

## CRISTAL: A STANDARD TO SUPPORT E-COMMERCE WITHIN THE EUROPEAN AGROCHEMICAL INDUSTRY

Guy Debecker, from Du Pont de Nemours in France describes an industry-wide initiative to facilitate information exchange within the agrochemical industry

### Introduction

While the integration of business data to improve efficiency of supply chain management has been a great achievement of the 1990s, this step change in our work practices has been originally limited to internal applications in most organisations, at the level of manufacturing sites or at best, in a limited regional geography. In the late 1990s, many distributors experienced electronic data exchange with the suppliers and their customers. By nature, the world of crop protection is a prime candidate for enhanced communication between partners in the supply chain due to its regulated nature: during commercial interchange, for the control of its inventories and to track the actual movement of goods, this industry has an obligation of stewardship. This means intense exchange of information for transportation, application and disposal of its products. This data exchange and record keeping will certainly become even more intense in the future, as the tracing of pesticides use is of public concern. The farmers, originally considered as the ultimate users of our products, have to be considered as pivotal partners in data tracking when it comes to documenting the history of potential exposure to pesticides in the food chain.

Working in isolation, basic manufacturers had developed internal solutions to their tracking needs. This created a barrier to the application of electronic data exchange in the distribution chain, as the content and the format of the information varied from source to source. The European Crop Protection Association (ECPA), concerned that the benefits of electronic commerce between trading partners could be negatively impacted by this situation, initiated an industry-wide project aiming at defining a pan-European framework and standards for the E-commerce in the agrochemical industry. The CRISTAL<sup>1</sup> standards, agreed upon in 1999, are in their state of piloting and implementation. As the technology evolves, the CRISTAL team has lately been focusing on Internet messages and new product coding supports.

### Objective

CRISTAL is an industry-wide initiative that follows a strict

<sup>1</sup> CRISTAL is the project acronym for Communicating Reliable Information and Standards to Agriculture and Logistic. Its standards are hosted by the ECPA web site [www.ecpa.be/cristal/](http://www.ecpa.be/cristal/) and can be consulted freely.

<sup>2</sup> British Agrochemicals Association, now called Crop Protection Association (CPA).

set of guiding principles:

- The standards have to be open to any organisation and adaptable to different technologies, already in place, or of promising future.
- The standards have to be universal wherever possible, internationally recognised. The standards have to be compatible with existing practices shared by the different partners in the supply chain: the chemical industry standards for the basic manufacturers, the existing logistic and transport standards, the needs of the distributors in the channel for whom agrochemical products are only an element of their offering and the retail industry.
- Participation is open to all, favouring voluntary sharing of knowledge and experience.
- The fuel for effective implementation has to be generated by the interest of the participants, as the investments required must be justified by the benefits expected. To effectively enable the realisation of these benefits, all the participants have committed to conform to the CRISTAL standards when implementing E-Commerce solutions with their trading partners.

### Participants

National Associations of Western Europe and agrochemical manufacturers participated in the project. National Associations such as the BAA<sup>2</sup>, took a leading role in identifying the channel expectations, conducting surveys with distributors and retailers, while the manufacturers focused on technical solutions. Early on, the team benefited from the expertise of EAN-International, and maintained close contacts with European associations such as AGROEDI-Europe, and the North American initiative RAPID, Inc

### Scope

The project charter covers all the key elements that require an alignment between the basic manufacturers to achieve the benefits of automation in the area of:

#### Product stewardship

The ability to identify uniquely a product, based on a universal coding system, and to refer to national data bases or manufacturers to access product information such as instructions for use, applications rates and timing, registered crops, safety data sheets, safe disposal instructions, transport regulations... either by manually entering a code,



Figure 1. An EAN13 code



Figure 2. An EAN128 code

or by automatic capture through optical or radio frequency techniques.

The capability to record product name, pack size, lot number etc... to document Good Agricultural Practices by the grower, or to facilitate emergency communications or recalls in the distribution channel.

**Administrative efficiency**

To interface transactions within companies or between trading partners through Electronic Data Interchange (EDI) or Internet, for material management and commercial purposes.

**Reduced distribution and storage costs**

To enable enhanced planning and scheduling of deliveries, storage space management, material retrieving, and consolidations of shipments...

**Reduced inventories**

To Improve data quality and visibility of existing inventories and planned inventories.

**Solutions**

To select an appropriate Product Coding and EDI message, the CRISTAL project considered the existing practices in the trade and retail industry of the various member countries and the rest of the world. It also built on previous work from reputable experts and associations as EAN-International, AGROEDI in Europe, UCC and RAPID in the USA.

**Product Coding**

**Consumer units**

These are identified by an EAN13 code, familiar to most consumers in Europe (Figure 1). The codes issued by the manufacturers, are unique to the product and its pack size. This allows the retailers and the growers to automate their computer transactions for stock keeping, invoices, and any type of record related to the nature of the product.

