



**The European Guide to implement
EPC/RFID for Retailers and their Suppliers
Version 1, 26th March 2008**

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1. Introduction and objective

Modern supply chains are complex and involve many different companies working together to better serve the customer. EPC/RFID can clearly help all participants within the supply chain to get benefits. But in order to efficiently use EPC/RFID, the different companies involved need to agree on basic specifications and standards about how to implement this technology. Even when standards exist, there are still many ways to approach the deployment of the standard the related topics. This document should address those questions and give some answers to help companies in the deployment of EPC/RFID in Europe.

The creation of European Guide has been initiated by Carrefour and coordinated by GS1 in Europe by using the platform of the European Adoption Programme (EAP) to bring major stakeholders in the retail environment around one table. GS1 has invited major retailers and their suppliers in Europe to work together on a common document to create a guideline and reference of good practices to facilitate any future EPC implementations in Europe. This is not supposed to be a retailer driven or imposed exercise but a joint collaborative effort to further drive adoption of EPC in Europe.

The document is structured in a Q&A format giving answers to the major questions raised in the marketplace. The answers in this document are focused at a high level so that management can be better informed on the key issues and also have access to relevant complementary information.

The following companies have been working together on this document and agreed on its content:

- Carrefour
- Henkel
- Kraft International
- Metro Group
- Nestle
- P&G
- Rewe Group

The European Guide is supposed to be an “active” document on which the companies involved will continue to work on additional questions and answers raised in the marketplace. The version 1 of this guide has been released during the European Adoption Programme co-chair meeting in Neuss on the 26th March 2008. Version 2 will have additional technical and further management related questions and answers.

We invite other retailers and manufacturers in Europe to contribute to this document in order to build on this foundation and improve its usefulness. The companies do not need to be necessary GS1 EPCglobal members but the focus remains on the adoption of the EPC technology. Please contact or send your comments and feedback directly to the GS1 coordinator Stephane Pique (stephane.pique@gs1eu.org).

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2. Questions and answers

2.1 I have seen reports that retailers are using RFID already, what processes are they trying to improve with this technology?

Supply chain has been the major focus, the world's leading retailers and suppliers are working in this area although the actual use cases do differ. The most popular in the area of logistics is the ability to check goods in by putting RFID on each shipping unit. When the supplier makes available shipping information to the business partner, he includes the unique identification number for each pallet allowing the retailer to automatically receive the goods when that the Electronic Product Code (EPC) is read from a tag.

2.2 What are the main benefits that companies are trying to achieve by using the technology?

- Improve visibility and enhance traceability
- Improve availability of products on the shelves
- Improve customer experience
- Optimize warehouse and distribution labour efficiency
- Improve the speed of the checkout process
- Improve product quality and freshness
- Optimize inventory level to reduce costs
- Improve forecasting and planning with a more demand oriented approach
- Prevent theft

2.3 What are the major use cases?

The retailers are working on the following use cases to be implemented within the next three years:

- Asset management (RTI – Reusable Transport Items)
- Inventory management for apparel, media and entertainment and consumer electronics
- Warehouse management
- Return management
- Promotion execution

2.4 Are there industry standards for these use cases or retailer specific rules to follow?

Yes, there are standards published by GS1 EPCglobal which have been developed and managed by end-users such as the authors. Those companies strongly recommend implementing GS1 EPCglobal standards as described in this document and published on the GS1 EPCglobal website: www.epcglobalinc.org/standards.

2.5 Are there any examples of suppliers finding their own internal value?

Examples exist where suppliers use RFID to improve asset management, tracking and control within their own operations. Trials are underway to understand how RFID can improve visibility within the supply chain between their suppliers and customers so that product availability improves and consumer satisfaction is enhanced.

2.6 How can RFID help improve the consumer experience of products and stores?

RFID can be used to make packaging and products more interactive. For example RFID can be used to give consumers more information about the product – ingredients, nutrition, safety, traceability, how to use information etc. RFID can also be used to help improve product flows to stores: improving on shelf availability for the consumer and the freshness of the products.

2.7 What GS1 data standards are needed for what?

It is recommended to use the GS1 Identification Keys. It is a globally managed System of numbering and marking to identify Trade Items (GTIN), Logistic or Transport Units (SSCC), Locations and legal entities (GLN), Assets and Reusable Transport Items (GRAI, GIAI), Service Relation and more. GS1 ensures the global unambiguous uniqueness of the identifier in the open Supply and Demand Chain¹. For EDI (Electronic Data Interchange) it is recommended to use the GS1 EANCOM², a detailed Implementation Guideline of the UN/EDIFACT Standard messages using the GS1 Identification Keys and to conduct

¹ For additional Information please contact your local GS1 Member Organization or use the GS1 General Specifications, January 2008, Version 8.0

² You can find additional information on <http://www.gs1.org/productssolutions/ecom/> or contact your local GS1 organisation

efficient Internet-based electronic commerce GS1 XML³ schemas provide a global business messaging language of e-business. EPCIS⁴ builds an Interface for data sharing, both within and across enterprises. This sharing is aimed at enabling participants in the EPCglobal Network to gain a shared view of the disposition of GTIN (or EPC) bearing objects within a relevant business context.

