

# Auto-ID Lab Releases Accada RFID Prototyping Platform

A free, open-source reader protocol, ALE middleware, tag data translation engine and EPCIS implementation will let end users, systems integrators and researchers explore the benefits of the EPCglobal Network.

By Mark Roberti

June 14, 2007—The [Auto-ID Lab at ETH Zurich/ University St. Gallen](#) in Switzerland has released an open-source RFID prototyping platform called [Accada](#). The lab says this platform will spur adoption of Electronic Product Code technologies by enabling end users, systems integrators and researchers to experiment with EPCglobal Network protocols to develop new applications.

"By downloading this free software stack," says Christian Floerkemeier, a researcher at the lab, "companies or researchers can simulate the EPCglobal Network and figure out how they will collect, aggregate and disseminate EPC data."

Accada was originally developed within the Swiss Auto-ID Lab, and at ETH Zurich's [Institute for Pervasive Computing](#), with major contributions from the [Cambridge Auto-ID Lab](#). The intention, however, has been for it to become an independent open-source effort.

The Accada platform includes a reader software module that can run on an EPC interrogator or separate device. Accada implements the [EPCglobal Reader Protocol](#), a standard enabling EPC readers to communicate with middleware in a standardized manner. The software module incorporates all mandatory and optional features defined by EPCglobal in the Reader Protocol specification. This allows for the filtering of data based on the tag's EPC, as well as which reader antenna reads the tag, the time, the location and so forth. The Accada reader module also supports the EPCglobal Reader Management Specification.

The Swiss Auto-ID Lab has developed application programming interfaces (APIs) to some commercially available readers, and it has also created a simulation engine. Users can simulate hundreds of readers on a network and, using a graphical user interface, drag and drop virtual RFID tags on readers. This enables users to simulate and test applications, without affecting their real-world operations.

The next module in the platform is middleware for filtering and collecting EPC data, and for connecting a large number of readers in an RFID deployment. Once the interrogators capture tag data, they notify the middleware using network-messaging protocols. The middleware aggregates the data from separate interrogators—eliminating redundant reads and performing other relevant filtering—then sends the data to relevant back-end applications on a schedule set by the network administrator. The interface between the filtering and collection middleware and the back-end application is based on EPCglobal's Application-Level Events (ALE) Version 1.0 specification, which determines the networking protocols used by the middleware to communicate with back-end systems.

Additionally, the Swiss Auto-ID Lab has created EPC Information Service (EPCIS) software that receives RFID data from the middleware module, translates the data into relevant business events and makes those events available to back-end systems. The Accada EPCIS software module consists of a capture application that interprets the captured RFID data, a repository (database) that stores events and a query application that retrieves RFID events from the repository.

"We implemented the EPCIS repository with its capture and query interface," Floerkemeier explains, "so you can generate simulated events, store them in the repository and query the repository."

Accada also features a tag data translation engine (TDT) developed at the Cambridge Auto-ID Lab. The goal of the TDT engine is to provide flexible translation (encoding and decoding) between these different EPC representations. This module is also used within the Reader module. Floerkemeier stresses, however, that no Accada software modules are as robust as some commercial software, and none are meant for use in large-scale deployments.

"We created the platform, first and foremost, to educate EPC novices," he says. "If you give them demos and programs to download, researchers can get familiar with the EPCglobal Network, and those who want to prototype can do so without engaging a software company. People should understand that this is not a reference implementation of the EPCglobal Network. It's an open-source project to foster adoption of the network."

RELATED\_ARTICLES Accada is currently already in use in a number of research-and-development departments, as well as in such European Union-sponsored research programs as BRIDGE. Accada's Reader Management implementation has been used only for beta-testing in EPCglobal's certification program.

The aforementioned software is available for download at [Accada's Web site](#), under an LGPL-Open Source License. All Accada software is implemented in the Java programming language. A complementary open-source effort in the .NET environment, ongoing within the Auto-ID Labs, is available as well. More details can be found on the [Open Source Implementations](#) section of the Auto-ID Labs Web site.

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