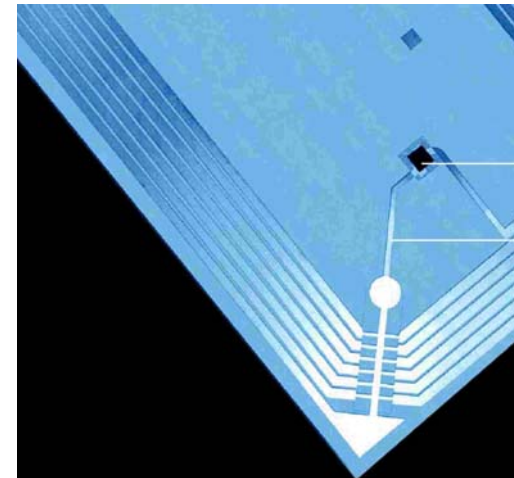


# Accada – Open Source EPC Network Prototyping Platform

Christian Floerkemeier

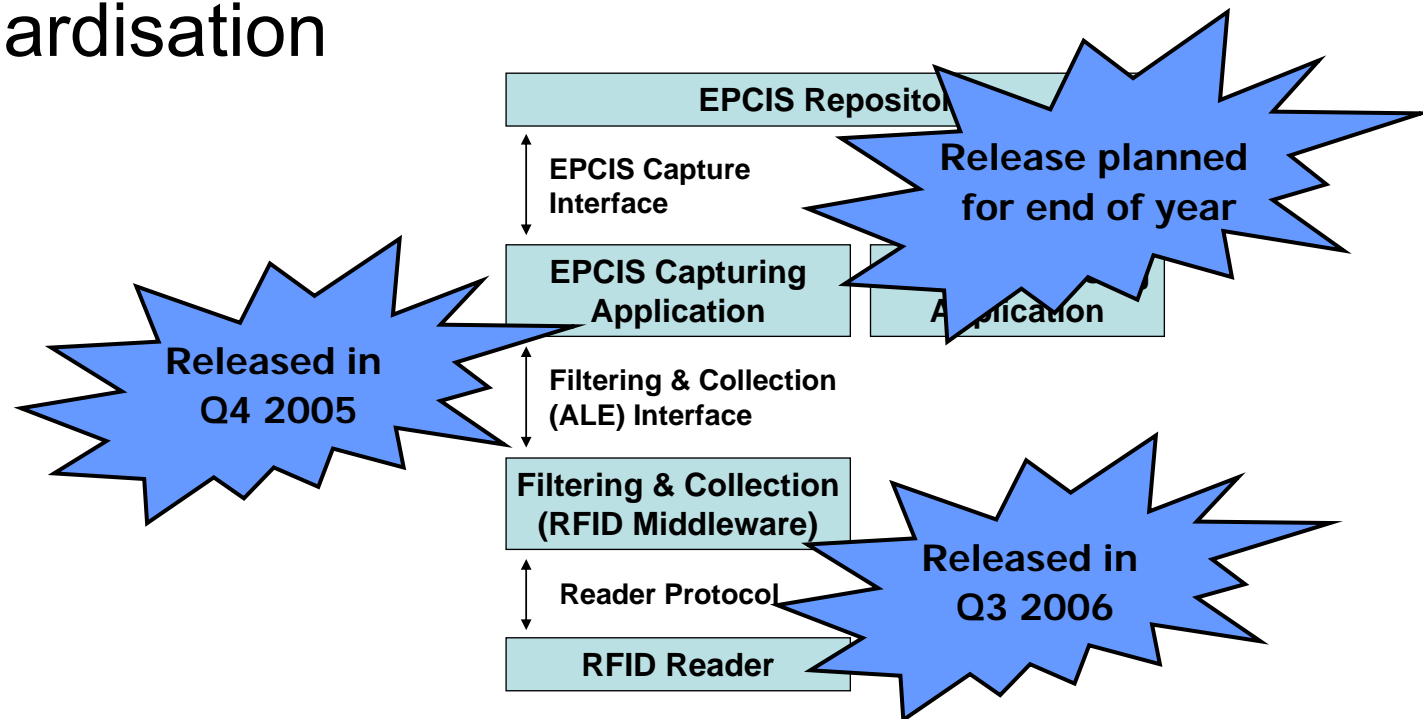
Christof Roduner

SAP October 2006



## Introduction

- There has been a lot of progress in the EPCglobal community on EPC Network standardisation



# Accada Objective

- Develop an **open source** RFID **prototyping** platform that implements the EPC Network specifications
  - To foster the rapid prototyping of RFID applications
- Target groups:
  - **EPC Network Novices**
    - Illustrate functionality with simple showcases
  - **Researcher & Students**
    - Provide common codebase for experimental software
  - **Application Developer**
    - Provide tools to facilitate development

