

BRIDGE

Newsletter - June 2009

BUILDING RADIO FREQUENCY
IDENTIFICATION SOLUTIONS
FOR THE GLOBAL ENVIRONMENT

Welcome to the *last* BRIDGE Project Newsletter !

This Newsletter is the last of a series of 14 Newsletters issued over the three years of the project. All previous issues are available on the BRIDGE website.

<http://bridge-project.eu/index.php/newsletters/en/>

We hope you enjoyed reading our news !

For this edition, we will report on the following topics:

- WP9 - Reusable Asset Management, Improving Asset Management with RFID
- WP10 - Products and services - Identifying benefits of EPC beyond the point of sale.
- WP13 - DiscoverRFID website translated
- Protection of RFID/EPC Systems, 3 July 2009, Leuven, Belgium
- Calendar of events
- Latest News - New training material

Any feedback or questions contact emilie.danel@gs1.org





The scope of the **WP9 Reusable Asset Management** is to improve reusable asset management in the supply chain. The objective is to evaluate, measure and propose how a secure track and trace solution based on GS1 EPCglobal standards can improve the management of Reusable Transport Item (RTI) between the trading partners.

Step 1: the Market Analysis

The first task consisted of getting an overview of the current situation regarding asset management in the supply chain. This overview provided a general base on which the project requirements and solutions could be developed, since it defines its domain objectives and context. A survey analyzing the behavior of industries regarding assets management in Europe, allowing for complete description on the employment of the two management models that exist in the supply chain:

- **The pooling model:** Assets are owned by professional Pool Operators and rented to users. Pool Operators manage the movement of their pools between trading partners
- **The exchange model:** Assets are owned directly by their users. They are exchanged in same quantities and quality between trading partners

The strengths/weaknesses analysis showed a strong lack of efficiency in the management of RTIs circulating among the supply chain. There is no common commitment among participants in the supply chain to guarantee (achieve) better RTI control. Only some parties undertake actions to improve the follow-up of assets. Moreover the level of non-commitment from other parties makes it difficult, or even impossible, to control assets in the whole supply chain. Most common problems that result from this lack of efficiency are:

- Over-stock and size of the pool

- Quantity of loss
- Fraudulent use of RTIs by non authorized actors
- Number of disputes between trading partners
- Non transparent rental costs
- Counterfeiting

Thanks to this analysis, a list of requirements needed in order to improve RTI management was drawn up.

Step 2: the requirements analysis

The second task consisted of describing the business and technical requirements to solve Asset Management issues. Based on the survey made for the first deliverable, the scope was limited to the pooling and exchange models for pallets and crates and mainly focused on the food and beverage sectors.

The analysis showed that in order to improve their asset management, all actors of the supply chain require more visibility on RTIs use. They need to track and trace assets during their own internal processes as well as during the trading partner processes. An accurate visibility on assets flow could give the opportunity to:

- Improve asset use with better rotation and therefore reduce over stock or pool size
- Identify the company responsible for

causing problems and therefore reduce damages, losses, fraudulent uses or counterfeiting

- Optimize exchanges with partners and therefore reduce quantity of disputes
- Track and trace the goods contained in the asset by tracking and tracing the asset itself

- **Data exchange:** The supply chain is an “open loop” world and Asset Management involves multiple trading partners. Therefore, if companies want to improve their visibility, they need to exchange relevant information with their partners about asset movement in the flow. Certain information needs to be stored in an Information System and shared with partners such as: Asset code, Asset quantity, Asset location, Asset disposition.

