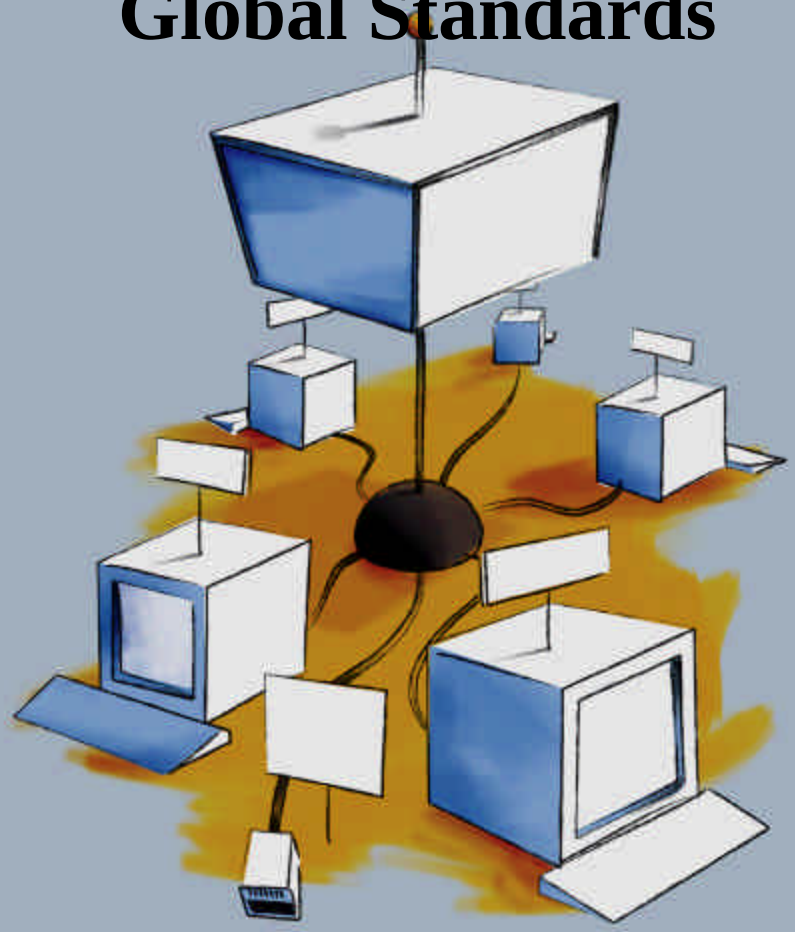
Global Technology Initiative

E-Commerce and Global Standards



FOOD MARKETING INSTITUTE

GMA GROCERY MANUFACTURERS OF AMERICA
MAKERS OF THE WORLD'S FAVORITE BRANDS OF FOOD, BEVERAGES, AND CONSUMER PRODUCTS

AIM®

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Food Marketing Institute and the Grocery Manufacturers of America
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Introduction[1]

Since 1999, manufacturers and retailers have spent almost $1 billion dollars on a broad range of e-commerce activities designed to make the supply chain more effective but tangible results are only just beginning to be realized. In order for the industry to move e-commerce forward, the key foundational elements identified in this position paper require aggressive executive leadership throughout the food distribution community.

It is no exaggeration to say that without this aggressive leadership on the issues identified here, we run the risk that much of this $1 billion dollars spent over the last three years will have been wasted.

The short-term challenge is to complete the development of the basic building blocks for e-commerce activities worldwide. While there have been extensive discussions about these building blocks, there is still a debate over where the line should be drawn between open industry utilities and private enterprise solutions. In addition, there is a growing gap between early adopters and skeptics. There is even a gap within some companies between the executive suite that believes in the need for supporting basic e-commerce building blocks and a management team unable to find the payoff for laying the early foundations. All of this jeopardizes the industry's ability to achieve the required critical mass to realize the true value of collaborative electronic trading.

