GS1 EPCglobal Standards in the Consumer Electronics Industry

Creating visibility throughout the total product life cycle

What's in it for me?

The GS1 EPCglobal Consumer Electronics Industry Action Group (CE IAG) explores the benefits of EPC and RFID and the visibility data it supports to enhance business processes and customer service . The aim of CE IAG is to improve the Consumer Electronics (CE) global supply chain in all aspects of the product life cycle. Consumer electronics manufacturers, distributors and retailers are working toward the day when life-cycle tracking of computers, TVs and other electronic products will deliver benefits for businesses, consumers and the environment.

With the globalization of the CE business model, increasing visibility and optimizing processes become central to an organization's success. CE companies of all sizes are now forming partnerships and alliances in order to gain greater access to customers on domestic, cross-border, and global markets. Hence, the need for standards behind this technology enabling the secure sharing of real-time information between trading partners. This allows businesses to monitor the location and state of individual items as they pass through the supply chain thereby increasing visibility, safety, security, efficiency and traceability.

EPC/RFID enables you to acquire much more information about events in your supply chain. This detailed and frequent collection of event data provides a revealing view of how your supply chain is operating. GS1 EPCglobal standards enable sharing of data, however collected, in ways that drive common interpretation of that data. It's this unique ability to have in-depth visibility of what is really happening in a company's operations that gives them the opportunity to establish trends, identify problems and subsequently resolve them resulting in improved key performance indicators. This impacts a company's profit and loss and balance sheet as well as improving customer service.

It's all about Visibility	
Inventory Visibility • Product Visibility • Asset Visibility • Repair, Maintenance and Recycling	**Visibility enables traceability of products**
Brand Protection • Counterfeit • Diversion, Gray Market • Channel Management	**Visibility enables traceability and authentication of products**
Chain of Custody • Track and Trace • Electronic Pedigree	**Visibility supplies the custody information for creating authenticated chain of custody**

Challenges of the Consumer Electronics Supply Chain

The Consumer Electronics Supply Chain faces particular challenges that EPC-enabled RFID can help address:

• Consumer Electronics items tend to be of a high average value, are used for longer periods, in some cases more than 10 years and require more secure handling in the supply chain. Therefore, tags and applications must be reliable and sustainable.

• A smooth passage through total product life cycle is essential for cost competitiveness and customer service as CE supply chains can be geographically dispersed with a high ratio of goods manufactured in Asia then shipped into markets all over the world.

• After they are sold, CE items may be repaired and/ or maintained by manufacturers or services providers during usage. This means that product information needs to be accessible not only by manufacturers but by other supply chain partners such as retailers, service providers and recycle companies. As a result, stringent security specifications for tags and systems are required.

• Most CE products must be tagged and monitored at item level in order to ensure better services at the point of sale as well as improved repair and maintenance services. This means that item level tagging on each product is necessary while ensuring that consumer privacy is protected.

Benefits of EPC/RFID Technology in the Consumer Electronics Supply Chain

• Business:

RFID tags on products will enable lifecycle management of consumer electronics and provide traceability from the procurement of parts and components to manufacturing, distribution, sales, servicing and maintenance, and recycling. This will ensure that consumer electronics products are dependable, safe, and easy on the environment.

RFID, EPC and the supporting data exchange standards will facilitate collaboration among CE supply chain partners leading to a reduction in the complexity of their global supply chains, higher profitability and improved productivity.

Further advantages, as item-level tagging becomes a reality for the CE Supply chain, include improved product recall capacity, product authentication, and aiding in the efficient administration of consumer guarantees. EPC/RFID technology will also significantly reduce the widespread problem of counterfeit products which is estimated to cost over $500 billion annually. More specifically, in the European Union alone, the number of registered cases of counterfeit products increased by 400% over the last 5 years.

• After Sales Services:

Consumers are placed to enjoy a number of immediate advantages from EPC-enabled Consumer Electronic products in the form of improved product availability and greater reliability in terms of quality, safety and supply chain security.

By integrating a product serial number at Item Level into the EPC encoded into an RFID tag, improvement of after sales services will be achieved, ensuring a much more efficient service experience for customers. Product returns, complaints and warranty services can be done without today's required paper receipt. An RFID tag attached to or embedded in the product acts as a lifelong sales slip and makes conservation of paper receipts obsolete. A unique and quick identification of the returned item will reduce waiting times and improve the customer service quality significantly.