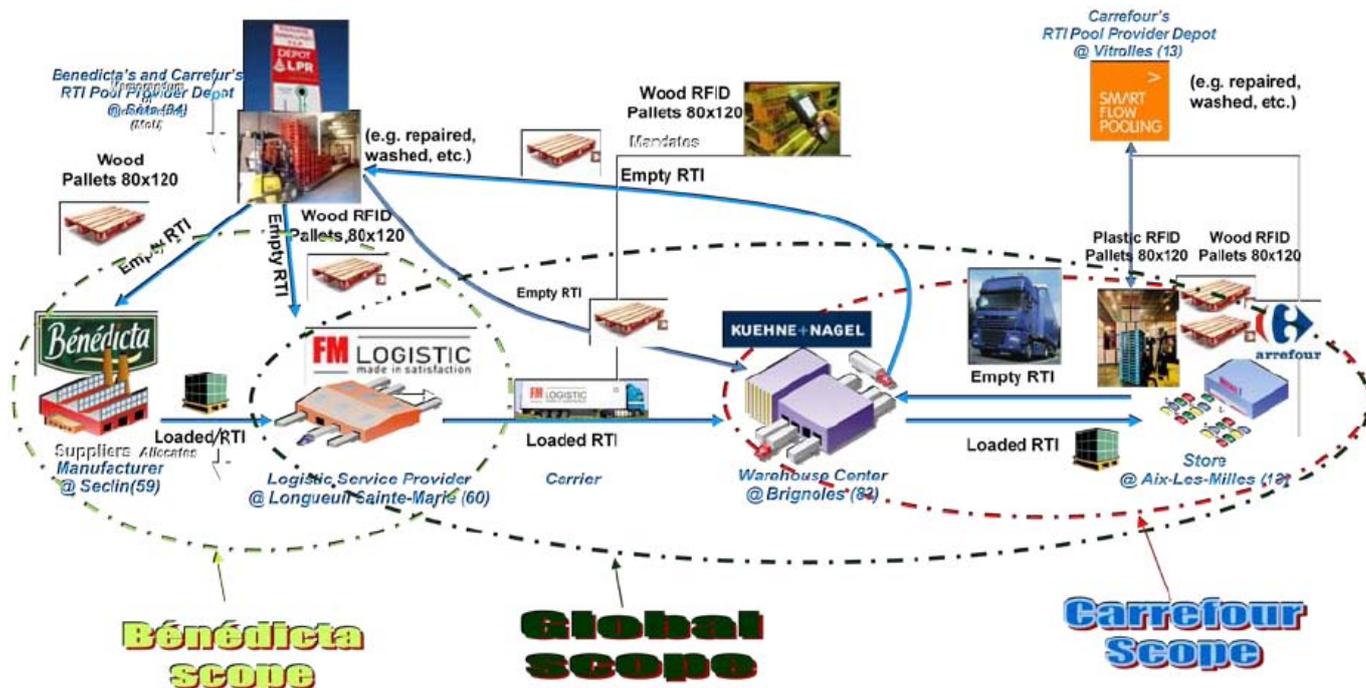
Visibility improvement depends on three functional requirements:

- **Identification:** Assets can be “traced & tracked” in the supply chain if and only if they are identified with a code. This code must allow a company to distinguish one type of asset from another (sort of asset dimension, brand, composition, etc) and one unique asset among others (for reason of traceability)
- **Automated data capture:** Companies need to automate their processes in order to improve their productivity (i.e. reduce time per process) and their efficiency (better quality of data collected). Barcode and RFID tags are the best data carriers to use for this automated identification

For all of these functional requirements, GS1 and EPCglobal have developed a set of standards such as the GRAI code, the GS1 128 Barcode, the Gen2 technology, EDI messages and EPCIS events. The next step of WP9 will allow them to be evaluated during a pilot phase in order to find how they could be used by trading partners to reach the objectives.

