Freescale’s i.MX and Micrium’s \(\mu C/OS-II\)

**Overview**
Freescale’s advanced i.MX family of applications processors helps you quickly harness the power of wireless, broadband, multimedia and the Internet. Designed for use in smartphones, wireless PDAs, mobile gaming, GPS systems and many other mobile wireless applications, Freescale’s i.MX applications processors are a leading solution in today’s smartphone environment.

**i.MX Applications Processors**
Based on ARM® core technology, the i.MX family of applications processors is designed to offer low power consumption with real-world power performance and a high degree of integration to significantly reduce your design time.

**µC/OS-II for Your Embedded Product**
Besides having an advanced family of applications processors, developers need a strong software foundation which provides solid performance. Micrium offers high quality, royalty-free software for embedded developers.

The i.MX Family supports a broad range of industry-leading platforms such as those based on the Microsoft® Windows® CE OS, Palm OS®, Linux® OS and Symbian OS™. Evolved from the best-selling DragonBall™ family of applications processors, the i.MX Family consists of the cutting-edge i.MX21, i.MX1 and i.MXL, tiered offerings for different types of handhelds and smart devices. The i.MX portfolio is a central feature of Freescale’s i.Smart smartphone reference design, providing power performance to our Innovative Convergence™ platforms.

**Smart Speed**
> > Efficient energy management
> > Application-specific acceleration

**Multimedia**
> > Hardware based acceleration
> > MPEG-4 encode and decode

**Security**
> > Security framework with hardware and software elements
> > Protects services and high value content
> > Provides trusted operating environment
> > Enables digital rights management

µC/OS-II, Micrium’s real-time kernel is a very robust RTOS. It comes with 100 percent portable ANSI C source code that is clean and very consistent. One of the great benefits of µC/OS-II is its performance. The execution time for most of the services provided by µC/OS-II is both constant and deterministic—this means that execution times are not dependent on the number of tasks running in your application. µC/OS-II is also very fast. The scheduler in µC/OS-II contains only four simple lines of C.

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**Learn More:** For more information about Freescale products, please visit [www.freescale.com](http://www.freescale.com).

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Real Time Operating System

µC/OS-II is a portable, ROMable, scalable, preemptive real-time, deterministic, multitasking kernel that can be used in i.MX-based applications. µC/OS-II can manage up to 63 application tasks and provides the following services:

- Semaphores
- Mutual exclusion semaphores (to reduce priority inversions)
- Event flags (added in V2.51)
- Message mailboxes
- Message queues
- Task management (create, delete, change priority, suspend/resume, etc.)
- Fixed sized memory block management
- Time management

A validation suite has been developed for µC/OS-II and provides all the documentation necessary to prove that µC/OS-II is suitable for Safety Critical Systems (DOB178B Level A) proving that µC/OS-II is a very robust RTOS.

µC/OS-II can be scaled to only contain the features you need for your application and thus provide a small footprint. On the i.MX family of applications processors, µC/OS-II can be reduced to as little as 6 KB of code space and 1 KB of data space (excluding stacks).

Embedded TCP/IP Stack

µC/TCP-IP is a compact, reliable, high performance TCP/IP protocol stack. Built from the ground up with Micrium’s renowned quality, scalability and reliability, µC/TCP-IP enables the rapid configuration of required network options to minimize your time to market. Micrium also offers a number of add-on modules to µC/TCP-IP: DHCP client, DNS client, FTP server, HTTP server (i.e. web server), TFTP server and more.

Embedded Graphical User Interface

µC/GUI is universal graphical software for embedded applications. It is designed to provide an efficient, processor and LCD controller independent graphical user interface to any application using a graphical LCD. It works in single as well as in multi-task environments. µC/GUI can be adapted to just about any size of physical or virtual display with a LCD controller and CPU. µC/GUI comes with ALL the source code. µC/GUI works with just about all CPUs and unlike other GUIs which requires a C++ compiler, µC/GUI is written in 100 percent ANSI-C. Processors from 8 to 32 bits will run µC/GUI; 16-bit CPUs or better are advisable for performance considerations.

Embedded File System

µC/FS is a FAT file system which can be used on any media (SD/MMC, Compact Flash, IDE, SMC, Flash chips and more) for which you can provide basic hardware access functions. µC/FS is a high-performance library that has been optimized for speed, versatility and memory footprint. MS-DOS/MS-Windows® compatible FAT12, FAT16, FAT32 and Long Filename support.

Partnering with Freescale

Taking advantage of the quality and capabilities of Micrium’s kernel and software tools while using Freescale’s i.MX family of application processors will allow developers to create a wide range of products and an ever-expanding set of features for mobile devices as Freescale’s comprehensive hardware and system solutions are engineered to help reduce overall system cost and speed time to market.