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Impinj Adds New Piece Of The RFID Puzzle

CEO/President William Colleran, Ph.D. discusses the industry, a revolutionary new product, and Impinj's recent to moves to strengthen the company.

Recently, we had the good fortune of speaking with William Colleran, Ph.D., CEO/president of **Impinj**. Over the years, he has always shared a unique view of the RFID sector and has been spot-on with his predictions. In this article, we will look at where the company stands today and at the path it has taken to get there.

The first subject we bridged with the RFID leader was Impinj's new xArray Reader System. Colleran describes the product as a game-changing RFID reader system-the first product designed to meet the requirements for wide-area monitoring applications while maintaining backwards compatibility with portal applications. It brings proven tag direction capability to the market in a package that is both low-cost and easy to deploy.

About the size of a small pizza box, the Speedway xArray system provides wide-area monitoring through its beam-forming antenna array, which delivers full power throughout a 40 foot diameter when ceiling-mounted at 15 feet high. The xArray system can distinguish 52 different antenna beams providing for location assignment within the read zone, and the antennas radiate a linear pattern in both the horizontal and vertical paths in order to read tags in any orientation. The reader itself is optimized to read many thousands of tags very quickly, and to distinguish tags of interest from the rest of the field. The xArray can be configured to handle both wide-area monitoring scenarios and portal applications. Moreover, Impinj has added robust tag direction capability that has been proven accurate even in difficult, real world environments.

William Colleran, PH.D., CEO/ president, Impinj.

The reader system's slim profile was designed to mount easily into a single tile of a standard drop ceiling, where it is unobtrusive and able to blend into any décor. The Speedway xArray includes a tilt sensor, hysteresis feedback, and programmable beacon to alert users when the system or environment may need attention. The xArray draws minimal power (which keeps costs low) and runs from standard PoE (IEEE 802.3af), so there is no need to hire an expensive electrician for installation. Furthermore, the Speedway xArray is programmed using industry-standard LLRP and Impinj extensions, for maximum re-use of code and minimum delays due to learning curve with new APIs.

With pre-production units already in the hands

of Impinj partners through the company's exclusive Early Access Program, full volume production is anticipated this year.

Colleran told *SCAN/DCR*, "This is an all-in-one device, which separates it from other ceiling-mounted products. It offers wide-area monitoring, location, 24/7 coverage, low electricity consumption, and it snaps onto a ceiling like a common light fixture. We have been seeing tremendous interest in this since we introduced it to our partners and their customers.

"Things are moving rapidly in Europe. I believe there is an opportunity to see the same phenomenon in the United States. Most of the major RFID players that matter have settled any possible litigation issues by signing on as Round Rock Research LLC. licensees..."

William Colleran, CEO/president, Impinj, Inc.

"We have also done Beta testing at a handful of stores with great success," he continued. "Our Early Access Partners are already developing applications for its use. Major retailers are very, very interested in the xArray system. This product changes everything. It represents a culmination of our efforts in our design lab."

The road to success

Although Impinj is now leading the field in RFID chip technology and related products, the road to success hasn't necessarily been easy. Founded in May 2000 by leading scientists Dr. Carver Mead and Dr. Chris Diorio and backed with more than $110 million in venture funding, the Seattle-based company has weathered ground-shaking events such as the great recession and the meltdown of the telecom industry. In addition, Impinj has been able to stay strong in a sector that has taken nearly 14 years to see real measurable traction.

Impinj had a record year in 2013. The company achieved revenue growth of 30% and hit a number of other key financial milestones. In 2011, Impinj withdrew it bid for an initial public offering, but since the company is now profitable, and the economy is in a better state, a new IPO could be a possibility in the future. The company's CFO, Evan Fein believes there is a good chance Impinj will see similar financial success in 2014. Impinj is investing heavily in R&D.

A new site

Recently, Impinj purchased an old grocery story building across the street from its headquarters. The 11,000 square

foot facility will be called Impinj Design Labs and will be used to test its products.