Step 3: the Business Case analysis

The aim of the third step of WP9 was to define the different way of solving the business



General scope of the WP9 pilot

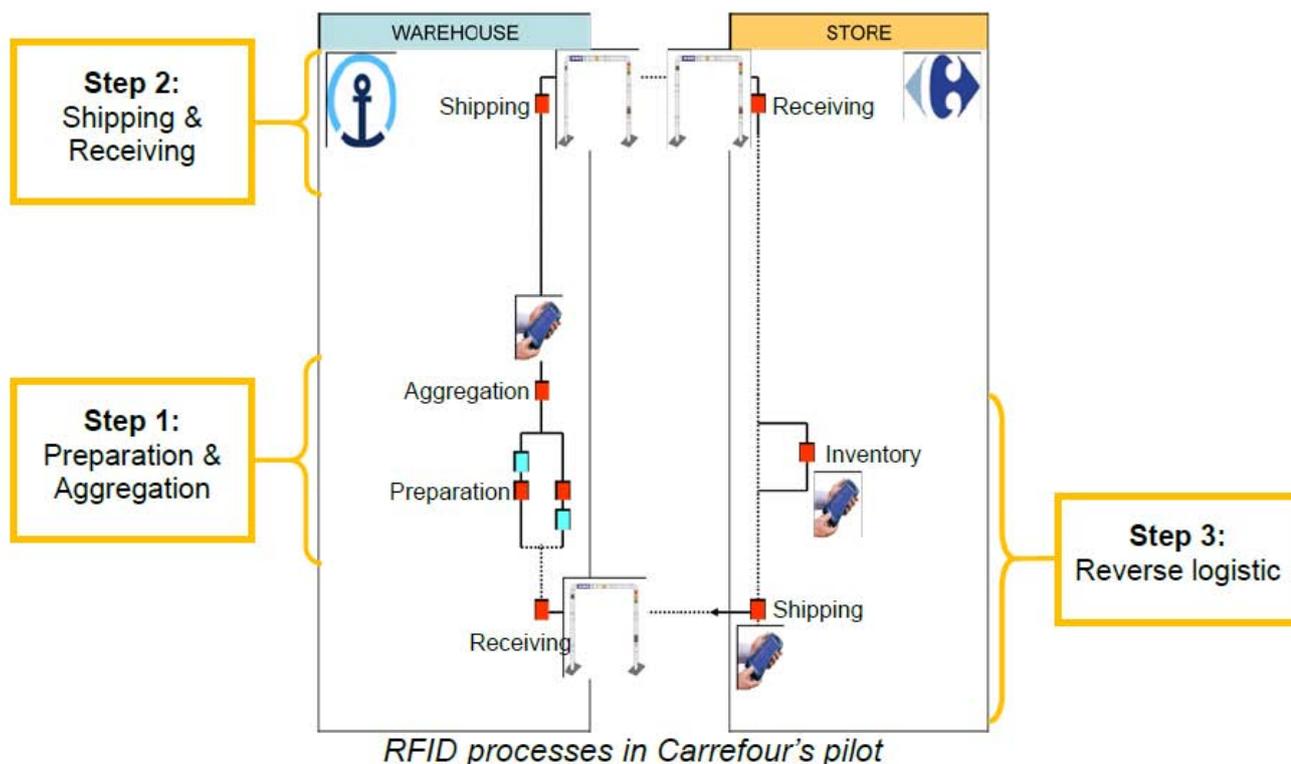
requirements of reusable asset management by using RFID and EPC Network. The main idea of the WP9 members was to develop two business cases, one concerning a manufacturer and another concerning a retailer. The goal was therefore to use these business cases to launch two semi-closed loop pilots and one global open loop pilot. In order to reproduce a typical supply chain, the WP9 group was composed of a food manufacturer (Bénédicta), its logistic provider (FM Logistics), a retailer warehouse (Carrefour but operated by Kuehne Nagel), a store (Carrefour) and, of course, two pool providers (LPR and Smart Flow pooling). It was decided to only focus the analysis on pallets in a pooling model, which represent one of the most commonly used asset management in the European retail.

The two business cases addressed all the different ways to solve the business requirements with technology like RFID and EPC Network. For the actors, they detailed the scenarios of GRAI codification, asset tagging with RFID tags, use of RFID readers in the logistic processes, generation and exchange of EPCIS events between IT systems of the trading partners, and evaluated the cost/benefit of the solution.

