, as well as very fast access to large repositories of images and medical data of smaller institutions.

SGI offers a full complement of networking and Web tools that enable geographically separated clinics or hospital groups to share information and computer resources quickly, securely, and cost-effectively. The industry-leading scalability of each SGI system lets a facility start small, knowing that the site can evolve to a larger-scale computing and storage solution when needed.



Cardiac image courtesy of University Hospital of Rotterdam and Duke University.

Computer-Aided, Computer-Guided Surgeries and Simulations

SGI systems facilitate virtual and enhanced visual procedures for improved preoperative planning and simulations. These techniques reduce the need for more invasive diagnostic and surgical procedures, lowering both the costs and the risks to the patient. During surgery, surgeons are better prepared after previewing detailed imagery. Surgeons are also taking advantage of computer guidance during procedures, an advance made possible by real-time SGI visualization capabilities.

Traditional surgical and radiology training can require extensive practice with expensive machines or cadavers. Simulation-based training can save time, expose the surgeons to a greater range of pathologies and emergency situations, and even help standardize training and evaluation. SGI visualization solutions enable realistic training solutions using data gathered from actual patients.

visualization

A Sampling of Premier Manufacturers Using SGI Systems

- ATL Ultrasound
- Bruker Medical
- Comdisco
- GE Medical Systems
- Marconi Medical Systems
- Philips Medical Systems
- Siemens Medical
- Toshiba Medical Systems

A Sampling of SGI Applications Providers

- Accuray Oncology
- Algotec Systems Ltd.
- AnalyzeDirect.com
- Barco
- BioSense, Ltd.
- Clinicomp International
- Comdisco
- DOME Imaging Systems
- Endocardial Solutions
- FOCUS Imaging
- Johnson and Johnson
- Medtronic/Surgical Navigation
- MeVis Technology
- Noran Instruments
- Nucletron
- Rasna Imaging
- Sensor Systems
- StorageTek Technology
- Stratasys
- Terarecon, Inc.
- Vital Images
- WAM!NET

Sampling of Tools and Core Technologies

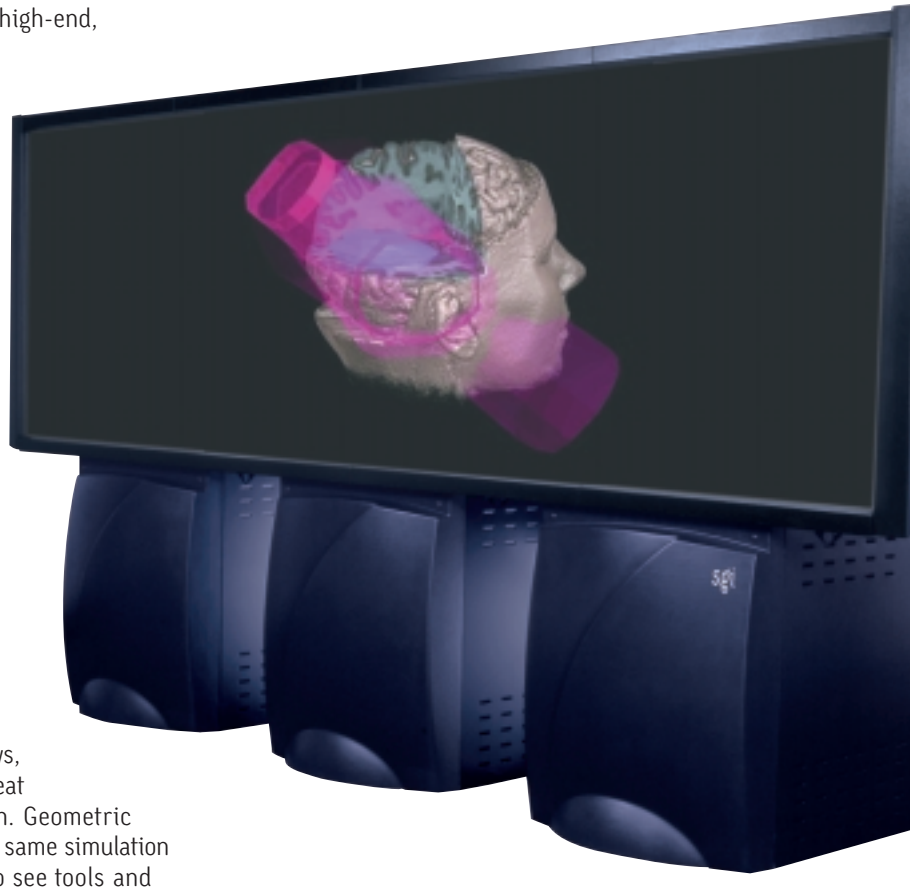
Optional tools and technology products add value to the high-performance SGI servers and visualization workstations employed by the medical community.

OpenGL Vizserver™ This solution is designed to deliver high-end, advanced Onyx visualization capabilities and performance to the desktop. It allows users to view and interact with large data sets from a desktop system at any location in an organization. It supports concurrent, real-time processing of complex 3D graphics, rich 2D imagery, and ultrahigh-resolution video for the world's fastest, most realistic visualization.

SGI™ Reality Center™ Visualization solutions that provide collaborative immersive viewing and interaction in real time, Reality Center facilities immerse you and your colleagues in your data so you can perceive it in a life-size, real-time environment, often leading to new insights and the ability to solve problems more quickly.

OpenGL® The premier environment for developing portable, interactive 2D and 3D visualization applications in medical and other markets, OpenGL ensures that every SGI computer system is leveraged to its fullest advantage for high-quality, high-performance visualization.

OpenGL Volumizer™ A revolutionary graphics API for volume visualization applications, OpenGL Volumizer allows, for the first time, standard visualization applications to treat volumetric data and surface geometry in a similar fashion. Geometric models of scalpels and prostheses can now appear in the same simulation scene as the volumetric patient data, allowing surgeons to see tools and targets in the same scene.



Radiation treatment image courtesy of Marc Levoy, Stanford University.

Creating the Future: Medical Luminary Sites

Long-established relationships with some of the medical community's premier research institutions help SGI keep an eye on the future. These facilities depend on high-end SGI technology for the development of next-generation medical solutions.

A Sampling of Medical Research Visionaries Working with SGI

- Bowman Gray School of Medicine
- Cleveland Clinic
- Duke University
- Fraunhofer Institute
- Fukui Medical School
- Imperial College of Science, Technology, and Medicine
- Johns Hopkins University
- Jikei University, Japan
- Kent Ridge Development Labs, Singapore
- King's College, London, UK
- Kyoto University School of Medicine
- Los Alamos National Laboratory
- Massachusetts General Hospital at Harvard University
- Mayo Clinic
- Montreal Neurologic Institute at MacGill University, Canada
- National Foundation for Functional Brain Imaging
- National Institutes of Health
- National Library of Medicine
- Niigata University Brain Research Institute, Japan
- Ohio Supercomputer Center
- Pittsburgh Supercomputer Center
- Sick Kids Hospital at the University of Toronto
- Stanford University
- The University of Texas M.D. Anderson Cancer Center
- University of California at Los Angeles
- University of Chicago
- University of Copenhagen
- University of Florida Brain Institute
- University of Manchester
- Utrecht University
- Virchow Klinikum, Berlin, Germany
- Wisconsin College of Medicine

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