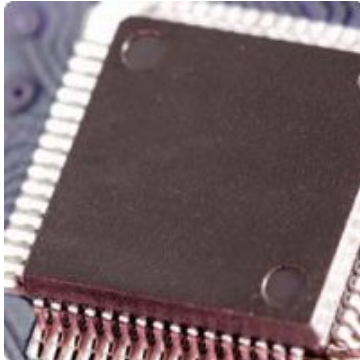




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DESIGN ARTICLES

2017 embedded processor report: At the edge of Moore's Law and IoT



Brandon Lewis, Technology Editor

With the benefits of Moore's Law waning and the Internet of Things (IoT) targeting an untold number of lower end devices, embedded processor vendors are now tailoring solutions to the specific needs of end customers and applications more than ever before. The result? An emphasis on power efficiency, security, development tools, and cost.

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?Portable Stimulus?: System-level verification trends for 2017 and beyond



Adnan Hamid, Breker Verification Systems

The functional verification space has had more innovation than any other part of the front-end design flow, and yet the amount of time and effort spent in verification continues to grow. The problem stems from rising complexity and the fact that simulation as a technology has failed to scale ever since single processors stopped becoming more powerful. It is compounded by an increasing number of tasks that verification is expected to perform, such as power verification.

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The Embedded Experts Podcast: Where have all the OS vendors gone?



Rich Nass, Embedded Computing Brand Director *and*

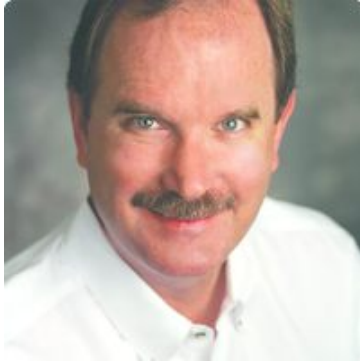


Brandon Lewis, Technology Editor

Lewis, Technology Editor

On this week?s podcast with the Embedded Experts, Rich Nass and Brandon Lewis, we look at the semi-shakeup in the world of operating systems. There?s been some acquisition and there?s been some realignment. Security is in vogue and ?real time? is, well, not necessarily real time. And then there?s open source. Let us know if you agree with our opinions. Topics covered: RTOS Linux Semiconductor Companies Open Source Security

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Patching up Linux for real-time applications: Origins and impacts on IoT



Brandon Lewis, Technology Editor

A pioneer of embedded operating systems (OSs), Jim Ready is not only credited with the creation of one of the first commercially available real-time operating systems (RTOSs), the Virtual Real-Time Executive, under his guidance MontaVista helped pave the way for the use of Linux in embedded devices in the early 2000s. Now an independent consultant, Ready reflects on how early work in embedded Linux that prompted modern mobile OSs like Android also branched into more deeply embedded applications through the advent of capabilities such as the Realtime Preemption (RT-Preempt) patch, and how that evolution could ultimately impact the software hierarchy in the Internet of Things (IoT).

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You'll likely find the HSA software and toolchains quite useful and timeless

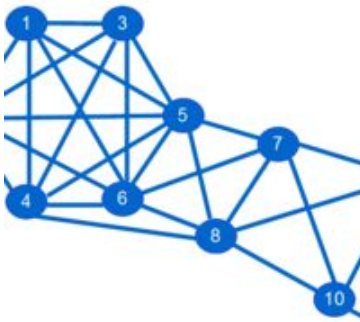


Paul Blinzer, Fellow, AMD, Chairperson, System Architecture

Workgroup of the HSA Foundation

Many people talk about hardware architecture as if it's the most important part of a new platform. It's true that hardware architecture is important for performance, which was discussed at length in a previous blog post. As a refresher, the pillars of the Heterogeneous System Architecture (HSA) are unified and shared virtual memory user-mode dispatch, [...]

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Bluetooth and market trends in mesh networking



Brandon Lewis, Technology Editor

Of all the design decisions associated with an Internet of Things (IoT) deployment, the most fundamental is the choice of network architecture. Particularly when dealing with wireless machine-to-machine (M2M) communications, the selection of an appropriate network topology has significant ramifications on the cost, power consumption, and bandwidth requirements of the devices and infrastructure that comprise these networks, and thus contributes considerably to the success or failure of connected products.