The key issues center around two areas:

- Global Data Standards and Data Synchronization
- Trading Exchanges

The longer-term challenge is to accelerate the development of next-generation technologies in a way that avoids repeating the mistakes of the past. The most promising of these is Radio Frequency Identification (RFID) technology that offers the potential for our industry to dramatically and fundamentally change the way business is done. The Auto-ID Center, with facilities at MIT in Cambridge, Massachusetts, Cambridge, U.K., and Adelaide, Australia (soon to be opened in Japan and China) is currently the driving force in this effort supported globally by private corporate sponsors.

Microchip and radio frequency technologies have advanced to a stage where it's feasible to place radio frequency enabled microchips containing a unique code (electronic product codes or ePCs) on pallets, cases and even individual products. These systems are now available and work is being done to bring costs into an acceptable range. The advantage of industry-wide RFID implementation is the ability to track products down to the individual item level across the supply chain without human intervention. Ensuring common global standards and an open architecture in the development of the ePC is a business imperative if the industry is to gain maximum benefits from this technology.

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[1]Acknowledgment: The information summarized in this briefing paper draws freely from several comprehensive research reports on each of these individual topics prepared by A. T. Kearney, Cap Gemini Ernst & Young and the Auto-ID Center.

E-Commerce Priorities

For the purpose of this document, we have defined e-commerce, or electronic collaboration, as "the use of a continuous exchange of information between supply chain partners to increase the efficiency and effectiveness of their businesses."

In practical terms this means continuous automated exchange of:

- Item Information,
- Transaction Information Including Pricing,
- Supply Chain Information,

all serving as a foundation for trading partners to regularly share consumer insights and to collaborate on sales forecasts, future promotion plans, and product development.

Advanced e-commerce applications like CPFR (Collaborative Planning Forecasting and Replenishment) or Scan Based Trading require a basic foundation to be in place. Each element of this foundation builds upon the others and must be developed in sequence to maintain the integrity of efficient and effective electronic trading. The building blocks are:

I. Common Global Data and Communication Voluntary Standards

Without standardized data formats and information exchange processes, suppliers and customers will need to maintain multiple data formats and systems to communicate one-on-one with different trading partners. There needs to be a common set of voluntary industry-recommended standards if we are to eliminate this need.

II. A Single Global Registry and Continuous Data Synchronization

Suppliers and customers must have identical information (correct and up-to-date item and party data) in their trading databases. Otherwise any information that trading partners exchange about purchase orders, invoices, future plans, etc., may be incorrect and unreliable.

A single global "registry" must be created to ensure the unique registration of each item, party, or location in the industry. Under the vision created by the Global Commerce Initiative (GCI-see the glossary of terms), this registry would be managed through a governance process under the authority of an expanded EAN International with the services being delivered by UCCnet as endorsed by EAN International in October of 2002. This expanded EAN International would also be responsible for setting up global synchronization standards and for certifying participants for compliance with those standards through its Global Standards Management Process (GSMP).

Executive Action Items

Objective: This paper proposes voluntary global standards with the objective of accelerating the implementation of electronic trading capabilities for the consumer packaged goods and retail industries on a global basis to enhance consumer value and improve business performance. As with all voluntary standards, companies will need to make their own individual decisions after considering these recommendations.

A. Development and Implementation of Global Standards as the Foundation for Data Synchronization

Background on Voluntary Global Data Standards

The Joint Boards and the global industry organizations are fully committed to work toward the voluntary standards set by the bodies that administer our product numbering systems (EAN/UCC). These standards allow for the unique identification of products and company locations and thereby form a cornerstone for electronic commerce.

GTIN is the EAN/UCC system number that uniquely identifies trade items (products or services). GTIN is an umbrella term used to describe the entire family of EAN/UCC data structures and encompasses the identification of individual products, cases and pallets. GTIN has four different numeric data structures that are 8, 12, 13 or 14 digits in length. The most commonly recognized GTINs are encoded in EAN/UPC symbols on retail products. For those GTINs printed on individual items, any empty leading spaces are filled with zeros meaning that the basic underlying UPC or EAN bar codes used for consumer packages would not change.