2.8 Are there any best practices on how to use EPC Gen2?

The EPCglobal RFID Implementation "Cookbook" is targeted towards readers who already know about RFID and intend to get involved in using the technology. The Cook Book includes information from EPCglobal working groups, of which many members are early RFID adopters. The objective of the Cookbook is to provide companies with practical and timely information needed as they prepare for RFID pilot and implementation projects by taking advantage of the learning already captured by the EPCglobal member community.

Please go to: www.epcglobalinc.org/what/cookbook

2.9 What are the components for the tag price and the corresponding costs involved?

The tag price is influenced by the following factors:

- Quantity
- Form factor (size, material, etc.)
- Memory size
- Features and functionalities
- Manufacturer

Depending on the above factor, the price range for basic tags on the market is between 0.10 and 0.25 EURO (as per end of 2007). The trend of the past and the future stays that the price drops with time.

2.10 Is there a tool for evaluating an ROI?

There are several ROI calculators available on the internet:

³ You can find additional information on <http://www.gs1.org/productssolutions/ecom/> or contact your local GS1 MO

⁴ For more information look at: <http://www.epcglobalinc.org/standards/epcis>

- www.gs1-germany.de (RFID Kalkulator)
- www.autoidecenter.org
- www.indicod-ecr.it/prodottiservizi/index.php?id=171

2.11 What are the radio frequency usage rules in Europe?

All available RFID tags and readers sold in the European Single Market need to comply with EU equipment and radio regulations. Without compliance with those rules, such products can not be legally acquired in Europe.

Therefore, any RFID systems you buy in Europe can be deployed on the basis of current regulations. The applicable rules allow for the operation of efficient RFID systems without undue constraints in terms of performance compared to the US. In fact, the evolution of technologies and standards, particularly with respect to UHF-systems, has made it possible to utilise even the limited radio spectrum currently available in a very efficient way.

In addition to the improvements achieved so far, there are initiatives and studies on the way to further improve the performance and to enlarge the available radio spectrum in Europe. Those efforts will lead to even better performance than possible today and are aimed at improving further the scalability of the solutions in Europe to ensure mass adoption.

2.12 What kind of centres and labs are available for testing RFID on my products?

Six European EPC Labs agreed to work closely together and formed the European EPC Lab Network supporting the adoption of RFID and EPC technology in Europe. More information is available under: www.gs1eu.org/labs

2.13 Are there any guidelines or code of conduct in the usage of RFID?

It is recommended to use the official public policy guidelines published by GS1 EPCglobal. These guidelines are intended to complement compliance with the substantive and comprehensive body of national and international legislation and regulation that deals with consumer protection, consumer privacy and related issues. They are based, and will continue to be based, on industry responsibility, providing accurate information to consumers and ensuring consumer choice.

As new developments in EPC and its deployment occur, these Guidelines will evolve while continuing to represent the fundamental commitments of industry to consumers. It is hoped that further developments, including advances in technology, new applications and

enhanced post-purchase benefits, will provide even more choices to both consumers and companies on the use of EPC tags. The sponsors of EPCglobal support continuing their focused efforts in these development areas to assure responsible and effective development of both the EPC technology and these Guidelines. You can find the mentioned guidelines under: www.epcglobalinc.org/public/ppsc_guide

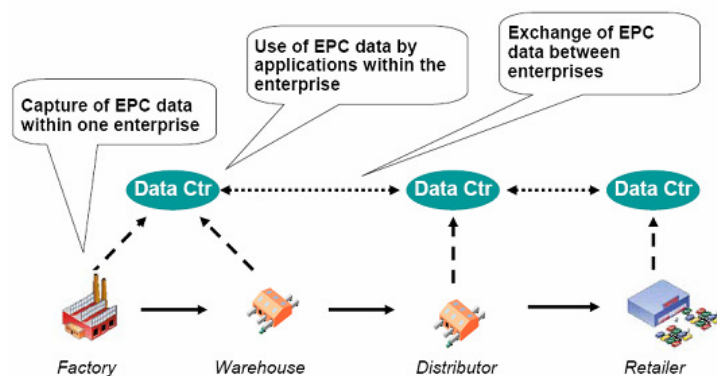
GS1 EPCglobal has also developed a website called www.discoverrfid.org, a consumer-oriented website to enable to understand what is behind RFID and EPC and how the technology helps companies, institutions and organisations make life easier and safer – in other words, better.