"This building enables us to test our products in a number of typical retail areas," Colleran explained. "We can simulate a retail sales floor, a back-end warehouse, a loading dock, etc. It is already proving quite valuable. As time goes on, we'll find other ways to do real-life simulations. In addition, we will use the warehouse area to store our own inventory, obviously, tracked by RFID."

The worldwide market

When asked for his view of the industry, Colleran told us, "Things are moving rapidly in Europe. I believe there is an opportunity to see the same phenomenon in the United States. Most of the major RFID players that matter have settled any possible litigation issues by signing on as **Round Rock Research LLC**. licensees. [*See SCAN/DCR 7/29/11*.] [*See sidebar*.]

Continuing, Colleran stated, "There are still some initiatives going on with the **GS1** VILRI group. However, one of the main things we see happening is the search to find new ways to integrate RFID into existing ERP systems. Most major retailers will be working with large integrators to remove this obstacle. To help them in their process, we have our STP (source tagging platform) product."

Brick & mortar vs. online

Colleran outlined for us the various stages of retail RFID adoption that will likely occur. First,

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Discover Financial Services
Checkpoint Systems
The Coca Cola Company
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Intelleflex
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retailers will look at item-level RFID within the four walls as a method to increase sales (already happening). The second stage will be the use o RFID to tie their brick & mortar sales to their online offerings. Retailers want to the process to be more seamless and easy for customers as they try to compete with the Amazons of the world. Amazon has had to learn how to turn its orders over to UPS for shipment in an efficient manner. Retailers are already experts at this.

That said, the key to any successful online or brick & mortar/online combination is accurate inventory visibility. The last step-some of which is already occurring-is creating the ability to show what stores nearby have an item. This can be online or on an actual showroom. Retailers want to be able to show both types of customers where they can find the product they are looking for in the event that a particular store is out of stock. So, customers may not be able to purchase the item they are looking for at the store down the block, but they may be able to do so in another part of the city. Or, they can simply make arrangements to have the item shipped directly to their houses or the store nearest to them. It all about meeting customer needs, giving them options, and making sure to deliver on your promises. If you tell a customer the item is at another store and he/she drives there-only to find the store doesn't have it-you've got a real problem.

Jim Donaldson, senior director, corporate communications, Impinj, Inc.

"To assure that all these systems operate correctly, you need an accurate inventory system," said Colleran. "And to have a totally accurate inventory, you need a fixed overhead scanner running 24/7…not a handheld reader. An inaccurate inventory can be a huge detriment. You must have a real-time snapshot."

Jim Donaldson, Impinj, sr. director corporate communications, added, "Many retailers have as many as 30,000 SKUs online but only 5,000 in their stores. The goal is to make everything available to customers, regardless of how they are shopping.

"In addition, RFID can help improve the customer experience in specific retail apps. Say a

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WHY DO YOU NEED AN RFID PLATFORM?

By William Colleran, Ph.D.

Many people kick around the term platform without a crisp—or even generally agreed-upon—definition. Like the word solution, platform means lots of different things to different people. Below, I list the characteristics that I believe define a technology platform.

Complete set of products

A technology platform integrates a complete set of products necessary to develop solutions. Which elements of a solution are parts of the platform and which are parts of the broader ecosystem depends on the context and the market involved. But, completeness is key; otherwise end users are forced to select their system's components in a mix-and-match fashion from multiple vendors. The mix-and-match approach loses all of the advantages that a platform-based system delivers. I'll discuss those advantages shortly.

With GrandPrix, Impinj offers an extensive and growing list of all of the components necessary to develop RFID solutions. Today Impinj's offerings include tag chips, reader chips, readers, antennas, software APIs and more highly integrated products like our STP encoding system and our Speedway xPortal and xArray reader systems which marry an RFID reader with phased antenna arrays.

