Collaborative Project

ASPIRE

Advanced Sensors and lightweight Programmable middleware for Innovative Rfid Enterprise applications

FP7 Contract: ICT-*215417*-CP

WP7 – Dissemination, Exploitation, Training

Public report - Deliverable

Dissemination Activities

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Content

Section 1 Executive summary

ASPIRE Deliverable D7.2 describes the dissemination activities performed by the ASPIRE consortium. The main outcome of the project in terms of a product is the ASPIRE middleware platform. The ASPIRE platform and its development claimed a significant size of research and innovation work. Therefore, one project objective was to ensure the proper dissemination, training and exploitation of the project results both as a complete ASPIRE outcome and of the individual bits and pieces of research work that make an inherent basis for the proper functioning of the ASPIRE middleware platform.

The input included in this deliverable is mainly based on the individual dissemination plan of the consortium partners. It addresses also key issues on standardization and exploitation aspects. This deliverable has been maintained as a “living” document for the ASPIRE dissemination activities throughout the project. Updates have been made at the end of each project year. The deliverable includes reports of the scientific dissemination activities related on RFID, RFID middleware and the AspireRFID middleware. Dissemination is of great significance to the project impact as the success of the ASPIRE middleware is also measurable by the number of potential users that adopt it.

In addition to dissemination, the project undertook training and defined clear-cut exploitation strategies. This deliverable describes training and exploitation undertaken by the project.

Section 2 Introduction

The main outcome of ASPIRE in terms of a product is the ASPIRE middleware platform. The ASPIRE platform and its development claimed a significant size of research and innovation work. Therefore, one project objective was to ensure the proper dissemination, training and exploitation of the project results both as a complete ASPIRE outcome and of the individual bits and pieces of research work that make an inherent basis for the proper functioning of the ASPIRE middleware platform.

In support of that the project developed a dissemination plan that was described in details in D7.1. The ASPIRE scientific dissemination plan was divided into academia dissemination, open source dissemination and standardization actions which comes later in the document. The academia dissemination comprises all actions regarding publications, journals and technical presentation while the open source dissemination comprises all dissemination plans regarding open source community and software contributors.

The original ASPIRE dissemination plan was divided into scientific, open source, and standardization plans to meet the specific needs of each plans. ASPIRE dissemination plan also comprised training and information days for SMEs as well as ASPIRE middleware support.

The ASPIRE middleware platform was especially developed to benefit Small Medium Enterprises (SMEs) by allowing to introduce the benefits of modern RFID technology into a variety of businesses. Therefore, dissemination and training was always understood as a critical important issue for achieving a high project impact.

From the beginning of the project it was clear that the general knowledge of the RFID technology among the SME community was quite low. The dissemination activities thus were defined in a twofold direction: on one hand they were oriented towards giving a basic overview on the RFID technology, concentrating on the facilities offered by this technology to the user/SME, explaining them, what SMEs could precisely do with this technology in their businesses, how RFID can help SMEs save time, money and help to make their business systems easier, and on the other hand describe the ASPIRE technology, explain its advantages to SMEs and show them this is the tool they need to implement RFID at a low cost.

A number of initiatives were undertaken in this direction. In general, dissemination, targeted the main potential ASPIRE end user by organising information and training days, workshops, creating brochures and booklets and distributing those at the above mentioned events. Another dissemination effort was aimed at popularising the scientific innovations on which the ASPIRE platform is based. This was manifested by publishing at large at conferences, workshops, journals, special issues editorships, books and books chapters. all peer-reviewed and highly international events.

Another dissemination activity was strictly focused within the EU project community. ASPIRE was present at concentration meetings and FIA events and joining the collaborative discussions among EU-funded ICT projects towards placing ASPIRE and RFID properly within the vision of the Future Internet.

ASPIRE provided a significant opportunity for cooperation among a wide range of partners from the industrial sector (application developers, service providers, SMEs, manufacturers) as well as R&D institutions and Universities. The impact of the ASPIRE project results can, therefore, only be realized in a wide and varying business landscape represented by the partners.

The main purpose of this deliverable is to present how the ASPIRE partners disseminated the project results, what is their approach to exploitation of the results also for long-term (i.e., after the project completion), and actions related to standardization. The most significant dissemination activities related to publications in journals, magazines, letters,
This deliverable has been maintained as a “living” document for the ASPIRE dissemination activities. Updates have been made at the end of each project year. The deliverable includes reports of the scientific dissemination activities related on RFID, RFID middleware and the AspireRFID middleware.

The contributions related to dissemination, training and exploitation, included here follow the original dissemination plan described in D7.1. All activities were focused on achieving a return of investment. The project concludes by claiming that the return of investment has been achieved. It is, however, not possible to give an exact calculation of the return of investment. One way to measure is by the number of increased revenues for SMEs that have adopted ASPIRE.

Section 3 Dissemination Activities

3.1 AAU's Dissemination Activities

Name	Type of dissemination (Journal/Paper/Standard.)	Purpose	Relation with the ASPIRE
Low Access Delay Anti-Collision Algorithm for Reader in RFID systems	Conference paper, The 13th International Symposium on Wireless Personal Multimedia Communications (WPMC 2010)	In this work, the RFID reader collision problem is studied and a centralized scheduling-based algorithm is proposed as possible candidate solution, especially for those scenarios involving static or low mobility readers.	Del.5.3 - Section 4.2.5.2: Algorithm 2
High Fairness Reader Anti-Collision Protocol in Passive RFID Systems	Conference paper, IEEE RFID Conference 2011	In this paper, an anti-collision protocol has been proposed in order to solve the reader collision problem. The aims of the proposed solution are: (1) to prevent and avoid collisions among readers; and (2) to limit the access delay of the readers on the channel, while guaranteeing them fairness with respect to the channel contention.	Del.5.1 - Section 8: Simulation of Medium Access Techniques for Low Cost Readers in Passive RFID Systems
ASPIRE: Added-value Sensing: Reliability and Middleware	Poster, The 7th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (IEEE SECON 2010)	Advances in active RFID integration with WSNs allow for more RFID based applications to be developed. In order to fill the gap between the active RFID system and the existing middleware, a HAL for active reader and ALE server extension to support sensing data from active tag were developed and integrated to the ASPIRE middleware.	Del. 5.2

