Startup Opens Up RFID Middleware

A software integration firm is developing an open source middleware platform for RFID deployments.

By Mary Catherine O'Connor

Apr. 6, 2005—Software integration firm i-Konect is developing a free, open source RFID middleware platform, called Singularity, designed for end users who want to integrate RFID data into both their enterprise systems and the EPCglobal Network, in order to optimize supply chain management and realize a return on RFID investments.

Radio frequency identification middleware is a software layer that filters data from RFID hardware devices and sends it to enterprise systems. In order to link into the EPCglobal Network, the middleware also requires an EPC Information System (EPC-IS), which stores EPC data and provides EPCglobal members access to that data.

Middleware solutions are being sold by many different software vendors, but most are proprietary systems that require end users to pay a software fee that, according to i-Konect CEO Ron Rose, can be as much as 50 percent of the total middleware deployment cost, which also includes the middleware's installation and its integration with a user's enterprise system. The Mason, Ohio, company uses a services-based business model, so while the Singularity software will be free, i-Konect will charge its customers for the installation and integration of the middleware. Customers can opt to do their own installation and integration, as well.

"Any end user or systems integrator is welcome to use the software," says Rose. "We're building this for the industry's benefit."

Ron Rose and the company's CTO, Tom Rose, founded i-Konect late last year, and combined, the Rose brothers have experience in systems design and enterprise software architecture. Tom previously did independent contracting and worked as an enterprise systems architect for the insurance company Anthem Wellpoint. Before forming i-Konect, Ron was an RFID systems designer for Amtech (now TransCore), one of the first companies to commercialize RFID. At Amtech, he developed early RFID-enabled highway toll systems. The pair acted as consultants to a smart shelf development project initiated by International Paper's Smart Packaging division and Procter & Gamble.

RFID middleware has two main elements: edgeware and EPC information system (EPC-IS). The edgeware collects and filters data from RFID devices (tags and readers) and translates that data into business-event data by using a process manager, which is part of the Singular platform. The process manager filters data in accordance with an application-level events (ALE) specification. (EPCglobal is currently working to standardize an ALE specification; once it does, all members of the EPCglobal Network will use this ALE.) ALE software will be used to link the edgeware part of the Singularity middleware to the EPC-IS part.

An EPC-IS is accessed via the EPCglobal Network's Object Naming Service (ONS), an automated networking service that points computers to the exact EPC-IS that contains information about a product associated with a

specific EPC.

The initial phase of Singularity's development is the creation of an open source EPC-IS. The middleware's EPC-IS is in the pre-alpha stage, meaning that the architecture is complete and some but not all of the code has been written for the software. The company is holding weekly open conference calls for any interested developers or potential partners to ask questions about the Singularity project. Also, the pre-alpha software is available for download at Sourceforce.net, an open source clearinghouse that provides free services to developers. Once the code is complete, it will go into alpha stage, and then beta stage, during which end users will test the software.

The Roses say the only other open source RFID project currently underway is The Radioactive Project, which is also developing middleware. In Chicago on Apr. 10, developers and software vendors will meet at EPC DevCon, a VeriSign-sponsored preconference to RFID Journal LIVE!, to discuss the development of the EPCglobal Network and issues pertaining to it.

The Roses say that once they complete the Singularity platform, which is based in Java programming language, they will create a version of the software based in Microsoft's .NET architecture.