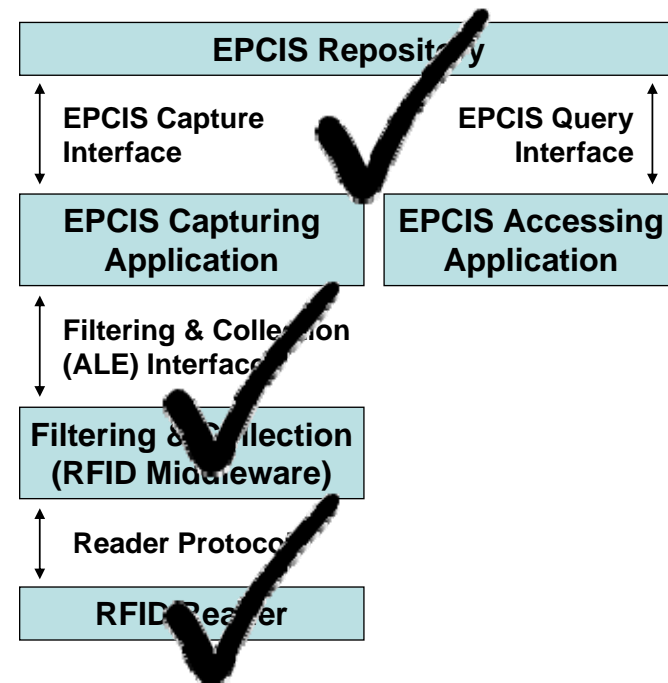
## Background

- Based on RFID middleware work started at the Swiss lab back in 2003 in the days of the Auto-ID Center
  - Initial version implemented PML, which was developed within the lab
- Initiated by the Auto-ID Lab St. Gallen/ETH Zurich, but it is today an independent open source effort
- With contributions from:
    - other Auto-ID Labs
    - external open source developers