3.2 AIT's Dissemination Activities

Name	Type of dissemination (Journal/Paper/Standard.)	Purpose	Relation with the ASPIRE
Nektarios	International	Despite the proliferating number	D3.4, D4,5

Leontiadis, Nikos Kefalakis, John Soldatos, "**Bridging RFID Systems and Enterprise Applications through Virtualized Connectors**"	Journal of Automated Identification Technology (IJAIT), Vol. 1, No.2, 2010	of tools and techniques for building RFID applications, their integration with legacy enterprise applications (such as ERP and WMS systems) and corporate databases is still a very tedious task. Integration effort is therefore still a set-back to rapid and cost-effective RFID deployments in non-trivial enterprise environments. In this paper, we introduce a middleware component (conveniently called "Connector"), which abstracts the interfacing of RFID systems with enterprise applications. Our Connector component considers RFID deployments that adopt the EPC Global architecture, i.e. deployments populating RFID events into repositories compliant with the EPC-IS standards. Developers using the "connector" components are offered with handlers for the main interaction messages between EPC-IS repositories and enterprise applications. The paper ends-up presenting the implementation and use of the "Connector" middleware for the interfacing between a WMS system and an EPC-IS repository in the scope of a logistics application. Lessons learnt from this validating case study are also outlined.	
Nikos Kefalakis, Nektarios Leontiadis, John Soldatos, Kiev Gama and Didier Donsez, "**Supply Chain Management and NFC Picking Demonstrations using the AspireRfid Middleware**"	Platform the ACM Middleware 2008 conference, Leuwen, Belgium, December 1-5, 2008	RFID middleware is a cornerstone of non-trivial RFID deployments in complex heterogeneous environments. In this demonstration, we introduce and present the AspireRfid middleware platform using demonstrators in the area of Supply Chain management and Near Field Communications. The AspireRfid platform provides support for non-trivial RFID applications in several fields including supply-chain management, logistics, access control, asset management and pharmaceuticals. In this demonstration we present a traceability application for logistics	D2.1

		and supply chain management, as well as a pick and pack application. AspireRfid implements several building blocks of the EPCglobal architecture. However, it also extends the EPCglobal architecture with several middleware modules, which can greatly facilitate RFID application development and deployment. Hence, prior to presenting the demonstrations, we provide a brief discussion of the EPCglobal architecture and the extensions implemented by AspireRFid. We end-up with an illustration of the demonstrators.	
Nikos Kefalakis, Nektarios Leontiadis, John Soldatos, and Didier Donsez, "**Middleware Building Blocks for Architecting RFID Systems**"	1st Mobilight Conference, May 2009	RFID middleware is a cornerstone of non-trivial RFID deployments in complex heterogeneous environments. In this paper we introduce the principal middleware building blocks specified in the scope of the EPCglobal architecture. Alternative protocols and implementation frameworks for realizing these middleware blocks are also presented. At the same time we outline several middleware extensions to the EPCglobal architecture, towards meeting common requirements of automatic identification applications. Furthermore, we classify RFID applications into various categories based on their simplicity, as well as based on their closed or open loop nature. Accordingly, we highlight the middleware blocks that are most important to each application category.	D2.3, D2.4
Achilleas Anagnostopoulos, John Soldatos and Sotiris G. Michalakos, "**REFiLL: A Lightweight Programmable Middleware Platform for Cost Effective RFID**	Journal of Pervasive and Mobile Computing (Elsevier), Vol. 5, Issue 1, February 2009, pp. 49-63	Middleware platforms for RFID data filtering and collection tend to be resource intensive, costly and/or provide a low degree of programmability. In this paper, we introduce REFiLL, a lightweight middleware framework that can significantly ease the development of RFID systems. The introduced framework fits within the overall EPC global	D2.1, D2.4

Application Development"		network architecture as a programmable filtering solution, sitting between the EPC (Electronic Product Code) reader virtualization layer and EPC application level events. Thanks to a set of well defined programming constructs, REFiLL renders application development a task of authoring a set of XML-based files, which are also editable within a visual development environment. Following the presentation of the REFiLL framework, we also describe the process of application development, along with sample prototype applications.	
Panos Dimitropoulos and John Soldatos, "**RFID-enabled Fully Automated Warehouse Management: Adding the Business Context**"	International Journal of Manufacturing Technology and Management (IJMTM), Special Issue on: "AIT-driven Manufacturing and Management" 2009.	The EPCglobal has recently ratified the EPC-IS standard, which insulates enterprise applications from understanding the details of how individual steps in a business process are carried out. However, few processes are described on the basis of this framework. In this paper, we present an overview of EPC-IS and accordingly leverage its event semantics to formulate the business context for prominent warehouse management (WM) processes. Specifically, we provide a fairly general description of WM business processes in terms of EPC-IS events. These events have been validated and used in the scope of realistic RFID deployments in different enterprises. Based on this experience we believe that these baseline descriptions could serve as templates for a wide range of RFID WM deployments. We also provide insights on how these descriptions could be used in the scope of a wider business process management framework, which could be amenable by graphical tools.	D4.3
John Soldatos, "**AspireRFID Can Lower Deployment Costs**"	RFID Journal 16 Mar. 2009 http://www.rfidjournal.com/article/vie	The project, involving academic and research institutions across Europe, has developed free open-source RFID middleware, and is	General promotion of the ASPIRE Project

