

# Synopsys Helps SGI Drive High Performance Computing

*“As our primary EDA provider, Synopsys played a key role in our transition to COT. Not only did Synopsys technology help enable the design of our latest Altix UV supercomputer, but its services and support helped us avoid serious schedule delays during our first COT ASIC while we concurrently migrated to a smaller process node. Synopsys collaborated with us every step of the way.”*

**Rick Chapek**

Senior Vice President of Hardware Engineering, SGI

Silicon Graphics International Corporation (SGI) is a global leader in large-scale clustered computing, high-performance storage (HPS), high performance computing (HPC) and data center enablement and services. SGI products and services are used by the scientific, technical and business communities to solve challenging data-intensive computing, data management and visualization problems. These applications typically require large amounts of computing power and fast and efficient data movement both within the computing system and to and from large-scale data storage installations. SGI enables enterprises to meet their computing and storage requirements at a lower total cost of ownership and provides them greater flexibility and scalability. SGI recently announced Altix UV, the world's fastest supercomputer with a shared memory architecture. Based on an open industry standard architecture, Altix UV enables scaling from 32 to 2,048 cores with architectural provisioning for up to 262,144 cores, while supporting up to 16TB of global shared memory in a single system image (SSI). Superior performance is built into every Altix UV system, leveraging SGI's high speed 15GB per second interconnect NUMalink® 5 and MPI Offload Engine (MOE) acceleration. The custom SGI silicon that makes this system possible was designed with Synopsys EDA tools.

**Making The Transition From ASIC to COT**

An integral part of SGI's product strategy in recent years has been the migration from an ASIC handoff model to customer-owned tooling (COT) and a foundry handoff. The decision offered the technology leader the

opportunity for greater flexibility and efficiency in their design chain, but posed short-term risks as SGI ramped up their internal physical design capability. Critical program schedules could not be compromised during the transition. To mitigate risks and accelerate their COT learning curve, SGI took advantage of Synopsys' expertise in physical design tools and consulting services, enabling the company to complete its first COT designs on schedule and on spec. At the same time, SGI was able to grow and strengthen its proficiency in back-end design to take on future COT projects.

**Teaming Up for SGI's Next Transition: 40nm**

Industry leaders like SGI are continually evolving and adapting to the latest technologies that will provide technical and commercial differentiation for their products. Having successfully collaborated with Synopsys on previous transitions to COT and 90 nanometer (nm) design rules, SGI has recently consolidated on a comprehensive suite of tools from Synopsys' Galaxy Implementation and Discovery Verification Platforms to implement their latest 40 nm designs. In addition, recognizing that the development and maintenance of a new design flow was a significant cost to bear on their own and diverted precious resources from their design focus, SGI has adopted the Lynx Design System as the foundation of their 40nm design environment. By extending their primary EDA provider relationship with Synopsys to a broader set of tools and a unified design flow, SGI can continue to advance the efficiency and productivity of its chip design processes to reduce cycle time and achieve even higher levels of break-through performance.