



AGERE SYSTEMS ENHANCES ASIC HANDOFF WITH INDUSTRY-LEADING SPYGLASS PREDICTIVE ANALYSIS PLATFORM

Agere Systems, a premier provider of advanced integrated circuit solutions for wireless data, high-density storage and multi-service networking applications, is one of the world's top five ASIC suppliers. The company delivers leading ASIC services with the broadest and best-supported communications IP portfolio available and excellence in supply chain management. Its customers include the leading manufacturers of personal computers, wireless terminals, network equipment and hard disk drives.

Challenge

Agere needed a commercial solution to replace its internally-developed audit tools for gate-level ASIC handoff. They required a tool that would handle all of the advanced handoff audits needed for today's complex designs. With designs now exceeding 1.5 million instances, they needed a faster way to handle increasing file sizes. And they wanted an industry-standard interface for ease of use.

"Our proprietary tools predate industry standards and had not evolved," explained Donald Friedberg, director of design methodologies at Agere. "What had been an asset years ago had become a liability."

Solution

The SpyGlass predictive analysis solution from Atrenta met Agere's handoff audit requirements.

"It's a well-established and robust environment that supports industry standards and provides a breadth of audits in a reasonable time," Friedberg said. "We were impressed with its powerful interface for customization to support our unique audits and technology. Agere's focus on providing the best overall customer experience starts with the initial chip design. SpyGlass helps us provide better customer service."

Agere's ASIC customers are now required to run SpyGlass before handing their designs off to Agere for implementation. SpyGlass eliminates time-consuming iterations in the handoff procedure and ensures compliance with Agere processes. This reduces risk on both sides and assures first-time success.

With SpyGlass, Agere can quickly determine whether incoming designs meet their handoff requirements. SpyGlass has also become a valuable asset for Agere after handoff, as well.

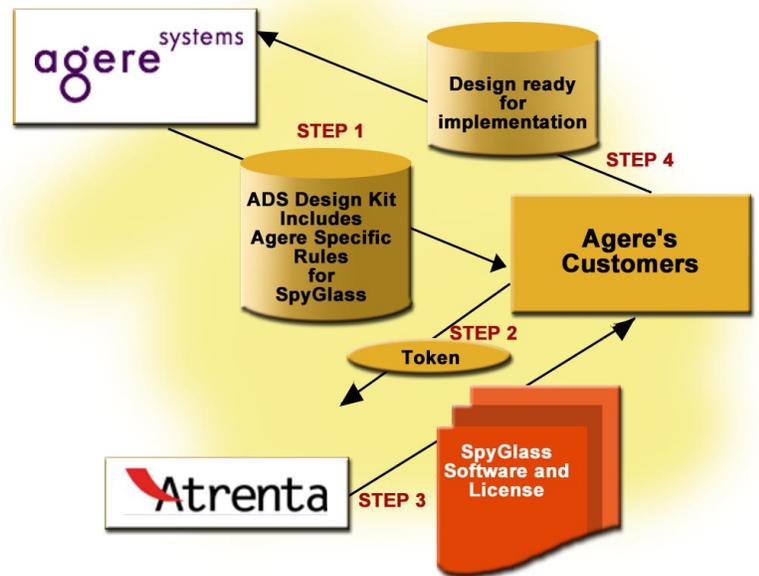
"SpyGlass is now an integral part of our gate-level development process," Friedberg said. "It lets us find problems early in the design cycle and ensures the quality of the design through the process. We can change our implementation approach when we see something that could be done better."

3.4 million flat instances in 3 hours

SpyGlass' ability to handle very large, flat designs allows Agere to analyze more complex designs, faster. Designers work on flat files with over 1.5 million placeable elements without breaking up the file to analyze piecemeal as they had to do with their old tools.

"We use SpyGlass to analyze flat designs with over 3 million placeable elements in about 3 hours."