	w/4661/	currently working to create a range of tools to facilitate RFID deployment.	(WP7)
John Soldatos, "**The AspireRfid Project**"	RFID World 16 Mar. 2009 http://www.rfid-world.com/showArticle.jhtml?articleID=215900319		General promotion of the ASPIRE Project (WP7)
N. Kefalakis, J. Soldatos, N. Konstantinou, N. Prasad, "**APDL: A Reference XML Schema for Process-centered Definition of RFID Solutions**"	Int. Journal of Systems & Software(JSS), Elsevier, 84 (2011) pp. 1244-1259 (doi:10.1016/j.jss.2011.02.036)	Despite the proliferation of RFID systems and applications, there is still no easy way to develop, integrate and deploy non-trivial RFID solutions. Indeed, the latter comprise various middleware modules (e.g., data collection and filtering, generation of business events, integration with enterprise applications), which must be deployed and configured independently. In this paper we introduce APDL (AspireRFID Process Description Language), an XML based specification for describing and configuring RFID solutions. Using APDL one can minimize the steps and effort required to integrate and configure an RFID solution, since it unifies all the configuration parameters and steps comprising an RFID deployment. APDL supports several configuration parameters defined in the scope of the EPCglobal architecture and related standards. However, it extends beyond the EPCglobal architecture, to a wider class of RFID solutions. Furthermore, APDL is amendable by visual tools, which obviates the need to carry out low-level programming tasks in order to deploy an RFID solution. These tools are also presented and evaluated in the paper.	D4.2, D4.3, D4.4
Nikos Kefalakis, John Soldatos, Efstathios Mertikas, Neeli R. Prasad, "**Generating Business Events in an RFID Network**"	IEEE International Conference on RFID-Technologies and Applications (RFID-TA) , Barcelona, Spain, September 2011	Radio Frequency Identification (RFID) has been promoted, as the solution to the identification and tracking of objects, without any means of wires or human intervention. RFID middleware is a prominent component of any non-trivial RFID deployment. EPCglobal has been actively	D4.3

		working towards a set of middleware standards for large scale interoperable RFID deployments (such as the Electronic Product Code Application Level Events (EPC-ALE) and Information Sharing (EPCIS) standards), while several middleware projects have concentrated in the implementation of these standards. However, there is still a clear need for middleware modules that map low-level tag streams (e.g., stemming from EPC-ALE modules) to Business Events (e.g., events formulated according to the EPCIS standard). In this paper, we introduce a middleware module for bridging EPC-ALE reports with EPCIS repositories based on automated generation of business events subject to Master Data and context pertaining to a particular business case. We call the respective middleware module Business Event Generator (BEG). BEG is a configurable engine that can automatically create business events from a set of low-level tag streams. In addition to the BEG module, we introduce tools and techniques for configuring the BEG engine. We illustrate the use of the above middleware and tools based on a set of indicative use cases in the area of logistics and supply chain management.	
N. Konstantinou, "**Expowave: An RFID anti-collision algorithm for dense and lively environments**"	Letter submission in IEEE Transactions on Communications, received comments for minor revision for July 20th, 2011	This paper analyzes and proposes Expowave, a distributed algorithm for the scheduling of an RFID reader network. The behaviour of the algorithm is presented in detail, and its performance is evaluated through a set of simulation experiments. It is demonstrated that the algorithm constitutes an efficient approach to the reader anti-collision problem, especially in dense and lively environments.	T5.4
Konstantinos Mourtzoukos, Nikos	Submitted for publication in	Among the main challenges of inter-enterprise deployments for	D3.5

Kefalakis and John Soldatos, "**Object Directory Services for Inter-Enterprise Track-ing and Tracing Applications**"	International Journal of Advanced Pervasive and Ubiquitous Computing (IJAPUC), 2011	RFID and Internet-of-Things (IoT) is the lack of implementation of object directory services, which are a key prerequisite towards deploying added-value traceability applications. This paper discusses the challenges of inter-enterprise RFID deployments and accordingly introduces the design and (open-source) implementation of an object directory service for tracking and tracing applications. The service is partly based on EPCGlobal Object Naming Service (ONS) standard and enables the implementation of large scale traceability of things. The relevant implementation enables the traceability of things, while being part of the AspireRFID open source project. Along with the implemented service, the paper discusses a set of representative applications, which manifest its potential impact.	

AIT also focused on the organization of ASPIRE participation in the ICT 2010 Exhibition, which took place September 27-29, 2010, in Brussels. In particular, AIT has been in charge of the preparation of an exhibition proposal for the ICT 2010 conference in Brussels (September 27-29, 2010). The proposal (available in APENDIX I) was centered round the ASPIRE STAFF trial and the ASPIRE tools. In particular it proposed the demonstration of elements of the STAFF trial, on the basis of a conveyor belt used for receiving/shipping RFID-tagged items. In addition to the conveyor belt and the related RFID processes, ASPIRE proposed also to demonstrate most of the ASPIRE tools, the APE and the low-cost reader. The proposal was accepted by the organizers of the ICT 2010 event. Following the acceptance of the proposal, AIT has started the coordination of the demonstration. The project was granted booth R4-17 in the "ICT Connects" area.

AIT was responsible for the:

- Coordination of the participation of all four projects (ASPIRE, RFID-ROI-SME, RFID-F2F, raceNetworkRFID) in the same booth, through:
  a) Contacts with representatives of other projects,
  b) Arrangements for the proper and timely delivery of the materials. Editing of the video presentations.
- Preparation of four ASPIRE posters (i.e. illustrating ASPIRE results) (Figure 1 below), as well as one overview poster depicting the whole ecosystem of the collaborating RFID projects.
- Preparation of realistic technical demonstrations of the ASPIRE middleware and tools, which were presented in this exhibition booth.
- During the exhibition, AIT staffed the booth with two people; at least one was present during all time instants.

