
Khronos Releases OpenGL SC 2.0 for Shader Programmable Safety Critical Graphics Streamlined API reduces certification costs for Avionics and Automotive Systems; GLSL shaders provide enhanced graphics with increased performance and reduced power

April 20th 2016 – Aviation Electronics Europe, Munich – The Khronos™ Group, an open consortium of leading hardware and software companies, announces the immediate availability of the OpenGL® SC 2.0 specification for bringing programmable graphics to systems that require system safety certification. The OpenGL SC 2.0 API specification has been developed by the Khronos Safety Critical working group to address the unique and stringent requirements of high reliability display system markets, including FAA DO-178C and EASA ED-12C Level A for avionics, and ISO 26262 safety standards for automotive. Building on the large number of worldwide customer deployments and successful avionics certifications using OpenGL SC 1.0, OpenGL SC 2.0 enables high reliability system manufacturers to take advantage of modern graphics programmable shader engines while still achieving the highest levels of safety certification. More information on OpenGL SC 2.0 and Khronos safety critical specifications and activities is available at: <http://www.khronos.org/safetycritical>.

About OpenGL SC 2.0

OpenGL SC 1.0 defined a safety critical subset of the OpenGL ES™ 1.0 fixed function graphics pipeline. OpenGL SC 1.0 shipped in 2005, with minor updates to OpenGL SC 1.0.1 in 2009. OpenGL SC 2.0 is a subset of OpenGL ES 2.0 that includes GLSL-based programmable shaders to enable enhanced graphics functionality, with increased performance and reduced power. OpenGL SC 2.0 removes all debug functionality from OpenGL ES 2.0 but incorporates the OpenGL robustness extension into the core specification for scheduling and memory access integrity. OpenGL SC 2.0 is designed to be both deterministic and testable while retaining compatibility with existing OpenGL ES 2.0-capable silicon, enabling the immediate deployment of high-volume desktop, mobile and embedded silicon solutions.

"OpenGL SC 2.0 marks the start of a new era of Safety Critical standards by the Khronos group to address a growing industry need for safety critical technologies," says Erik Noreke Technology Visionary and chair of the Safety Critical working group. "With smart technologies becoming more and more prevalent in daily life with such things as autonomous vehicles and operator assistance, I am proud to be part of the Khronos effort to deliver the safety critical standards for not only high performance graphics, but also compute and vision."



Core Avionics & Industrial Inc.
400 North Tampa Street
Suite 2850
Tampa, Florida 33602

T: 888-330-5376
F: 866-485-3199
www.coreavi.com

See OpenGL SC 2.0 at Aviation Electronics Europe, Munich, (April 20-21)

OpenGL SC 2.0 implementations are already operational and are being publicly demonstrated: - CoreAVI is demonstrating its OpenGL SC 2.0 graphics drivers* running on Curtiss Wright's rugged VPX3-133 SBC (NXP QorIQ T2080) and VPX3-716 COTS graphics module executing Wind River VxWorks RTOS and Presagis' VAPS XT HMI graphics development tool; - Presagis is demonstrating CoreAVI's OpenGL SC 2.0 graphics drivers* running on NXP QorIQ P3041 quad core processor with AMD's Radeon E8860 GPU graphics processor executing Wind River VxWorks RTOS and Presagis' VAPS XT HMI graphics development tool.

Future Safety Critical Standards

Visual computing acceleration will be a vital component of many emerging safety critical market opportunities including Advanced Driver Assistance Systems (ADAS), autonomous vehicles and new generation avionics systems. The Safety Critical working group at Khronos has a remit to develop safety critical versions of other Khronos specifications, including Vulkan™ for high-efficiency graphics and compute. The OpenVX™ working group at Khronos is also developing a safety critical version of this standard for low power vision processing. The Safety Critical working group will build on the experience of shipping OpenGL SC, but is also looking to develop cross-API guidelines to aid in the development of open technology standards for Safety Critical systems. Any interested company is welcome to join Khronos for a voice and a vote in this development process.

Industry Support for OpenGL SC 2.0

"OpenGL SC 2.0 enables avionics, automotive, and safety critical system manufacturers to unlock the power per watt performance capabilities of modern graphics processors utilizing programmable graphics pipelines," says Steve Viggers, vice president of software at CoreAVI. "Available today, CoreAVI has delivered the industry's first OpenGL SC 2.0 driver designed to achieve the most stringent safety certifications, including the FAA DO-178C Level A and ISO 26262 ASIL D standards." "Traditional safety critical software domains are opening up to the benefits offered by leading edge graphics technologies. Mobica are working on OpenGL SC 2.0 solutions with our automotive and semiconductor partners to build leading edge products such as in-car UIs," says Jim Carroll, CTO of Mobica. The enhancements introduced in OpenGL SC 2.0 will enable the use of these technologies for a wider range of companies, market sectors and ultimately, end-users." "I am delighted that Presagis is at the forefront of this major change for the Embedded Graphics industry," says Jean-Michel Brière, general manager at Presagis. "Using the power of GPUbased shaders opens immense possibilities in terms of HMI design and performance."

For more information, please contact CoreAVI.

Media Inquiries



Core Avionics & Industrial Inc.
400 North Tampa Street
Suite 2850
Tampa, Florida 33602

T: 888-330-5376
F: 866-485-3199
www.coreavi.com

Core Avionics & Industrial Inc.

sales@coreavi.com

About Core Avionics & Industrial Inc.

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 The Khronos Group

The Khronos Group is an industry consortium creating open standards to enable the authoring and acceleration of parallel computing, graphics, vision, sensor processing and dynamic media on a wide variety of platforms and devices. Khronos standards include Vulkan™, OpenGL®, OpenGL® ES, WebGL™, OpenCL™, SPIR™, SPIR-V™, SYCL™, WebCL™, OpenVX™, EGL™, COLLADA™, and glTF™. All Khronos members are enabled to contribute to the development of Khronos specifications, are empowered to vote at various stages before public deployment, and are able to accelerate the delivery of their cutting-edge media platforms and applications through early access to specification drafts and conformance tests. More information is available at www.khronos.org.