In order for a seamless global trading system to evolve, all parties in the supply chain will need to be capable of accepting 14-digit numbers throughout their internal systems.

GLN is a 13-digit numeric code that uniquely identifies a physical, functional or legal entity. It contains a unique EAN/UCC company prefix and location reference number and is used as a key to retrieve additional information from databases about the company, store, manufacturing center, distribution center, or even the individual vending machine identified by the code. This eliminates the need for redundant entry of data such as addresses, phone numbers, hours of operation, and capabilities.

The standards management and governance process for maintaining voluntary global standards seems finally to be resolved. An agreement was reached resulting in UCC and the Canadian based ECCC organization joining EAN as full members in November of 2002. A new EAN International board will be formed recognizing this new collaboration and consideration will be given to changing the name if necessary. It has been further agreed that UCC and ECCC must remain in position to respond to their own marketplaces and that the governance, management policies and practices of EAN International will not inhibit UCC's and ECCC's abilities to quickly respond to their own user requirements.

Action Items for Voluntary Global Data Standards

1) Implement GTINs and GLNs within your organizations and your trading partners. Set a target completion date for your company and ensure that all relevant divisions are informed and educated on the correct use of GTIN and GLN systems and standards. The Joint Boards also request an independent study be conducted to identify any current obstacles that may hinder full compliance with EAN/UCC numbering standards, including the role listing fees might play, and to make recommendations for improving industry-wide compliance.
2) Develop broad participation from the industry in the EAN/UCC Global Standards Management Process. An ongoing dialogue should also be maintained with the International Organization of Standardization (ISO) and the Voluntary Interindustry Commerce Standards (VICS) group that represents primarily the general merchandise companies.
3) North American retailers who presently scan 12-digit UPC consumer product symbols must be capable of also scanning EAN 13-digit symbols at point-of-sale by January 1, 2005. This is commonly referred to as *Sunrise 2005*. UCC further recommends that North American companies update and expand their databases and software applications to accept and communicate GTIN data structures up to 14 digits in length.

B. Global Registry and Data Synchronization

Background on the Global Registry

Perhaps the most controversial issue confronting global e-commerce has been the creation of a single global registry. The issue centers on the implementation efforts of UCCnet in North America and the position held by many international companies that UCCnet is not yet a global solution but rather a registry for North America.

It is a widely held belief that one industry-wide registry is preferred versus multiple registries that would add complexity and cost to the supply chain. The GCI Global Data Synchronization Vision supports this concept. There is now general recognition that UCCnet as originally designed was not a global registry solution but is now well positioned to become one. UCCnet is the only registry currently in proven operation and the only one publicly committed to complying with the GCI Global Registry Business Model that will outline the requirements needed to fulfill the role of a global registry. This model is scheduled to be turned over to EAN/UCC in January of 2003. In addition, UCCnet complies with EAN/UCC standards where they exist today (GTIN, GLN) and will comply with future EAN/UCC standards as they are developed through the GSMP.

Agreement has now been reached allowing EAN to endorse UCCnet and we believe UCCnet will soon publish a set of specific steps to be taken to meet the requirements of becoming a true global registry. Recognizing this, and subject to these requirements, the GCI Board has now endorsed UCCnet as the global registry. While a true global registry develops, there is a concerted effort in the United States to drive the adoption and implementation of UCCnet. These efforts have the endorsement and support of the FMI and GMA Boards as well as the VICS Board of Directors.

Action Items for the Global Registry

1) The Joint Boards reaffirm the need for a single global registry.

2) The Joint Boards endorse the efforts of GCI to define the global registry business model by January 1, 2003 and the efforts of EAN/UCC to develop the supporting standards through the GSMP. The Joint Boards further endorse UCCnet's efforts to complete the steps necessary to become the single global registry, endorse UCCnet's commitment to develop a transparent, cost-effective pricing model, and endorse the efforts of all parties to establish a UCCnet governing board reflecting its international membership.

3) While this is underway, companies with operations in the US are strongly encouraged to participate in UCCnet.

