The Australian Meat Industry

delivering tools for supply chain efficiency and traceability

global standards for numbering and e-Messaging

The EAN•UCC system

About this document

This document is intended to provide an overview of numbering and e-Messaging as well as bar coding for the meat industry. It is based on using global standards for trade and commerce as they apply to meat and livestock.

The document has been prepared as an executive summary from material produced by a number of MLA demonstration projects related to traceability and supply chain management as well as from material supplied by EAN Australia.

Acknowledgments

These projects have been conducted by:

- Meat and Livestock Australia
- Queensland Government - Department of State Development
- Australian Country Choice
- Australian Meat Holdings
- Australian Agricultural Company

Major additional contribution has been provided by:

- EAN Australia
- AUS-MEAT
- AQIS
- FOOD SCIENCE AUSTRALIA

The projects have covered:

- Live stock to Slaughter using the EAN•UCC system (NLIS/EAN Integration Project)
- Traceability for Co-Products and By-Products
- Export of Meat Products using e-Messaging for Importation into the US
- Retail Ready and Value Added Products
- e-Business Tools for Efficient Supply Chain Management for the Beef Industry (QE-Meat)
- Using the EAN•UCC system for Food Safety Traceability - Beef

Much of the information in this document has been obtained from various EAN•UCC publications and has been modified to better suit the meat industry. Acknowledgment is give to EAN Australia for providing the material.

