



Beef Traceability Case Study



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It is with great pleasure that we bring you the GS1 Beef Traceability Case Study. This document has been prepared to inform you about a successful pilot project on the application of the EAN.UCC System in the tracking and tracing of beef in order to comply with the EU Commission Regulation 1760/2000. The project was run under the auspices of GS1 Ireland's (formerly EAN Ireland) Food Traceability Committee which was established to assist the Irish Food Sector with taking the necessary steps to introduce efficient and cost effective procedures to address food safety and traceability issues.

While the solution outlined in this case study was developed between Musgrave SuperValu Centra and Kepak its beef supplier, it is based on EAN's open global supply chain standards. As a consequence, the solution developed is intended to be a model for an efficient and cost effective 'Track & Trace' solution for the sector as a whole.

We believe that this case study will be a useful tool for companies implementing a traceability system in any food sector. We hope that you find it interesting and informative.



Jim Bracken
Director of GS1 Ireland



Gary Mathews
Chairman of GS1 Food
Traceability Committee

February 2005

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Avery Berkel
Digi Systems
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GS1 Head Office
Kepak
Musgrave SuperValu-Centra
Westfleisch, Germany



2. Project Overview

In 2000, the EU Commission's Beef Labelling Regulation 1760/2000 was introduced to ensure that all beef producers labelled their product. This regulation became compulsory for all EU Member States on the 17th July 2000. The regulation aims to ensure a link between the meat and the individual animal or group of animals from which the beef originated. 1760/2000 replaced the existing regulation of EC 820/97 which established compulsory beef labelling and voluntary beef labelling.

The legislation 1760/2000 specifies that the label on pre-packed beef must carry the following mandatory information in human readable format.

From 1st September 2000:

- A reference number to link the meat and the animal or group of animals
- Country of slaughter
- Country/countries of cutting
- Approval number of slaughterhouse and cutting halls

From the 1st January 2002:

- Country of birth
- Country/countries of fattening

In 1998 EAN International (to be referred to as GS1 in the remainder of the document) set up a Meat Supply Chain Task Force to produce guidelines in response to the Council Regulation 820/97 which introduced a voluntary beef labelling scheme. The regulation 820/97 also provided for the introduction of a system of compulsory labelling in all Member States from 1st January 2000. The GS1 Traceability of Beef Guidelines outlined how to use the EAN.UCC System (often referred to as the EAN.UCC Standards) to help comply with this legislation. However, when EC 1760/2000 was introduced, GS1 set up a European Meat Expert Group (EMEG) to examine how the new regulation would impact on the existing guidelines. The end result was the publication of a third edition of the Beef Traceability Guidelines which fully addressed EC Regulation 1760/2000.

EAN Ireland (to be referred to as GS1 Ireland) was anxious to establish a project set up which would demonstrate how to use the EAN.UCC Standards to meet the legislative requirements of 1760/2000 as well as improving business operations. The initial work of scoping the project was carried out by the GS1 Ireland Food Traceability Committee which invited participation from all industry groups (for listing of members see Appendix 1).

Following the scoping of the project, visits were made to beef production facilities in Ireland

- AIBP Cahir

and also Westfleisch, Germany.

After the scope of the project had been agreed, subsequent visits took place to:

- Kepak Athleague
- Kepak Watergrasshill

Retailers and producers were invited to participate in the pilot project and following discussions with interested parties (a full listing is available from Appendix 2) it was agreed that the pilot would run in conjunction with Musgrave SuperValu-Centra (MSVC) and their sole beef producer/supplier Kepak. Once the participants were agreed, work began on delivering a cost effective solution for the tracking and tracing of beef from slaughter to retail point of sale. The project team took

into account the '3rd edition of the GS1 Traceability of Beef Guidelines' and set to work to address the regulation and its implications. Key issues which had to be taken into account were the cost factor, the level of technology required and the need for visibility of traceability information at all stages of the supply chain.



The project began in Autumn 2002 and it was decided that it would focus from when the animal reaches the point of slaughter to when the beef is bought or served to the customer in a retail environment.

When an animal is slaughtered and cut into primal, each primal is marked with an EAN 128 barcode containing all the required traceability information. The label travels with the primal until it reaches store level. When the pre-pack meat is prepared at store level, the EAN 128 barcode

is scanned and the traceability information is transferred via the retailers' scales onto the pre-pack product. Each pre-packed piece of meat is allocated a unique FoodTrace number which links it back to the batch of animals killed on a particular day. The FoodTrace solution, developed by Kepak & Musgrave SuperValu-Centra, was built with the consumer in mind and addresses not only pre-packed beef but is the first of its kind in Ireland (and we believe elsewhere) to address the issue of serve-over cuts in a supermarket. For serve over, the information retrieved from the EAN 128 barcode is transferred to the back office PC which allocates a batch number to the primals cut each day. This has eliminated the need for a manual whiteboard as all the traceability information can be printed directly from the FoodTrace system. The whiteboard is a manual system whereby the butcher must hand write the origin of the meat being served. With the FoodTrace system the origin of the meat can be printed and displayed at the butcher counter.

The end result is a traceability solution based on the EAN.UCC Standards which is capable of tracking and tracing beef throughout the supply chain and provides seamless traceability from the retail pack via the primal cut to the batch of animals. The solution was successfully trialled in a number of SuperValu stores across Ireland in early 2003 and has been rolled out in over 150 SuperValu stores to date. Centra stores with a red meat counter will also be implementing the FoodTrace System.

3. Project Participants

Following a number of meetings, the final participants in the pilot project were:



► GS1 Ireland

GS1 Ireland is a not for profit, neutral organisation responsible for the development, promotion and use of the EAN.UCC global standards for bar coding, scanning and electronic commerce messages. GS1 Ireland is also responsible for the development of standards for Radio Frequency Identification (RFID).



► Musgrave Group

The Musgrave Group is one of the largest supermarket groups in the Republic of Ireland. Musgrave Group is responsible for the SuperValu and Centra retail franchise business and also manages one of the country's largest cash and carry operations.



