



ALT Software Inc.

DO-178B OpenGL Driver Kits

ALT Software provides a suite of DO-178B certifiable OpenGL SC display drivers for embedded computing platforms. ALT's drivers are certifiable up to up to Design Assurance Level (DAL) A, the highest level recognized by the FAA, EASA, and Transport Canada. The driver's modular architecture allows ALT to customize it for particular customer requirements, and generate additional certification artifacts on a component-by-component basis, which significantly reduces the time and costs of customization. ALT offers a variety of royalty-free product options including the driver binary, binary plus source code, diagnostic tools, and the full set of artifacts required for certification of the driver in its target environment.

Features

- Operating systems supported: Green Hills INTEGRITY 178B, Wind River VxWorks 653, DDC-I Deos, as well as customer proprietary RTOS.
- Supports a variety of graphics processors; including AMD ATI Radeon and Fujitsu graphics cores
- Full OpenGL SC software renderer available for devices with no or limited graphics hardware
- Windowing support via Khronos EGL
- Small memory footprint
- Memory management for resource constrained systems
- Dual display support (independent and mirrored)



About ALT Software

ALT Software is the world's leading supplier of advanced 2D/3D graphics, safety critical and OpenGL enabling solutions for embedded systems. The company provides OpenGL ES, OpenGL SC (DO-178B certifiable) and OpenVG graphics drivers for SoCs and discrete GPUs from AMD, Fujitsu, Intel, Imagination Technologies, Texas Instruments, Freescale, and others. ALT's customizable high-performance 2D/3D embedded graphics drivers support a variety of real time operating systems (RTOS) and a range of system configurations. From display drivers for the ATI Radeon E4690, AMD's latest high-performance embedded computing GPU, to an OpenGL 1.1/SC software-based graphics renderer, ALT's products support the full spectrum of high to low-end graphics requirements of various embedded systems. Their software is designed for deployment in aerospace and defense systems as well as in automotive, medical, industrial, and consumer devices.



Customization Services

ALT Software provides customization services to accommodate various system configurations and to add functionality to our safety critical drivers. Our experience and industry alliances have made us experts with most major RTOS, graphics controllers, bus architectures, and processors. We provide custom safety-certifiable graphics solutions, including driver, application level, and middleware solutions utilizing the same processes we use to create our own COTS safety-critical drivers.

Modular Architecture

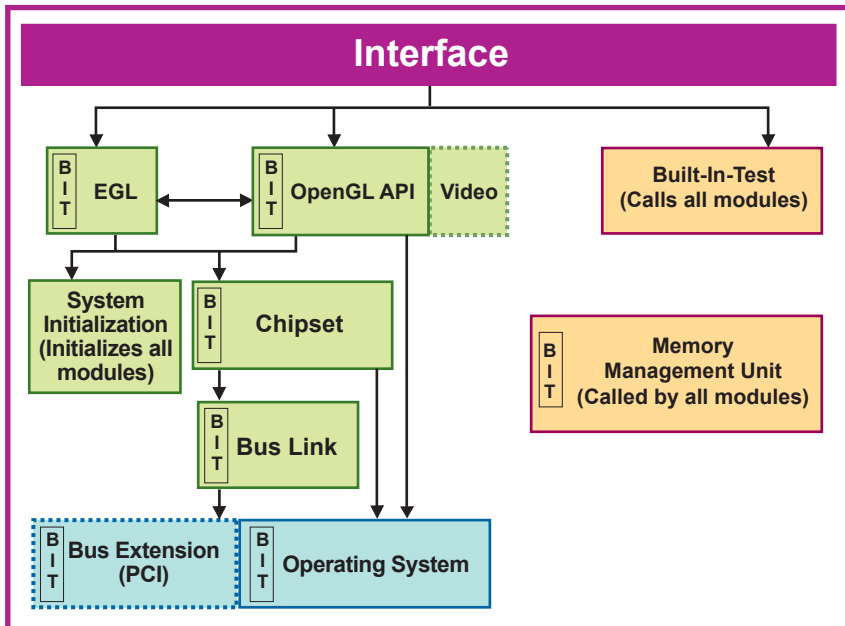
ALT's certifiable OpenGL SC drivers use a modular architecture designed to minimize and isolate coding changes when moving between target systems. This lessens the impact of developing for different platforms, operating systems, and graphics controllers by isolating these issues in specific modules that each contain a common interface. The modular architecture allows developers to change and recertify the driver to accommodate customization requirements without the need for expensive re-verification of unchanged components. Having a clean interface between the components of the driver also results in greatly simplified integration and testing of customer-specific modules and a greater overall robustness of the driver.



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DO-178B Level A Graphics Driver Product Family				
Product	GBK-178	GSK-178	GCK-178	GEK-178
Purpose	Prototyping & non-certifiable production	Production with customizability in certifiable projects	Certification	Prototyping & certifiable production
Binaries (release & debug)	✓	✓		✓
Safety Certification Artifacts			✓	✓
Source Code		✓		✓
Low Level BIT Graphics Controller Tests	✓	✓		✓
Test Harness			✓	✓

ALT Software DO-178B OpenGL Driver Block Diagram



Base Driver Features

- OpenGL ES-SC support, plus custom extensions
- DO-178B Level A certifiable
- Direct mode rendering
- Supports both ring buffer and PIO
- Variable sync modes
- Texture size up to 2048 x 2048

Graphics I/O Features

- RGB analog, DVI, and LVDS outputs
- Custom resolutions up to 2048 x 1536
- 2 simultaneous and discrete outputs per graphics controller

2D Acceleration Support

- BitBLT
- Line draw
- Polygon and rectangle fill
- Scissoring
- Raster operations
- Double buffering

3D Feature Support

- Lighting effects
- Multiple clipping planes
- Geometry culling and clipping
- All 3D primitives
- Fog effects
- Alpha blending
- Bilinear filtering

DO-178B Compliance

Developed from the ground up with safety criticality in mind, ALT's OpenGL products conform to the RTCA's DO-178B "Software Considerations in Airborne Systems and Equipment Certification" guideline. Compliance requires minute attention to detail, strict process control and thorough, concise documentation, resulting in robust software of the highest quality. ALT's DO-178B products are optimized to attain maximum performance from the underlying hardware while respecting the constraints of the DO-178B guideline. Our adherence to best practices at all stages of the software life cycle reflects these priorities. These products are intended for clients who require an OpenGL ES / OpenGL SC driver that meets the strict software certification standards mandated by the FAA, EASA, and Transport Canada. Product options include a complete set of DO-178B Level A documentation as well as a test harness that fulfils the requirements of the highest level of criticality in the DO-178B guideline.