

Renesas Ready Ecosystem Partner Solution

GHS μ -velOSity RTOS



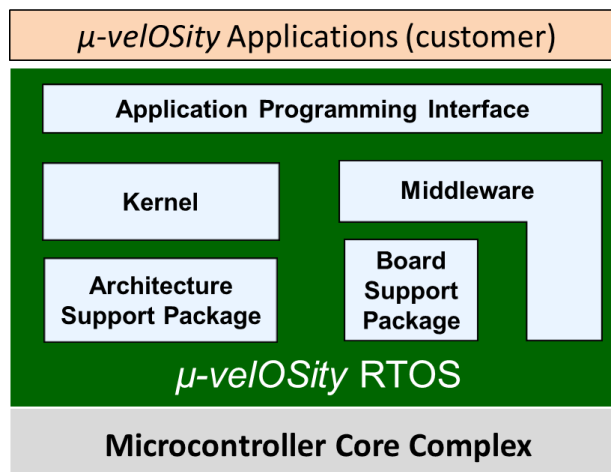
Solution Summary

The μ -velOSity™ RTOS is the smallest of Green Hills Software's family of real-time operating systems. The RTOS supports a wide range of MCUs and is certified to the highest industry standards for functional safety and security. Its small footprint, intuitive interface, and maximum performance enables developers to build reliable software at a lower cost with faster time-to-market. μ -velOSity RTOS solutions exist for the [RA family of MCUs](#) and [RZ family of MPUs](#).

Features/Benefits

- Certified for IEC 61508 SIL3, EN 50128 & 50657 SIL4, ISO 26262 ASIL-D and more
- Native support for the latest revisions of C and C++
- Sophisticated functionality in a small memory footprint
 - Multi-tasking functionality
 - Hardware abstraction
 - Resource allocation and management
 - Priority-based, preemptive scheduler
 - MPU support for safe and secure application separation

Diagrams/Graphics



Target Markets and Applications

- Automotive
- Industrial IoT
- Medical
- Radar
- Safety islands / safety checkers
- Battery management systems
- Vision and camera systems
- PLC
- Simple HMI
- Sensor hubs
- I/O controllers

[GHS \$\mu\$ -velOSity RTOS](#)



Reliable kernel architecture

For over forty years, Green Hills Software has been providing software products and services for mission critical embedded systems in diverse market segments, including aviation, industrial, automotive, and medical.

In this decades-long journey, Green Hills Software has built the μ -velOSity RTOS as an answer to the industry's need for a safe, secure, lean, and reliable operating system for embedded microcontrollers.

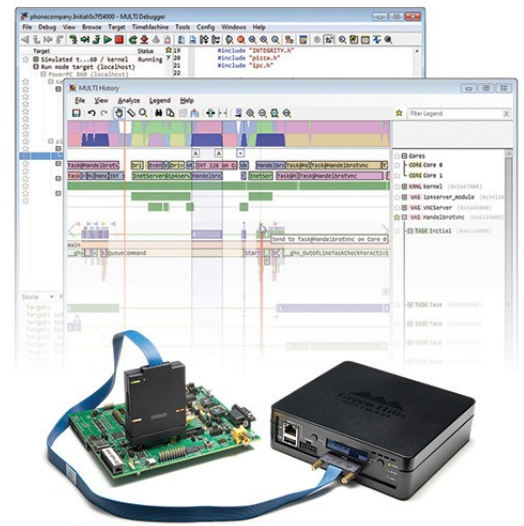
Platform for multicore microcontrollers

The ongoing consolidation of mixed-criticality functions on microcontrollers and the diversity of real-time cores pose a new challenge to the developers. The μ -velOSity RTOS enables the industry to solve these challenges by:

- 1) offering support for a wide range of hardware architectures including ARM and RISC-V as well as
- 2) leveraging the most comprehensive suite of embedded development tools available to realize complete application control and visibility.

Tools from Green Hills include:

- ▲ **Green Hills Probe**, a hardware debug device letting developers download code to the target for kernel-aware debugging and run-control right out of the box.
- ▲ **Target simulators** to provide instruction accurate host-based simulation environments for μ -velOSity when hardware is not yet available or in limited supply.
- ▲ **Optimizing compilers** for C, C++, Embedded C++, MISRA C and CERT-C generate the smallest-footprint and fastest-executing code in the industry.
- ▲ **The MULTI[®] integrated development environment** for μ -velOSity, includes simultaneous multiple task debugging integrated with profiling and code coverage visibility tools for advanced source-level debugging.
- ▲ **The TimeMachine[®] debugger**, helping you find bugs faster and optimize system performance. TimeMachine can greatly enhance system visibility, significantly reducing development time and helping developers to create higher performance, more reliable device software.
- ▲ **Kernel-aware debugging**, allowing developers to easily view detailed information about μ -velOSity kernel objects, such as tasks and semaphores. Summaries of all objects of a certain type and extensive information about specific kernel objects are made possible by the μ -velOSity RTOS' tight integration with the MULTI debugger.



Reliable solution for safety & security

Modern microcontrollers in automotive, industrial and IoT applications need an RTOS purpose-built for the task. Vehicle electronics are a good example where cyber security, functional safety, cost, scalability and development speed are OEM priorities for ECU node applications with ultra-small memory footprint requirements.

The μ -velOSity RTOS from Green Hills Software and its associated MULTI IDE allow the customers to keep innovating and still gaining in productivity without compromising on safety and security.