► Kepak

The Kepak group, an Irish company is one of Europe's leading food processors. They process in excess of 400,000 cattle, 2.5 million lambs and 15,000 tonnes of consumer foods per annum.



Denis O'Brien is an Information Technology Consultant and former IT manager with the Kepak Group. Denis was responsible for all I.T. resources for the Kepak Group, including the design and development of the production and plant management systems before he set up his own consultancy business, Valent Systems. Denis designed and developed the FoodTrace® system, and was the project manager responsible for bringing the system from conception, through development, right up to implementation in the trial stores.



► Digi Systems

Digi Systems is an Irish-owned business distributing Retail and Industrial Weighing Systems, Bar-Code Label Printers and ePOS Systems countrywide.



► Avery Berkel

Avery Berkel is part of the Avery Weigh- Tronix group and is one of the world's largest manufacturers and suppliers of weighing equipment and solutions.

Further information on each of these companies is available in Appendix 3.

4. Drivers for Change

The introduction of legislation from the European Commission and the increasing demand from consumers for traceability information relating to the meat they purchased were some of the key drivers that encouraged companies to build effective traceability systems.

4.1 Legislative Requirements

4.1.1 EU Legislation: The first BSE crisis in 1996 caused a loss of consumer confidence and a decline in beef consumption in the European Union. From 1999, there were early signs of a new crisis, despite the range of measures taken to combat BSE at Community level and in certain Member States at a national level. The EU Commission decided that it was necessary to introduce a regulation that would ensure the traceability of beef by means of proper labelling which would inform consumers of the origin of the product. The Beef Labelling Regulation 1760/2000 was introduced on the 17th July 2000 and requires all beef retailers and producers to provide information on the beef label relating to the source of the beef. The legislation lays down the principles for establishing a system for the identification and registration of bovine animals and sets out the procedures for the labelling of beef and beef products. 1760/2000 repeals the existing legislation EC 820/97.

Council Regulation 820/97 was issued on the 21st April 1997 and introduced a voluntary beef labelling scheme and allowed Member States which had established a system for individual livestock identification and movement registration to adopt national legislation introducing the compulsory labelling of certain characteristics of beef produced from animals born, reared and slaughtered within their borders. EC 820/97 also provided for the introduction of a system of compulsory origin labelling for beef in all Member States from 1st January 2000. However, compulsory labelling was confined to origin only and all other information was governed by the voluntary labelling scheme. Under 1760/2000, Since the 1st January 2002, 1760/2000 made it compulsory to indicate the complete origin of all cattle on the meat label.

Both the beef Labelling regulation 1760/2000 and the more recent food safety legislation 178/2002 are based on the principles of traceability¹ which incorporates both tracking² and tracing³. All food, feed and beverages in the supply chain now require a verifiable method that allows them to be identified and recorded accurately in order to guarantee a link between each point of processing and distribution in the supply chain.



¹ Traceability has been defined as the ability "to identify a unique batch of product and the raw materials used in its production and then follow that batch, through the production and/or distribution process, to the immediate customer.

² Tracking is the ability to follow the path of a specified unit and/or batch of product downstream through the supply chain as it moves between trading partners.

³ Tracing can be defined as the ability to identify the origin of a particular unit and/or batch of product located within the supply chain by reference to records held by trading partners upstream in the supply chain.

4.1.2 National Legislation: At a local level in Ireland, the European Communities (Labelling of Beef & Beef Products) Regulations 2000 (S.I No 435 of 2000) and the EC Amendment Regulations 2002 (S.I No 485 of 2002) were introduced. These Regulations provide that organisations involved in the production or marketing of beef or veal must label their product with certain compulsory traceability information. The Regulations also provide for approval of additional voluntary labelling:

4.1.2.1 Compulsory Beef Labelling: Organisations are required to label beef with the following information as laid out under 1760/2000:

- The reference number or code of the animal or group of animals from which the beef was derived.
- The country of the slaughterhouse and approval number. The indication should read: 'Slaughtered in (name of country) (approval number)'. This number is particularly useful for withdrawing product quickly from the market that comes from a slaughterhouse where problems may have been detected.
- The country of the de-boning hall and approval number. The indication should read: 'Cutting in (name of country) (approval number)'. This number is useful for identifying quickly where the beef last came from before it was put on sale to the consumer.
- Country of birth.
- All countries where fattening took place.
- The country where slaughter took place.

The only exception to the compulsory beef labelling system is for minced meat.

4.1.2.2 Voluntary Beef Labelling:

Operators wishing to place information on the label additional to the requirements of the compulsory labelling system must first submit an application for approval to the competent authority where the sale or production of the beef takes place. In Ireland it is the responsibility of the Department of Agriculture & Food. Such information can include identification number, sex and breed.

4.1.2.3 Serve Over Beef Legislation:

In the case of Serve Over Beef, similar traceability information must be made available to the consumer at the point of sale. This is provided through the use of a whiteboard.

4.2 Subsequent Legislation

In 2002 the European Commission introduced new legislation to lay down the general principles of food law as well as procedures in matters of food safety and to establish the European Food Safety Authority. This regulation known as 178/2002 came into effect in all EU member states on the 1st January 2005. The aim of the legislation is to increase consumer confidence in the safety of all foods consumed and to ensure that all businesses involved in the production, manufacture, distribution or

retail of food and drink items have a reliable traceability system in place which details who they received product from and to whom they supplied- the principle of one-up one-down traceability.

The legislation outlines that:

- All food and feed business operators must be able to identify any person from whom they have received raw ingredients and/or product and equally and person who they supplied with a food, feed, food producing animal or at substance incorporated into a food or feed.
- The regulation applies to all stages of production, processing and distribution of food and feed.
- These operators must have systems and procedures in place which allow the information to be made available to the authorities (FSAI) on demand.
- Food or feed must be adequately labelled or identified to facilitate traceability.
- The authorities will lay down measures and penalties applicable to infringements of the food law. The penalties shall be effective, proportionate and dissuasive.

Any solution designed to fulfil the requirements of 1760/2000 must now also be capable of meeting the requirements laid out under 178/2002.