By attaching RFID tags containing EPCs on products, the operators responsible for repairing defective products can easily obtain repair and maintenance records, invoice the appropriate party, and rewrite warranty information accurately.

When problems occur with CE products after many years of use, responding quickly requires much time and energy. RFID tags containing EPCs on products will make it possible to handle such problems in a timely manner.

Most warranty validation today is done at the item and not the component level. If a tag of sufficient capacity is used then the extended user memory can be used to record key warranty related data such as date and place of sale. This too can ensure that the malfunctioning component within the item is the one that was built into it at the time of manufacture and not one substituted from another item that is no longer under warranty.

• Environment:

Having RFID-enabled CE products will help reduce the amount of waste that pollutes the environment, since only defective components rather than whole products are discarded.

The costs of collecting and sorting used consumer electronics are high. Some countries require manufacturers to take back and recycle the products they sell (or pay for their take-back and recycling) when consumers are ready to dispose of them. Today's end of life service providers have to identify and separate the different recycle streams for CE products manually or with expensive sensors. EPC-enabled EOL processes will aid supply chain partners when the time comes to collect and sort used consumer electronics.

When products are to be discarded, RFID tags will help achieve efficient recycling. Referring to detailed product information on the tags enables proper handling of hazardous materials, collection of valuable rare metals, and the recycling of parts and components. RFID tags will provide the proof of proper handling by recycling operators, which will assure environmental protection.

Eventually, RFID tags could even help ensure that manufacturers comply with regulatory mandates for disposal of toxic substances (many electronic products contain lead, mercury and other hazardous substances).

CE Global Supply Chain Partners

Total product life cycle management takes a global approach to supply chain processes. EPC enabled RFID can help drive business operations efficiencies for multiple supply chain partners:

• Consumer Electronics Manufacturer:

Receiving and inventory management of raw materials and components, packaging materials, manufacturing, commissioning, aggregating items to pallet, finished product inventory management, plant localization, order picking, shipping, transportation, after-sales services, efficient product recall processes in terms of defective product.

• Logistics Providers:

Receiving and product inventory management, aggregate pallets to container, consolidation/deconsolidation, order picking, tracking, shipping, distribution.
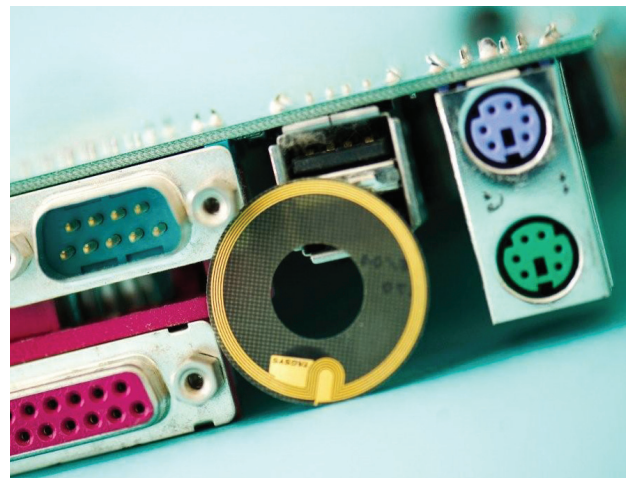
• Retailers:

Receiving of pallets and products, inspecting products, inventory management, order picking, selling of product, administration and traceability of products. convenience by supplying product related information, anti-theft management and after-sales services.

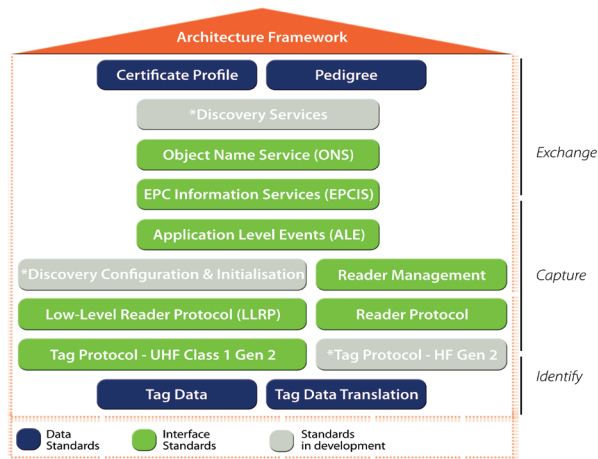• End of Life Process Providers:

Receiving of products, inventory management, recycling, ultimate disposal, order picking, distribution, administration and traceability of products.