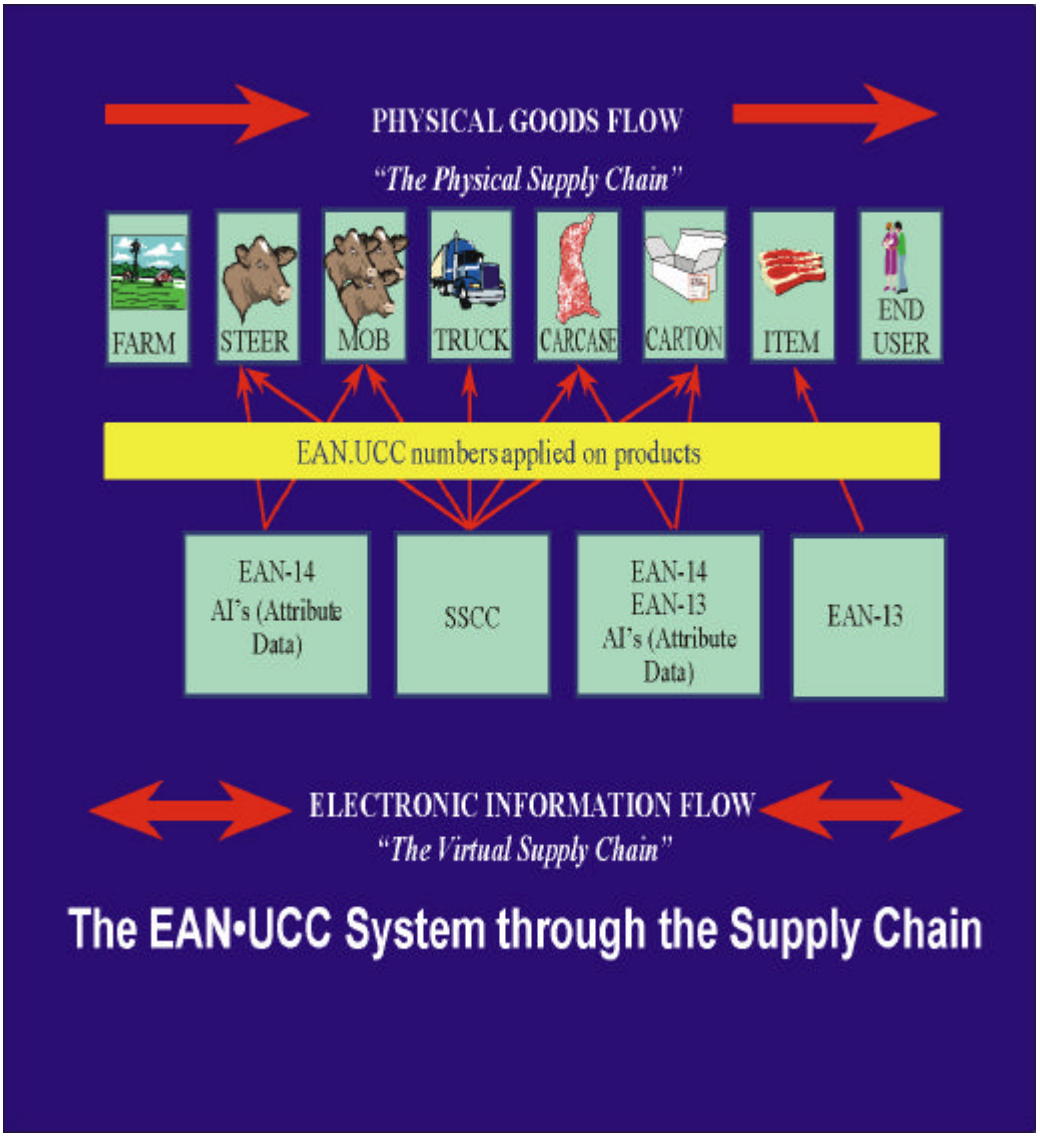
Meat Industry Supply Chain

delivering efficiency and traceability

Supply chain efficiency: the key to competitive success

Increasingly, corporate success is based, not on having the best product, but on having the best supply chain management practices.

Through the automation of business processes, the global standards for numbering and e-Messaging (the EAN•UCC system) drives increasingly fast, efficient and accurate flow of information between trading partners, factors that are fundamental to the success of any business. This includes the value of information related to traceability for track forward and trace back.



Efficiency

An efficient meat industry supply chain allows your company to build better relationships with trading partners today, and ensure your products achieve greater competitiveness and demand tomorrow.

Reduced Costs

Indeed as companies strive to reduce costs, they also become increasingly intolerant of trading partners whose supply chains don't mesh smoothly with their own. Businesses are finding that the best supply chain can be more important to winning and keeping trading relationships than the quality of their products.

Supply Chain Management

For that reason, companies striving for continuous improvement in supply chain management now enjoy speedier time to market, reduced distribution costs and enhanced data flow, all helping to ensure the right products get to the right marketplace at the right time and at the right price.

e-Messaging

E-commerce will place even greater demands on the supply chain. As a result, future success in e-business demands excellence in supply chain management today.

The Benefits

standards for numbering and e-Messaging

The use of global standards for numbering and e-Messaging offers benefits to all parties in the meat industry supply chain by reducing costs, saving time, providing traceability, and increasing accuracy through management of the entire supply chain.

What are the benefits of global standards for numbering and e-Messaging?

At Point of Sale (POS), retail systems can involve large numbers of scanning registers linked to a store management system that can perform functions including updating price files, printing shelf labels, deleting lines, ordering, stocktaking, reporting sales data and managing inventory, as well as payroll, labour scheduling and cash office functions.

However, well before goods arrive at the retail outlet, the global standards for numbering and e-Messaging have delivered benefits to all parties involved in the supply chain.

For all trading partners, benefits include:

- The ability to identify goods and shipments quickly and accurately
- Track forward and trace back of products
- Faster delivery of goods
- Fewer handling and shipping errors
- Better inventory management and reduced inventory holdings
- Reduction of order and replenishment times

For Livestock Production (breeding, backgrounding and finishing), benefits include:

- The ability to identify livestock (mobs and individuals) and consignments quickly and accurately
- Compliance and integration with the National Livestock Identification Scheme (NLIS)
- Electronic NVD, Waybills and other regulatory and market access forms
- Producer feedback matched to properties, mob and even individual animals
- Ability to provide Traceability for livestock from birth to retail

For Domestic Processing (slaughter, boning, cold store, value adding, retail ready, by-product/ co-products) benefits include:

- The ability to identify livestock, carcases, cartons, bulk packs, pallets and shipments quickly and accurately
- Compliance with retailer requirements for bar coding
- Track forward and trace back from slaughter to retail shelf
- Integration with the National Livestock Identification Scheme (NLIS) for slaughter
- Ability for using e-Messaging for NVDs, Waybills, Meat Transfer Certificates, producer feedback
- Compliance with customer traceability requirements for Co-Products and By-Products

For Export Processing (slaughter, boning, cold store, exporting by-product/ co-products) benefits include:

- The ability to identify livestock, carcases, cartons, bulk packs, pallets and shipments quickly and accurately
- Compliance with export customer requirements for bar coding
- Track forward and trace back from slaughter to point of use in export country
- Integration with the National Livestock Identification Scheme (NLIS) for slaughter
- Ability for using e-Messaging for NVDs, Waybills, Meat Transfer Certificates, EXDOCS, Importer, producer feedback
- Compliance with customer traceability requirements for Co-Products and By-Products