4.3 Consumer Attitudes to Food Safety

It is estimated that the BSE crisis resulted in an EU wide drop in the consumption of beef of about 16 per cent in 2001 with respect to consumption levels of 1999⁴. This in turn led to a substantial drop in the market price of beef and consumers refused to buy beef where its origin was not clearly stated. The greatest effect was felt in the retail sector where all but a few multiples suspended the sale of Irish beef for a short period. The power of the consumer was clearly demonstrated as governments and trade associations rapidly introduced schemes and codes of practice to reassure the consumer about the safety of their beef. Retailers and producers that introduced traceability systems found that the fall off in their beef sales was less than the national average. Sales of beef in these stores also recovered more quickly and to a higher level than those who had no traceability or food safety initiatives in place.

A number of other studies in the area of consumer attitudes to food safety have highlighted that consumers want to make informed choices about the food they are buying and consuming. According to a BMRB/Minitel Survey, 44% of the population base surveyed was concerned about the safety of their food. Furthermore, an Agri aware study found that 51% of consumers studied would pay 5% extra to guarantee traceability. A recent study undertaken by the Food Safety Authority of Ireland (FSAI)⁵ revealed that food safety ranks fourth as a consumer concern, after drugs, the health service and the environment. As part of this study, consumers were also asked if they had stopped eating any particular food in the past three years, with a significant amount (32%) replying that they had stopped eating certain foods completely, beef and meat attaining the highest percentage.

⁴ The Baseline outlook for the agricultural sector in Ireland, Teagasc

⁵ The Food Safety Authority is a statutory, independent and science-based body, dedicated to protecting public health and consumer interests in the area of food safety and hygiene

4.4 GS1's response:

In 1998, GS1 set up a Meat Supply Chain Task Force to produce traceability of beef guidelines in response to the Council Regulation (EC) 820/97. The task force consisted of 33 parties representative of the entire beef supply chain such as the European Livestock and Meat Trading Union (UECBV) and the Retail, Wholesale and International Trade Representation to the EU (EuroCommerce). A second edition of this document was published in November 2000 when the EC regulation 820/97 was repealed. As a direct result of the introduction of the EU 1760/2000, the WEST (Western European Support Team) Group which comprised European/EFTA GS1 Member Organisations formed EMEG- the European Meat Expert Group to consider how the EAN.UCC System could be used to help the European Beef Industry to address the requirements of the new regulation. EMEG developed a set of guidelines which were based on the two previous editions published by GS1 to help the sector implement the use of barcoding and e-commerce messaging in order to introduce tracking and tracing systems based on open global standards. The guidelines, known as 'GS1 Traceability of Beef Guidelines' were developed in consultation with the European Commission. GS1 Ireland along with France, Germany, Netherlands and Spain was an active participant in the EMEG Project.

GS1 Ireland then decided to set up a project group to examine the practical implications of implementing the EAN.UCC System in order to assist producers and retailers to comply with 1760/2000. Following the introduction of the General Food Law 178/2002, any traceability system that is developed must also comply with this legislation.



5. The Beef Traceability Project

5.1 Getting the Project Started

When the EU Regulation 1760/2000 came into force GS1 Ireland reviewed the implications of the legislation on the beef industry. This review involved participation in the work of the GS1 Beef Traceability working group. The guidelines arising from this group were circulated to interested parties both retailers and meat processors to determine if a project could be carried out in Ireland to address the legislation.

In December 2001 and January 2002, GS1 Ireland approached the key stakeholders in the Beef Sector, including the FSAI, the Department of Agriculture and Food, Bord Bia⁶ as well as supply chain partners from producers to retailers to invite them to participate in a Food Traceability Group. The objective of the group was to look at the implications of 1760/2000 and to consider how the GS1 Traceability of Beef Guidelines could be implemented in order to establish an efficient and cost effective way of complying with the legislation of beef labelling. The full list of meeting participants is set out in appendix 2.

Following initial discussions on the issue of traceability and having considered presentations from various solution providers on DNA testing and weighing scales solutions, it was decided that a pilot project would be the most appropriate strategy to adopt. Discussions with retailers and producers relating to the practicalities of implementing the EAN.UCC Guidelines were also held. Site visits were made to the AIBP Plant in Cahir, and the Westfleisch plant in Germany. Musgrave SuperValu-Centra (MSVC) and Kepak its sole beef supplier volunteered to participate in a pilot implementation of the guidelines.

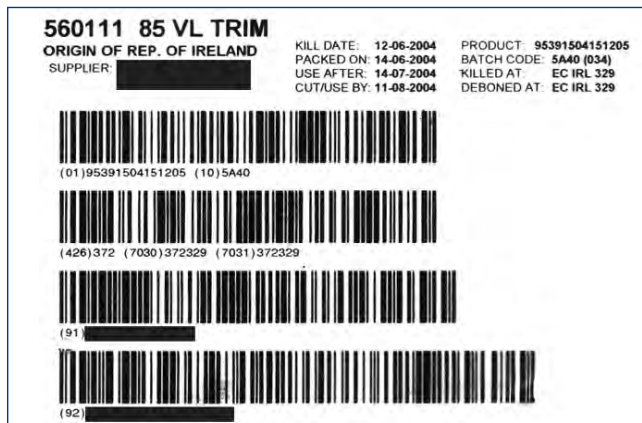
5.2 Project Scope

The Musgrave SuperValu-Centra Group were anxious to address not only the matter of labelling the pre-packed product but also to resolve the issue of serve over beef in a more effective and comprehensive manner than that required by 1760/2000. In the case of the latter, it was envisaged that the project would establish a tighter traceability link on beef sold over the butchery counter. As the SuperValu retail outlets perform the pre-packing step at individual store level, there was a need to establish a simple low cost solution to cater for the transmission and processing of the data relating to the primal cuts supplied to each store. As all SuperValu and Centra stores are privately owned franchises, the cost factor had to be taken into account as well as the fact that the stores would have different operating systems, various PC specifications and a varying level of PC skills. The end solution had to be robust enough to interoperate with all existing IT solutions.

