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“Sustainable innovation the only way to long-term success, device intelligence the future of electronics design”

**Interview with Altium CEO Nick Martin, on how innovation is now
crucial in designing electronics for the connected generation**

SANTA CLARA, Calif. —February 5, 2008 – Altium Limited, the electronics design industry’s leading developer of unified electronic product development solutions, has launched the Altium Innovation Station at DesignCon 2008 to provide designers with the design tools they need to create sustainable differentiation into the future.

In this interview, Nick Martin, CEO of Altium, outlines his vision for the future of electronics design.

What’s influencing electronics design today, and what pressures are we facing?

“The overall forces driving the electronics industry, and product development in general, are changing. And this process of change is continuing to accelerate, rather than slow down. The globalization of manufacturing, particularly the commoditization of low-cost, high quality manufacturing, has all but removed this advantage from larger organizations. And first to market is no longer any guarantee of sustained success.

“Sustainable differentiation needs to go far beyond being first to market and cheapest in the catalogue. Neither guarantees success. Customers are more aware and more sophisticated. They expect a pleasurable, easy-to-use experience, all packaged in a way that suits their image and lifestyle.

“Today, customers demand that products look and feel cool, *and* that they are functional and desirable. The interface must be attractive, and easy to use. Products must connect automatically to related equipment, to supplier organizations, to peers. New connected ‘ecosystems’ will become the norm in the future.

“But most of all, products must be intuitive to use. Complex functionality must be cleverly organized and ordered so that its capabilities can be explored and exploited without the need to reach for the manual, or call for help.”

So how are we coping? What should electronics designers do?

“I think they struggle to deal with increasing complexity, because on the tool side they are often using outdated design methodologies.

“They can’t take full advantage of the latest design technologies because existing design systems do not support them effectively. Or they are just very expensive.

“They are often forced to make crucial decisions about design architecture before knowing how the design will perform.

“They are under the pump, sacrificing design innovation to meet ever-shorter deadlines.

“And I don’t think it’s too much fun at the moment being an electronics designer. How can it be, if you’re forced to design using the same components as the next guy? Where’s the personal fulfillment in squeezing the last drop out of design?”

You’ve touched on differentiation. Surely people do differentiate at the moment?

“There are two myths about differentiation in electronics design. First, that designing and bringing products to market more quickly than your competitors will sustain your business. And second, that lowering your cost of manufacturing will achieve the same result.

“Of course, both play their part. But what’s really happening is that you’re buying some time. Neither provides real differentiation. There will always be someone faster, and someone less expensive.

“So I don’t think you can bet your organization on these. Real, sustainable differentiation comes from intangible attributes such as brand – and soft design, the device intelligence that defines the functionality of a product.”

So what needs to change?

“I think the old design traditions need to be replaced.

“Today the hardware engineer sees the product as a collection of off-the-shelf components, programmable components, and a processor running the code. The software developer sees the product as functionality running on a processor, being fed inputs and expressing outputs via the connected hardware. The system designer sees the product as a set of design requirements, delivered through a system combining software, soft hardware and off-the-shelf hardware.

“As a customer, you simply see the product as a piece of technology that makes your life better in some way.

“As designers, much as we’d like to approach the design task from the customer’s perspective, focusing on the intelligence and useability of the product to have the best shot at succeeding at those real product differentiators, the realities of product development – until now – have forced designers to make decisions about hardware and configuration even before they’ve decided what the product will do.

“So we need a better way to design.

“Imagine if your design libraries were more than component symbols and low-level code libraries. Imagine if they also included blocks of pre-configured hardware, such as USB, Ethernet, or standard interfaces, complete with software drivers to suit.

“Imagine then if those hardware blocks were more than schematics, if they were actual plug-and-play hardware I/O modules, ready to connect to your chosen processor and FPGA.

“Imagine if you had a full Device Software Framework, that let you code independently of the processor, with full driver support for the chosen set of peripheral blocks. And that code was completely portable, ready to move to another processor, if needed.

“Imagine if you could capture your design in an abstract way, using these high level blocks.

“Imagine taking that computationally and processor intensive algorithm, and pushing it from the code into fast hardware, with a few mouse clicks.

“Imagine if the design software interfaced directly to the development hardware, with swappable FPGAs or processors, and those swappable I/O modules. And then imagine moving the entire design from the development board, straight into an off-the-shelf unit, ready for deployment.

“If you do bring all of these together into a single design environment, there’s no more sacrificing design innovation to meet development deadlines, or stitching your product together from the output of multiple, loosely-integrated design flows.

“And there’s no more locking down crucial system architecture decisions too early, or working with yesterday’s technology because your existing design system doesn’t support the latest devices.”

Are we talking here about new directions for electronics design?

“The fundamental objective of every product development team is to deliver the best possible customer experience, one that invokes the response, ‘I’ve just got to have one of those!’

“What creates such a response from a user? Central to it is what the product is like to use – how it responds to their inputs, how well its behavior fulfils their expectations.

“And at the heart of achieving that is the intelligence that you design and build into the product. That desirable customer experience is tightly bound up with the product intelligence. Get that right and you’re well on the way to sustainable differentiation.”

How do you focus on the product intelligence?

“It’s not by forgetting everything you have learned, ditching the way you do design. It’s easier than that.

“It’s about designing your products in an environment where you are free to keep your focus on the high-level design, while the environment manages the low level detail for you.

“An environment that includes all the tools needed for all aspects of electronic product development, including processor-independent embedded coding and debugging, mixed schematic and HDL-based FPGA design and synthesis, and full PCB capture and layout.

“An environment that includes a configurable hardware platform, for that crucial implementing, debugging and updating phase of development. With freedom to experiment with various vendor devices, and the freedom to swap I/O hardware in and out.