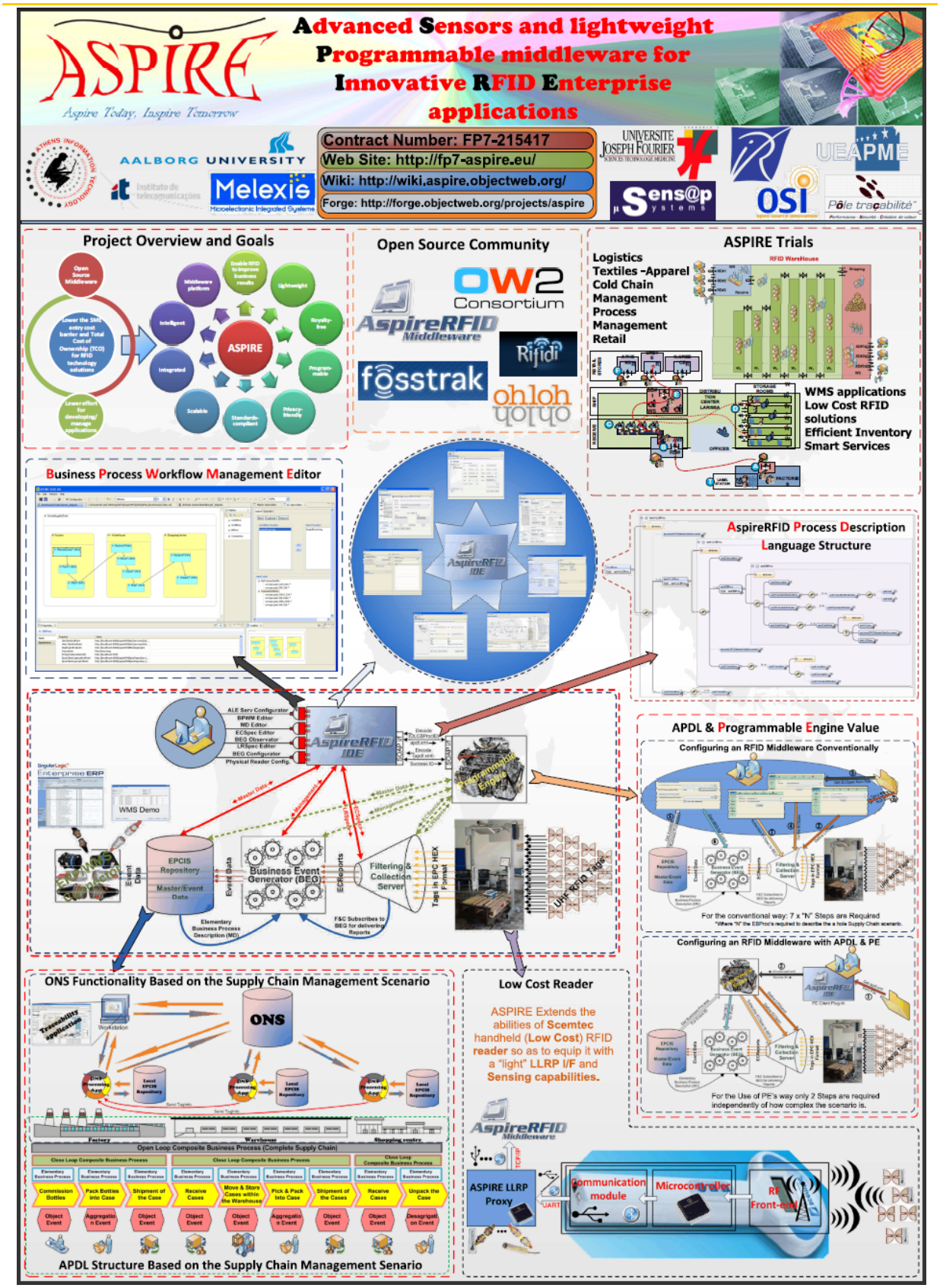

Figure 1 ASPIRE's central poster at ICT 2010 "digitally driven" conference

3.3 UJF's Dissemination Activities

Name	Type of dissemination (Journal/Paper/Standard.)	Purpose	Relation with the ASPIRE
Kiev Gama, Walter Rudametkin, Didier Donsez Using Fail-stop Proxies for Enhancing Services Isolation in the OSGi Service Platform 3 rd Middleware for Service Oriented Computing (MW4SOC Workshop of the 9th International Middleware Conference 2008), December 1-5, 2008, Leuven, Belgium DOI: 10.1145/1462802.1462804	Paper	Dependability in RFID and sensors middleware	WP3
Kiev Gama, Didier Donsez Using the service coroner tool for diagnosing stale references in the OSGi platform. Demo Session, Middleware2008 In Proceedings of the ACM/IFIP/USENIX Middleware '08 Conference Companion (Leuven, Belgium, December 01 - 05, 2008). Companion '08. ACM, New York, NY, 58-61 DOI 10.1145/1462735.1462749	Paper	Dependability in RFID and sensors middleware	WP3
Kiev Gama, Didier Donsez A Practical Approach for Finding Stale References in a Dynamic Service Platform Conference on Component-Based Software Engineering (CBSE 2008), Karlsruhe, Germany, October 14th-17th, 2008 DOI 10.1007/978-3-540-87891-9_16	Paper	Dependability in RFID and sensors middleware	WP3
Kiev Gama, Didier Donsez Service Coroner: A Diagnostic Tool for locating OSGi Stale References 34th EUROMICRO CONFERENCE on Software Engineering and Advanced Applications (SEAA) Service and Component-Based Software Engineering Track, Parma, Italy, September 3-5, 2008	Paper	Dependability in RFID and sensors middleware	WP3
Lionel Touseau, Didier Donsez, Walter Rudametkin Towards a SLA-based Approach to Handle Service Disruptions Proc. of 5th IEEE International Conference on Services Computing (SCC 2008), Research track, July 8-	Paper	Availability in RFID and sensors middleware	WP3

11, 2008, Honolulu, Hawaii			
Jean, Sébastien and Gama, Kiev and Donsez, Didier and Lagrèze, André Towards a Monitoring System for High Altitude Objects 6th ACM Mobility Conference 2009, Nice, France, September 2-4, 2009	Paper	Usage of the Aspire' RFID and sensors middleware for tracking flying objects	WP3
Didier Donsez and Kiev Gama and Walter Rudametkin Developing Adaptable Components using Dynamic Languages 35th EUROMICRO Conference on Software Engineering and Advanced Applications (SEEA) 2009, Track: Service and Component Based Software Engineering (CBSE2009), August 27-29th, 2009	Paper	Dynamic languages support in ECSpec custom functions	WP4
Kiev Gama and Didier Donsez Towards Dynamic Component Isolation in a Service Oriented Platform Component-Based Software Engineering, 12th International Symposium, CBSE 2009, East Stroudsburg, PA, USA, June 24-26,2009, Proceedings	Paper	Dependability in RFID middleware	WP3
Rudametkin, Walter and Gama, Kiev Gama and Touseau, Lionel and Donsez, Didier, Towards a Dynamic and Extensible Middleware for Enhancing Exhibits, IEEE CCNC 2010, Consumer Communications and Networking Conference, January 9-12 2010, Las Vegas, Nevada, USA	Paper	Event Condition Action middleware architecture to develop NFC application	WP3
Kiev Gama and Didier Donsez, "A Self-healing Component Sandbox for Untrustworthy Third Party Code Execution", Component-Based Software Engineering, 13th International Symposium, CBSE 2010, Prague, Czech Republic, 23-25 June 2010	Paper	Dependability in RFID and sensors middleware	WP3
Issac Garcia, Gabriel Pedraza, Bassem Debbabi, Philippe Lalanda, Catherine Hamon, Towards a service mediation framework for dynamic applications, IEEE APSCC 2010 , December 6 - 10, 2010, Hangzhou, China	Paper	Event Oriented DSL and middleware for RFID and sensors based appications	WP3, WP4
Kiev Gama and Didier Donsez Applying Dependability Aspects on Top of "Aspectized" Software Layers AOSD'11, March 21–25, 2011, Pernambuco, Brazil	Paper	Dependability in RFID and sensors middlewares	WP3