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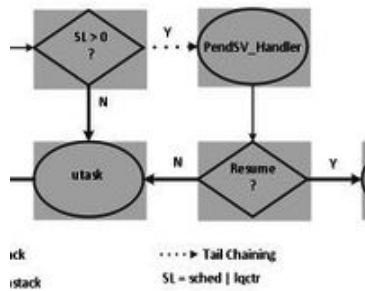
Hardware emulation for multi-level debugging methodology



Lauro Rizzatti, Verification Consultant

Chip design debug is a difficult discipline, and system-on-chip (SoC) design has made it more so. It's like the proverbial needle in the haystack. For SoC designs it's two haystacks, one for software, the other hardware. Software development groups often point a collective finger at the hardware group claiming it's a hardware bug, while the hardware group snaps back, claiming it is a software bug. It's hard to know who's right without effective verification tools to pinpoint the problem. That's where hardware emulation comes in.

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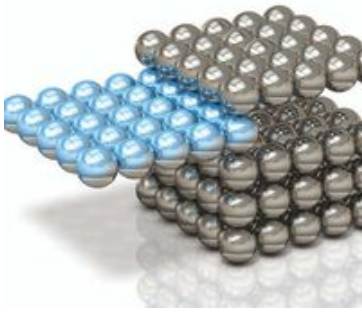
Security and the Cortex-M MPU, part 4: SWI API for MPU systems



Ralph Moore, Micro Digital

The Cortex-M v7 memory protection unit (MPU) is difficult to use, but it is the main means of hardware memory protection available for Cortex-M3, -M4, and -M7 processors[1]. These processors are in widespread use in small- to medium-size embedded systems. Hence, it is important to learn to use the Cortex-M v7 MPU effectively in order to achieve the reliability, security, and safety that modern embedded systems require.

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A source-annotation-based framework for structural coverage analysis tool testing



Olivier Hainque, AdaCore

Automated testing of software tools always requires some way of comparing what the tool does against what we expect it to do. Testing compilers, for example, usually entails verifying the behavior of compiled programs, checking compilation error messages, or analyzing the generated machine code. For static or dynamic analysis tools, this typically involves checking the tool outputs for well-defined sets of inputs.

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Distributed Trust Ecosystem key to autonomous driving future



Brian Spector, MIRACL

It's no secret that advanced driver assistance systems (ADAS) and the fast-approaching autonomous driving future are set to transform the mobility market. A countless number of devices will need talk to each other in order to ensure a safe environment: multiple sensors and systems within the car will communicate securely at lightning speed while the vehicle itself will be tuned into its surroundings via vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) ad hoc networks, and more. Road conditions, precise position, speed, traffic signals and the location of other vehicles are just some of the data that go into this mix.

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Semiconductor foundations for connected device security



Brandon Lewis, Technology Editor

Foundational security for Internet of Things (IoT) devices starts in silicon, a realization that can be seen today as semiconductor companies ramp up production of integrated circuits (ICs) that either incorporate security functions or act as complete standalone cryptographic devices themselves.

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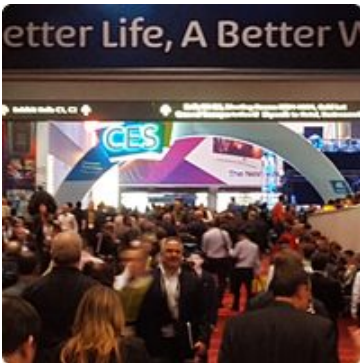
I3C: An upgraded interface for a world of sensors



Brandon Lewis, Technology Editor

Enter the Improved Inter-Integrated Circuit (I3C), a next-generation chip-to-chip interconnect capable of supporting not only mobile devices, but Internet of Things (IoT), wearables, and automotive sensor subsystems as well. Below, Foust explains.

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Floored: CES 2017 recap



Brandon Lewis, Technology Editor



Rich Nass, Embedded

Computing Brand Director

Slide show ? The 2017 Consumer Electronics Show didn't pack feature a headlining technology like past shows where wearables, driverless vehicles, drones, and augmented/virtual reality took center stage the first time. However, what it did showcase is perhaps more important ? evidence that the Internet of Things (IoT), autonomous and electric vehicles, and the technologies [...]

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2016 takeaways, 2017 trends to watch



Curt Schwaderer Editorial Director

2016 was another exciting year for the embedded industry highlighted by emerging Internet of Things (IoT) platforms and the sensors, embedded systems, and network topologies to support them. Here we review the embedded highlights of 2016 and look forward at emerging trends for 2017 and what's driving them. 2016 embedded year in review 2016 [...]

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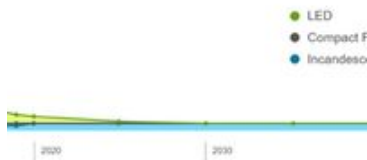
Growing the Internet of Things, part 5: Security



Skip Ashton, Silicon Labs

What will it take to really grow the Internet of Things (IoT)? The answer is complex and multifaceted, and we have to consider the following areas:

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WHITE PAPER



White Paper: The Intel(r) IoT Platform - Architecture Specification, Internet of Things (IoT)



Staff Intel

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