**Traded Units**

A more complex coding system is used for units that are traded in the market place, as regrouping cartons. Not only must the product be identified, but also its lot number and,

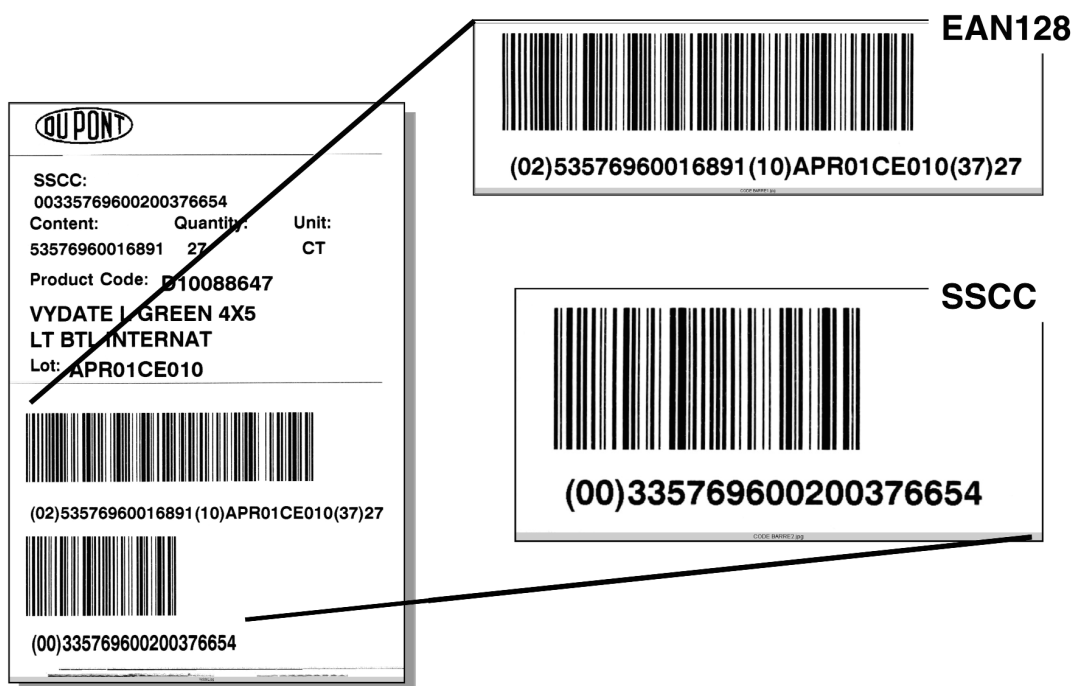


Figure 3. An EAN128 code with more embedded product information

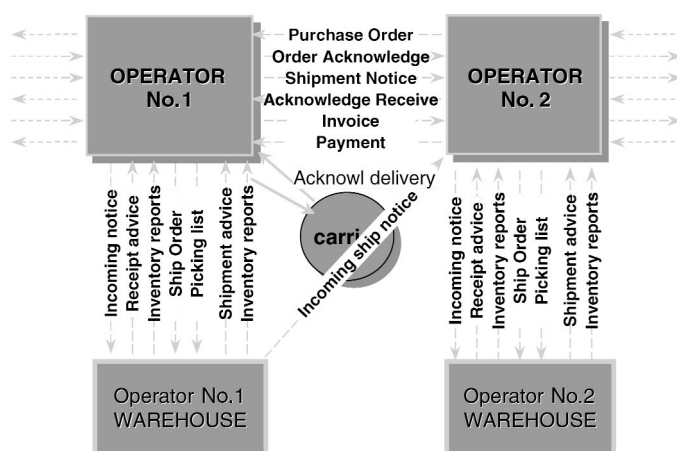


Figure 4. CRISTAL EDI standards for data interchange.

through electronic data access, any other information pertinent to the effective and safe management, tracking or tracing (production date, weight, order number, supplier address, material safety data sheets...). The selected code is a well established coding system designed for dynamic information (EAN128)

In this coding, strings of information's start by an application identifier that allows the reading system to recognise the nature of information carried: (01) as the product, (10) as the lot number, (21) as the package serial number (Figure 2).

### Logistic units

Logistic units are parcels or pallets prepared for shipment or storage in a warehouse. The CRISTAL standard is based on the use of a serial code (or SSCC) unique to each logistic unit, allowing partners in the logistic chain to identify each parcel as it moves between locations. The unique SSCC number is the key to access specific commercial and logistic information maintained in the partners computers. In addition, there is however the possibility to embed more

product information in an EAN128 code, as illustrated in Figure 3.

### Data interchange

Once codification of products has been standardised, it is possible to establish a set of data interchange messages between trading partners. CRISTAL has issued EDI standards, which concern companies who deal with a large number of commercial transactions. The standards are based on EANCOM and have been designed to meet all the agricultural industry requirements (Figure 4). The CRISTAL project team is currently investigating various Internet XML solutions, to identify an alternative suitable the agrochemical industry.

### Future developments

Besides Internet solutions, the CRISTAL team is also investigating the impact of new coding opportunities and global standardisation. Radio Frequency labels (GTAG's) and Reduced Space Symbology (RSS) are examples of new product coding methods that may offer exciting developments for automatic data capture in the foreseeable future.

Guy Debecker, graduated from University of Louvain (Belgium) with a PhD degree in Physical Organic Chemistry. He joined DuPont as a Research Chemist in 1972 in the Polyester Films Department in Luxembourg. Dr. Debecker has spent 29 years of with DuPont, mainly managing engineers and scientists. After heading QC/QA and a Process group at Luxembourg, he joined Agricultural Products in 1982 as Technical Manager in France, and held several assignments in the USA in research and product management. He returned to Europe as Manager of the Supply Chain of the Agricultural Products in Europe, Middle-East, Africa. Since 1994, his work has been refocused on manufacturing business processes integration, leading SAP implementation, MRPII, Y2K and, lately, 6 Sigma.

### NEXT ISSUE

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