



VkCoreGL™ SC1 Application Library

Features & Benefits

- Provides and OpenGL® SC 1.0.1 API along with EGL 1.4
- Designed and developed from ground up for high performance, and safety critical certification (including RTCA DO-178C / EUROCAE ED-12C Level A).
- Integrated and compatible with popular safety critical HMI tools such as ANSYS® SCADE, Presagis' VAPS XT, ENSCO's iData® and DiSTI's GL Studio®.
- Contains no open source and no 3rd party software
- Supports RTOS, including Wind River® VxWorks®/VxWorks 653, SYSGO PikeOS®, QNX OS, Green Hills Software® INTEGRITY®/INTEGRITY178 tuMP, DDC-I Deos™, Lynx Software Technologies LynxOS®/LynxOS-178/LynxSecure, Linux, and is configurable for proprietary RTOS or 'bare metal' (no RTOS)
- Available with CertCore178™ (Avionics DO-178C / ED-12C Level A, C and D) safety certification packages
- Solutions aligned with latest Future Airborne Capability Environment (FACE™) Technical Standard

Introduction

CoreAVI's VkCoreGL SC1 is an application library designed to run on CoreAVI's VkCore® SC Vulkan®-based safety critical graphics and compute driver. VkCoreGL SC1 provides an OpenGL SC 1.0.1 API that enables integrators to run legacy OpenGL SC 1.0.1 applications while simultaneously taking advantage of the advanced capabilities of Vulkan. VkCoreGL SC1 supports fragment and vertex shaders and supports the following extensions:

- Supported Extensions: GL_ARB_multisample, GL_ARB_multitexture, GL_ARB_vertex_buffer_object, GL_EXT_blend_color, GL_NV_blend_square, GL_EXT_copy_texture, GL_EXT_draw_range_elements, GL_SGIS_texture_edge_clamp
- Additional Functions (from OpenGL 1.3): glBlendFunc, glDepthFunc, glReadBuffer, glCallList, glDeleteAllLists, gl_DeleteAllTextures, glTexCoord2f, glTexCoord2fv, glVertex4f

VkCore SC utilizes EGL 1.4 for the platform interface which includes the EGL_EXT_Compositor extension for multiple window composition.

Built with a similar superset of Khronos' OpenGL SC 1.0.1 specification as CoreAVI's ArgusCore™ SC1 safety critical graphics drivers, the VkCoreGL SC1 application libraries support a fixed function graphics rendering pipeline (1). VKCoreGL SC1 enables users to deploy modern GPU shader programs in safety certifiable environments.

(1) Please contact CoreAVI for a list of specification extension differences.



EGL Platform Interface

The interface between VkCoreGL SC1 rendering and the underlying native platform window system is provided by EGL 1.4 including the EGL_EXT_Compositor extension. The extension minimizes application effort, enabling composition of multiple windows within a single or multi-partition graphics system. It provides a standard windowing API for FACE alignment and can be used in mixed assurance level situations, making it an ideal choice for embedded avionics, defense and automotive applications.

The EGL_EXT_Compositor may also reduce the cost of making changes to the application. The application could be separated into different sub-applications with the compositor amalgamating the sub-applications' output into a complete display where only a sub-set of the applications affected by a change would need to go through the change process.

CertCore178™

CoreAVI's complete RTCA DO-178C and EUROCAE ED-12C Level A certification data packages support the use of VkCoreGL SC1 application libraries in any avionics safety certification.

Evaluation Support

VkCoreGL SC1 application libraries are available for Windows 10 on a 12 month evaluation license which includes support.

Contact Sales@CoreAVI.com for more information on VkCoreGL SC1.