Background on Data Synchronization

GCI has developed a vision for how global data synchronization should work. Under this vision, each manufacturer and retailer chooses (or develops) a home data pool in which to store information about the products they buy and sell as well as their location information (addresses, phone numbers, etc.). Once these data pools (sometimes called data catalogs) are in compliance with the necessary standards, each item loaded into the data pool must be registered with the Global Registry before this information can be published and synchronized with other data pools. The registry ensures a unique registration for each entry and points users back to the home data pool where the full set of information about each item, party, or location is stored. Trading partners can then use synchronization engines to automatically update their own data pools.

In conjunction with the GCI, Cap Gemini Ernst & Young has developed a business case to illustrate the supply chain efficiency benefits of global standards and global data synchronization. The main conclusions of that business case are attached in an appendix.

Action Items for Data Synchronization

1) The Joint Boards endorse the GCI Global Data Synchronization vision. Each food retailer and consumer packaged goods supplier in the food industry is encouraged to do the same.

2) The Joint Boards endorse data pool compliance with existing EAN/UCC voluntary standards and implementation of new standards as they are developed through the GSMP. This is a fundamental step towards gaining certification for the data pools. The expanded EAN International will be working with the GCI Implementation Team to establish a process to promote global implementation and ensure compliance of the registry and data pools with the standards in order to comply with the GCI vision.

3) Public and private data pools wishing to participate in this process will need to subscribe to UCCnet as soon as it has been certified as the single global registry and these data pools will also need to comply with global synchronization standards once they have been agreed upon.

4) The Joint Boards recognize that in order for data pools and their network systems to ensure synchronization of sensitive relationship-dependent data in complete confidentiality, security standards must be in place and proof of certification of the overall synchronization process available.

C. GCI Global Scorecard

Background on the Global Scorecard

In order to measure the rate of implementation of the basic voluntary standards and data synchronization capabilities, a special section has been created in the "Global Scorecard" to capture this information. This is in the E1 section (Common Data and Communication Standards) of the GCI global scorecard website at www.globalscorecard.net.

Action Item for the Global Scorecard

1) It is recommended that companies complete the GCI Global Scorecard as soon as possible in 2003 and again toward the end of the year to benchmark progress during the year.

D. Trading Exchanges

Background on Trading Exchanges

Four major trading exchanges have been created: GlobalnetXchange, Transora, World Wide Retail Exchange and CPG Market. None of these have yet fully lived up to their promise and clear areas of duplication exist. The duplication among these exchanges leads many to believe the industry would be well served by consolidation among some or all of them.

Action Item for Consideration By The Trading Exchanges

1) Recognizing that these exchanges have investors who will make their own decisions, the Joint Boards reaffirm the need for the exchanges to identify their common functions and to continue discussions exploring the feasibility of merging some or all of these exchanges.

Emerging Technologies

We turn now to the most promising emerging technology—the "smart tag" or electronic product code (ePC). The ePC is the next generation EAN/UCC code that allows products to be tracked and monitored throughout the supply chain without human intervention.

The ePC itself is the basic product identification number for a product plus an additional 9-digit "license plate" unique to each item, case, or pallet. These ePCs are carried in a Radio Frequency Identification tag (RFID microchip) with a built-in antenna that can communicate with a remote reader. Since line of sight is not required, a product can be read without manually manipulating the pallet, case, or package. This is the same basic technology used in the *Mobil SpeedPass*.

The potential benefits of replacing the current product codes with ePC tags are enormous. Just a few of the things that should become possible with continuing research and development for industry applications include:

- Manual counting and recounting of products in CPG supply chains could be eliminated. Warehouses, trucks, backrooms, and shelves could contain readers that would automatically and continually track products and maintain true perpetual inventory data.
- Continuous monitoring of product inventory at each point in the supply chain could virtually eliminate out-of-stocks by automatically calling for replenishment when preset inventory triggers are reached. This would also allow shrink to be measured and controlled on a real-time basis and would greatly enhance our ability to identify counterfeit products.
- Continuous monitoring of movement throughout the supply chain could easily locate recalled products with precise accuracy.
- Recognizing some technical hurdles yet to be cleared and a strategic plan for the customer checkout process needs to be developed, it is entirely possible that today's conventional checkout systems could be replaced with RFID systems that scan each customer's basket without unloading it and automatically bill the transaction according to the customer's payment preference.