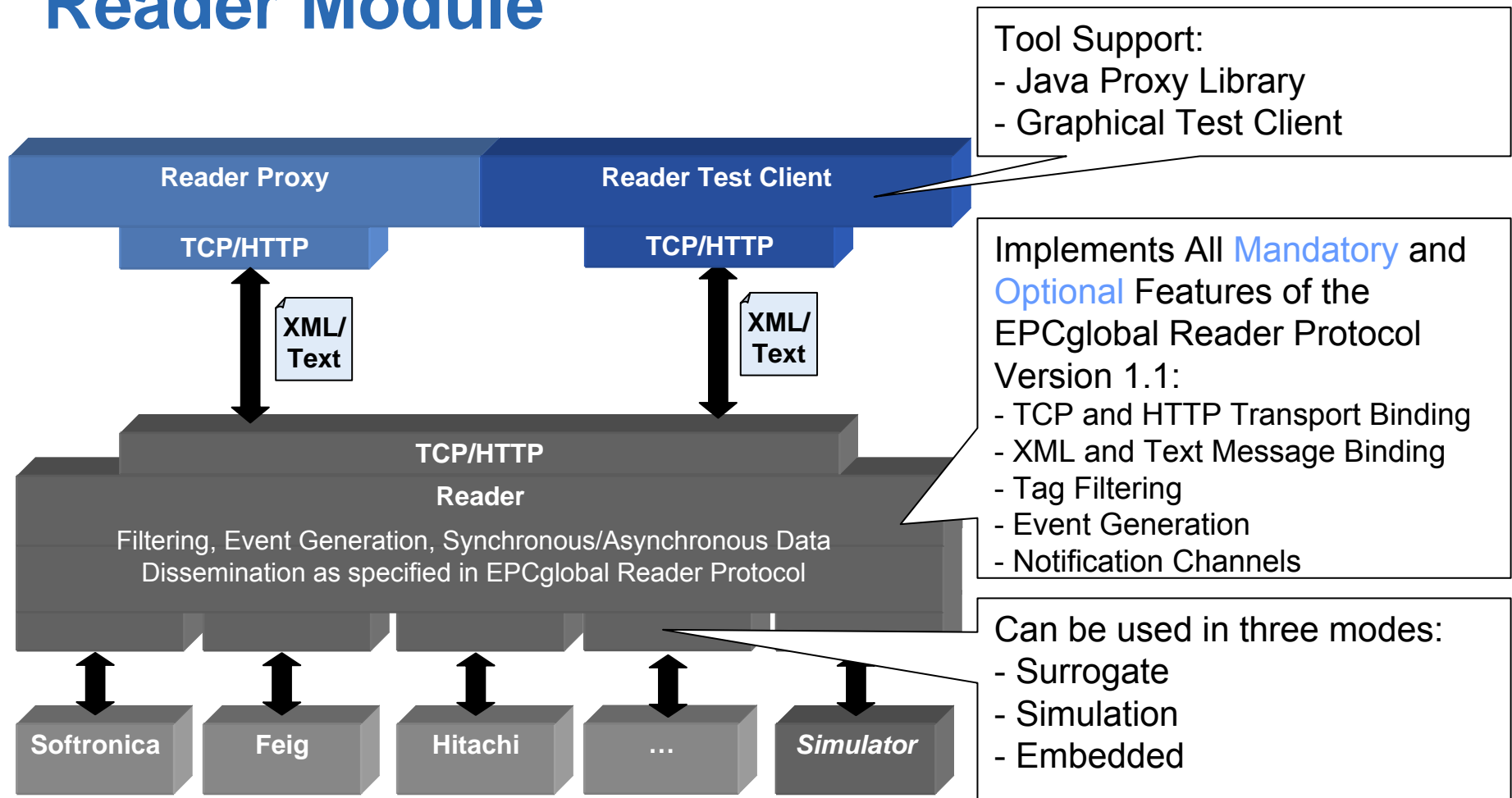
# Status

- Accada currently features three modules

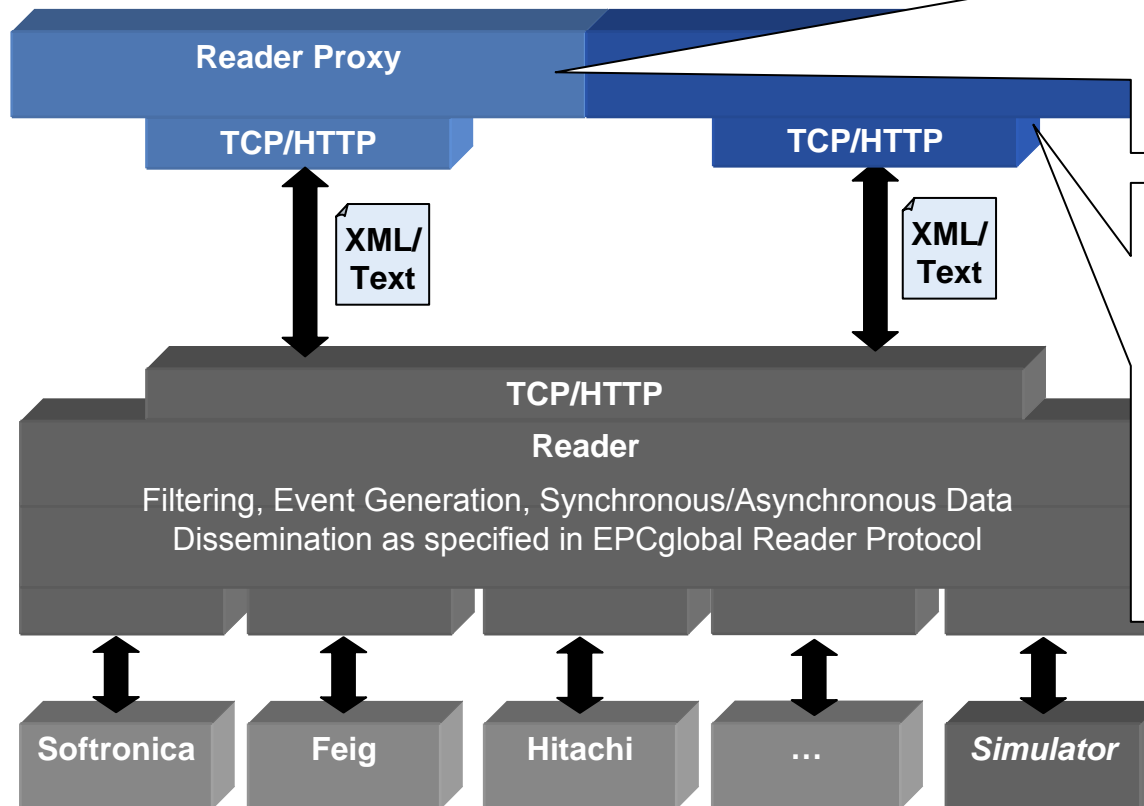
- EPCIS
- Filtering & Collection Middleware
- Reader