2.14 We use a GS1 barcode. If I put an RFID tag in addition, do I need to change the current GS1 identification key?

No, there is no need to change the current bar code number (GTIN) if a RFID Tag is put in addition onto a product. The brand owner is responsible to distinguish between items with or without an EPC Tag if he supplies both. Identical items, with and without an EPC Tag, must have the same GTIN to enable the smooth operation of the Supply Chain.

2.15 What is EPCIS and how does it work?

EPC Information Services (EPCIS) is an EPCglobal standard for sharing EPC related information between trading partners. EPCIS provides new capabilities to improve efficiency, security, and visibility in the global supply chain. EPCIS facilitates internal data capture as well as external sharing of information about movement and status of goods in the physical world. Companies can exchange information by "talking the same language". EPCIS provides standard interfaces that enable the development of business applications with a much finer granularity of detail.



Picture: Introduction to EPCIS, October 2007. EPCglobal JAG meeting in Hong Kong

2.16 What kind of information can be exchanged?

The EPCIS enables the exchange of information on the What, Where, When, and Why of events occurring in any supply chain. This is important business information, such the time, location, disposition and business step of each event that occurs during the life of an item in the supply chain. While EPCIS is an integral part of the EPCglobal Network, it differs from elements at the lower layers of the Architecture in three key respects:

1. EPCIS deals explicitly with historical data (in addition to current data). The lower layers of the stack, in contrast, are oriented exclusively towards real-time processing of EPC data.
2. EPCIS often deals not just with raw EPC observations, but also in contexts that imbue those observations with meaning relative to the physical world and to specific steps in operational or analytical business processes. The lower layers of the stack are more observational in nature.
3. EPCIS operates within enterprise environments at a level that is much more diverse and multi-faceted. This is due to the desire to share EPCIS data between enterprises which are likely to have different solutions deployed to perform similar tasks. In part, it is also due to the persistent nature of EPCIS data.

Generically, EPCIS deals in two kinds of data: event data and master data. Event data arises in the course of carrying out business processes, and is captured through the EPCIS Capture Interface and made available for query through the EPCIS Query Interfaces. Master data is additional data that provides the necessary context for interpreting the event data. It is available for query through the EPCIS Query Control Interface, but the means by which master data enters the system is not specified in the EPCIS 1.0 specification.

2.17 Does the EPCIS replace EDI?

No. The EPCIS standard provides a way to share high volume, detailed information about events and status among cooperating partners. EPCIS does not address purchasing, forecasts, bidding, billing, etc. that are typically exchanged via EDI in a business transaction between two parties.

2.18 Should our company implement GS1 or EPCglobal Standards?

The authors of the document strongly recommend to use the GS1 EPCglobal standards and therefore to join the organisation. The prerequisite for creating an EPC number is to be member of EPCglobal.

2.19 What is the process for keeping data in Sync between the parties (product changes/ new products / management of discontinuations)?

The GS1 Global Data Synchronisation Network (GDSN) enables the management of product information. Some examples are product description, packaging dimensions, GTIN reference, weight, etc. EPC data are related to the physical flow of the item during its life cycle. The link between these two worlds is the item identification number e.g. GTIN and EPC association. The synchronization principles are not affected by the EPCIS introduction.

2.20 Who should read my data and which data?

The collaboration agreement between the trading partners will define the access rights to specific data. A company could leverage their EPCIS repository for capturing business events from middleware, integrating the EPCIS repository into the enterprise architecture via web services, and allowing trading partners to access data in the EPCIS repository in a secure manner via the query interface. To have access to Data in a secure manner there are two forms of security described in the EPCIS specification – authentication and authorization.

2.21 How should an EPC in the occurrence of the SGTIN and SSCC be reflected in a despatch advice?

GS1 Germany and the relevant national boards have developed a recommendation for the use of the SGTIN and SSCC within the EANCOM DESADV. The relevant codes to be used have already been submitted and approved by the GS1 GSMP (Global Standards Management Process). Currently the entire national recommendation has been forwarded to GSMP in order to approve the document on a global level to ensure that user companies transmit the SGTIN and SSCC in the EANCOM DESADV in the same way worldwide.

3. Acronyms

DC	Distribution Center
DESADV	Despatch Advice
EANCOM	EAN Communication
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
EPC	Electronic Product Code
EPCIS	Electronic Product Code Information Services
GIAI	Global Individual Asset Identifier
GLN	Global Location Number
GTIN	Global Trade Item Number
GRAI	Global Returnable Asset Identifier
GSMP	Global Standards Management Process
JAG	Joint Action Groups
POS	Point Of Sales
ROI	Return On Investment
RTI	Reusable Transport Items
SGTIN	Serialized Global Trade Identification Number
SSCC	Serialised Shipping Container Code
XML	eXtensible Markup Language

4. Additional resources

Auto-ID labs	www.autoidlabs.org
GS1	www.gs1.org
GS1 EPCglobal	www.epcglobalinc.org
GS1 in Europe	www.gs1eu.org
METRO Group	www.metro-link.com

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