Step 4: the description pilots

Two pilots were planned, one with Bénédicta (manufacturer) and one with Carrefour (retailer), but only the retailer pilot took place. The Carrefour pilot aimed to track and trace empty pallets and their shipment (the goods) from a warehouse to a store and vice-versa. It started in June 2008 and ended at the beginning of November 2008 which resulted in the exchange of a total of 5264 RFID pallets. Each pallet was tagged with two tags encoded with the same GRAI and was identified at each step of the logistic flow (see figure below)

The pilot results showed that two tags fixed in diagonal opposite plots of the pallet permitted to guarantee high rate of readability during all the logistic processes. However, the location of the tags has to be studied, especially to ensure resistance from electromagnetic phenomenon (detuning, absorbing, and reflexion) and damages due to the harsh environment. The results also showed that it is possible to track and trace goods by tracking and tracing pallets if an aggregation between the



SSCC(s) and the GRAI is managed in the data base and shared with authorized trading partners. Finally, the pilot demonstrated positive improvements of visibility due to RFID and EPCIS event exchange.

Step 5: the results and recommendation analysis

This step consisted of matching the pilot results with the business cases and requirements in order to validate the expected benefits and propose a set of recommendations of GS1 and EPC standards for asset management improvement.

Many business opportunities such as increase of number of rotations per pallet, the identification of locations where problems occur, improvement of process productivity and efficiency or optimization of partners account management were confirmed during the pilot. Moreover, the possibility to track and trace goods by tracking and tracing assets offer a fantastic opportunity to improve Asset Management as well as Supply Chain Management.

The experimentation in a real context during the pilot phase allowed also to propose a set of technical requirements concerning tag selection, tag encoding, tag fitment, reader configuration, and of course Information System infrastructure for companies who want to improve their asset management by using RFID and EPCglobal standards.

Step 6: the guidelines and dissemination

This last task concerns the dissemination of the work done since the beginning of the project. Based on the conclusions of WP9 and other work packages, 4 deliverables are needed to improve reusable asset management:

- A Technical Guideline to help solution providers to understand the market needs and develop efficient solutions
- An Application Guideline to help end-users to implement the technology
- A Financial tool to help companies to evaluate the costs/benefits of the solution
- A training tool kit to help companies to plan training sessions on RFID asset management

Further information WP9 please contact:
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WP10 Products in Service

Identifying benefits of EPC beyond the point of sale



WP10 (Products in Service) has focused on the consumer electronics sector, investigating many benefits of unique serialisation, not only within supply chain logistics up to the retail store, but also looking at after-sales processes such as warranty management.

The Sony pilot extends across the supply chain from a factory in Barcelona, where Bravia TV sets are manufactured, through a distribution centre in Tilburg, to the Sony Style retail store in Berlin, then onwards to Sony's network of authorised repair centres.

Much of the initial work was concerned with upgrading manual data capturing processes to fully automatic processes, to improve the efficiency of operations. An example of this is paperless warranty management, through which it is possible to determine the date when a specific product was purchased by the customer - and to determine whether or not the product is eligible for repair under warranty, even if the customer can no longer find the original printed receipt or returns the product to a store or service centre other than the store where they originally purchased the product.

Deployment of Discovery Services from WP2

More recently, WP10 has been the first BRIDGE business application work package to deploy the Discovery Service prototype that was developed in BRIDGE WP2 by AT4 wireless and AIDA - This allows each organisation in WP10 pilot to create a record within the Discovery Service for each product instance for which it holds some information, typically within the EPCIS repository of that organisation. Within the supply chain, this typically occurs when each product instance is created by the manufacturer and then upon arrival at each subsequent site or organisation through the supply chain (including any post-sale arrivals at service centres or dedicated repair centres), even though each of those organisations may hold several detailed events and other information about the specific product instance within their EPCIS repositories and other systems.

