Ricoh Adopts Synopsys' Processor Designer to Accelerate Custom DSP Design

DSP Development Time Cut in Half While Meeting Performance Goals

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Highlights:

- Ricoh designed their custom digital signal processor (DSP) in only five months, without needing prior DSP design expertise
- Processor Designer automated the entire DSP design process, including generation of both a software development tool flow and optimized RTL, reducing development time by 50 percent
- Processor Designer's LISA description language made it easy for Ricoh to add unique functions and instructions to their DSP thus meeting performance goals

Synopsys, Inc. (Nasdaq: SNPS), a world leader in software and IP for semiconductor design, verification and manufacturing, today announced that Ricoh Company Ltd., a global leader in imaging devices and industry products, has adopted Processor Designer for custom digital signal processor (DSP) design. Ricoh's Core Technology Research and Development (R&D) team designed their latest DSP in only five months, without needing DSP design expertise. Processor Designer automated the custom processor design process by generating both a software development tool flow and optimized RTL, reducing development time by 50 percent compared to traditional methods.

Processor Designer accelerates the design of both application-specific instruction-set processors (ASIPs) and programmable accelerators through automated software development tools, RTL and instruction set simulator (ISS) generation from a single, high-level specification. Application-specific processors and programmable accelerators are increasingly essential to support the convergence of multiple functionalities on a single system-on-chip (SoC). This makes them ideal for use in a wide variety of applications including video, audio, security, networking, baseband, control and industrial automation applications.

"Processor Designer provided exactly what we needed – an easy way to create a high-quality custom DSP letting us focus on our design expertise rather than RTL and software toolchain implementation details," said Sadahiro Kimura, senior R&D engineer at Ricoh. "With Processor Designer, we developed our custom DSP in half the time we expected, including a special user-defined instruction set."

Ricoh quickly came up to speed on the standard LISA language used for design input into Processor Designer. They also found LISA to be a very powerful and easy to use description language for adding unique instructions and functionality to their custom DSP. Without compromising performance, Processor Designer enabled the Ricoh R&D team to write much less code compared to using RTL, therefore achieving much faster time-to-results.

"Ricoh's success shows how designers can rely on Processor Designer to significantly speed and simplify the custom processor development process, reducing overall engineering effort," said John Koeter, vice president of marketing for IP and systems at Synopsys. "Designers creating application-specific processors or programmable accelerators can use Processor Designer to meet evolving requirements and make optimal architecture tradeoffs without compromising performance, power or area."

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is a world leader in electronic design automation (EDA), supplying the global electronics market with the software, intellectual property (IP) and services used in semiconductor design, verification and manufacturing. Synopsys' comprehensive, integrated portfolio of implementation, verification, IP, manufacturing and field-programmable gate array (FPGA) solutions helps address the key challenges designers and manufacturers face today, such as power and yield management, system-to-silicon verification and time-to-results. These technology-leading solutions help give Synopsys customers a competitive edge in bringing the best products to market quickly while reducing costs and schedule risk. Synopsys is headquartered in Mountain View, California, and has approximately 70 offices located throughout North America, Europe, Japan, Asia and India. Visit Synopsys online at https://www.synopsys.com/.

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