Digi Systems developed a modification to their existing product allowing their scales to generate labels which implemented the recommendations of food traceability legislation for pre-pack meat products. These labels were now suitable for the pilot project. At the initial stages, it was decided not to use electronic messaging to transfer the data between the meat processor and the retailer. The preferred solution was based on using bar coding technology and specifically the EAN-128 symbology. EAN 128 is a data carrier for use on outer cases and pallets and can carry supplementary information relating to a product. Further information on EAN 128 is available in Appendix 4. Various label materials and their adhesion properties had to be trialled because of the environment in which the meat was stored. After a number of tests a label material was selected which was both compatible with the environment and the printing requirements. Also in selecting the label the adhesion properties had to allow for the label to be subsequently peeled off without damage and placed in a permanent log book at the retail outlet.

⁶ Bord Bia is the Irish Food Board and acts as a link between Irish Food and Drink suppliers and existing and potential customers.

A number of experiments were carried out to determine the best layout for the EAN 128 label that would contain all the information required by EU and national laws and the requirements of the meat processor. The label also had to meet the specifications outlined by GS1.



For privacy reasons, the farmers' name and address has been removed.

Following the initial project scope, visits were then made to Kepak Athleague and Watergrasshill to look and how the proposed traceability system would fit in with current practices.

6. How does the Traceability System Work?

6.1 Traceability at Slaughterhouse



When the animal arrives at the abattoir, its identity and history are transferred into Kepak's database. The animal is then slaughtered and following the hide removal it is quartered into hindquarters and forequarters. A carcass label is attached to each quarter which

contains information such as carcass number, ear tag number, farmers name and address, country of origin, date of birth, factory of slaughter, slaughter date, sex & grade and its cold weight. All this information is also recorded in Kepak's database.

6.2 Traceability at Processing Stage



Once the animal has been quartered it moves to the boning hall where the animal is deboned and each quarter is then made into primal cuts. After the cutting takes place, the cut is weighed, vacuum packed and labelled with the EAN 128 barcode. The EAN 128 label

contains the product code, batch code, country of origin, country of slaughter, factory of slaughter, factory of cutting, kill date, pack date, cut by date and use by date. With this barcode label, primal cuts can now be traced back to a group of animals which were slaughtered on a particular date. These primal cuts are scanned into the Kepak storage facility - either freezer

PROCESS FLOW



storage or chill storage. Primals are kept in the chill storage for a period of approximately 10 days. Through the use of scanning a traceability record is maintained of when exactly the product entered the chill or freezer room and when it was dispatched.

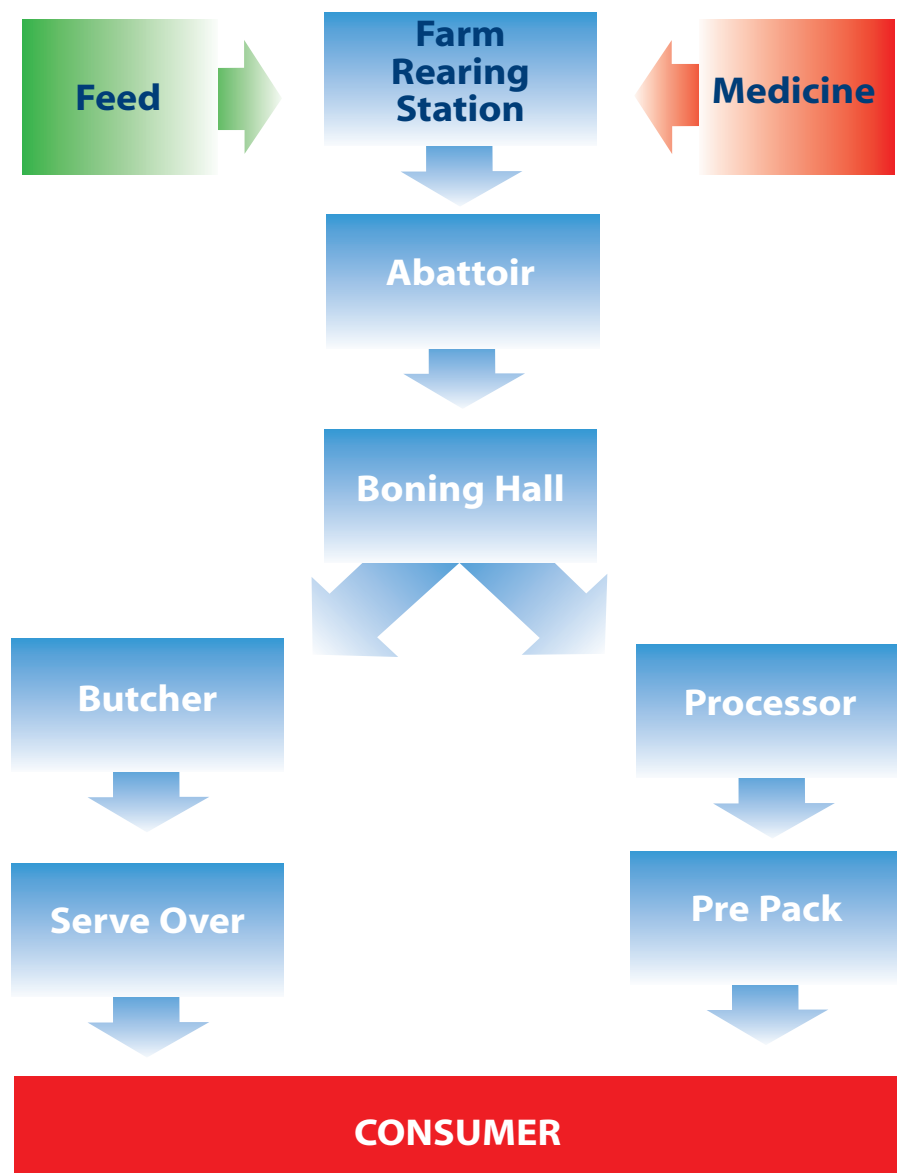


6.3 Traceability at Distribution Level

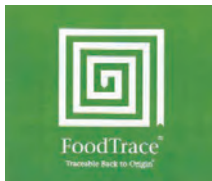
Each day Musgrave SuperValu-Centra place a daily order of beef and Kepak then pick product from the cold storage facility. Tracking the products in cold storage helps to ensure quality control and also makes the distribution process more efficient. The primal cuts are then scanned out of storage and transported to Musgrave SuperValu-Centra Depots where they are picked for the stores order for that particular day. The primal cuts are then transported directly to the store where they are processed for serve over products or for in-store pre-pack.