Although the number of organisations involved in the current WP10 pilot is relatively small, the deployment of Discovery Services allows first hand experience with EPC data sharing concepts in terms of usability, technical performance and functionalities. It also paves the way for a larger roll-out, since it provides an important scalability mechanism for extending to include a wider range of products as well as additional factories, distribution centres, retail stores, service centres and repair centres that are associated with them.



All in one solution developed for the WP10 pilot. This pillar contains antennae, reader, middleware and EPCIS repository

Alignment with EPCglobal standards

Like the pharmaceutical traceability pilot (BRIDGE WP6), the Sony pilot has also experimented with the use of RFID in addition to optical data carriers such as barcodes and DataMatrix symbols. RFID tags are typically only attached to the packaging during



supply chain logistics, whereas optical identifiers such as barcode and DataMatrix are used to uniquely identify each product instance, avoiding any privacy issues. Associations between identifiers (including associations resulting from changes of aggregation and containment) are recorded via the EPCIS interface provided by the RedBite system installed at each site. For almost all products, Sony already allocated serial numbers. Together with their solution provider, Sony have made use of the EPC Tag Data Translation standard and the open source TDT implementation from Fosstrak in order to construct serialised SGTIN EPC identifiers from their EAN-13 barcode identifiers and serial numbers.



Goods detected by antennae pillar

The use of Auto-ID technologies such as RFID and EPC enables easier data capture at key points in the supply chain e.g. on arrival and departure at each site. Automated data capturing and the ability to identify several objects simultaneously without line of sight enable companies to increase the visibility of product flows whilst at the same time reducing the effort for manual object identification. The underlying assumption however is that the read rates are always at 100%, which is not the case in a real life situation. The Sony pilot installation and the developed

applications demonstrate how to introduce RFID into an operational environment and how to handle read rate issues in order to reap the benefits of increased productivity and visibility.

Analysis and usage of data captured using Auto-ID technology

Because each product instance can be uniquely identified, each can have its own life history with details about its creation, distribution, usage and any maintenance/repair activities, including details about parts or components that were replaced during its service life. At the level of an individual product, this has the potential to help make more informed decisions during repair or servicing, as well as for extracting maximum residual value at the end of life, especially if some particularly valuable components were only installed recently. Furthermore, when this information can be collected across a 'fleet' of products of the same type, it is possible to do data mining to analyse for any systematic performance issues across a particular product line or production batch - and to be able to take more effective and responsive remedial action. The availability of more granular information in searchable electronic format can ultimately provide better decision support tools for streamlining repair and maintenance processes.

The improved visibility enabled through the use of Discovery Services and track and trace techniques enables manufacturers such as Sony to make more selective phased product recalls to remove any dangerous or defective products from the supply chain, even before they reach the retail stores - and potentially to send more targeted advisory notices if there are any issues with the products in the inventory of particular stores or distribution centres.

Through experimental pilots, BRIDGE WP10 has been investigating and demonstrating how deployment of RFID and the EPC Network architecture can yield benefits not only within the supply chain but beyond the point of sale.

Further information on WP10, please contact Mark Harrison,
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DiscoverRFID.org translated in 5 languages Raising awareness internationally



Last year, GS1 launched a consumer oriented website to raise awareness and inform people about the benefits of the RFID technology, with a focus on the Electronic Product Code (EPC)

DiscoverRFID.org intends to communicate the benefits and potential of the technology in an entertaining and emotional way, addressing not the technology itself but the use cases (whether current or future) and the manner in which they will positively affect people's lives.

It covers a variety of life aspects, such as health, environment, leisure, travel and many more and provides a wealth of every day life examples underlining the benefits of the technology. It also explains in a simple and educative manner how the technology works and is currently applied by EPCglobal. The concept animations developed by BRIDGE are available on this website.