About GS1 EPCglobal Standards and EPCglobal Inc

GS1 EPCglobal Standards are a set of integrated industry-driven standards which have been developed to meet user requirements enabling the identification of objects, data capture and sharing of information among partners throughout the supply chain. These standards are developed within the framework of EPCglobal Inc.

EPCglobal Inc is a subsidiary of the global not-for-profit standards organization GS1, and supports the global adoption of the Electronic Product Code as industry-driven standards to enable accurate, immediate and cost-effective visibility of information throughout the supply chain.

About the GS1 EPCglobal Consumer Electronics Industry Action Group

• Mission and Goal:

The Consumer Electronics Industry Action Group is one of an expanding number of industry focused global RFID standards groups developed under the GS1 EPCglobal standards framework. The GS1 EPCglobal Standards Development Process is critical to ensuring that the standards developed and ratified by the EPCglobal Board of Governors are user driven, global and royalty-free wherever possible.

The objectives of the CE IAG are to develop RFID enabled business processes through the utilization of EPC to improve the Consumer Electronics supply chain in all aspects of the product life cycle.

Additionally, the group aims to improve the repair operation process to ensure better customer satisfaction. Consumer Electronics organizations involved in the CE IAG will gain the benefits of standardized EPC enabled business processes in their global multi-partner supply chains.

• Target audiences

The CE IAG is targeting supply chain partners with an interest in adopting RFID enabled business processes in the Consumer Electronics supply chain; consumer electronic manufacturing companies, distributors, wholesalers, retailers, providers of end of life processes as well as CE industry associations, solution providers and service providers such as test centres and certification organisations.

• Our relevance

The Consumer Electronics industry faces many challenges in today's global economy. The CE IAG has identified examples where EPC/RFID enables competitive advantages thanks to supply chain visibility and efficiency by reducing out of stocks, reducing theft and diversion, and increasing factor utilization and productivity. Improved visibility enhances asset management, and supports a broad range of safe and secure initiatives such as anti-counterfeit, supply management, and traceability to ensure products are dependable, safe and easy on the environment.

The CE IAG has described high-level business scenarios and their associated use cases in order to identify and drive business requirements in the context of GS1 EPCglobal standards concerning Identification, Data Capture and Data Exchange. By describing high priority use cases from a global perspective, the CE IAG will derive the maximum possible benefit from the implementation of EPC/RFID.

• Why Sony and HP are leading the CE IAG initiative

"RFID technology based upon GS1 EPCglobal standards enables accurate, immediate and cost effective visibility of information throughout the life cycle of Consumer Electronics products, gained through our participation in EPCglobal CE IAG activities. It is beneficial not only for manufacturers like us, but also for other supply chain players such as; distributors, logistic service providers, and recycle operators. The most important thing is however, our customers are set to benefit too".

Tatsuya Yoshimura
Co-Chair EPCglobal CE IAG
RFID Standards Research and Promotion Manager
Sony Corporation

"With the globalization of business, optimizing processes becomes central to an organization's success. EPC/RFID technology, based upon GS1 EPCglobal standards, enables our company to maximize efficiency by solving problems within the supply chain and reducing operational complexity at facilities around the world which also allows us to help our customers. Hence, our commitment to play a leading role in the CE IAG, a platform of different stakeholders who are keen to solve the current and future challenges in the Consumer Electronics supply chain."

Greg Edds
Co-Chair EPCglobal CE IAG
Worldwide RFID Program Lead
Hewlett-Packard Company

How to Join the GS1 EPCglobal Community

To find out more about the GS1 EPCglobal community, including becoming a subscriber, and to participate actively in the development and implementation of global standards to create visibility and improve efficiency throughout the supply chain, please visit http://www.epcglobalinc.org/home.

Consumer Electronics companies are more than welcome to join the activities of the EPCglobal Consumer Electronics Industry Action Group. In order to participate in this group as well as the GS1 EPCglobal Standards Development Process, it is mandatory to become an EPCglobal subscriber.

For more information regarding the EPCglobal Consumer Electronics Industry Action Group, contact Audrey Kremer at audrey.kremer@gs1.org or your local GS1 Member Organization (contact details are available on www.epcglobalinc.org).