# Reader Module



# Reader Module

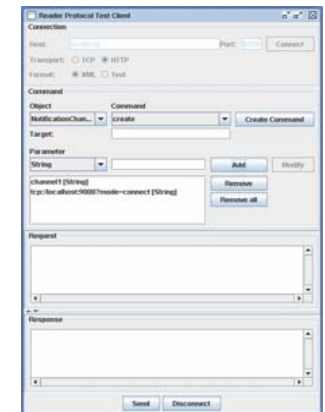


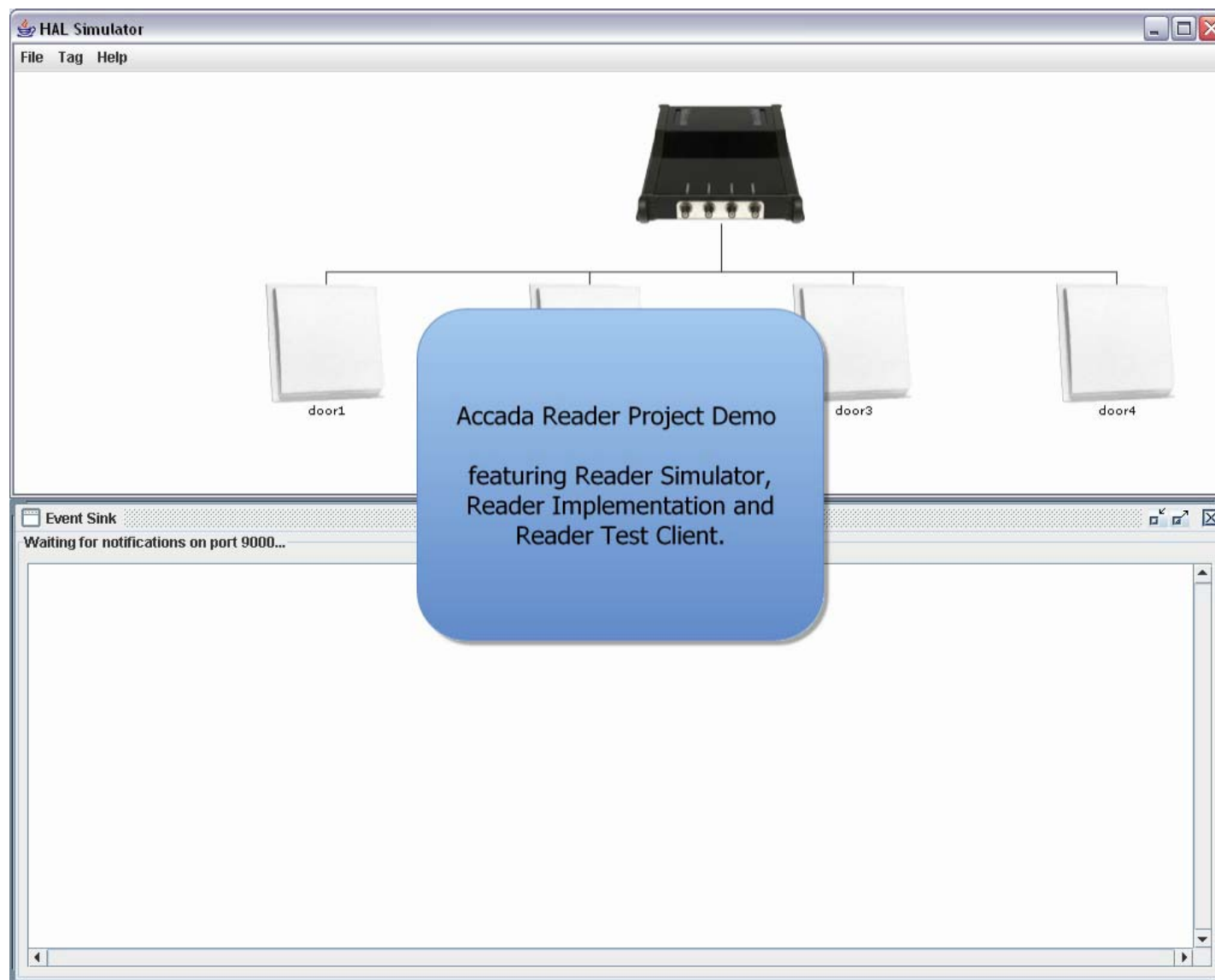
## Reader Proxy – Java Interface to facilitate communication

```
// init handshake
Handshake handshake = new Handshake();
handshake.setTransportProtocol (Handshake.HTTP);
handshake.setMessageFormat (Handshake.FORMAT_XML);

// get reader device
readerDevice =
ReaderDeviceFactory.getReaderDevice (HOST,
PORT, handshake);
```