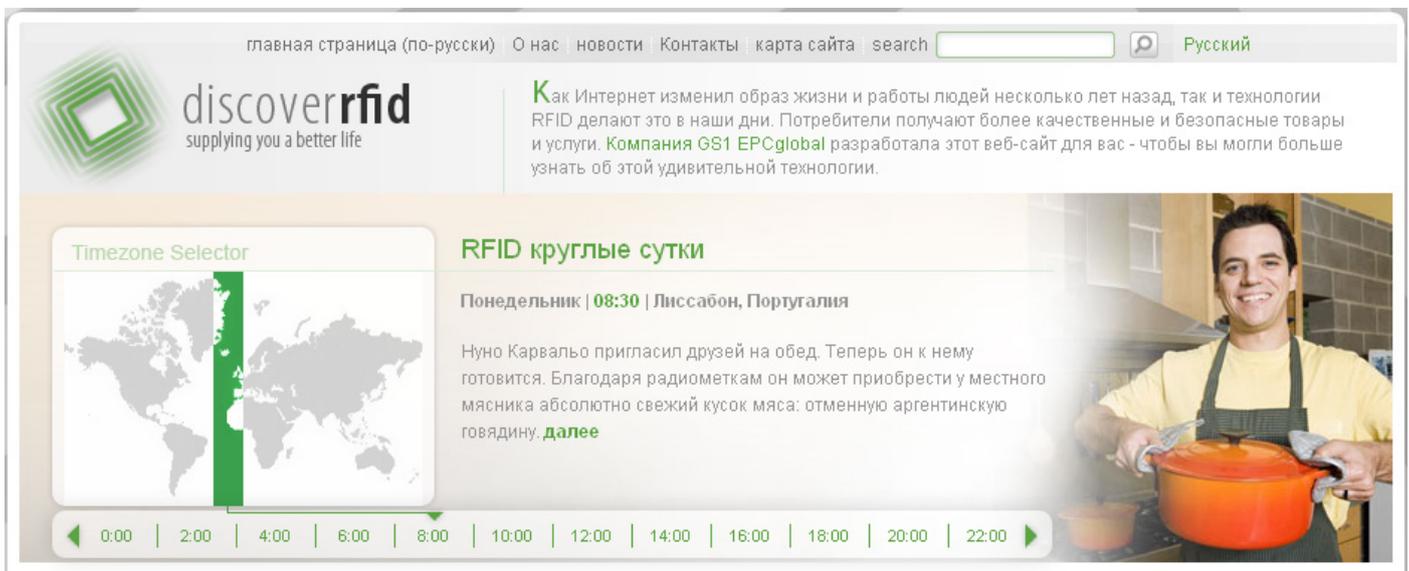
Finally, a FAQ provides answers to the most common questions and encourages visitors to send their own unanswered questions.

The website has been very successful with around 2300 visits per month raising to 3200 monthly visits in 2009.

In an effort to make it more accessible to a wider audience, and broaden the scope of visibility, the BRIDGE WP13 took the initiative to undertake the full translation of the website in 5 european languages: As of June 2009, DiscoverRFID.org has been available in French, German, Spanish, Russian and Hungarian. The different languages can be accessed via the language menu in the top right corner of the homepage and will display automatically.

Thanks to these new versions, the team expects a significant increase of the visibility of the website, therefore a better and wider promotion of the technology to consumers from all backgrounds.

More information, visit
<http://discoverRFID.org>



screenshot of the website homepage in russian





Protection of RFID/EPC Systems 3 July 2009, Leuven, Belgium



An interactive workshop on the impact of upcoming changes on secure RFID solutions will be organised by the BRIDGE project and co-hosted with RFIDsec 09 in Leuven on 3 July 2009. Participants will discuss advances in RFID security technologies, EPC Discovery Services, access control mechanisms for EPC networks and look into the latest developments in public policy and privacy regulations.

The aim is to provide solutions for cross-industry problems and to enable new secure collaborative services.