Enhanced functionality

Platform components are synergistic with each other so that the whole is greater than the sum of the parts: 1 + 1 = 3. A platform delivers functionality that is not available from any individual component acting alone. As an example, **Microsoft** Office delivers important user benefits (arising from the interplay amongst Excel, Word and Powerpoint), that make the software suite compelling compared to an approach using stand-alone spreadsheets, word processors and presentation software. MS Office enhances user efficiency by sharing a common GUI among its applications, and delivers tremendous value from the ability to easily embed Excel spreadsheet elements into Word and Powerpoint documents.

Synergistic functionality arises when GrandPrix components are used together too. For example, our second generation Source Tagging Platform, STP 2.0, leverages the fast write capability in our Monza tag chips along with custom software running on our Speedway Revolution readers to enable the highest possible encoding rates for brand owners and service bureaus. We also enable dramatic efficiency improvements for retailers looking to automate inventory-taking by providing Speedway software that exploits Monza's TagFocus and FastID features. Impinj's product suite works together synergistically to deliver unmatched performance and functionality-one hallmark of a technology platform.

Interfaces that others build upon

A platform offers interfaces (APIs and UIs) that others can build upon. These interfaces remain stable even as technology evolves, and that continuity allows systems to work when components are upgraded - i.e., the system can be made future-proof. For example, continuity of the Intel instruction set allows processor or computer upgrades without requiring new software. This future-proof capability is now commonplace in technology systems, but the benefit is enormous.

Similarly, our Monza Self-Serialization feature is continuous across chip families so that when components are upgraded, the system is unaffected. Monza Self-Serialization is a feature of Impinj's latest Monza chips whereby we program the Tag Identification number, or TID, of each chip so that its unique information can be easily used to provide serialization for the Electronic Product Code, or EPC, programmed by the tag's user at a later date. Users can deploy systems relying upon Monza Self-Serialization with the confidence that future members of our Monza product family will implement Monza Self-Serialization that is compatible with existing, fielded systems. As another example of GrandPrix's flexibility, the Impinj Radio Interface, IRI, will allow software re-use even as radio hardware evolves and improves over time. IRI is Impinj's new interface definition that will be implemented on all of our reader chips and SiPs to allow portability of software applications across multiple hardware generations. Again, users can develop systems confident that their investments will be leveraged on hardware that hasn't even been designed yet.

Platform Advantages

The advantages of using a technology platform are as obvious as they are powerful. Because platforms offer a complete set of products, systems can be deployed faster and designed for optimized performance.

The emergent properties of a platform allow for enhanced functionality compared to mix-and-match solutions. And, platform-based systems can be future-proof because APIs allow for modular design. While standards are important to enable ecosystems to emerge with healthy competition among participants, platforms are important because they accelerate adoption by making available highly integrated systems with enhanced performance and functionality that users can adopt without fear of early obsolescence.

Advantages of GrandPrix

What are the advantages of Impinj's GrandPrix platform? First, GrandPrix, and all of its components, are fully Gen2 compliant. Impinj wrote the Gen2 protocol, and we're focused on developing products that take full advantage of the standard's capabilities and benefits. In addition, with the GrandPrix platform you get the Impinj advantage - best-of-breed performance of every component plus features that elevate the capability of any RFID system. Our customers know that by selecting GrandPrix they'll get a solution that delivers more functionality, performance and flexibility than any other. *SCAN*

woman come into the store and is looking for shoes in a size 9 ½. If there are no 9 ½ shoes in a particular style she has in mind, the attendant can use RFID to tell her what is in the backroom that she might be interested in. If he has to leave her side to get that information, she may simply walk out of the store and no sale occurs."

Closing

As we ended our conversation, Colleran confided, "The industry is still growing at a healthy rate of 35% year over year. I see no reason why this won't continue. Slowly but surely, we are removing the challenges to adoption, putting standards in place, and developing the necessary hardware and software to enable user to achieve the full benefits allowed by RFID. I am confident we will see great things happening in our sector."

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