## Test Client With Graphical User Interface





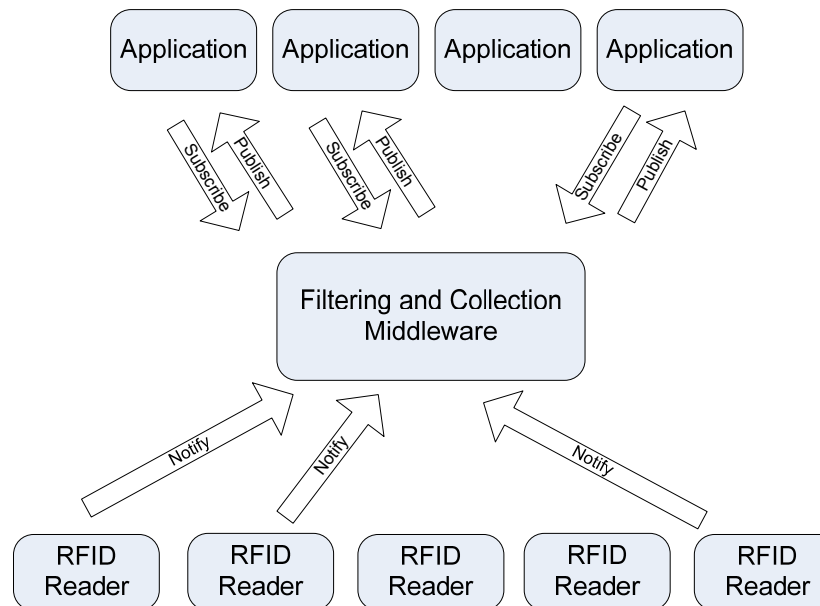


## USPs...

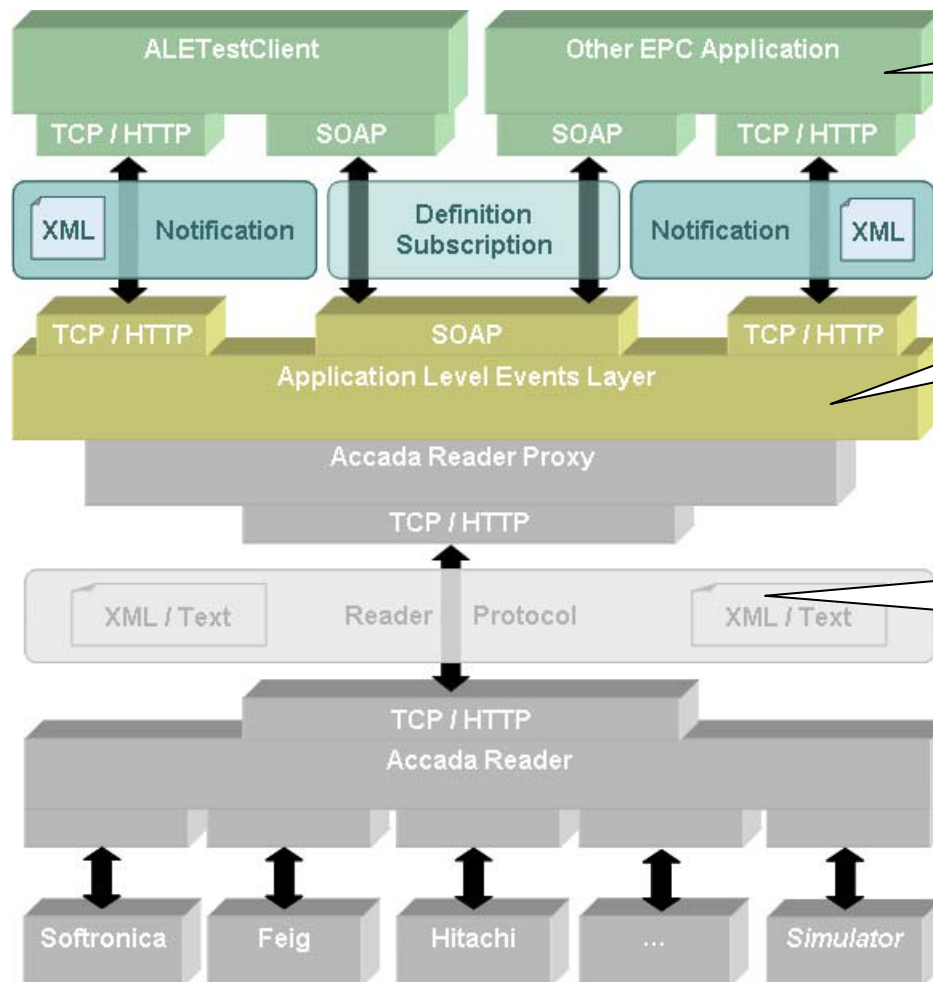
- Easy way to explore EPCglobal Reader Protocol Features
  - Use simulation engine
- Accelerated application development
  - No need to deal with low-level message transport bindings because of Java Reader Proxy
  - Use simulation framework without RFID hardware
  - Make readers speak the EPCglobal Reader Protocol with our reader module
- ....

# Filtering & Collection Middleware Module

- Need to aggregate information across readers



# Middleware Module

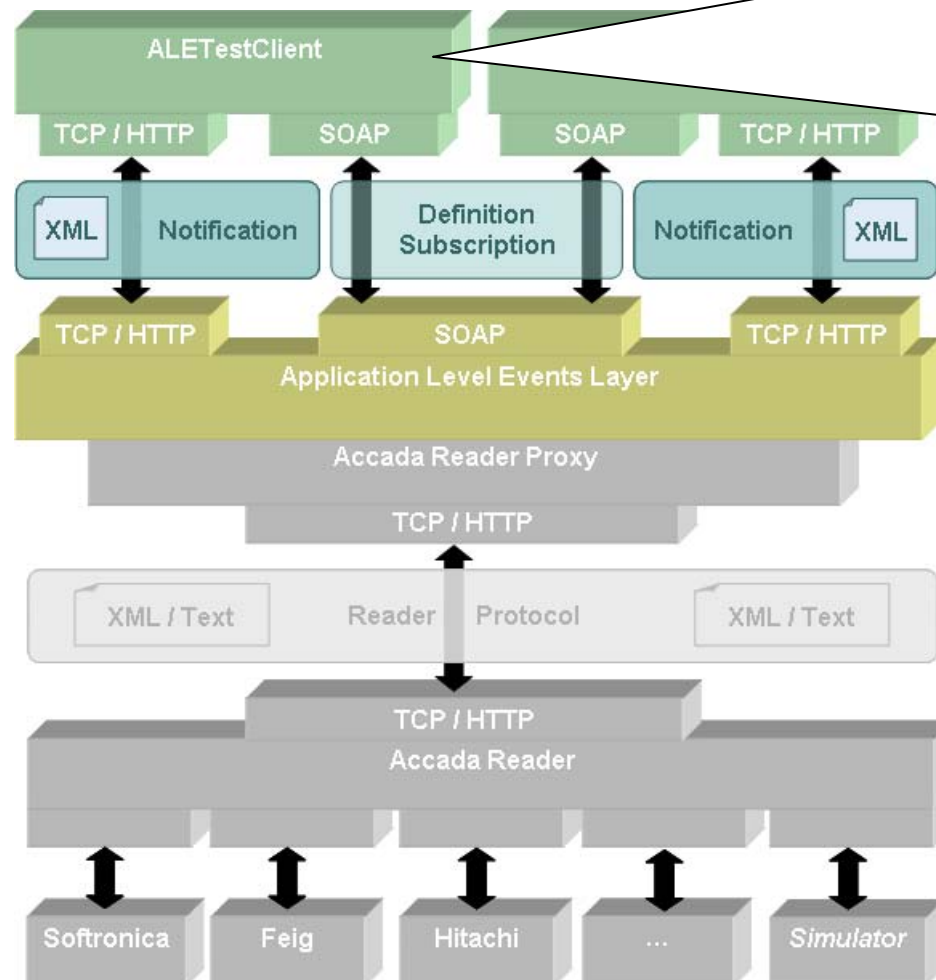


Tool Support:  
 - Web/Java Test Client  
 - ALE Proxy

Implements EPCglobal  
 Application Level Events  
 Specification Version 1.0:

Uses EPCglobal Reader  
 Protocol to communicate with  
 readers (Accada Reader  
 module shown here)

# Middleware Module



The screenshot shows the ALE Client application window. The title bar contains the text "ALE Client" and standard window controls. The main content area is organized into several sections:

- File**: Contains a "Select Command" dropdown menu with "define" selected.
- define**: Contains a "Specification Name" dropdown menu and a "Specification File Path" text field. Below the text field is a "Choose File" button.
- execute**: A button located below the "Specification File Path" section.
- Result**: A large empty text area at the bottom of the window.

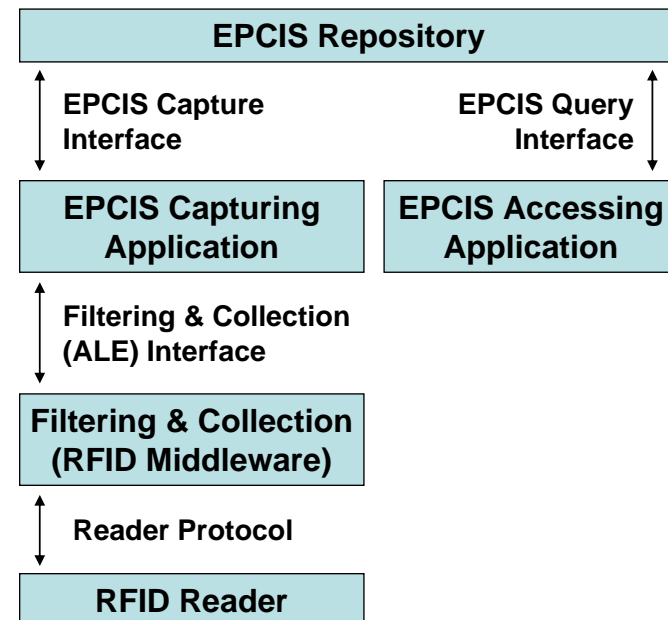
## USPs.....

- Explore ALE Middleware functionality with our demos
- Simplify application development by combining Accada reader simulation framework with Accada middleware
- Test other ALE implementations with Accada ALE Test Client