Don Friedberg
Director of Design Methodologies
Agere Systems



Agere first sends a request to Atrenta and then provides their ASIC kit to their customers, which includes ASIC libraries, the Agere-specific rules and a token. Their customers logon to an Atrenta VPN and use the token to generate a license for SpyGlass. Next, the Agere customers download the SpyGlass software and analyze their designs. Now they are ready to handoff their design to Agere for layout and fabrication.

“Different tools out here let you do pieces of this, but SpyGlass is the only tool that lets you do the full breadth.”

Don Friedberg

Director of Design

Methodologies

Agere Systems

“We’re definitely doing more advanced designs,” Friedberg said. “We use SpyGlass to analyze flat designs with over 3 million placeable elements in about 3 hours on a 32-bit machine.”

This speed and power make it natural for designers to use SpyGlass often throughout the design process.

“If the tool is easy to use and runs in a reasonable amount of time, people will run it more frequently,” Friedberg said. “They’ll find errors earlier, save time, and get a higher quality design at the end.”

For example, an Agere designer used SpyGlass to check a design after doing test work, and discovered that the test tool had created asynchronous loops. Early detection allowed the problem to be corrected quickly with minimum impact on the schedule.

Supporting Agere’s differentiators

Atrenta offers a complete set of predefined rules with SpyGlass. It also lets users easily create their own advanced rules in C or Perl using SpyGlass objects.

“SpyGlass provides a rich interface for developing custom rules,” Friedberg said. Agere has created over 50 audits that it uses to ensure design quality, many of which are unique to Agere and reflect their unique knowledge of ASIC design methodology.

The ability to quickly create advance rules also lets Agere be more responsive to customer requests.

For example, Agere had developed a technology-specific audit for electromigration, based on a global clock frequency. When a customer asked Agere to look at each net based on its actual clock, SpyGlass let them easily create a new rule to handle it.

“SpyGlass predictive analysis gives us the hooks to go in and identify each net and its controlling clock,” Friedberg said. “I don’t know of any other solution with that capability.”

Breadth of audits in one tool

Of the 50 audits, Agere has developed about 25 technology-specific checks for design rule violations such as overloaded drivers, undesired clock interactions, improper interface between cells of different voltages, and IP-specific errors. These audits let Agere customers use all the power of Agere’s technology and ensure the designs are correct before handoff.

“For example, we have a very rich set of complex I/O buffers – our documentation tells designers how things should be connected, and SpyGlass lets them verify that they’ve done it correctly,” Friedberg said.

SpyGlass also performs topology audits to identify areas which, although correct in function, may lead to lower circuit performance due to poor implementation.

“Topology audits give designers insights into the structure of the design”. Some topology you can’t say is good or bad – it may be acceptable in some cases but not in others. SpyGlass lets our designers break it down into constructs and decide if it’s ok based on their knowledge of design intent.

“Using SpyGlass for both technology-specific and topology audits is far more effective than switching among multiple tools to identify different types of problems one at a time. Altogether SpyGlass handles more than 50 Agere audits.

“Different tools out here let you do pieces of this, but SpyGlass is the only tool that lets you do the full breadth,” Friedberg said.

Atrenta’s token-based business model benefits Agere and its customers

Atrenta’s token-based business model is one example of Atrenta’s flexibility. Agere ships its libraries, tools, and technology-specific SpyGlass rule set to its customers, who then use a token to download SpyGlass directly from Atrenta’s web site. This gives Agere customers easy access to SpyGlass for handoff audits, and frees Agere to focus on what it does best.

“We’re an ASIC vendor,” said Friedberg. “We don’t have to manage the SpyGlass distribution process or worry about licenses and updates. We QA our rules with all new versions of SpyGlass, and our customers always have the latest technology from Atrenta.”

Friedberg has been pleased with Atrenta’s flexible, responsive approach to doing business.

“We always had what we needed from Atrenta,” he said. “If we needed something more, they were always very quick to respond.”

Robust and extensible solution

SpyGlass also gives Agere the ability to standardize on one tool for both RTL and gate level analysis. Many Agere customers already use SpyGlass for predictive analysis at the RTL level.

“We can definitely see the value of SpyGlass as a complete solution from RTL to gate level,” Friedberg said.

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