What will these security capabilities look like? What new business models and service providers might emerge? How can technology and application providers exploit these changes? How can we get these security features to market early? What changes are needed to technology standards? Will secure RFID provide significant improvements for RFID end-users and product consumers? What will be the impact on people?

This workshop will involve leading RFID/EPC security researchers and industry leaders whose businesses revolve around supply chain innovation. This powerful mix will encourage open discussion and influence the commercial and social impacts of RFID/EPC technology.

Event Details:

Date: 3 July 2009

Venue: K.U.Leuven De Valk, Tiensestraat 41,
3000 Leuven, Belgium

Event Start: 9:00 End: 15:00

More information on the BRIDGE website

<http://bridge-project.eu/>



The event will be co-located with the Workshop on RFID Security 2009, the fifth edition of a series of workshops held in Graz, Malaga, Budapest and now Leuven.

After a fruitful collaboration last year, the event is once again sponsored by the BRIDGE project.

More information

<http://www.cosic.esat.kuleuven.be/rfidsec09/>

Further information on the workshop and future workshops, please contact:

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Emilie Danel - emilie.danel@gs1.org





Calendar of events



RFIDSec09 - Workshop on RFID Security 2009



July 1-3, 2009, Leuven

<http://www.cosic.esat.kuleuven.be/rfidsec09/index.html>

This event is sponsored by the BRIDGE project

In addition, a specific BRIDGE Security workshop is organised after the RFIDsec09 on 3 July 2009 at the same venue.

Check <http://www.bridge-project.eu/index.php/RFIDsec/en/> for more information



GRIFS Workshop

30 June 2009, Washington DC, USA

<http://grifs-project.eu/index.php/events/en/>



Innovation & EPC Technology Forum

1-2 July 2009, Malaga, Spain

<http://www.gs1es.org>

Symposium on RFID Technologies & The Internet of Things

24-26 September 2009, Split-Hvar-Korcula, Croatia

<http://marjan.fesb.hr/SoftCOM/2009/index.html>



Living in tomorrow's Internet of Things world

6-7 October 2009, London, UK

<http://www.rfidglobal.eu/press/Final%20Conference.pdf>



EPC Europe Conference/ RFID Journal Live! Europe

19-21 October 2009, Frankfurt, Germany

<http://www.rfidjournalevents.com/europe/>



RFID Show

8-9 December 2009, Paris, France

<http://www.rfid-show.com/>



BRIDGE New Training Material available

Two new training courses have been developed in their first draft version by Work Package 12.

These courses are:

- The advanced Implementation aspects of EPC / RFID course that focuses on the implementation steps that are particular to EPC / RFID systems such as the system design, site analysis and system installation, security, monitoring and troubleshooting.
- The EPC / RFID for Senior Managers course that explains how EPC / RFID can impact the business processes in a way which is beneficial for all stakeholders involved. The processes and the related benefits are presented using the SCOR model that is a reference model considered cross-industry as the de facto standard diagnostic tool for supply chain management.

The Syllabi and PowerPoint Presentations for these 2 training courses are available online at <http://www.bridge-project.eu/index.php/Training/en/> in their first draft version.

The final version of this course material, that will also include the material for web-based education, will be delivered by August 15, 2009.

BRIDGE is a European Union funded 3-year Integrated Project addressing ways to resolve the barriers to the implementation of RFID and EPCglobal technologies in Europe. Seven Business work packages have been set up to identify the opportunities, establish the business cases and perform trials and implementations in various sectors including anti-counterfeiting, pharmaceuticals, textile, manufacturing, re-usable assets, products in service and retail non-food items. The project includes an important research and development program in various aspects of RFID hardware, software, network and security. A series of horizontal activities is providing training and dissemination services, enabling the adoption of the technology on a large scale in Europe for the sectors addressed by BRIDGE and beyond.

<http://www.bridge-project.eu>
If you have questions regarding BRIDGE
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