
ASPIRE on Behalf of IoT in the Breakout Session on Experimental Facilities

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Internet of Things Means:

- Communication with Smart Objects
- Individual digital presence: RFID deployment in every day life
- Ubiquitous computing, mobility and dynamic reconfigurability
- Innovative devices networked in a variety of ways
- New business possibilities
- Challenges from user, technological and business perspectives

Internet of Things Projects and their Objectives

- A new approach towards deployment of Radio Frequency Identification (RFID) solutions to overcome the cost-barriers for the successful adoption of this technology
- Focus on
 - Open source middleware
 - Innovation in the field of RFID technology
 - A common framework for a multitude of users, standards and tools
 - Interoperability

How?

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- Middleware to be hosted and run on low-cost RFID-enabled microelectronic systems in a number of scenarios
 - Combine IoT platform with other European innovations in communication technology and infrastructure, security, privacy, policies, regulations, standardisation, network and service management and their deployment aspects, etc
 - Ensure concept adoption through suitable business models and involvement of end users

Challenges to face

- A wide range of software systems, including distributed objects and components, message-oriented communication, and mobile application support: how do we overcome scalability, interoperability, complexity
- Integration of previously independent solutions with new developments
- Common instead of dedicated interfaces
- Heterogeneity of networked devices

Some more things to consider...

- Mediate interaction between applications or parts of the application through choice of an appropriate architecture
- Trend towards ubiquitous computing, mobility and dynamic reconfigurability: are IoT solutions 'innovation-proof'?
- How do we ensure consistent observation, security, trade offs between autonomy and interdependence for the different subsystems, definition and implementation of resource management policies

How can we collaborate?

Extra slides

Back up

Thank you

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ASPIRE partners:

Aalborg University – CtiF, Denmark

Université Joseph Fourier, France

Melexis technologies SA, Switzerland

UEAPME, Belgium

Pole Traceability Valence, France

INRIA (OW@INRIA, POPS), France

RELIT – Athens Information Technology, Greece

Open Source Innovation Ltd, UK

Sensap S.A, Greece

Instituto Telecomunicações IT, Portugal

Timeframe: 01/01/2008 – 31/12/2010

Budget: 6.1M€

ASPIRE Scenarios

- Fully automated reading and processing functionality. Applications will run without human intervention.
- Mobility scenarios involving several mobile warehouses in the scope of the supply chain.
- Measurement of added-value parameters such as temperature, humidity or pressure.

Novelties of the ASPIRE Platform

- Roalty-free: develop a suitable licensing scheme
- Lightweight: to run on low-cost RFID microsystems
- Programmability: simple configurations
- Intelligence for context analysis and reasoning
- Compliancy with existing standards
- Minimum of data generation for prevention of privacy abuse
- Scalability and integration (e.g., end-to-end management functionality for the platform elements))

How does the ASPIRE platform work?

- Collect data from underlying RFID network
- Transport and present RFID data to higher layer software
- Carry RFID data over the networks (filtering detection and optimised network bandwidth)
- Filtering of sensor streams and according detection and delivery of higher-level application events to the applications
- Management of connected RFID readers
- Route RFID data that needs to be transported

How do we prove our concept

- Scenarios and requirements
- Development of a low-cost hardware platform based on existing solutions
- Validation through RFID trials

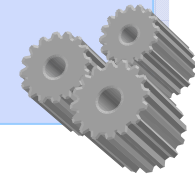
ASPIRE Overview and Goals

Significantly lower the SME entry cost barrier and Total Cost of Ownership (TCO) for RFID technology solutions:

- Free Middleware running on Low-cost hardware
- Lower effort for managing the infrastructure and developing applications



Enable RFID scenarios (based on ASPIRE middleware and added value sensors) that improve business results



*Develops and will deliver a lightweight, royalty-free, programmable, privacy - friendly, standards-compliant, scalable, integrated and intelligent **middleware platform***

