

# GSMP, EDIFACT, simpleB GCIP, GTAG. Are you up to speed with latest global standards initiatives? We review key developments, past and present

## Oiling the wheels of global commerce

OVERVIEW

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**EAN International was formed 25 years ago, bringing 12 European countries together to tackle the challenges and opportunities represented by the invention of the bar code.**

Today, EAN International is a truly global operation spanning 101 countries, dealing with identification, tracking, tracing issues through a range of automatic data capture and data-transfer technologies. And, with the burgeoning development of new innovations such as the Internet and radio frequency identification, its role is becoming ever-more important.

So how did this global standard-setting process come about, and what are its current priorities?

The EAN•UCC system originated in the US in 1972 with the development of the 12-digit Universal Product Code (UPC) by the Uniform Grocery Product Code Council established by the grocery trade for the purpose. The original bar code was

designed in 1973 to meet the council's requirements and in the following year, it changed its name to the Uniform Product Code Council.

Inspired by this activity in the US, major manufacturers and distributors operating in 12 European countries formed an ad hoc council in 1974 with a brief to examine the possibility of developing a uniform and standard numbering system for Europe, but to be similar to the UPC system already in operation in the US.

These beginnings were formalised in February 1977 with the setting up of the European Article Numbering Association (EAN) as a not-for-profit international association under Belgian law with a Brussels-based head office. Its aim was, and still is, the development of a set of standards enabling efficient management of global, multi-industry supply chains by uniquely identifying products, shipping units, assets, locations and services.

## EAN has its origins in the first grocery industry bar codes of 25 years ago. Today it is a truly global operation covering standards in every area

The objective pursued by the founders was to provide businesses with a single solution for identifying and symbol-marking consumer items. The European Article Number (EAN) was created to be compatible with the UPC system, formally introduced in the US in 1972, and to use the same bar code technology, but with 13 digits. It also provided a migration path for systems already present in two major European countries.

The EAN-8 number and bar code were introduced to allow the marking of very small items. And right from the start, it was clearly established that EAN numbers would identify items and not provide any classifying information regarding the product itself, its price or its origin.

In 1980, the specific requirements of the books and serial publications industries were addressed. A standard was developed to enable the incorporation of the pre-existing ISBN and ISSN identification systems into the EAN-13 format. The two and five-digit add-on symbols were designed to enable the automatic data capture of information supplementing the identification number of a book or serial.

The EAN system introduced in Europe and quickly adopted by Japan and many countries from the five continents was implemented by a growing number of manufacturers. As the number of

consumer products marked at source reached a critical mass, retailers started implementing scanning systems at point of sale and requested suppliers which had not done so already, to mark their products with EAN, thus creating a snowball effect.

In the early 1980s, EAN users requested that standards be set for numbering and symbol marking items traded between manufacturers, distributors and retailers. EAN specifications for numbering and symbol marking despatch units were released in 1984.

This standard set the rules for identifying groupings of items packed into standard containers, such as cartons. The interleaved two-of-five (ITF) symbology was endorsed for printing symbols directly on poor-quality substrate such as cardboard. A numbering structure comprising 14 digits was developed and enabled easy assembly of unique identification numbers for containers comprising series of identical items.

In 1987, EAN's General Assembly decided that consideration should be given to providing users with an international standard for EDI. At this time, several numbering organisations had developed and made available national EDI standards to their member companies. It did not take long to agree that EDIFACT standards developed under

## The standard-setting process has had to constantly adapt to fast-developing technologies, new commercial opportunities and internationalisation

the auspices of a United Nations Working Party were paving the way for a universal computer-to-computer communication language.

EAN decided to provide implementation guides of UN/EDIFACT messages and to call this new standard EANCOM. In recent years EANCOM has been providing comprehensive EDI standard guidelines for a large number of trade, transport and financial transactions.

A fundamental principle of EAN is to identify items with a non-significant number and recommend that information related to the items be stored in computer files and exchanged between companies in a supply chain using standard EDI messages. In reality, there is sometimes a need to provide information related to an item on the item itself, in a format which can be captured automatically.

These requirements were addressed by EAN and led to the development of a standard first published in 1989 and called “supplementary encodings”. The bar code symbologies already endorsed by EAN, EAN/UPC and ITF, didn’t provide the flexibility required for representing data which had variable formats.

