Addressing Today’s Industrial Automation Challenges

The industrial automation market is facing unprecedented business pressures. To stay successful, three major trends must be addressed: the competitiveness of the global market which is driving the focus on cost reduction for both capital and operational expenses; increasing wired and wireless connectivity, the high value of data, and cyber terrorism are all driving a focus around security; and costs related to the possibility of bodily harm are driving demands for increased safety requirements.

The Mentor® Embedded Solution for Industrial Automation has been built to address these trends, enabling manufacturers of equipment for industrial automation to be competitive and relevant. The Mentor solution enables the creation of feature-rich, power-efficient, connected, reliable, safe, and secure systems. This multi-platform approach includes proprietary and open source runtime environments, a multicore framework to accelerate complex heterogeneous system development, rich graphics support, integrated tools, and relevant safety and security certifications. The solution is augmented with a rich ecosystem of key partners who complement the solution with a breadth of industrial-focused connectivity and security capabilities. The Mentor Embedded Solution for Industrial Automation includes:

**Nucleus RTOS**

Mentor® Embedded Nucleus® RTOS is a reliable, scalable, and fully optimized RTOS, perfectly suited for a range of industrial automation devices. The RTOS includes a user-space process model for applications separation and...
reliability, a comprehensive power management framework, a breadth of connectivity and security options, broad graphics support, and advanced multicore support. Nucleus is further enhanced to address specific Industrial requirements with safety certification to IEC 61508 SIL 3, and GE Digital Achilles Security Certification.

**Multicore Enabled**

The Mentor Embedded Multicore Framework enables developers to configure, deploy, and manage multiple operating systems and applications across homogeneous and heterogeneous processors. This comprehensive framework manages the many challenges associated with inter-process communication (IPC), resource management/sharing, and management of cores within a heterogeneous environment and is available natively or in a supervised environment with Mentor’s small footprint type-1 hypervisor to enforce separation.

**Industrial Connectivity and Security**

Mentor Embedded runtime platforms include a breadth of connectivity options needed by today’s industrial automation systems. The platforms include support for well-established and emerging connectivity protocols including OPC UA, EtherCAT, EtherNet/IP, Data Distribution Service (DDS), and more. The platforms include integrated security features, and also support the Floodgate family of products from Icon Labs, which provide a foundation for developing secure, trusted, authenticated, and managed embedded and IoT devices.

**Cloud Enabled for the Industrial IoT**

The Mentor Embedded Industrial Solution also includes support for industry-standard cloud and IoT technologies, including XMPP, MQTT, AMQP, CoAP, RESTful API support, and 6LoWPAN. For a complete cloud solution, commercial integration with Microsoft Azure is available for both Nucleus RTOS and Mentor® Embedded Linux®.

**Sourcery CodeBench**

Mentor Embedded Sourcery™ CodeBench delivers a powerful toolset that helps embedded software engineers efficiently develop and optimize software for a variety of targets and various domains including connectivity and graphics.

**More about Mentor Embedded**

Mentor’s Embedded Systems Division comprises the Mentor Embedded family of products and services, including embedded software IP, tools, and professional services to assist developers and silicon partners to optimize their products for design and cost efficiency.