“An environment that is much bigger than what you sit in front of – one that is directly connected to software and firmware updates, new hardware releases, technical experts, and a growing network of your peers.”

You’ve mentioned creating product ‘ecosystems’ – what are they?

“Perhaps the biggest driver for change is the ubiquitous connectivity of ‘everything to everything’, which is so dramatically changing the role of technology in our lives.

“We all know that the number of devices connected to the Internet continues to grow from the astronomical towards the truly cosmological. And industrial electronics designs must connect more.

“Device intelligence allows electronics designers and organizations to create product ‘ecosystems’ which create mutually-beneficial relationships with their customers through connectivity. These product ‘ecosystems’ deepen relationship between suppliers and their customers, in ways that go far beyond improved service efficiency or quicker updates.”

So what benefits will increased device connectivity deliver?

“So device connectivity is a new way to generate income through extending a longer term and higher value relationship with your customer. One example might be in the mining sector. In Australia, we’re in the middle of a mining boom and the mining companies can’t extract the minerals fast enough. Any downtime has significant commercial and financial implications. Imagine having trucks with remote intelligence embedded in their engine management systems so that mining companies can remotely monitor service periods, performance, maybe even who is driving which truck. They can pre-empt failures, and minimize downtime. And any truck manufacturer offering this functionality embedded within their vehicles, or even offering remote support services, will have the edge.

“Or imagine something closer to home – no longer having to wait for your service delivery man when your product at home stops working. Instead, your intelligent connected product can be called on from base, diagnosed over the web and the fix identified all without you having to be there.

“Another great example is printers. Everyone knows that the money in printers is in the consumables, the printer cartridges. And everyone knows that there are clones for every cartridge in the market. So some printer manufacturers have introduced connectivity that measures the toner levels and then offers to order replacements for you when levels fall low. The value and differentiation is in the intelligence in the printer, and its connectivity to its ecosystem. You get your toners, the manufacturer gets your money!

“Obviously, organizations like General Electric have been connecting systems as large as power generators or MRI scanners to ‘ecosystems’. But not everyone is GE – yet every designer *should* have the tools to act, create, design, build and grow like GE.

“All this is made possible through electronic products that take advantage of programmable hardware, wireless devices and the web. But to create these types of

solutions, designers will need to create their product with a system that has these possibilities built in.”

How can any given approach to electronics design meet every demand?

“If you have a single view of the design environment, if you move away from old paradigms and loosely-integrated point solutions, then you can cover all aspects of electronics design.

“And I think it’s essential that engineers can do this. How can we, as a tool supplier, know what any given design team or design project requires? The moment you make a choice, you’re immediately bringing back constraints, and possible design dead-ends.

“So our new Altium Innovation Station concept does allow design anywhere along the continuum. So you can do hardware design with or without device intelligence, using Altium Designer. Or you can also create and deliver an intelligent device, without any hardware at all.

“And then you can progress along the continuum of design options. Introduce special peripherals. Do semi-custom design, or design using custom form-factors. Or upload in the future on pre-formed hardware that comes complete with its own platform inside.

“And this is possible because the device intelligence comes first in the design process and you deploy this into any number of execution possibilities.”

Altium made its reputation in the PCB space. It sounds like you’re moving the company well into the embedded sector. What’s the plan?

“Well, our vision remains unchanged. Altium has always been about providing the best possible tools to every electronics designer, unconstrained by prohibitive pricing.

“And as you note, our heritage starts in the PCB space, and Altium Designer is still the leader in PCB design functionality.

“But we’ve spent seven years bringing this vision to market and we’ve now done that. We’ve extended our unified design environment embodied in Altium Designer right through to hardware development, with our desktop NanoBoard, and on to deployment in final hardware, with our new deployment NanoBoards.

“So now, embedded engineers can create designs in hardware and deploy to physical hardware without having to go to manufacture. We think that board-level designers will continue to enjoy the market-leading features in Altium Designer, such as the 3D real-time board visualization introduced in Altium Designer in November 2007. We also give them the option of applying their existing board design skills in new ways so they can really take advantage of focusing on the higher value parts of the design process”

Thank you.

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About Altium

Altium Limited (ASX:ALU) is the leading developer of electronic product development solutions dedicated to unifying the different design disciplines involved in electronics product development. Altium products ensure all electronic engineers, designers, developers, and their organizations, take maximum advantage of emerging design technologies to bring smarter products to market faster and easier. Founded in 1985, Altium has headquarters in Sydney, Australia, sales offices in the United States, Europe, Japan, China, and resellers in all other major markets. For more information, please visit www.altium.com.

About Altium Innovation Station

The concept of the Altium Innovation Station combines the Altium Designer electronics development tool with Altium’s NanoBoard range of reconfigurable hardware development and deployment platforms to provide the single design environment for sustainable differentiation in electronics design. Together, they allow electronics designers to create value and innovation in their products by focusing on designing device intelligence.

Altium Designer’s unified design environment means users can harness the potential of the latest electronics technologies, and move to a ‘soft’ design methodology without the need to acquire specialist programmable device expertise. It unifies the design of the hardware, software and programmable hardware by removing the disparate design flows of old design paradigms.

Altium's NanoBoard range of reconfigurable hardware platforms allows for both the development and deployment of device intelligence based on programmable devices such as FPGAs. Altium's NanoBoard architecture is unique in that it comes complete with a range of programmable devices housed on plug-in FPGA daughter boards, and interchangeable peripheral boards. The development NanoBoard provides a versatile

reconfigurable development platform independent of the choice of FPGAs. In the future, deployment NanoBoards will allow rapid completion of the design process to final hardware – without the constraints of having to design hardware early in the design process.

For more information, please visit <http://www.altium.com/Products/AltiumDesigner/>.

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