Looking ahead in embedded platforms: The trends and products to look out for

Rudy Ramos, Mouser Electronics

Ever since the launch of the Pulsar digital watch in 1972, the world of embedded systems has progressed exceptionally rapidly, to the point where this type of electronics is now all around us and continuing to spread. It's an exciting area to be involved in: over the coming months, platforms will continue to evolve, making it easier and cheaper for designers to deliver products to consumers. [The Pulsar Digital Watch] Embedded platforms are, of course, driven in part by wider market trends that demand… **Continued...**

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XMOS offers high-performance voice processor or complete dev kit

Rich Nass, Embedded Computing Brand Director

There's no getting away from voice-activated products. They're all around us. I'm not saying that's a bad thing, but it's something we need to accept and embrace. Now that we agree on that, we need to agree on the path to get to those voice-enabled products. One vendor that helping to guide developers is XMOS , with its XVF3000 family of voice processors, which provide far-field voice capture using arrays of MEMS microphones. One version of the processor, the 3010x, adds support for Sensory's… **Continued...**

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Next on the dev kit tour: Nordic Semi's Thingy

Rich Nass, Embedded Computing Brand Director

I seem to be on the development kit tour this summer. I just got done with the Z-Wave dev kit from Sigma Designs and they set the bar pretty high. I did have an issue, but it was mostly due to my own insufficient programming skills. With a little tech support, and a lot of, "oh yeah, that's the command," I managed to turn my table lamp on and off with my laptop. Next up on the tour was the Nordic Semiconductor Thingy board…   **Continued...**

Show off your robotic prowess with robot-sumo competitions

Jeremy Cook, Engineering Consultant

[Image by RoboCore Robot Sumo by Paulolenz via Wikimedia Commons , CCA-SA 3.0] In human competition, one could argue that there is no purer expression of sport than pitting one person directly against another in some form of wrestling. Though robots aren't yet advanced enough to wrestle with one another in the Greco-Roman style, a simplified form of sumo wrestling has become a very popular robo-sport. The concept — push the other robot out of the ring — is simple, but mastering it against…   **Continued...**

Taking the dev kit from prototype to solution

Cliff Ortmeyer, Newark

Development kits, aka dev kits, are driving innovation in a number of areas. From wireless and sensing, to the IoT and power management, dev kits are an essential part of the early stage design process, enabling engineers to test their designs quickly and cost-effectively. Their position as an essential part of a designer's toolkit is firmly entrenched. Research with 1500 designers to explore how they approach the design process revealed that 89% used dev kits to experiment with new systems. However, dev kits aren't…   **Continued...**

The vehicle architecture of automated driving level 2/3

Rudolf Grave, Elektrobit

The requirements for automotive system design and software development are increasing due to the three most important future issues of the automotive industry: autonomous driving, software updates over the air, and drive system electrification. The current electric/electronic (E/E) architecture in the vehicle integrates one or a few vehicle functions per control unit. This increases both the number of control units and distributed software functions and the complexity of connectivity respectively. In this context, the E/E architecture must perform an increasing number of driver assistance… **Continued...**

Cross-industry semantic interoperability, part one

Richard Halter, Global Retail Technology Advisors, Mark Harrison, Milecastle Media, Adam Hise, Harbor Research, Scott Hollenbeck, VeriSign, Brandon Lewis, Technology Editor, Doug Migliori, ControlBEAM, John Petze, SkyFoundry, *and* Ron Schuldt, Data-Harmonizing

This multi-part series addresses the need for a single semantic data model supporting the Internet of Things (IoT) and the digital transformation of buildings, businesses, and consumers. Such a model must be simple and extensible to enable plug-and-play interoperability and universal adoption across industries. IoT network abstraction layers and degrees of interoperability Interoperability, or the ability of computer systems or software to exchange or make use of information [1], is a requirement of all devices participating in today's information economy. Traditionally, interoperability has been… **Continued...**

IoT over BLE in 10 minutes with Microchip Curiosity and MikroElektronika Clicks

Brandon Lewis, Technology Editor

Goal: The following describes how to build a simple Internet of Things (IoT) data streaming application over Bluetooth Low Energy (BLE) using the Microchip Curiosity High Pin Count (HPC) development board, MikroElektronika Bluetooth and gyroscope Clicks, and the MPLAB X integrated development environment (IDE) . We begin by configuring Curiosity's onboard 8-bit PIC16F18875 microcontroller (MCU) to receive orientation data from the MikroElektronika MIKROE-1379 GYRO Click using quick-start libraries recently added to the MPLAB Code Configurator (MCC) . We proceed by modifying code from sample… **Continued...**

Embedded vision for Industry 4.0

Nick Ni, Xilinx

Machine vision is a term commonly used for embedded vision systems operating in an industrial context. Consequently, machine vision addresses a wide range of applications, from optical inspection of manufactured goods such as semiconductor and solar panel manufacturing to postal and parcel sorting, industrial X-rays, and food packaging. There are several high-level trends facing most machine vision applications today: Ubiquity of machine vision Embedding intelligence from machine learning at the edge Open, high-level languages and frameworks Multi-level, multi-factor security The ubiquity of machine vision… **Continued...**

A language fit for embedded

Colin Walls Mentor Graphics Embedded Systems Division

There are a great many programming languages in use today and many more that have fallen into disuse over the years. A challenge has always been standardization. Just about everyone would concur that standards are a Good Thing, but nobody can agree on how to apply the idea to programming languages. One approach is to design a very complete language that addresses every programmer's needs. This was attempted about 50 years ago by IBM. In those days, there were a number of widely used… **Continued...**

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