The supply chain for beef can be summarised as follows:

Beef Chain Diagram

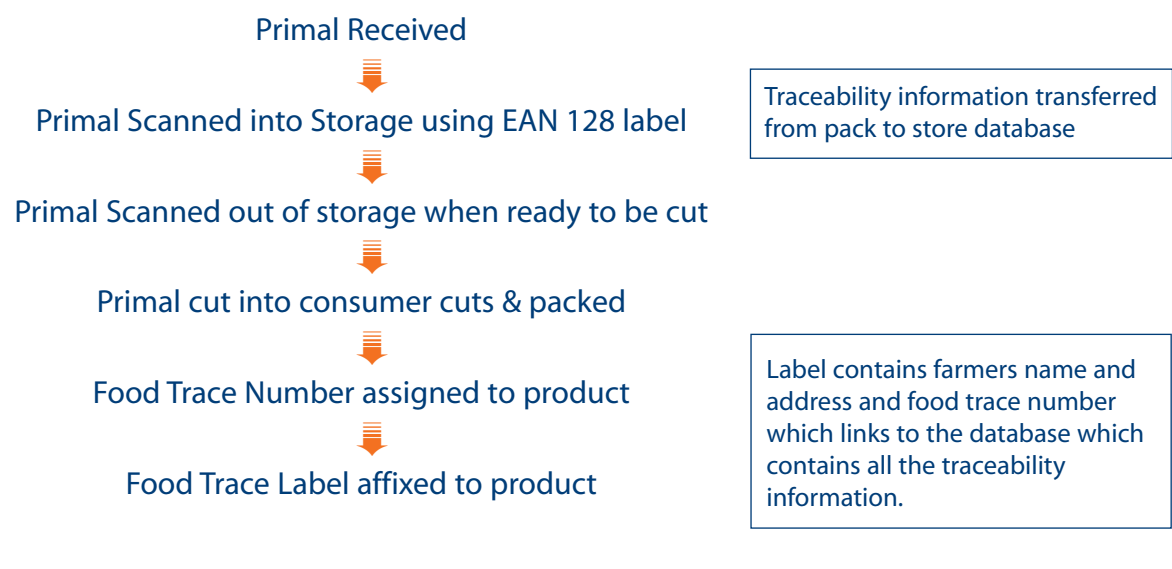


6.4 Traceability at Store level



When the primal cuts arrive at the butchery department at SuperValu and Centra outlets, the EAN 128 on the pack is scanned to confirm receipt of the beef and also to transfer all the traceability information from the primals to the stores' database. The primals are scanned into storage and when they are ready to be cut and packed, they are scanned out. A record of when the beef was delivered and processed is now available. This also provides a link between the primal cut and the batch of animals from which it originated. A Desktop PC based database was developed which captures the information on the label through scanning. For each day's production of pre-packed products, the system known as Food Trace records the traceability information contained in the EAN 128 label on the primal and transfers it via the retailers' scales onto the pre-packed products.

Store Level – Pre Packed

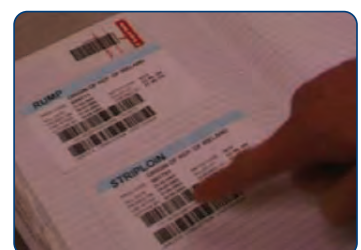


For privacy reasons, the farmers' name and address has been removed



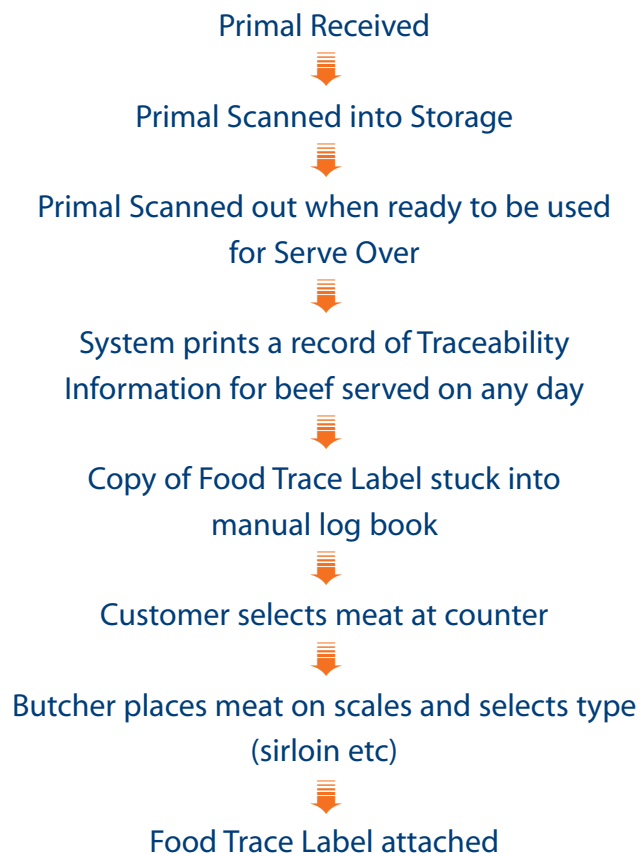
A FoodTrace number (i.e. daily lot number) is printed on every piece of pre-packed or serve-over beef and acts as a unique reference number to retrieve the traceability information. If the consumer has a query relating to the origin of the beef, once the FoodTrace number is quoted, the beef can be traced right back to the factory in which it was processed and the batch of animals from which it originated.

For serve over product once the EAN 128 label is scanned the information contained is transferred onto the back office PC. The system then allocates a lot number to the primals used for serve over within a given time period. When the consumer purchases a cut of meat from the batch, the traceability



information is delivered through the unique FoodTrace number printed on the price label. The software behind the system is capable of producing a traceability report for the consumer and a 'white-board' sheet used for in-store display. A copy of the label used in a days serve over products is printed and stuck into a manual log book to serve as a record of all batches used.

