# Synopsys and Alango Technologies Introduce Voice Enhancement Package Optimized for DesignWare ARC Data Fusion IP Subsystem

Combination of Alango's Far-Field Voice Enhancement Software Technologies and Synopsys' ARC IP Subsystem Provides Ideal Low-Power Solution for Voice-Controlled Devices

**Disclaimer: GlobalFoundries acquired the Synopsys Processor Solutions business on June 1, 2026. Clickhere to learn more.**

MOUNTAIN VIEW, Calif., and TIRAT CARMEL, Israel, Sept. 13, 2017 /PRNewswire/ --

**Highlights:**

- Alango's Voice Enhancement Package (VEP) offers multi-microphone beamforming array and echo cancellation technologies to enhance speech recognition performance in voice-controlled multimedia devices
- The ARC Data Fusion IP Subsystem integrates an ARC EM DSP processor, audio software library and tightly-coupled pulse density modulation and $I^2S$ peripherals to simplify the implementation of ultra-low power voice and audio functions
- Pre-validated combination of Alango's VEP software ported to Synopsys' ARC-based Subsystem reduces development time and risk for designs requiring energy-efficient voice and speech processing

Synopsys, Inc. (Nasdaq: SNPS) and Alango Technologies today announced that Alango Technologies'Voice Enhancement Package (VEP) software has been optimized for Synopsys'DesignWare® ARC® Data Fusion IP Subsystem. The VEP is a suite of real-time software DSP technologies designed for improving speech recognition performance in voice-controlled multimedia devices. The ARC Data Fusion IP Subsystem is a highly integrated hardware and software IP product that processes data from sensor and audio sources with minimal energy consumption. The combination of Alango's optimized audio signal pre-processing software with the ARC Data Fusion IP Subsystem enables designers to rapidly integrate a complete, pre-verified hardware and software solution for voice and speech processing into a range of multimedia devices requiring minimal energy consumption.

"The increasing prevalence of voice activation and recognition in human-machine interfaces is requiring sophisticated speech-to-noise ratio enhancement technologies to enable highly accurate speech comprehension in noisy environments," said Dr. Alexander Goldin, CEO of Alango Technologies. "Optimizing our Voice Enhancement Package for the ARC Data Fusion IP Subsystem gives SoC designers an ideal low-power solution enabling superior voice activation, recognition and control capabilities in their products."

Alango's VEP is a suite of real-time software DSP technologies that includes a multi-microphone beamforming array and stereo echo canceller to enhance far-field speech pick-up and response to "barge-in" commands. The VEP is a front-end solution that performs audio signal pre-processing prior to the automatic speech recognition (ASR) and key word recognition (KWR) engines. The VEP receives the microphones' signals, applies acoustic echo cancellation, and then forms acoustic beams relative to the usage environment or "field." These acoustic beams, which have much-improved signal-to-noise ratio (SNR) compared to the raw microphone signals, are then sent to the ASR engine for recognition. VEP processing significantly improves the ASR's ability to recognize verbal commands.

The ARC Data Fusion IP Subsystem is a pre-verified hardware and software solution optimized for highly efficient DSP performance and ultra-low energy consumption. The subsystem processes data from digital and analog sources, offloading the host processor to enable more efficient data processing. The configurable IP subsystem, with its choice of EM DSP processors, delivers a 2x performance boost for typical signal processing functions compared to other available processors and significantly reduces frequency and memory requirements to run audio codecs and speech/voice communication software. The ARC Data Fusion IP Subsystem also includes an audio processing library of common functions, including gain control, mixer and sample rate conversion. Tightly coupled PDM and $I^2S$ peripherals simplify the integration of voice and audio I/O such as MEMS microphones used for far-field voice user interfaces and hands-free voice commands. In addition, the hardware PDM interface implementation is significantly more energy efficient than the equivalent software implementation, with minimal gate count impact. The integrated solution is optimized for "always on" data fusion combining sensor, voice, gesture and audio processing functions.

"Advanced IoT devices are incorporating multiple microphones to enable more precise voice recognition by identifying the origin of a sound and cancelling interferences," said John Koeter, vice president of marketing at Synopsys. "By combining our ARC Data Fusion IP Subsystem with Alango's Voice Enhancement Package, designers can quickly integrate high-quality voice

and speech capabilities into their SoCs while staying within their power and area budget."

**Availability & Resources**

The DesignWare ARC Data Fusion IP Subsystem is available now from Synopsys.

The optimized port of Alango Technologies Voice Enhancement Package is available now from Alango Technologies.

Come see us at the ARC Processor Summit 2017 on Tuesday, September 26th at the Santa Clara Marriott, 2700 Mission College Boulevard, Santa Clara, CA 95054.

**About Alango Technologies**

Alango Technologies Ltd. is a leading developer and licensor of front-end digital speech and audio enhancement technologies for a variety of applications. Alango's worldwide customers include companies of different scale covering a wide product range. Alango Technologies can be found in in-car infotainment systems, after market hands-free car kits, navigation systems, mobile phones, Bluetooth headsets, portable speakers, assistive listening devices, audio conferencing and intercom systems. Further information on Alango can be found at www.alango.com.

**About 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, 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 enables designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit 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 the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

**Editorial Contact:**
Monica Marmie
Synopsys, Inc.
650-584-2890
monical@synopsys.com

SOURCE Synopsys, Inc.