The Auto-ID Center has been testing the ePC system in warehouses and retail outlets in the United States since October 2001 and field tests in Europe are under discussion. These tests will ensure that the technology is fully functional in operational settings and will provide "real-world" data for case study development.

Likely timing: The Auto-ID Center has committed to turn this process over to the industry in October of 2003. Since it took approximately 5 years to create critical mass for the UPC itself, it is reasonable to assume it will take at least that long to implement the ePC for consumer packages industry wide. In the meantime, some of the sponsors intend to begin utilizing this technology on pallets within the next few months and on shipping cases within the next year.

Relationship to the Global Registry: Even though each item will eventually carry a unique code, the basic GTIN will be embedded in this code and, therefore, a basic registry for GTINs would still be necessary. In addition, full data synchronization on a global level would increase the speed at which the ePC advantages could be realized by the industry and consumers.

Relationship to Sunrise 2005: Even if individual consumer items carry the unique 24-digit ePC number, it's likely the industry will limit early consumer product applications to the GTIN portion of that code. This means the systems created for *Sunrise 2005* will still be sufficient. However, this also means that creating systems capable of dealing with 14 digits will not be a permanent solution. Companies should give some thought to building in enough flexibility to eventually expand their systems and communications packages to deal with a full 24 digits.

[Note: To keep our comparisons consistent, this paper uses the number of digits in the various coding numbers but the ePC literature tends to refer to "bits". For conversion, one digit is equivalent to four bits of information. The "96 bits" so frequently used to describe the full ePC code, therefore, translate to 24 digits.]

Maintaining Common Global Standards. The Auto-ID Center is working closely with EAN/UCC to ensure that the ePC technology developed by the center builds on existing global standards and becomes compatible with new standards as they are developed. They will work towards an open architecture that can be utilized by any company globally and will work to place the appropriate standards before the global standards bodies for formal recognition. EAN/UCC is also assisting the Auto-ID Center in developing a strategy for the future of the Center beyond the initial technology release.

Once the basic standards are established, the tracking of unique items, whether they are consumer products, cases or pallets, means a revolution in the way trading partners do business in the food industry. The business applications need to be developed, extensive education programs need to be conducted, and compatible international technology standards need to be maintained. Within the United States, there is an existing applications development body that can help coordinate this process. It is the Automatic Data Capture Technical Advisory Group (ADC1 TAG) of the American National Standards Institute (ANSI). ANSI in turn works with the International Organization of Standardization (ISO) representing 140 countries committed to harmonizing standards and technologies in their actual practice.

The specific charge of the ADC1 TAG group is to focus on bar coding, biometrics, electronic article surveillance and RFID and to maintain a cooperative relationship with the many committees working in allied areas such as security, smart cards, bio-ID, and communications. As of May 2002, ANSI has appointed the Food Marketing Institute as new administrator of this United States committee.

Action Items for Developing the ePC Technology

1) The Joint Boards ask EAN/UCC to put a governing body in place to maintain the standards and provide a home for the ePC technology as it is released to the industry. The Joint Boards further ask that the Auto-ID Center work closely with

EAN/UCC as they continue to develop this technology including working to ensure that GTINs are used as the basis for the ePC numbering system.

2) The Joint Boards further ask ANSI's ADC1 TAG group to coordinate their ePC applications work with the EAN/UCC governing body and other applicable industry standards bodies, including standards bodies in industries other than our own, on a global basis.

APPENDIX I—THE CASE FOR GLOBAL STANDARDS

The Global Commerce Initiative (and 22 of its member companies) and Cap Gemini Ernst & Young have jointly developed the business case for Global Standards and Global Data Synchronization. The resulting report *The Case for Global Standards* clearly identifies the improvement potential for both retailers and manufacturers. These are the main conclusions:

Should you care about voluntary Global Standards and Global Data Synchronization?