Store Level – Serve Over



Traceability information transferred from pack to store database

FoodTrace System allocates a lot number to the primals used for serve over within a given time period.

The FoodTrace system can analyse all traceability data by date, by farmer, by batch, by primal etc and also facilitates immediate product recall.

The FoodTrace System works on the basis of EAN identification numbers and helps to convert EAN numbers to consumer friendly information. For example:



EAN Number	Application Identifier	Explanation
■ (01)95391504151267	➡ Primal:	STRIPLOIN
■ (426)372	➡ Country Of Origin:	372 =IRELAND
■ (7030)372313	➡ Factory Of Slaughter:	EC 313 IRL Kepak Clonee
■ (10)2L27	➡ Batch Code:	2L27

7. Future Plans for the system

When the FoodTrace System was first introduced, the meat purchased in a SuperValu or Centra outlet with a red meat counter was traceable back to a batch of animals slaughtered on a particular date. However, both Musgrave SuperValu-Centra and Kepak were eager to ensure a tighter traceability link between the animal and the farm in which the animal was reared. In October 2004, Kepak and Musgrave SuperValu-Centra launched a modification to their system which resulted in the name and address of the farmer being indicated on the FoodTrace label.

At the slaughterhouse level, the farmer's name and address are transferred into the Kepak database along with the traceability information relating to the animal. When the animal is processed into primal cuts, the EAN 128 label attached now contains the farmers name & address. This information is available through the use of the Application Identifier⁷ AI (90) indicating Farmers Name and AI (91)⁸ which indicates the county in which the farmer is resident and also their Bord Bia number. At the store level when the primal cut is received and ready to be processed further into consumer cuts, the EAN 128 label is scanned and the information contained is transferred via the scales onto the pre-packed product. The label on the pre-packed product now contains not only a unique FoodTrace number but also the farmer's name and address.

Musgrave SuperValu-Centra and Kepak are anxious to move to traceability at individual animal level and further developments will be made to the FoodTrace System to accommodate this.



8. Key Learnings

The FoodTrace System was initially trialled in four SuperValu stores across Ireland. There was an extremely positive reaction and based on user comments some minor modifications were made. These included adjustments to the whiteboard section and the need for a clear definition for retail purposes of a primal cut. Training Programmes were developed for Avery Berkel, Digi Systems, Musgraves Technical Support and Retailers. The roll out was targeted at 140 SuperValu stores in 6 months which amounted to 6 stores implementing FoodTrace per week. After only 8 weeks of roll out 80 of 140 stores were up and running and there was a waiting list of interested stores who wanted the system as soon as possible.

8.1 Benefits of the System



The Musgrave SuperValu-Centra Group and Kepak have realised a number of benefits since introducing the FoodTrace system. The stored traceability information is not only of great benefit to them but is particularly beneficial to the consumer as it now gives reassurance that the beef in SuperValu and Centra outlets is fully traceable back to batch and farmer. If a customer has a query relating to the beef, Musgrave SuperValu-Centra can now access all the traceability information at the touch of a button and can track the animal back to its batch and ascertain where it was slaughtered and de-boned. In terms of a product recall, Musgrave SuperValu-Centra now have an accurate record of where the primals were delivered and this now facilitates an immediate product recall. The speed at which this information is available has also dramatically increased as the information is stored electronically rather than in hard copy.



⁷ An Application identifier (AI) is a prefix used with EAN-128 to identify the meaning and format of the information or data that follows it. The Application Identifiers have defined structures and describe the length and content of the data field.

⁸ AI 90-99 are used for Company Internal Information.

By using the EAN.UCC System of bar coding and scanning, the likelihood of an error relating to batch numbers or production dates is significantly reduced as this information is now automatically captured from the EAN 128 label. This also means that the likelihood of traceability data relating to the beef being manipulated is significantly reduced.

Up to five hours work per week per store on average has been saved with the introduction of the Food Trace System. Before the introduction of the System, the butchery departments in SuperValu had to keep a manual record of the number of primals they received in and the corresponding batch numbers. This information was entered manually into a log book. However through the use of bar coding and scanning, the traceability data is now captured automatically. This means that the capital outlay per store can be recovered in a matter of months.

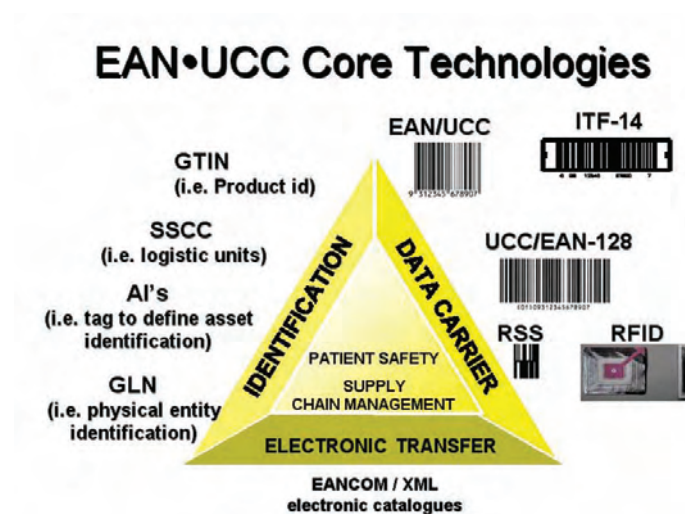
The need for a manual whiteboard system has now been eliminated as it is replaced by a printed sheet which gives a record of the traceability information relating to the beef being served on any particular day.

The FoodTrace System is also suitable for other food products and other suppliers and other food stuffs as it is not system dependant and does not need prior configuration. It accepts a range of EAN identification symbologies such as EAN 128 and also the Reduced Space Symbology barcode (RSS).



