

# SELECTING AN EMBEDDED RTOS



## FEATURED INTERVIEW:

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## MENTOR GRAPHICS - RTOS PRODUCTS & SERVICES, 2009

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- Q. First of all, tell us a little bit about yourself and your responsibilities at Mentor Graphics.**
- A. My name is Geoff Kendall, and I am Product Marketing Director in the Embedded Systems Division (ESD) of Mentor Graphics. I joined ESD two years ago after about ten years in the embedded software space, in which time I founded and sold two startup companies.
- Q. If you would, please give us a very brief, bulleted outline of your products. What sorts of real-time operating systems (RTOSes), tools, and/or services does your company offer?**
- A. Our *Nucleus Real Time OS* has shipped in billions of devices to date, powering thousands of embedded applications across a wide range of processors and architectures. The key strengths of *Nucleus* – namely a highly efficient, hard real-time kernel coupled with a broad range of OS services including networking – have led to particularly high success in the area of portable communications. There's a fair chance that your mobile phone depends on *Nucleus* to make and receive calls.
- Complementing the *Nucleus Real Time OS* is our *EDGE Developer Suite*, which brings together compilers, a highly advanced debugger, an optimizing profiler and a full simulation platform, all fine-tuned for *Nucleus*-based application development.
- Q. What is Mentor Graphics's "unique value proposition" for the embedded systems engineer or programmer who is considering an embedded RTOS? What do you and your products do to help him get his product to market faster, cheaper, better?**
- A. We offer a complete, end-to-end software development platform to our customers. Furthermore, our unique value proposition stems from the fact that we own all of the core technologies that make up this solution. Whereas some vendors plug gaps in their offering with modified versions of open source software (such as GNU compilers and debuggers), our ownership of the complete solution enables us to deliver efficiencies – both in terms of workflow and the final application – that far exceed what can be achieved when combining separate technologies from disparate sources.

**Q. How are you different as a company from competitors? What sets your products apart from those of other RTOS companies?**

A. Our offering builds on more than twenty years of delivering highly efficient, cost effective embedded software, particularly in markets where issues such as power efficiency and bill of materials are of paramount importance, such as portable consumer electronics. Our experience in delivering optimized solutions makes us the right choice for customers unlocking the potential of the very latest embedded hardware, and enables software developers to devote more time to differentiating their product rather than worrying about low level design issues. For example, our *Inflexion™* UI technology enables smoothly animated user experiences with advanced three-dimensional effects to be architected in minutes and delivered even on low-end hardware.

**Q. What embedded architectures do you support - e.g., Intel architecture, MIPS, ARM, PowerPC, etc.?**

A. A wide range of embedded 32-bit architectures, including ARM, MIPS, PowerPC and ColdFire.

**Q. What additional software do you offer such as networking, file systems, TCP/IP, security, IDE, GUIs etc.? What about development tools? Are there particular partnerships with other software companies that are especially helpful?**

A. *Nucleus Real Time OS* incorporates:

- Real time kernels with a range of APIs (e.g. POSIX, uiTRON) and services such as MMU.
- Network and connectivity services, including more than 50 IP-based protocols.
- Storage services with FAT, SAFE and persistent file systems, and embedded SQL engine.
- Certified USB 2.0 stacks (function, host and OTG) with a wide range of class drivers.
- GUI services with core rendering, windowing, and 3D menu/animation capabilities.
- An OpenMAX/IL-compliant multimedia framework with audio/video components.

*EDGE Developer Suite* includes:

- An Eclipse-based IDE.
- Optimized compilers for multiple architectures, with support for third party replacements.
- A fast, configurable debugger offering unprecedented flexibility.
- A profiler tightly coupled with *Nucleus OS* to enable rapid bug and bottleneck analysis.
- A simulation environment for fast, reliable application development without hardware.

**Q. How are your products sold? What is a typical fee arrangement? Is it royalty free? Per unit royalty?**

A. Multiple options are available to accommodate anything from one-off projects to enterprise-wide usage.

**Q. Finally, what sort of “try before buy” experiences does your company offer? Are there free demo downloads, webinars, seminars? What web URL’s can you point us to for more information?**

A. Evaluations of all products, as well as instructional videos, technical papers and interactive demos, can be requested at <http://www.mentor.com/embedded>.

For more information and pricing for Mentor Graphics embedded solutions, please call 1-800-547-3000 or e-mail [embedded\\_info@mentor.com](mailto:embedded_info@mentor.com).

**Q. Thank you for this product interview.**