Kiev Gama, Gabriel Pedraza, Thomas Lévêque and Didier Donsez, "Application Management Plug-ins through Dynamically Pluggable Probes", TOPI 2011 1st Workshop on Developing Tools as Plug-ins, ICSE Workshop, May 28, 2011, Honolulu, Hawaii, USA	Paper	Plugins and Probes automatic deployment in End-to-end middleware management	WP3, WP4
Lionel Touseau, Service Level Agrement for Dynamic Services Oriented Platform, PhD Thesis, Université Joseph Fourier, May 25, 2010.	PhD Thesis	Contributions to WP3 (OSGi profile of the RFID middleware)	WP3
Kiev Gama, Towards Dependable Dynamic Component-Based Applications, PhD Thesis, Université Joseph Fourier, October, 2011.	PhD Thesis	Contributions to WP3 (OSGi profile of the RFID middleware)	WP3
EasyRide: an Ecological, Ethical and Social Ride-Sharing NFC-Enabled System, NFC Forum Competition 2009 http://air.imag.fr/mediawiki/index.php/EasyRide	Contest : finalists	Usage of NFC components of RFID Middleware (WP3)	WP7
TouchKey: Home and building access management platform to open communicating door locks, , NFC Forum Competition 2010 http://air.imag.fr/mediawiki/index.php/Touchkey	Contest: finalist	Usage of NFC components of RFID Middleware (WP3)	WP7
AIR (Ambient Intelligent Room) http://air.imag.fr	Fablab (factory laboratory) for Polytech'Grenoble' students. Students can prototype Ambient intelligence things and applications such as http://air.imag.fr/mediawiki/index.php/Projets_2010-2011	Usage of NFC, OneWire, Touchatag components of RFID Middleware (WP3)	WP7
Sounding balloon tracking, April 24, 2009, http://wiki.aspire.ow2.org/xwiki/bin/view/Photos/SoundingBalloonTracking Participation to an experiment of sounding balloon tracking with the Aspire MW (April 24). The experiment was led by the students and	Trial	Usage of the RFID middleware for realtime tracking of a sounding balloon	WP3

professors of the IUT de Valence (also Aspire user and contributor). The balloon reached the altitude of 26500 meters and covers 150 kms. It has collected GPS coordinates, temperatures, pressures and pictures. An “Aspire inside” sticker was on the balloon’ instrument box			
Co-Organization of the ICAR 2008) Preparation and Presentation of a RFID middleware tutorial and of the OW2 Aspire Project at ICAR 2008, Nice, August 2008 (80 attendees) http://rainbow.essi.fr/icar08/pages/accueilpag.html, http://www-adele.imag.fr/users/Didier.Donsez/cours/icar08-intergicielsrfid.pdf	Seminar and demonstration		WP7
Presentation of the OW2 ASPIRE RFID project to the OW2 Technological Council meeting, 15/05/2008, Grenoble (Didier Donsez) http://www.ow2.org/xwiki/bin/download/Events/OW2QuarterlyMeetingGrenobleFrance/dysoweb.pdf.	Defence of the project for the creation of the OW2 project.		WP7
Presentation of the ASPIRE project to Alex Türk (Senator and Chairman of CNIL, http://www.cnil.fr/index.php?id=4) 27/05/2008, LIG labs seminar, Grenoble, France.	Seminar		WP7
Lionel Touseau, Kiev Gama, Didier Donsez, Experimenting with the OSGi platform in the Aspire RFID middleware, OSGiDevCon @ Jazoon 2009, Zurick, June 22, 2009. http://www.slideshare.net/clement.escoffier/experimenting-with-the-osgi-platform-in-the-aspire-rfid-middleware	Industrial presentation	Detail of the OSGi based Aspire platform	WP3
Kiev Gama, Didier Donsez Runtime Diagnosis of Stale References in the OSGi™ Services Platform OSGi™ Community Event (June 10-11, 2008), Berlin, Germany	Industrial presentation	Dependability in RFID and sensors middleware	WP3
Presentation of a 3 hour-seminar on RFID middleware at ETAI http://www.univ-valenciennes.fr/congres/etia09, Lille (July 7, 2009).	Seminar for academics and industrials		WP3, WP4,WP7
Walter Rudametkin, Lionel Touseau, Maroula Perisanidi, Andreas Gomez, Didier Donsez NFCMuseum: an Open-Source Middleware for Augmenting Museum	Poster and Demonstration	Event Condition Action middleware architecture to develop NFC	WP3

Exhibits International Conference on Pervasive Services (ICPS'08), Demonstration track, July 6-10, 2008, Sorrento, Italy		application	
Nikos Kefalakis, Nektarios Leontiadis John Soldatos, Kiev Gama, Didier Donsez Supply Chain Management and NFC Picking Demonstrations using the AspireRfid Middleware Platform Demo Session, Middleware2008 In: Proceedings of the ACM/IFIP/USENIX Middleware '08 Conference Companion, December 01-05, 2008, Leuven, Belgium. DOI: 10.1145/1462735.1462751	Poster and Demonstration	RFID Middleware	WP4
Gabriel PEDRAZA, Issac GARCIA and Bassem DEBBABI, An RFID architecture based on an event-oriented component model. International Conference on Distributed Event-based Systems (DEBS 2010), Cambridge – England, July 12 - 15 2010	Poster and Demonstration	RFID middleware and development	WP3, WP4

3.4 INRIA's Dissemination Activities

Name	Type of dissemination (Journal/Paper/Standard.)	Purpose	Relation with the ASPIRE
Nathalie Mitton, Loic Schmidt, David Simplot-Ryl. **RFID Middleware : Concepts and Architecture** RFID Systems : Research Trends and Challenges, M. Bolic, D. Simplot-Ryl, and I. Stojmenovic (Eds). John Wiley & Sons. 2010.	Book chapter	Rfid middleware	RFID middleware
RFID active et Réseaux de capteurs, *Les mercredis de la RFID*, March 16th 2011, Paris	Talk	Rfid middleware presentation	Aspire presentation
RFID et Réseaux de capteurs,	Talk	Rfid middleware presentation	Aspire presentation