Their adoption is estimated to yield significant benefits

- Eliminate costs associated with corrections caused by inaccurate information.
- Reduce dependence on the human involvement in non-value activities through automated processes.
- Improve response to consumer demands through improved sourcing opportunities.
- Support food safety initiatives through better visibility, identification and traceability.
- Improve trading partner relationships through better communication.
- Increase speed to shelf through reduced product introduction time.

Productivity improvements of 1 to 3 percent of supply chain costs can be gained, impacting the bottom line by 10 percent to 15 percent per year. The improvement potential is comparable for both retailers and manufacturers. These benefits apply for all sizes of companies.

Without Global Standards, increasing global trade will add complexity and cost
Cross regional trade is increasing steadily. More and more retailers of all sizes are sourcing on a global level and are increasing their sourcing opportunities. At the same time, suppliers are increasing their market span to bring their products to the attention of a wider audience. These processes need the support of a consistent language.

Global Standards provide a platform for innovative collaboration that can bring you competitive differentiation
Most importantly, they allow you to shift much more of your company's time and energy into understanding and serving the needs of your customers by eliminating time and energy that is spent identifying, tracking, correcting, and undoing the effects of inaccurate data.

Global Data Synchronization provides a solid foundation for scalable deployment of collaborative business processes such as Collaborative Planning, Forecasting and Replenishment (CPFR).

Why is it important now?
It may be impossible to gain the full advantages when local or regional standards become deeply entrenched
Today, the differences in many technologies that were allowed to proceed without development of global standards demonstrate the difficulty of retrofitting a global standard. Companies face continuing added costs of business and inability to easily transfer successful products to new markets where there has been a failure to adopt global standards. Earlier examples of this kind of failure are right and left side drive automobiles in different regions and the different electrical power voltages and outlets. We have the advantage of having a unique opportunity to adopt a single standard if we act now.

APPENDIX II—GLOSSARY OF TERMS

ANSI American National Standards Institute—is a private, non-profit organization that administers US voluntary standards and conformity assessment systems. ANSI is the sole US representative and dues-paying member of the International Organization for Standardization (ISO).

CPFR Collaborative Planning Forecasting and Replenishment—collaboration between manufacturers and retailers to share future sales and promotion plans.

EAN European Article Numbering International—a non-profit governing body for enabling the efficient management of global, multi-industry supply chains by uniquely identifying products, shipping units, assets, locations and services.

ECCC Electronic Commerce Council of Canada—a non-profit member organization that administers the EAN/UCC system for Canada.

GCI Global Commerce Initiative—a worldwide network of e-commerce users, bringing together consumer products manufacturers and retailers to endorse and encourage the implementation of global standards that simplify global commerce.

GLN Global Location Number—a numeric code that identifies physical, functional or legal entities, used as a unique reference key to retrieve information from databases about stores, manufacturing plants, warehouses, sales offices, corporate headquarters, etc.

GSMP Global Standards Management Process—a jointly managed EAN/UCC methodology for developing global supply chain standards.

GTIN Global Trade Item Number—the EAN/UCC 14-digitglobal numbering system for uniquely identifying products and services.

ISO International Organization for Standardization—a network of national standards institutes from 140 countries working in partnership with international organizations, governments, industries, businesses and consumer representatives for establishing and maintaining harmonized international standards. See www.iso.ch.

UCC Uniform Code Council—a non-profit organization established to manage the US Universal Product Code and jointly manages the EAN/UCC system with EAN International.

UCCnet A non-profit data registry providing a universal foundation for electronic commerce by allowing trading partners to have access to synchronized EAN/UCC item information, as well as access to compliant business applications and services ensuring connectivity between trading partners.

VICS Voluntary Interindustry Commerce Standards Association—a global organization focused on improving the availability of products to consumers by providing leadership in the identification, development and implementation of volunteer standards, protocols, guidelines throughout the entire supply chain in the retail industry.