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# An RFID Application Developer's Wish List

RFID technology is graduating slowly from the early-adoption phase to becoming a mass movement. To accelerate the transition further, a set of infrastructure tools is needed to help people—specifically, the application developers—experiment with RFID and develop innovations based

on the technology.

The large number of Wal-Mart suppliers complying with the retailer's RFID mandate is a testimony to the fact that people do see value in the technology. Most of the suppliers that started with a "slap and ship" approach have begun internalizing the technology because they see a definite return on investment from using RFID to optimize internal efficiency. In the process of meeting compliance requirements, many problems and issues related to hardware, software, business processes and standards have been solved.



In order to take the technology to the next level, RFID application developers need to be empowered with tools and systems that help them play around with the technology. A lack of tools and resources has hindered the rapid prototyping of applications. The reason: The cost involved in setting up a full-scale RFID applications development lab (consisting of hardware, middleware and other integration software) has kept the majority of application developers from experimenting with the technology. This problem mandates the creation of a low-cost simulated environment, integrated with fully featured development tools to get rid of the hardware cost.

Such a scenario would provide a hardware-independent environment with software simulation support for the hardware. This environment would be offered by a new breed of vendor: an RFID application infrastructure provider that could integrate simulated individual pieces from the hardware and middleware

vendors and develop RFID application development platforms. Application developers would buy licenses from these vendors to use their platforms.

There are several simulated RFID platforms that application developers would like to see:

### **RFID Reader Simulator**

This would simulate all the functionalities of a particular RFID interrogator (reader). Developers should be able to vary different parameters related to an interrogator's functioning, add antennas and, in general, play around with the interrogator.

### **RFID Middleware Evaluation Version**

All major middleware vendors should provide an evaluation, or limited edition, of their products. They should also provide a "Developer License Version," just as the majority of J2EE application server vendors do today. This would give developers a chance to get used to the taxonomy and semantics of the middleware, experiment with the different specifications standardized by EPCglobal and rapidly develop prototypes.

### **RFID Development Studio**

This integrated development platform would have a suite of RFID hardware simulators, with built-in support for different middleware. It could be an Eclipse-based integrated development environment (IDE) with plug-in support from different parties. An RFID development studio could simulate different scenarios as required by the application, such as a tracking application in a warehouse where readers are fixed at

dock doors and goods move by conveyor belt, or an application in which perishable items are monitored. Developers should be able to modify different key parameters of the reader virtually, add a reader and antennas, try different interrogator profiles and create various application scenarios. The RFID development studio could be a visual editor where the developer could drag and drop readers to create RFID network. It could also be integrated with monitoring tools to provide health and diagnostic checks for the whole RFID network, including the EPC Information Service (EPC IS).

Simulated RFID platforms like those described above would jump-start the creation of a range of new applications. For example, a number of potential RFID applications related to item-level tagging have already been conceptualized, but are out of implementation scope, owing to the high hardware price involved. They could be developed using the simulated development studio. Using such a studio, we could start answering questions related to the scalability and robustness of applications, develop performance benchmarks and be software-ready so that when hardware prices come down, the applications would be ready to roll.

One thing is for sure: As more and more people get a chance to work on the technology, we will see a robust, hardened RFID platform and more killer apps.

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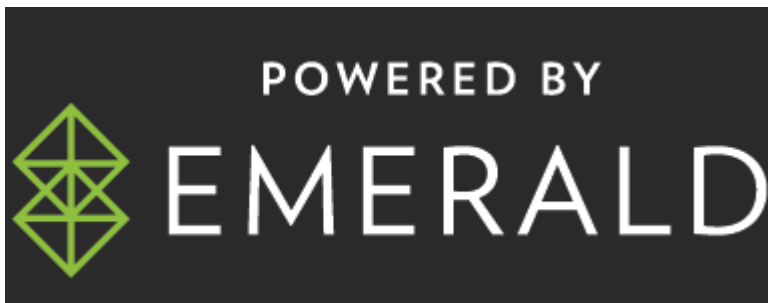


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