Rencontres INRIA Industries, January 26th 2011, Sophia Antipolis, France			
RFID middlewares and Aspire project, *Les Assises de la Traçabilité* , April 1st 2009, Valence, France.	Talk	Rfid middleware presentation	Aspire presentation
Routing and energy saving in wireless sensor networks, *journées thématiques du GDR SoC/SiP,* July 2009, Paris, France	Talk	Rfid middleware presentation	Aspire presentation
RFID middlewares, *WMNC, Special session Internet of Things*, September 11th 2009, Gdansk, Poland.	Talk	Rfid middleware presentation	Aspire presentation
Routing in wireless multihop networks, *PucesCom Atelier réseau de capteurs* , October 15th 2009, Vannes, France.	Talk	Rfid middleware presentation	Aspire presentation
RFID middlewares, *Internet of Things*, October 30th 2009, Lille, France	Talk	Rfid middleware presentation	Aspire presentation
L. Schmidt, N. Mitton and D. Simplot-Ryl. *Towards Unified Tag Data Translation for the Internet of Things*. In Wireless Communication Society, Vehicular Technology, Information Theoryand Aerospace & Electronics Systems Technology (VITAE'09), Aalborg,	Conference	Extended TDT components	D3.2, D3.3, D3.4

Denmark, May 2009.			
David Simplot-Ryl, Roudy Dagher, Roberto Quilez **DHT-based distributed ALE engine in RFID Middleware.** IEEE International Conference on RFID-Technologies and Applications (RFID-TA) , Barcelona, Spain, September 2011. To appear	Conference	DHT-based Distributed ALE	D3.4, D3.5
Essia Hamouda, Nathalie Mitton and David Simplot-Ryl **Reader Anti-Collision in Dense RFID Networks with Mobile Tags.** IEEE International Conference on RFID-Technologies and Applications (RFID-TA), Barcelona, Spain, September 2011. To appear	Conference	Reader-reader anti-collision scheme	D3.2, D3.3
Aline Carneiro Viana, Nathalie Mitton, Loïc Schmidt, Massimo Vecchio. **A k-layer self-organizing structure for product management in stock-based networks** Proc. 7th IEEE International Conference on e-Business Engineering (ICEBE 2010). Shanghai, China. 10-12 Novembre 2010	Conference	DHT based filtering and memory placement	D4.1

3.5 IT's Dissemination Activities

Name	Type of dissemination (Journal/Paper/Standard.)	Purpose	Relation with the ASPIRE
Collision resolution algorithms for RFID applications	Conference paper accepted for APMC (Asian Pacific Microwave Conference) 2008. IEEE indexed	Dissemination of results	Dissemination
Integration of RFID readers into wireless communication networks	Conference paper for Wireless Vitae 2008. IEEE indexed	Dissemination of results	Dissemination
Optimization of Mobile RFID platforms: a cross-layer approach	Book chapter. Intertech (online books). Accepted contribution to appear in 2011	Dissemination of results	Dissemination
Joint optimization of reader and tag collision resolution algorithms	Paper (to be submitted)	Dissemination of results	Dissemination
MAC-PHY Cross-layer optimization of RFID reader platforms	Paper (submitted) SPAWC Signal processing advances for Wireless communications 2011	Dissemination of results	Dissemination

3.6 SENSAP's Dissemination Activities

Name	Type of dissemination (Journal/Paper/Standard.)	Purpose	Relation with the ASPIRE
RFID enabled fully automated warehouse management: adding the business context.	Journal Publication (jointly by SENSAP / AIT), International Journal of Manufacturing Technology and Management (IJMTM), Special Issue on: "AIT-driven Manufacturing and Management" 21(3/4): 269-288 (2010)	Introduce ASPIRE's approach to connecting the RFID Filtering Layer with the Layer of Business Events, along with practical examples applied in the STAFF Trials	Relevant to the ASPIRE Architecture (WP2) and Business Event Generation (WP4), Applicable to the ASPIRE Trials (WP6)
RFID Information Day for SMEs in Greece, Athens, Greece (21/05/2011)	Information Day / Workshop (National Scale)	• Collecting SME Requirements (as part of ASPIRE WP2) • Present opportunities for companies (SMEs)	Relevant to ASPIRE WP2 and WP7

		to engage in ASPIRE • Establish a list of contacts for pre-marketing and exploitation purposes (in terms of SENSAP solutions)	
ICT 2010 «Digitally Driven», Brussels, Belgium	International Conference	Present/Disseminate the project's results in an international audience on ICT	Presentation of SENSAP's trial developments in WP6
Creation of Video (http://www.youtube.com/watch?v=DmmC2QJmqNo)	Dissemination Material (Video)	Presentation of the STAFF Deployment	ASPIRE Trials in WP6
STAFF Interview to RFID Journal http://www.rfidjournal.com/article/view/7899	Interview/Presentation	Presentation of the STAFF deployment and its benefits	ASPIRE Trials in WP6
ASPIRE workshop for SMEs, held in conjunction with the RFID-ROI-SME meeting in Brussels (UEAPME premises, November 24th, 2009)	Workshop for SMEs	• Presentation of the STAFF and SENSAP Deployments • Presentation of how to build solutions based on ASPIRE middleware.	ASPIRE Solutions Presentation WP2/ WP6

SENSAP undertook a variety of dissemination activities, targeting different audiences. The primary focus was the attraction of potential customers (i..e. companies (mainly SME) that would like to deploy RFID solutions). The dissemination activities of SENSAP included:

- Information Days:
  - An Information day on RFID technology was organized by SENSAP, May 21st 2010 for a diverse audience including potential (SME) end-users of RFID technology. SENSAP exploited the information days towards: (a) Presenting ASPIRE and the means for companies to engage in ASPIRE, (b) Presenting RFID demonstrations in order to the audience to understand RFID technology and its applications, (c) Establishing a list contacts for later exploitation and marketing purposes and (d) Eliciting SME requirements in the scope of ASPIRE WP2.
- Participation in Conferences / Exhibitions:
  - SENSAP presented the underlying technology of the STAFF deployment in the scope of the exhibition section of the ICT 2010 «Digitally Driven» conference. SENSAP staffed the ASPIRE booth during the conference. SENSAP demonstrations in the scope of the ICT exhibition concerned receiving and picking processes, using both a dock-door portal, as well as mobile hand-held readers.
  - SENSAP participated in RFID Journal Live Europe 2010 (Darmstadt, Germany 2-4/11/2010). The company participated in the conference based on a talk/presentation and a booth.
- Publications:

  - Panos Dimitropoulos and John Soldatos, 'RFID-enabled Fully Automated Warehouse Management: Adding the Business Context', International Journal of Manufacturing Technology and Management (IJMTM), Special Issue on: "AIT-driven Manufacturing and Management", IJMTM Vol 21, No.3/4, 2010.
- Dissemination Material:
  - Creation of Video on the STAFF Trial (see for example: http://www.youtube.com/watch?v=DmmC2QJmqNo)
- Interviews:
  - Dr. Dimitropoulos was interviewed by RFID Journal, about the STAFF deployment and retail extensions (roll-out as part of RFID-ROI-SME project). The interview is available at: http://www.rfidjournal.com/article/view/7899.
- Participation/Contribution in workshop for SMEs:
  - SENSAP participated and supported the ASPIRE workshop for SMEs, held in conjunction with the RFID-ROI-SME meeting in Brussels (UEAPME premises, November 24th, 2009). SENSAP participated in the meeting as a member of both consortiums and presented the application of ASPIRE in the three trials presented above (STAFF logistics, STAFF retail, SENSAP warehouse).

Section 4 Conclusions

This deliverable is mainly based on the individual and the collaborative dissemination activities throughout the project. The ASPIRE partners performed the proper disseminations, such as papers, journals, posters and standardizations, of the project results both as a complete ASPIRE outcome and of the individual bits and pieces of research work that make an inherent basis for the proper functioning of the ASPIRE middleware platform. These scientific dissemination outcomes are related on RFID, RFID middleware and the AspireRFID middleware.

Appendix A ASPIRE FP7-215417 Demonstration Proposal for ICT2010

ASPIRE presented demonstrations of its main technological developments through posters, video, but also realistic demonstrations of RFID systems and related middleware/tool functionalities in the ICT 2010 Exhibition. The booth hosted however three more RFID projects, which cooperate closely with ASPIRE, namely: ICT-PSP project RFID-ROI-SME, ICT-PSP project RFID-Farm-2-Fork and the thematic network raceNetworkRfid. These projects participated in the booth with posters and video presentations. Some photos from the ASPIRE booth in the ICT 2010 exhibition follow (Figure 2 below) and more can be found at the ASPIRE's Wiki (http://wiki.aspire.ow2.org/xwiki/bin/view/Photos/ICT2010).


ASPIRE Stand Ecosystem
ASPIRE
RACE
ASPIRE

Figure 2 Photos from the ASPIRE booth at ICT 2010 “digitally driven” conference

Abstract
This demonstration will showcase a realistic operative RFID system enabling fully automated logistics processes, including receiving, shipping and inventory. The demonstration will outline the benefits of RFID enabled logistics processes, which are faster and less error prone than conventional processes involving human intervention. Participants will view real-life receiving, shipping, and inventory RFID enabled processes based on a conveyor, RFID readers (including a mobile reader), antennas, as well as actuating equipment.

The demonstration will also include a set of satellite demonstrations of various tools that facilitate development and deployment of RFID solutions. These tools are available as open source software from the AspireRfid Project (http://wiki.aspire.ow2.org/). Participants will be also able to view presentations from three other projects (RFID F2F, RFID-ROI-SME, RACEnetworkRFID), which together with ASPIRE form an ecosystem of collaborating EU RFID projects.

What exactly will you show the visitor?
Describe the visual impact, interactivity, ease of comprehension and the overall visitor experience (max 3000 characters)
The demonstration will be structured based on a main demonstrator of RFID-enabled processes and a set of satellite demonstrations of various tools facilitating RFID deployment.
The main demonstration will be based on a visually attracting conveyor belt with various RFID readers, antennas and actuators for RFID-enabled logistics. The conveyor belt will serve as the central point of the booth, aiming at stimulating the visitors' interest and attracting their attention. This will be based on the fact that various objects of considerable size (e.g., packages / containers) will move through the conveyor. These objects will be automatically scanned through by readers residing within an RFID dock door portal attached to the conveyor. Lights and LEDs attached to the conveyor and the portal will be used to highlight specific states of the business processes. The combination of the lights and the moving packages is expected to be visually appealing to the visitors. Visitors viewing the belt from remote will be tempted to approach the demonstrator in order to witness the details. In terms of specific business processes, the receiving and shipping processes will be demonstrated. For both processes, the received/shipped goods will be automatically audited against the list of ordered/delivered items (e.g., invoice and/or delivery note).

The satellite demonstrations will include a wide range of tools, which will on the one hand visualize different parameters of the trial (e.g., the showcases processes), and on the other will illustrate a visual process of designing, developing, configuring and deploying an RFID solution. The tools are offered as royalty free components of the AspireRfid (http://wiki.aspire.ow2.org/) open source project and include tools for defining company master data, configuring middleware components (e.g., the Application Level Events server), defining/configuring logical and physical RFID readers, as well as designing business processes in a visual fashion. Furthermore, tools depicting the products and their status as they pass through the conveyor will be demonstrated. Also, a printing solution will be shown in order to facilitate visitors to understand the lifecycle of the RFID solution. The showcasing of the tools will be based on PCs/servers hosting the tools. Special reference will be given to the importance of these tools for SME companies, which cannot typically afford the proprietary and resourceful commercial solutions.
While the conveyor will be the central point of attention, satellite demonstrators will provide further insights on leading edge tools for building RFID solutions. Also, while the receiving/shipping processes will emphasize on the capabilities of RFID technology to deliver tangible Return-on-Investment (ROI), the demonstrations of the tools will illustrate research directions/initiatives aiming at facilitating SMEs to adopt RFID technologies in their business processes.

What is innovative about the technology or activity that you will show?

(max 1500 characters: 1500 left)
The technology to be demonstrated includes several innovations, relating to the RFID middleware and tools used, as well as to the deployment itself.

