

Synopsys ARC EV Processor Enables Kyocera Document Solutions to Launch AI-enabled Multifunctional Printer SoC

Integration of Synopsys DesignWare Processor IP Contributes to Kyocera Document Solution's First-Pass Silicon Success for On-Demand Super Resolution Image Processing SoC

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Highlights

- Kyocera Document Solutions differentiated its intelligent multifunction product SoC using high-performance DesignWare ARC EV6x Processor IP and MetaWare EV Development Toolkit
- DesignWare EV6x Vision Processors integrate from one to four 512-bit vector DSPs and a CNN engine, providing scalable performance for a wide range of vision applications
- MetaWare EV Development Toolkit, a suite of tools supporting TensorFlow, Caffe, ONNX, OpenCL C, OpenVX, and OpenCV standards, simplifies application software development

Synopsys, Inc. (Nasdaq: SNPS) today announced that Kyocera Document Solutions Inc. (headquartered in Osaka, Japan and referred to as Kyocera) achieved first-pass silicon success for its new multifunction product (MFP) SoC using Synopsys [DesignWare® ARC® EV6x Embedded Vision Processor IP](#) with convolutional neural network (CNN) engine and [ARC MetaWare® EV Development Toolkit](#). By using Synopsys' programmable ARC EV Processor, Kyocera successfully integrated high-performance artificial intelligence (AI) processing capabilities such as super resolution, with the flexibility to support future AI models. In addition, Kyocera deployed Synopsys' [HAPS® FPGA-based prototyping system](#) to accelerate ARC EV software development, SoC integration, and system validation.

"Implementing advanced AI functionality into our MFP SoC required high-performance, low-power processor IP with a high-quality tool chain, allowing us to find and test AI algorithms while developing the SoC in parallel," said Michihiro Okada, general manager, software development division at Kyocera Document Solutions Inc. "Only Synopsys' DesignWare ARC EV Processor IP and mature MetaWare EV Toolkit met our extensibility, performance, and area requirements."

The DesignWare ARC EV6x Processor family integrates scalar, vector DSP, and CNN processing units for highly accurate and fast vision processing. The EV6x Processors support popular convolutional neural networks including SR-GAN, MobileNET, Yolo, GoogLeNet, SSD, and ResNet. To simplify software application development, the EV6x processors are supported by the DesignWare ARC MetaWare EV Development Toolkit, a comprehensive suite of tools and software. The toolkit includes the MetaWare NN Compiler that analyzes neural networks trained using popular frameworks like Tensorflow or Pytorch and automatically generates the executable for the programmable CNN engine.

"As new artificial intelligence applications incorporate the latest high-performance neural networks, designers require superior hardware technology and software tools to deliver SoCs on schedule," said John Koeter, senior vice president of marketing and strategy for IP at Synopsys. "With our AI-optimized IP solutions that enable fast, accurate vision processing, companies like Kyocera can build competitive products faster and with significantly less risk."

Availability & Additional Resources

The [DesignWare ARC EV Processors](#), [ARC MetaWare EV Development Toolkit](#), and [HAPS® FPGA-based prototyping system](#) are available now.

- Success story: [DesignWare Processor IP Contributes to Kyocera's First-Pass Silicon Success for On-Demand Super Resolution Image Processing SoC](#)
- Website: [ARC EV Processor IP](#), [ARC MetaWare EV Development Toolkit](#), and [HAPS-80 FPGA-Based Prototyping](#)
- Blog: [How AI Brings New Life to Low-Resolution Images](#)
- Article: [Enhance Image! Real-time Super Resolution with ARC EV Processor IP](#)

About Synopsys DesignWare IP

Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare IP portfolio includes logic libraries, embedded memories, PVT sensors, embedded test, analog IP, wired and wireless interface IP, security IP, embedded processors and subsystems. To accelerate prototyping, software development and integration of IP into SoCs, Synopsys' IP Accelerated initiative offers IP prototyping kits, IP software development kits and IP subsystems. Synopsys' extensive investment in IP quality,

comprehensive technical support and robust IP development methodology enable designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit <https://www.synopsys.com/designware>.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As an S&P 500 company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and offers the industry's broadest portfolio of application security testing tools and services. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing more secure, high-quality code, Synopsys has the solutions needed to deliver innovative products. Learn more at www.synopsys.com.

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