Validate the above developments in RFID trials

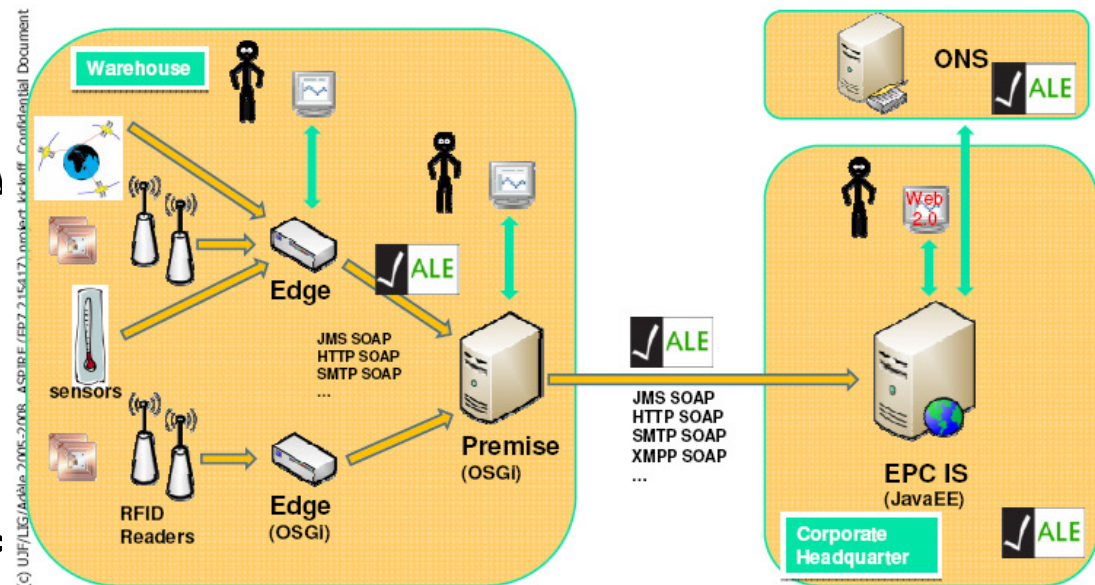


➤ **Core Open source RFID middleware infrastructure**

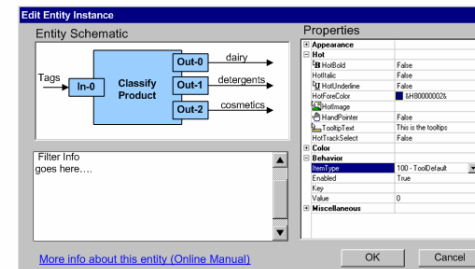
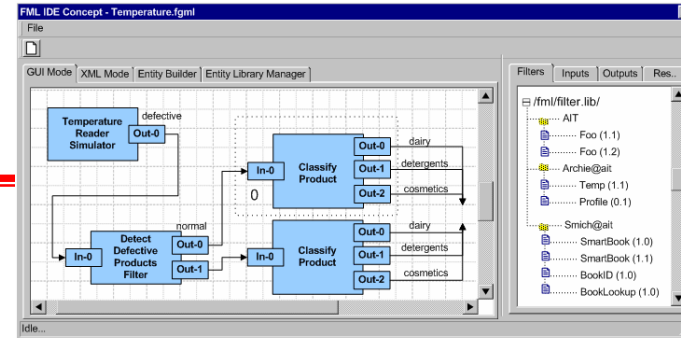
- Comprising standards implementations (e.g., ALE Servers, EPC-IS repositories, ONS)
- License and Reuse model to leverage existing OSS developments – implementations (e.g., Accada, Singularity)
- Background software of partners (e.g., INRIA, UJF, AIT)
- ASPIRE Open Source Community (e.g., OW2 project)

➤ **Develop middleware infrastructure extensions e.g.,**

- Mapping of Business Semantics (e.g., Processes) to Low-Level Eventing and vice versa - APIRE RFID BPM
- Distributed ONS
- Extensions for physical measurements
- Support for non-EPC implementations

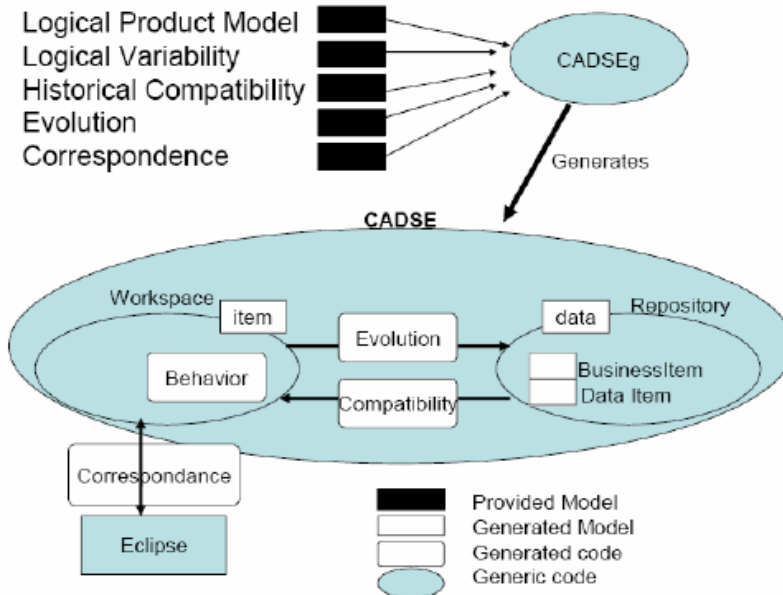


ASPIRE Technical Areas



➤ Enhance Programmability, Configurability

- Add-ons to core infrastructure
- Tool Suites, IDEs, MDA development
- Management (JMX, MBeans, SNMP/RM)



- **ASPIRE development will be SME driven and SME oriented**
- **Liaison with SMEs**
 - **Requirements Collection and Analysis**
 - **RFID Technology Dissemination – Workshops for SMEs / “RFID Information Days”**
 - **Trials Organization – Deployment (ASPIRE middleware)**
 - **Liaise with existing trials – Deploy new**

