

MEMORANDUM



Ref: FR-201-MO-RB-003
Date: 1st October 2010
To: General Distribution
From: Richard Barry – Real Time Engineers Ltd.
Subject: Summary information on the FreeRTOS project and the FreeRTOS product family

FreeRTOS™

From [Real Time Engineers Ltd](#)

About FreeRTOS

[FreeRTOS](#) is a small footprint, portable, preemptive, [open source](#), real time kernel that has been designed specifically for use on microcontrollers. With more than 77,500 downloads during 2009 - FreeRTOS has become one of the most popular real time kernels available. This leadership position is backed by the results of the 2010 Embedded.com survey of professional engineers, where FreeRTOS came top for the question "which kernel are you considering using this year".

Licensing

FreeRTOS is truly free, even for use in commercial applications, and does not pose any risk to your proprietary software or intellectual property. It is professionally developed and does [not contain any unknown or contributed code](#). The [license terms](#) do not 'infect' anything outside of the kernel and there is no requirement to share anything except modifications to the kernel itself. [Source code](#) is freely obtainable without having to provide any personal information such as your name or email address and there are no limitations or restrictions on performance or features.

Low cost [commercial licenses](#) are available under the OpenRTOS™ brand for applications that require professional software licensing to ensure the integrity and support of commercial products. Commercial licenses are provided by WITTENSTEIN high integrity systems under license from Real Time Engineers Ltd. The WITTENSTEIN group is a global engineering company with a distinguished 60 year history. Additionally a mature suite of USB, File System and TCP/IP products are available fully integrated with OpenRTOS at competitive prices.

WITTENSTEIN high integrity systems have a long history as a safety company developing safety critical and high integrity applications. They have used their experience in the aerospace, medical and industrial fields to produce SAFERTOS™, a real time kernel originally based on FreeRTOS that has been independently certified by TUV SUD for use in IEC 61508 applications to Safety Integrity Level (SIL) 3, and FDA 510K applications that have been classified as critical.

Technical Support

[Free support](#) is provided for FreeRTOS by an active user community. Strong and professional technical support is provided for all commercial versions of the software and many of the world's leading technology companies now use our products and support.

Education and Training

The FreeRTOS web site provides a wealth of useful information, including instructions on how to use the 'out of the box' example projects that are included in the main FreeRTOS download.

For those requiring greater detail or a FreeRTOS tutorial, a [FreeRTOS book](#) provides a hands-on, step by step introduction to multitasking systems and how to use FreeRTOS on a microcontroller. The book comes with 16 simple examples.

[Classroom training](#) sessions can also be arranged.

Real Time Kernel Features

Standard features include:

- Pre-emptive or co-operative operation
- Very flexible task priority assignment with no limit on the number of priorities or how many tasks can share a priority.
- Queues
- Binary semaphores
- Counting semaphores
- Recursive semaphores
- Mutexes
- Tick hook functions
- Idle hook functions
- Stack overflow checking
- Trace hook macros
- Optional commercial licensing and support

Recent ports manage interrupt nesting and allow interrupts above a user-definable priority level to remain unaffected by the activity of the kernel. Using FreeRTOS will not introduce any additional timing jitter or latency for these interrupts.

Debugging Support

A 'StateViewer' is available for Eclipse based IDEs and the IAR Embedded Workbench. This allows the state of each task, queue and semaphore to be inspected each time the debugger is halted.