After extensive testing and research, EAN working with its counterpart in the US, the Uniform Code Council (UCC) – which the Uniform Product Code Council had become – endorsed the Code 128

symbology which was made publicly available in 1981.

Through an agreement with the originator of the symbology and the association of automatic equipment manufacturers, a special feature of the Code 128 symbology was assigned to the exclusive use of EAN and UCC. The UCC/EAN-128 symbology was born and reserved for the encoding of data prefixed by Application Identifiers.

Today, standard application identifiers and related data are available to users for many supply chain applications and beyond. Application identifiers and UCC/EAN-128 are available to represent not only attribute information, but also identification numbers of trade items, logistic units, locations, assets and service relations. They form the heart of modern tracking and tracing systems.

In response to user demand for labelling transport units which need to be tracked and traced, EAN developed a standard label format, using application identifiers and the UCC/EAN-128 symbology. The standard EAN label is widely used today to facilitate and streamline the shipping, transporting and receiving operations.

### Global harmonisation

Shortly after its establishment, the European Article Numbering Association

## Convergence between computers, telephony, mobile telephony, television and radio, plus ever-widening bandwidth is transforming the role of technology

acquired international status through extending membership to organisations from other continents. To reflect increasing internationalisation, the name was changed to EAN International in 1992.

Although EAN and UCC remained independent organisations until very recently, a close collaboration always existed at a technical level. In 1993, this collaboration was formalised with the creation of the joint International Data and Application Standards Committee, IDASC. This committee was responsible to the EAN and UCC Boards and its objective was to ensure a consistent and technically sound development of the standards, which then became known as the EAN•UCC system.

Corrective actions were taken to eliminate all divergences that existed between the EAN and UCC standards, as well as ideas initiated to monitor global developments closely and launch new joint projects. One of the projects put in hand was the drafting of a manual to provide a technical description of the UCC/EAN system. It was launched as the General EAN•UCC Specification in 1999 and is updated annually.

UCC has provided EDI standards to its users since the early 1980s. These are based on ANSI/X.12 standards widely used in North America. In 1994, UCC endorsed EANCOM as the recommended EDI global

standard to be used by North American companies when communicating electronically with trading partners internationally. A close collaboration has been established in the EDI area, to make sure business requirements from North American users are met by the EANCOM standard.

### **Technological advances**

EAN International has advanced rapidly throughout its short life, but the technology advances in all aspects of computers and communications continue to appear at an increasing rate. The ability to convey and process ever-widening bandwidth at even greater speed is regularly announced, and digitalisation has seen convergence between computers, telephony, mobile telephony, television and radio.

The Internet has brought about faster development in inter-operability and inter-connectivity between the various communication modes and has enhanced opportunities for B2B and also B2C trading. Business communities are establishing Internet Exchanges to increase purchasing opportunities and provide transactional portals.

The rapid rate of change and advancement in technology has seen the EAN•UCC community change emphasis. It has moved away slightly from the basic

## EAN has been forced to speed up its traditional committee-based decision-making. A radical overhaul of processes involves users from all over the world

principle of providing member companies with the standards they have sought, to one where technology developments are evaluated for possible candidature as a standard where business needs are identified by member companies.

This is provided as a service to members who do not have the time and/or experts, or finance for evaluation themselves. The basic principle that standards remain open, enabling many providers to supply hardware or software, remains unaltered.

Trends have been identified in the increased use of existing standards which foresee greater use of the EAN•UCC system in coming years. This is based on a rising use in the agrochemicals, agriculture, defence, healthcare, meat, packaging and transport sectors, together with its adoption within recently ratified NATO defence standards.

Standards-making has a history of being learned committee-based and notoriously slow. EAN•UCC realised that in a rapidly changing world it was essential for its own processes to be radically overhauled.

Just over 12 months ago EAN International and the UCC developed the Global Standards Management Process (GSMP) to maintain standards-based solutions for global trade using EAN•UCC System technologies. It uses a global consensus process to develop supply chain

standards which are based on business needs and user-input.

In operation, the GSMP brings together users from all industries, from anywhere in the world, to allow for a uniform approach and methodology for global standards management. It is a comprehensive process which doesn't stop at standards development, but includes standards maintenance, and implementation support.