9. The EAN.UCC System in Traceability

The EAN.UCC System provides internationally recognised standards for globally unique identification of food and feed business operators and products in all transport and storage configurations. Furthermore, it provides for electronic communication standards that enable fast and accurate exchange of information between all stages of food production, processing and distribution. The system uniquely identifies products, locations, services and assets and also includes a series of standard data structures known as Application Identifiers (AIs), which allow secondary information such as batch, expiry and lot number to be encoded. The fundamental principle of the EAN.UCC System is an unambiguous numbering schema used to identify the goods or services throughout any supply chain. Using automatic data capture techniques, the numbering system can be applied successfully at every stage of production, transformation and distribution.



The EAN.UCC System consists of 3 components (i) Identification Numbers - used to identify a product, location, logistic unit, service or asset. (ii) Data Carriers - the barcodes or radio frequency tags used to represent these numbers. The data carriers vary according to the level of information required or the space available. (iii) Electronic Messages - the means of connecting the physical flow of goods with the electronic flow of information.

10. List of Appendices

1. GS1 Ireland Food Traceability Committee Members 2003
2. Organisations who participated in the initial discussions
3. Full description of project participants
4. Explanation of EAN 128
5. GS1 Guidelines for Beef Traceability
6. EAN.UCC System

Appendix 1:

GS1 Ireland Food Traceability Committee Members:

- Mr. David Fitzgerald, Chairman of Committee & Senior Executive, Glanbia
- Dr. Wayne Anderson, Chief Specialist Food Science, Food Safety Authority of Ireland
- Mr. Eoin Barry, Fresh Meats Supply Chain Manager, Musgrave SuperValu-Centra Group
- Mr. Eamon Howell, Quality Assurance Manager, Musgrave SuperValu-Centra Group
- Mr. Denis O'Brien, IT Consultant, WSI (formerly IT Manager, Kepak)
- Mr. Karl McDonald, Technical Executive, Food Safety Authority of Ireland
- Mr. Jim Bracken, Director, GS1 Ireland
- Mr. Brendan Kernan, Technical Consultant, GS1 Ireland

Appendix 2:

Organisations who participated in the initial discussions of the project.

- AIBP
- Avery
- Dunnes Stores
- Glanbia
- Musgraves
- Pettits
- Superquinn

Appendix 3:

Full company profiles on companies involved in the Traceability Project

1. GS1 Ireland



GS1 Ireland is a not for profit and neutral organisation responsible for the development, promotion and use of the EAN.UCC global standards for bar coding, scanning and electronic commerce messages. GS1 Ireland is a member organisation (MO) of GS1, which is headquartered in Brussels, Belgium. GS1 has over 100 member organisations representing 129 countries ensuring the system is truly global. Today, over 1.3 million member companies worldwide benefit from the use of the EAN.UCC system.

GS1 Ireland is also an active participant in the WEST (Western European Support Team) group whose mission is to promote the use of the EAN.UCC System across Europe through the support of local and transnational pilot projects. EAN Standards are fully endorsed by CEN, the International Standards Organisation (ISO) and UN/EDIFACT.

2. Kepak



The Kepak Group, is an Irish company, and is one of Europe's leading food processors. They process in excess of 400,000 cattle, 2.5 million lambs and 15,000 tonnes of consumer foods per annum. They have a turnover in excess of €500m and employ over 2,000 people. They have nine manufacturing facilities located across Ireland and the U.K., as well as sales offices throughout Europe. Kepak operated as a single plant up until 1985 when they acquired Goldstar Meats (now part of Kepak Convenience Foods division (KCF). This division was developed as a specialist beef burger supplier for both the retail and foodservice sectors. In 1986, Kepak purchased a lamb slaughter and boning facility in Hacketstown, Co. Carlow. This was a key strategic move to capitalise on the expanding sheep flock in Ireland and the forecasted increase in export sales. Another plant in Athleague, Co. Roscommon was acquired the following year.

The Athleague facility was extended in 1990 to incorporate a purpose built beef abattoir, allowing direct access to cattle supplies in the West of Ireland. The resulting success led directly to the purchase of a beef boning plant in Ballymahon, Co. Longford in 1992. This provided the opportunity of supplying the U.K. retail trade directly and the plant was used as a specialist processing facility for retail customers.

Expansion to the U.K. began in 1995 with the acquisition of the British Beef Company. The purchase included an integrated beef and lamb business including slaughter, boning and retail packing and gave Kepak a strong presence in the market. This was further solidified when Buchan Meats, in Aberdeenshire, Scotland was acquired in 1996.

Agra Trading Ltd. and its subsidiary Agra Meat Packers Ltd were significant acquisitions in 1997. In the same year, KCF invested in new cooking technology that allowed it to supply fully cooked microwaveable burgers to retail and foodservice customers. Kepak Group has recently invested in retail packing facilities in both Ireland and the U.K. and a state of the art retail packing facility was built on the Preston site in 1999. This allows the provision of a completely integrated service from 'farm to plate' and has led to substantial growth in business with key customers.

3. Musgrave Group



Founded in 1876, the Musgrave Group is one of the largest private companies in Ireland and supermarket groups in the Republic of Ireland. The company is one of the sector's most important supporters of Irish farmers, growers, suppliers and independent supermarkets. The Musgrave Group operates an island-wide distribution and support

network for independent supermarket owners and franchises the stores which hold approximately 24 per cent of the grocery market in the Republic and 10 per cent of the market in Northern Ireland; a 20 per cent market share of the island overall.

As well as the SuperValu and Centra retail franchise business, Musgrave also manages a leading cash & carry operation, with nine large purpose built facilities offering the traditional food and non-food ranges, as well as an extensive foodservices and delivered business. The Musgrave Group also operates in Britain through its Budgens division, having completed the acquisition of Budgens plc on 31 July 2002. Budgens operates 230 stores ranging in format from supermarkets to convenience stores. Budgens covers 25 counties including London, with over 800,000 square feet of retail space, 6,000 staff and serves over 80 million customers a year. Musgrave also operate a wholesale and distribution company in the Alicante region of Spain. They also operate a chain of franchised retail outlets and a chain of cash and carries. In June 2004, Musgrave Group acquired the Londis franchise for Great Britain, representing 2,100 independent Londis store owners.

