Accada

Open Source EPC Network Prototyping Platform

AUTO-ID LABS

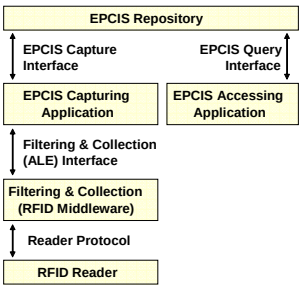
Project Mission

Accada is an open source RFID prototyping platform that implements the **EPC Network** specifications as defined by EPCglobal. It is intended to foster the rapid prototyping of RFID applications and to accelerate the development of an **Internet of Things**.

EPC Network Standards

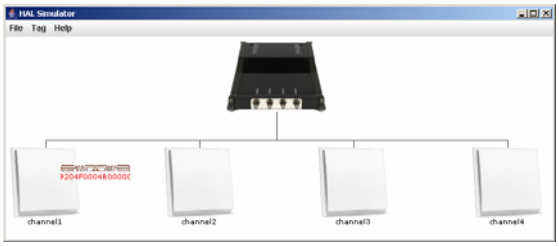
To realize the full potential of RFID in business process automation and supply chain management, an IT infrastructure is required that manages readers, filters and aggregates raw RFID data, and facilitates data exchange among business partners. The EPC Network aims to address these needs. At the heart of the EPC Network lies the Electronic Product Code (EPC) that is used to identify products not just at a class-level, but at an item-level. EPCs are written to and read from EPC-compliant RFID tags using the air communication protocols also defined by EPCglobal and its members. Building upon the Tag Data Standard and air interface protocols, such as Gen2, the EPC infrastructure consists of a number of roles and interfaces that are deployed within a company in order to process EPC tags in an EPC-compliant way. These roles and interfaces are illustrated in the figure below. They provide the following functionality:

- **The RFID Reader** identifies RFID tags and exposes its functionality through the **Reader Protocol** and **Reader Management Specification**.
- **The Filtering and Collection Middleware** is responsible for the coordination of readers and the filtering and collection of RFID readings. It generates **Application Level Events (ALE)**.
- The **EPCIS Repository** is used to store business events that are generated after the captured RFID data are interpreted in a business context. Its functionality is exposed via the **Capture and Query Interface**.
- The **EPCIS Capturing Applications** obtain RFID readings from the midlleware and transform them into business events that are then saved in the EPCIS Repository. These events can be queried by an **EPCIS Accessing Application**.



What Accada Can Offer

Accada provides an open source implementation of the roles and interfaces described above. This implementation is Java-based and enables RFID application developers to **quickly assemble EPC Network-compliant systems** by facilitating communication with other EPC Network components. Accada also accelerates the development process by providing various tools. Examples include **graphical clients to access readers and EPCIS repositories** as well as a **reader simulator** (see screenshot below) that can be used to test RFID software without having any reader hardware available. The simulator also supports a batch mode that allows users to simulate extensive deployments (e.g., a supply chain) spanning a large number of RFID readers.



For application developers who need to control a reader device that does not support the EPC Network standards yet, the Accada Reader module offers a **unified interface** that abstracts from proprietary communication protocols. For different RFID readers, Java components are provided that expose the reader functionality through a standardized interface. On our website, we also offer **demo material such as Web Start applications, Flash Movies illustrating EPC Network functionality, and a public EPCIS Repository** that allows users new to the EPC Network to interactively explore its architecture and functionality. Finally, Accada allows researchers or students to quickly try out new ideas by using the existing **codebase for rapid prototyping**.

Background

Accada was initiated by Christian Floerkemeier, Matthias Lampe, and Christof Roduner of the **Distributed Systems Group at ETH Zürich** led by Prof. Friedemann Mattern and the Auto-ID Lab at ETH Zurich / University of St. Gallen led by Prof. Elgar Fleisch. It is **in use by several research groups, system integrators, and individuals**. It is also used in the BRIDGE project, an RFID research project sponsored by the European Union.

Accada Quick Facts

- Java-based open source implementation of EPCglobal's EPC Network standards
- Facilitates the creation of both EPC Network-enabled applications and simple RFID systems
- Includes tools to support the development process and explore the EPC Network's functionality
- **Information and download: www.accada.org**

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