GSMP is built on the core activities of – identifying and assessing business needs; gathering business requirements; documenting best practices; gaining solution consensus; and developing and implementing standards

### Radio frequency tagging

The greater functionality available from using Radio Frequency Identification (RFID) is already leading to the development of global standards based on user-needs. The first RFID standard from EAN•UCC is the Global Tag (GTAG) Technical Specification, which refers to a standard for the so-called “air interface protocol” – the method by which readers communicate with tags which has been developed under the auspices of the International Organization for Standardization (ISO).

EAN International and UCC, through GTAG, were prime contributors to the first

## High start-up costs put many smaller companies off investing in EDI. Now, simpler XML-based standards means usage by smaller companies is set to explode

ISO standard that has been developed in this area, and this work will lead to the ratification of ISO 18000-6.

This ISO document, which is currently a Committee Draft available for public scrutiny and use, is an important technical standard for the community of RFID manufacturers and system integrators, which will develop, manufacture and sell standards-compliant and GTAG-compliant products and systems.

The GTAG Technical Standard will be introduced to the EAN•UCC Global Standards Management Process, as this provides an appropriate framework of maintenance and support. EAN•UCC will also create and release application guidelines for GTAG-compliant systems, in the same way that application guidelines have been created for automatic data capture systems, which are based on bar codes.

### Internet-based trading

Trading over the Internet has resulted in intense user demand for simplified forms of electronic messaging based on the use of XML, which is currently the most popular electronic communications language. This ranges from upstanding XML messaging to compatibility with EANCOM.

Additionally, a simplified form of EDI (lite EDI) and a new form of electronic

messaging based on business processes commonly called simplEB (simple electronic business – designed to work with any electronic communications language) are being developed.

The first EAN•UCC standards for XML messages for B2B trading transactions based on the Global Commerce Internet Protocol (GCIP), which was produced by the Global Commerce Initiative (GCI) in July 2000, have been published and provide for the management of standardised data over the Internet for the first time. They are designed for use across the world's most important trading exchanges and in other B2B communications, and result from intensive pilot trials conducted to test the robustness of the GCIP.

On a company-by-company basis, the larger ones are growing bigger and becoming more global in focus, but in sheer numbers they are far outweighed within the EAN community by small and medium-sized company members. Many of these will be more attracted to take up the simplified XML-based standards, when they are fully available, on account of much smaller start-up costs.

The high start-up costs together with high running costs have inhibited the take-up of EDI from most companies, apart from very large ones, often operating in the FMCG arena.

## Now, as EAN, UCC and the Electronic Commerce Council of Canada join forces, a truly global standard-setting system supports one million companies' activities

The Member Organisation's (MOs) memberships are the end-users of our standards and ancillary services, such as training and quality assurance. They, together with prospects, are the end-users of other MO-provided services, such as conferences and exhibitions.

More companies than ever before are using the standards in a variety of industry sectors. This is increasing the membership of existing MOs and giving rise to the establishment of more as the EAN•UCC standards appear in more countries of the world.

Fledgling and well-established MOs alike are alive to the opportunities being offered by their member companies which, in their own businesses, are becoming more prone to outsourcing to specialist suppliers. Often this is initiated by the trend to more collaboration between partners as a result of the availability of the Internet and advances in computer technology.

### The future

Having started in just 12 western European countries, EAN International has grown as countries from throughout the world have joined. And it has overhauled its own governance.

The consensus-based committee system, more suited to a small organisation, has given way to a more appropriate project-

led system. More recently, to create one global organisation to develop and maintain the already global EAN•UCC system, the UCC and its partner, the Electronic Commerce Council of Canada (ECCC), joined EAN International in its 25th year. Now 99 MOs representing 101 countries provide full support and information to almost one million local member companies which make more than five billion transactions a day in 23 sectors of industry using the standards.

EAN International is well placed to go forward for the next 25 years and beyond. It is truly one organisation with just one mission – creating open, global, multisectoral standards based on best business practices, and by driving their implementation, EAN International will play a leading role in supply and demand chain management improvement worldwide.

There is little doubt that advances in technology will continue to abound. The EAN community will take full advantage of the opportunities they offer for the ultimate benefit of its member companies.