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DDC-I, Core Avionics & Industrial and North Atlantic Industries Partner to Deliver High-Performance Safety-Critical DO-178C Display Solutions for Avionics

FACE™ Consortium Member Meeting, Scottsdale, AZ – January 29, 2019. DDC-I today announced it is working with Core Avionics & Industrial (CoreAVI), Arm, and North Atlantic Industries (NAI) to deliver an integrated safety-critical display and GPU computing solution designed for next-generation avionics systems. The smart display solution, utilizing the Arm®Cortex®-A53 multicore processor on AMD's E9171 GPU, integrates the Deos DO-178 real-time operating system with CoreAVI's newest safety-critical VkCore™ SC Vulkan®-based driver suite and VkCoreGL™ SC OpenGL®-based graphics and video libraries, all deployed on NAI's 3U, single-slot OpenVPX single-board computers. The integrated platform gives avionics OEMs a high-performance embedded platform for developing and deploying complex 2D/3D graphics and advanced streaming video in a scalable, DO-254/DO-178C package that is certifiable to Design Assurance Level (DAL) A.

"Arm has significant expertise in functional safety across automotive and industrial markets, where we continue to lead the way in advanced safety compute," said Neil Stroud, director of technology strategy, Embedded & Automotive Line of Business, Arm. "Alongside DDC-I, CoreAVI, and North Atlantic Industries, we will apply this expertise to our mutual customers to deliver a best-in-class Arm-based avionics platform with safety-critical RTOS and OpenGL graphics."

"Deos with SafeMC multicore technology provides advanced facilities like safe scheduling and cache partitioning that enable avionics OEMs to take full advantage of the high-performance multicore processing capabilities that Cortex-A53 brings," said Greg Rose, vice president of marketing and product management at DDC-I. "It also provides a time- and space-partitioned architecture that makes it ideal for hosting avionics display applications utilizing CoreAVI Safety Critical OpenGL libraries. Now, avionics developers can hit the ground running with a COTS avionics display platform that is fully integrated and ready to certify to DO-178C DAL A."

"CoreAVI's DO-178C DAL A certifiable Vulkan-based drivers and OpenGL SC-based libraries provides our avionics customers with the state-of-the-art graphics and compute capabilities that the newest generation of applications require," added Dan Joncas, Executive Vice President of Sales and Marketing at CoreAVI. "We're excited to collaborate on this innovative joint solution with DDC-I, ARM, and NAI to provide our customers with a platform that unlocks the best performance possible using the latest graphics processors for avionics from CoreAVI."

"Our highly-integrated, 3U, single-slot, OpenVPX 68GP2 single-board computers are certifiable to DO-254 DAL A and offer avionics OEMs the latest AMD E9171 and Xilinx Quad Core Arm Cortex-A53 Zynq



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Ultrascale+ SoC technology,” said Lino Massafra, vice president of sales and marketing at NAI. “CoreAVI’s and DDC-I’s DO-178C DAL A certifiable VkCore SC, OpenGL SC and Deos running on the 68GP2 meets the most demanding video processing requirements with the least SWaP-C”. “We look forward to working with the best-in-class video, processor and OS suppliers!”

The Arm Cortex-A53 is a high-performance, low-power 64-bit multicore processor that features one to four cores and is based on the Arm®v8-A architecture. Utilized by leading CPU and SoC manufacturers such as NXP and Xilinx, the Cortex-A53 is backward compatible with the 32-bit Arm architecture and provides up to 64 kbytes of L1 cache and 2 Mbytes of L2 cache. The multicore processor features DSP and NEON SIMD extensions, a VFPv4 floating point unit for each core, hardware virtualization support, and Arm®TrustZone® security extensions.

DDC-I’s Deos is a field proven, safety-critical, avionics RTOS that is used to host a multitude of flight-critical functions, such as air data computers, air data inertial reference units, cockpit video, displays and flight instrumentation, flight management systems, engine management, and many more. Built from the ground up for safety-critical applications, Deos was the first RTOS certified to DO-178 DAL A and is the only certifiable time- and space-partitioned COTS RTOS that has been created using RTCA DO-178, Level A processes from the very first day of its product development. Deos features deterministic real-time response as well as time and space partitioning. Deos also features patented slack scheduling and cache partitioning, which enables it to deliver higher CPU utilization than any other certifiable safety-critical COTS RTOS. Deos is supported on x86, Arm, and PowerPC microprocessors.

CoreAVI’s VKCore SC driver suites and VkCoreGL SC application libraries are certifiable to DO-178C DAL A, and the VkCoreGL SC libraries are FACE-aligned. VkCore SC drivers support multi-threading, multiple partitions, Hypervisor Multicore, mixed DAL and virtualized graphics, context management, integrated video capture, and GPU security. All CoreAVI drivers are designed and developed from the ground up to enhance safety, reliability and security and have a high technology readiness level.

About DDC-I, Inc.

DDC-I, Inc. is a global supplier of real-time operating systems, software development tools, custom software development services, and legacy software system modernization solutions, with a primary focus on mission- and safety-critical applications. DDC-I’s customer base is an impressive “who’s who” in the commercial, military, aerospace, and safety-critical industries. DDC-I offers safety-critical real-time operating systems, compilers, integrated development environments and run-time systems for C, C++, Ada, and JOVIAL application development. For more information regarding DDC-I products, contact DDC-I at 4600 E. Shea Blvd, Phoenix, AZ 85028; phone (602) 275-7172; fax (602) 252-6054; email sales@ddci.com or visit <https://www.ddci.com/pr18xx>.

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Core Avionics & Industrial Inc. ("CoreAVI"), a Channel One company, is a global leader in providing products and services designed to enable complete solutions for safety critical applications. A supplier of real-time and safety-critical graphics and video drivers, compute drivers, "program ready" embedded graphics processors, and DO-254/ED-80 certifiable COTS hardware IP, CoreAVI's suite of products enables commercial GPUs, SoC components, and COTS hardware designs to meet the requirements of long-term high-reliability and safety-critical embedded systems with long-term support. CoreAVI's products may be purchased with certification data kits for the most stringent levels of RTCA DO-254/DO-178C and EUROCAE ED-80/ED-12C. www.coreavi.com.

About NAI

NAI is a specialized provider of embedded electronics, power supplies and computing for sense & response-intensive, military and aerospace applications. We accelerate our clients' time-to-mission with a unique approach based on our Configurable Open Systems Architecture™ (COSA®) that delivers the best of both worlds: custom solutions from standard COTS components. For over 50 years, companies like Boeing, Northrop Grumman and Raytheon have leveraged our capabilities to meet the demanding requirements of a wide range of I/O and communication-centric applications, and do so with uncompromising quality, efficiency and responsiveness. Information about NAI and its products can be found at www.naii.com.