



ALT Software Inc.

DO-178B OpenGL Driver Kits

ALT Software provides DO-178B certifiable OpenGL display drivers for embedded computing platforms that employ hardware accelerated graphics. ALT's drivers are certifiable up to up to Design Assurance Level (DAL) A, the highest level recognized by the FAA, EASA, Transport Canada and the JAA. 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 Vx Works 653, DDC-I Deos™, as well as proprietary operating systems.
- Windowing support via Khronos EGL
- Support for PCI, PCIe, PMC, XMC, VPX
- Small memory footprint
- Memory management for limited memory systems
- Dual display support (independent and mirrored)



About ALT Software

ALT Software's drivers are currently used in commercial and military aircraft worldwide. We provide software and hardware development and design services, as well as embedded graphics software and hardware products. Our strengths are in software engineering, hardware design and prototype development, with particular expertise in 3D/2D graphics, video, audio, wired and wireless technologies. Our embedded graphics products include OpenGL graphics display drivers, graphics development kits, and display adapter hardware.



Customization Services

ALT Software provides customization services to accommodate various system configurations and to add functionality to our drivers. Our experience and industry alliances have made us experts with most major RTOS, graphics controllers, bus architectures, and processors. We develop custom safety-certifiable solutions in partnership with an FAA Designated Engineering Representative (DER) utilizing the same processes we use to create our own COTS safety-critical drivers.

Modular Architecture

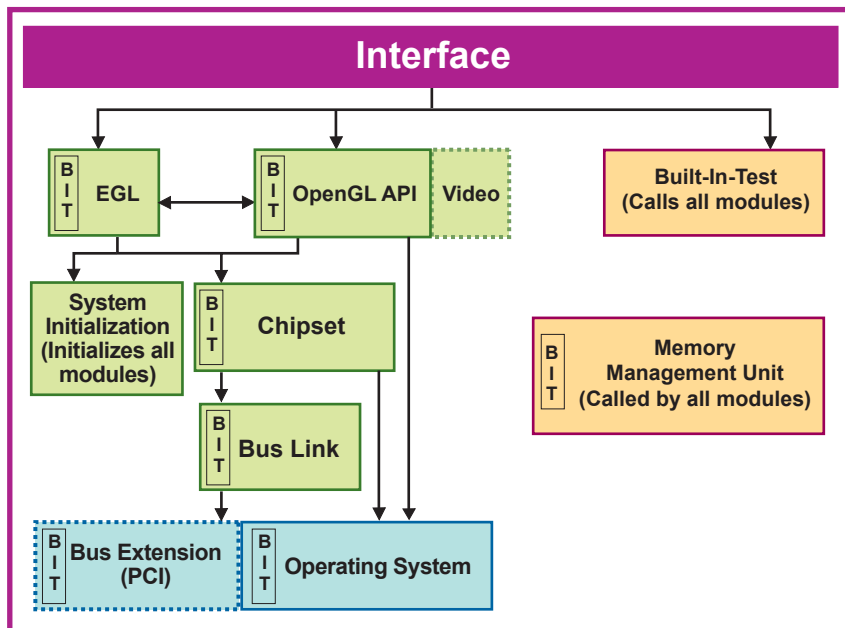
ALT's certifiable OpenGL drivers use a modular architecture designed to minimize and isolate coding changes when moving between target systems. This lessens the impact of developing for different platforms, operating systems, and graphics controllers by isolating these issues in specific modules that each contain a common interface. The modular architecture allows developers to change and recertify the driver to accommodate customization requirements without having to completely rebuild it. 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.



For more information contact:
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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

- Supports a superset of Khronos OpenGL ES-SC
- 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 driver that meets the strict software certification standards mandated by the FAA, EASA, Transport Canada and the JAA. 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.