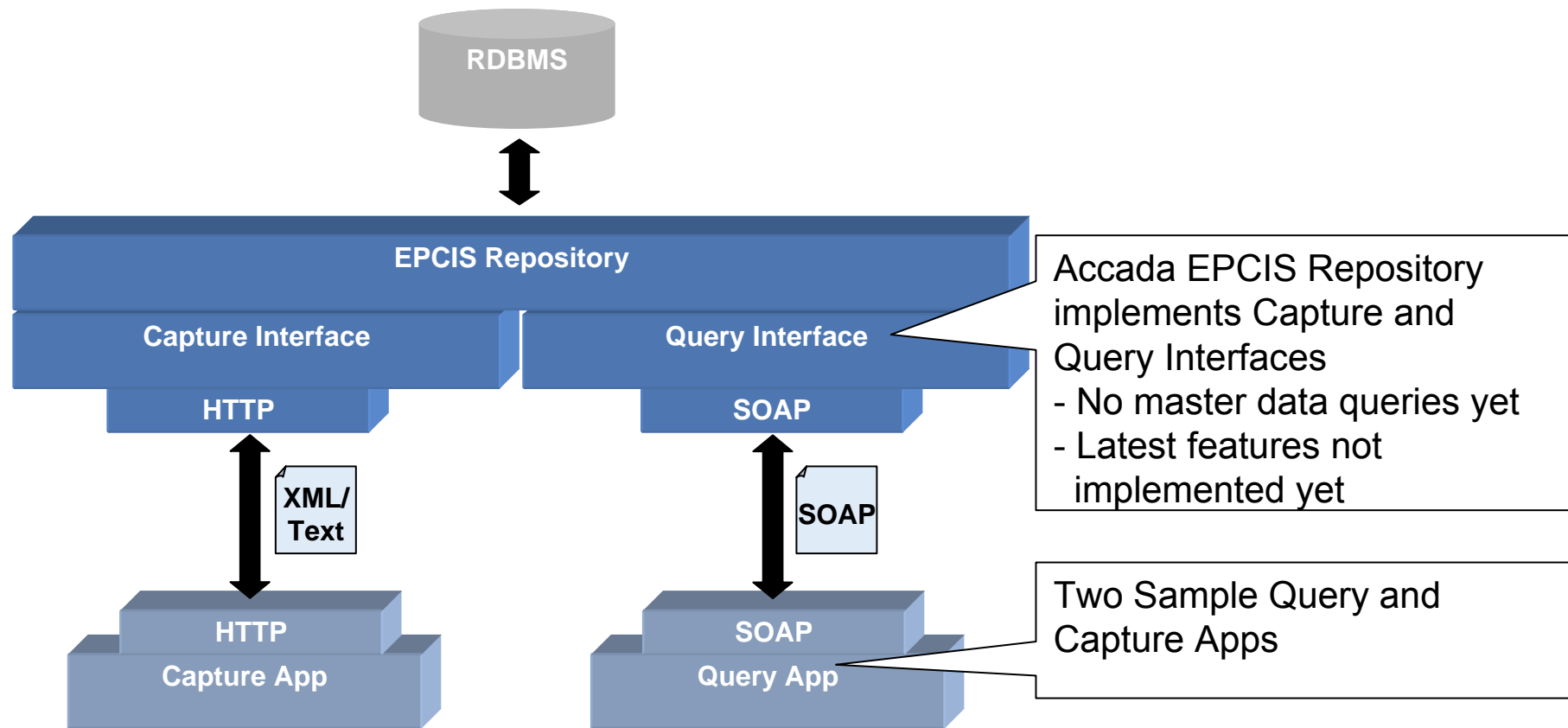
# Overview

- Accada currently features three modules

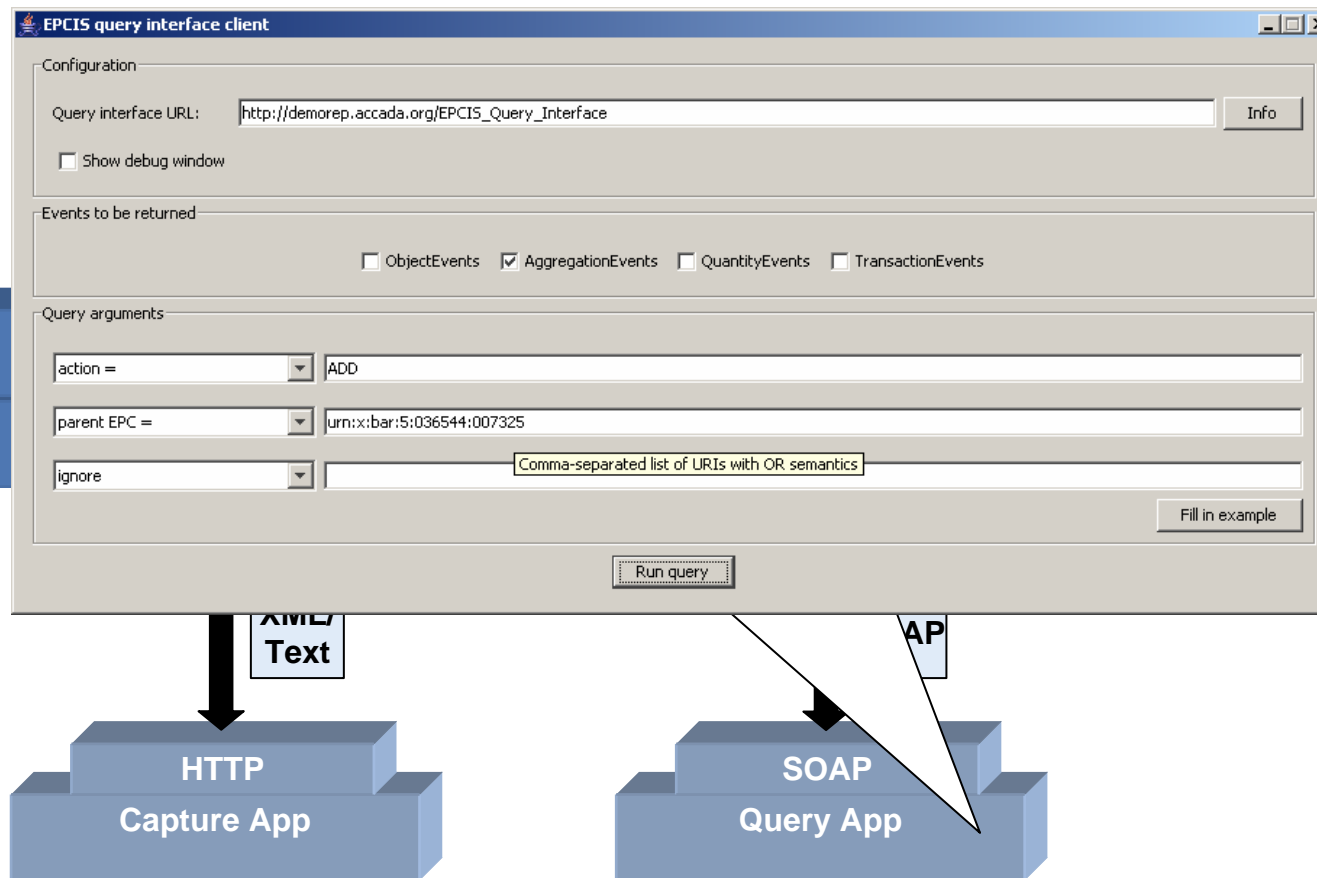
- EPCIS
- Filtering & Collection Middleware
- Reader