A) Innovations related to the deployment
The deployment is a first-of-a-kind in terms of:
-The RFID portal, to be demonstrated, provides a unique, world-class capturing reliability (better than 99.5%). It is envisaged that a high reading reliability/efficiency could be achieved in the scope of the ICT2010, subject however to parameters like interference from other wireless signals.
-The lifecycle of the deployment which is supported by appropriate tools, along with the visualization of the deployment.
-The use of a pool of different RFID technologies as well as electromagnetic coupling principles (used for energy transfer and tag actuation) so as to maximize tag singulation probability and reading range.
-Innovative software modules that – being seamlessly integrated with commercial EIS systems – allow fully-automated, autoid-based (RFID and barcode) enterprise process monitoring, management, and documentation.

B) Innovations related to the tooling
The tools to be demonstrated as part of the RFID deployment are novel based on:
-Their ability to support visual process-based deployment of RFID solution.
-Their ability to support end-to-end management and configuration of an RFID solution from a single entry point.
-The availability of an Integrated Development Environment (IDE) customized for RFID solutions.

How has your project become a success?
Describe how the EU research programme has contributed to this success (max 1500 characters: 1500 left)
Overall, we will demonstrate one of the first fully operational RFID installations world-wide used to trace more than 800.000 item-level pieces of apparel annually. The demonstrations have been partially accomplished in the scope of the ASPIRE FP7-215417 (http://www.fp7-aspire.eu) project, which has been instrumental towards designing and deploying both the logistics RFID system and the tools. Specifically, all the open source tools that will be demonstrated have been designed and developed in the scope of the ASPIRE project. Furthermore, the operative RFID system is part of one of the validating trials of the ASPIRE project.

How 'green' is your project?
One of the event's themes is sustainable growth. What do you do in your project to be 'greener'? What will you do in your stand to be 'greener'? (max 1500 characters: 1500 left)
RFID could boost traceability processes towards the eco-friendliness of future products and services. In particular, the use of RFID in logistics can enable the complete traceability of products, including the specific product (on the basis of serial numbers of the products) and the processes/dispositions it undergoes in the scope of the supply chain. Using the ASPIRE tools we will illustrate the possibility of maintaining a “green” (e.g., energy efficiency) profile of the product as it moves through the supply chain. This could be extended to support monitoring and control associated with green/ eco-friendly products. Likewise, in the process domain, RFID provide the possibility to automatically tag and trace business processes, which can later on be associated with the product.
Also, the traceability server to be presented helps enterprises adopt “paper-less” documentation procedures. Using added-value temperature sensing, supported out-of-the-box by the suite to be demonstrated, logistics companies may optimize the so called “cold-chain” processes so as to minimize fuel consumption.

In the stand we will illustrate these possibilities through posters. All the staff will not make use of paper in the stand, while also exploiting green devices in support of the demonstrator.

Technical Details
Estimated space required: 9 square metres
Wireless/LAN connections
Ethernet LAN connection - 1 LAN UTP connection 100Mbit/s (max 5 DHCP IPs)
Wireless LAN connection (1Mbit/s DHCP)

Please justify your requirements and provide technical details (number of connections, frequency bands, power etc) Mention any spectrum requirements for broadcasting or other regulated wireless communications (e.g. WiMax).
(empty)

Equipment that YOU will bring
Number of desktop PCs: 5
Number of monitors: 3
Number of laptops: 5

Please describe any other equipment that you will bring (e.g. hubs, switches, wireless access points, prototypes, decoders, external antennas...)
For the purposes of this demonstration, we will bring all the RFID equipment and related peripherals requiped for the demonstration including:
(a) Fixed RFID Reader (Impinj Speedway) X 1
(b) Far – Field RFID Antennas (MTI) including cables X 2
(c) Near – Field RFID Antennas (Impinj) including cables X2
(d) Optical Sensor Set X 2
(e) SUN HW Server including Monitor, Keyboard, Mouse X1
(f) Ethernet Router including cables X1
(g) Consumables (RFID Labels)
(h) Tagged apparel products (samples)
(i) Metallic Portal infrastructure (see also attached documents) including manually operated Conveyor Belt
(j) RFID Printer
(g) A prototype of a (low cost) mobile reader (based on the Scemtec reader) developed in the scope of the ASPIRE project
(h) Mobile RFID infrastructure for Pick & Pack Demonstration

1. Mobile RFID / Barcode (Intermec) Reader X1
2. GlassFish AS v2.1 X1
3. MS SQL Server 2005 Express Edition X1
4. SBOX v2.4 Traceability Server X1
5. Ethernet Router including cables X1
6. Consumables (RFID Labels)
7. Tagged apparel products (samples)

Very specific requirements - please mention and justify any other technical issues or requirements that may be important for your demonstration (e.g. cars, lorries, antennas, nitrogen cooling bottles, etc). If there are any safety or security issues, requiring special treatment or location than please mention them here
(empty)

This exhibit is involved in an EU programme
Yes
Programme: FP7
Project acronym: ASPIRE

Project number: 215417

Remarks

While this proposal is submitted under the FP7 project ASPIRE, it will include dissemination material and presentations from three other EU projects that are closely related to ASPIRE, in particular:

-The ICT-PSP RFID from Farm to Fork (RFID-F2F) PilotB project, which is planning pilot operations to demonstrate the use of RFID (for localisation and identification) and mobile WSN (for environmental monitoring) throughout the value chain for perishable foodstuffs (production, processing, transport, retail).

-The ICT-PSP RFID-ROI-SME PilotB project, which is organized eight distinct RFID pilot deployments for SMEs, across six European countries. The RFID-ROI-SME pilot projects, which will be presented in the booth target the following applications and sectors: (a) Automated Document Tracking and Archiving, (b) Safety on construction working sites, (c) Pilot for electronic tickets for VIP guests, (d) Construction of an interpreter of RFID pulses Pilot in the plastic film industry, (e) Cable Trading Logistics, (f) Security Systems, (g) Intelligent Manufacturing and Manufacturing Quality Control Pilot, (h) Logistics and Apparel with transnational interoperability.

-The ICT PSP RACEnetworkRFID project, which serves as a federating RFID platform that promotes best practices, case studies, reports, guidelines, events and services to increase awareness at European and national level.