4. Digi Systems



Digi Systems is an Irish-owned business distributing Retail and Industrial Weighing Systems, Bar-Code Labelling Printers and ePOS Systems countrywide. Digi scales are the market leaders in technology, and were the first scales in the world to introduce presets and thermal printing to the weighing market. The first Digi Scales were sold in Ireland in 1975 by Managing Director, Con Kenny, who later established Digi Systems Ireland in 1986. Digi's latest concept in scale and printer management is the SIS 98 Scale System Software package, which incorporates full connectivity to the SM500, 104 pre-set scale, SM500 touch screen with 450 Presets, and the DP90 touch screen printer. Using TCP/IP networking, it also supports the low-cost, non-alpha SM300 models and communicates with the latest range of FX3600 wrappers, and DPS3600 weigh price labelling scales.

All of these Retail and Industrial Scales and Printers can enjoy a common PLU file with price changes and creations effected from one windows based application. Digi's SM Scales and Printer series are fully prepared for the bovine compulsory and non-compulsory labelling requirements. They can be used for both Counter Service and Pre-pack labelling and provide various options for entering and selecting bovine data for practical traceability.

All Digi solutions can use the EAN 128 standard barcode to read and record the necessary information, eliminating the time and errors associated with manual entry.

5. Avery Berkel



Avery Berkel is part of the Avery Weigh-Tronix group which is one of the world's largest manufacturers and suppliers of weighing equipment and solutions. The group was formed in June 2000 when US weighing company Weigh-Tronix acquired the Avery Berkel group of businesses. With companies in Europe, USA, Africa and Asia, the group can draw on extensive international research, product development, manufacturing, sales and service resources which employ more than 4,200 people worldwide. These are supported by a network of dealers and distributors who sell and support their range of products around the globe.

The Avery Weigh Tronix group has created some of the most comprehensive weighing portfolio, supported by ancillary equipment, systems software and food processing machinery. From laboratory balances to weighbridges, hazardous area products to retail counter scales, mechanical checkweighers to computer-linked systems, their ranges meet the needs of the smallest independent trader and the largest multi-national business.

Appendix 4: EAN 128 Explanation

EAN-128 is a type of bar code symbology used to encode the identification and supplementary information relating to an item according to a defined structure. Supplementary information such as durability dates, batch numbers, etc can be encoded into the barcode using application identifiers. An application identifier (AI) is a prefix used with EAN-128 to identify the meaning and format of the information or data that follows it. Application Identifiers have defined structures and describe the length and content of the data field e.g. (01) Product Identification or (15) Best Before Date. EAN 128 is designed to be used on traded units (outer cases) and transport units (pallets) and not on the consumer unit as retail point of sale systems are currently not capable of reading the EAN 128 symbology.

THE DEMO COMPANY	
No.1 MAIN STREET, ANYTOWN, Co. ANYWAY	
Product:	
Fizzy Orange Soda 500ml x 24	
SSCC:	
353912345678910118	
GTIN:	
05391234567892	
Best Before Date:	Batch Number:
31/12/2005	APO1536Z
	
(01)05391234567892(15)051231(10)APO1536Z	
	
(00)353912345678910118	

Appendix 5: GS1 Traceability of Beef Guidelines

The following AI's were recommended by GS1 in implementing EC 1760/2000.

AI	Full title	Data Title	Format AI	Format Data Field
01	Global Trade Item Number	GTIN	n2	n14
10	Batch/Lot Number	BATCH/LOT	n2	an...20
251	Reference of Source entity	REFERENCE TO SOURCE ENTITY	n3	an....30
422	Country of Origin	ORIGIN	n3	n3
423	Country of initial process	COUNTRY-INITIAL PROCESS	n3	n.....15
426	Country of Processing	COUNTRY- FULL PROCESS	n3	n3
7030 up to 7039	Approval Number of Processor	PROCESSOR #	n4	n3+ an.....27

GS1 recommended AI's

GS1 also recommended that the carcass label include the following information:

- Country of birth AI 422
- Country/countries of fattening AI 423
- Country of slaughter & approval no. of slaughterhouse AI 7030
- Ear tag number AI 251
- EAN.UCC GTIN AI 01

On the primal label, GS1 recommended that the following information be present:

- Country of birth AI 422
- Country/countries of fattening AI 423
- Country of slaughter & approval no. of slaughterhouse AI 7030
- Country & approval no. of the 1st cutting hall AI 7031
- Country & approval no. of 2nd cutting hall AI 7032
- Country & approval no. of 3rd cutting hall – to 9th hall AI 7033-39
- Either ear tag number for individual cutting or batch number of cutting group AI 251
- EAN.UCC Global Trade Item Number AI 01

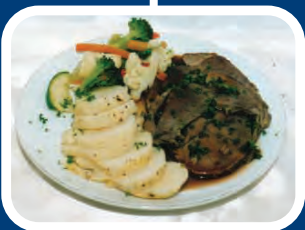
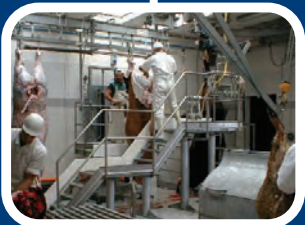
GS1 Traceability of Beef Guidelines are available at www.gs1.org

Appendix 6: The EAN.UCC System

The EAN.UCC Standards are used throughout the food industry for traceability purposes as well as withdrawal and recall procedures.

- The GTIN (Global Trade Item Number) is used in over 140 countries and territories to uniquely identify food products sold at retail point-of-sale outlets. The GTIN is more commonly known as an EAN 13.
- The GLN (Global Location Number) is used to identify food and feed business operators and locations of food production, processing, manufacturing and / or distribution operations.
- The SSCC (Serial Shipping Container Code) is used to uniquely identify food and feed products in all transport and storage configurations at all stages of production, processing, manufacturing and distribution.

Furthermore, by applying EAN.UCC traceability principles, food business operators may efficiently conduct targeted product withdrawals and recalls. These may be based on production, processing, manufacturing and / or distribution batches or on individual product serialization). CIES the Food Business Forum, Confederation of Food and Drink Industries of the EU (CIAA), European Brands Association (AIM), ECR Europe, and EUREPGAP all recommend the use of EAN.UCC standards.



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