# EPCIS module

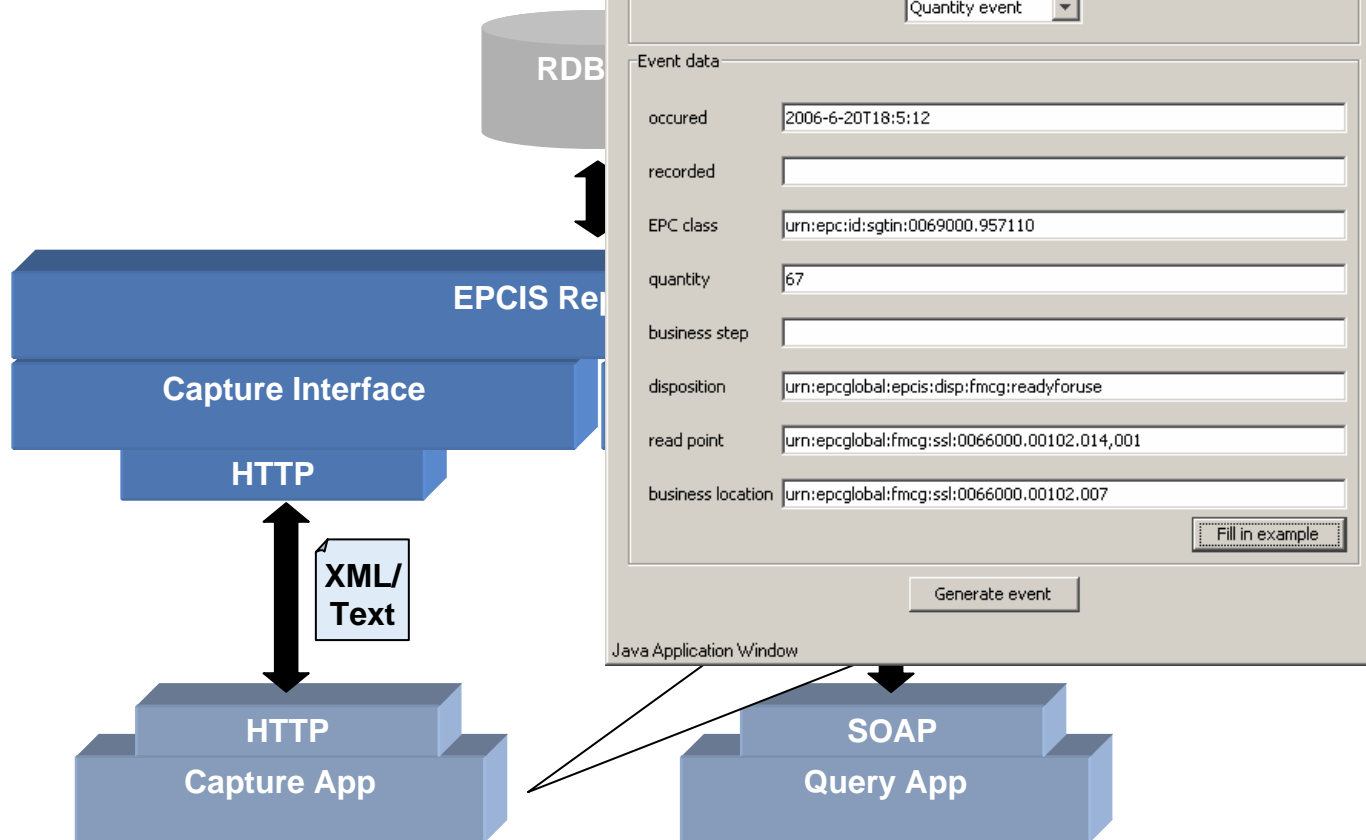


# EPCIS module





# EPCIS module



## Release Status

- **Reader Module**
  - Released alpha version as source and binary (Under BSD License)
  - Tested against conformance spec
- **Middleware Module**
  - Released alpha version as source and binary (Under BSD License)
  - Tested against conformance spec
- **EPCIS Module**
  - No source or binary released because spec is not released and not public yet
  - Online sample version only
  - Not tested against conformance spec (not available yet)

## Next Steps

- Next major release will feature
  - Reader Management
  - Tag Data Translation
  - Improved Legacy Reader Support
- Certification of Reader and Middleware implementation

## Project Information

- Based on Open Source Best Practises
  - Subversion Version Control
  - Maven Build Management
  - JUnit Unit Testing
  - Checkstyle Coding Standards
- Project & Development Team
  - Currently 5 full-time developers plus various part-time

## Success Stories So Far

- Contribute 10+ Errors and Bugs to EPCglobal Reader Protocol Working Group
- In Use in 6 Different Research Groups
- Adopted By RFID Integrator for Rapid Prototyping Purposes
- Used in the BRIDGE Project – European Union sponsored RFID Research Project

## Conclusion

- Open source EPC Network Prototyping Platform
- Three Accada modules currently available:
  - Reader
  - Middleware
  - EPCIS
- Goal: Completed EPC Network Implementation by December 2006
  - Featuring also Reader Management & Tag Data Translation

More information at:  
[www.accada.org](http://www.accada.org)