Meat Industry Demonstrations

EAN/NLIS integration project

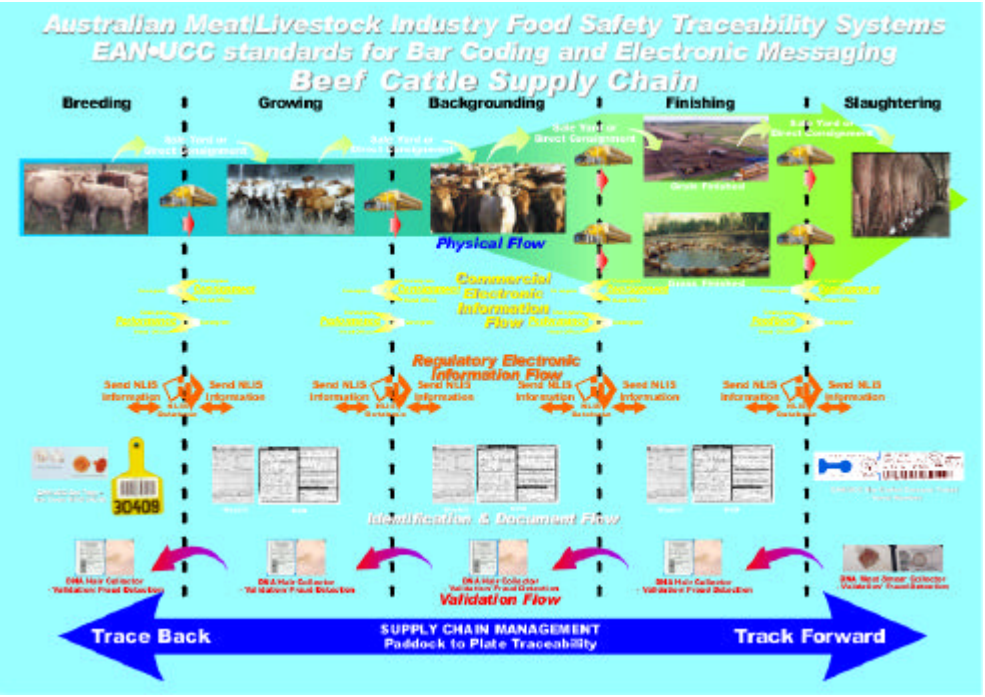
Demonstration project - Electronic Livestock Identification (NLIS), Data Capture, Processing and e-Messaging

The demonstration trial that was conducted with Australian Country Choice (ACC) Cannon Hill slaughter facility and the Brisbane Valley Feedlot was based on testing three primary areas of electronic information management, these were:

- Capture and record information on mob and consignments as well as individual livestock identification by use of NLIS devices in the feedlot. This was based on EAN•UCC numbering and e-messaging standards
- Electronic Messaging to the NLIS database of regulatory data based on EAN•UCC e-messaging standards
- Electronic Messaging between the Feedlot and ACC head Office of commercial information based on EAN•UCC numbering and e-messaging standards

Objective of Project

The objective of the trial was to demonstrate the operational efficiencies, cost benefit and traceability that can be achieved through adoption of suitable technology for individual livestock identification, information capture and electronic messaging using the tools of the EAN•UCC system.



Benefits to Industry

- The successful demonstration of the linkage of carcase and carton product back to live animal history from the NLIS database
- The movement up and down the supply chain of critical commercial information by use of based on EAN•UCC numbering and e-messaging standards.
- Validation audit conducted by matching DNA samples collected from retail product from a Coles Supermarket back to hair samples collected at induction at the Feedlot.
- DNA was used to prove that the retail product could be matched to an individual live animal by use of the EAN•UCC system.

Outcomes of Project

- RFID Tagging and reading individual cattle with NLIS devices at the feedlot to a total of 500 cattle
- Sending EAN•UCC e-messages to ACC head office of the records of the induction
- Sending EAN•UCC e-messages to ACC head office of the records of consignment of the cattle to slaughter
- Sending EAN•UCC e-messages to NLIS of the records of consignment of the cattle to slaughter
- Reading of NLIS devices at time of slaughter
- Sending EAN•UCC e-messages NLIS of the record of the slaughter
- Sending EAN•UCC Query e-messages to the NLIS for the live history on slaughtered livestock
- Receiving EAN•UCC Response e-messages from NLIS on the live history of slaughtered livestock

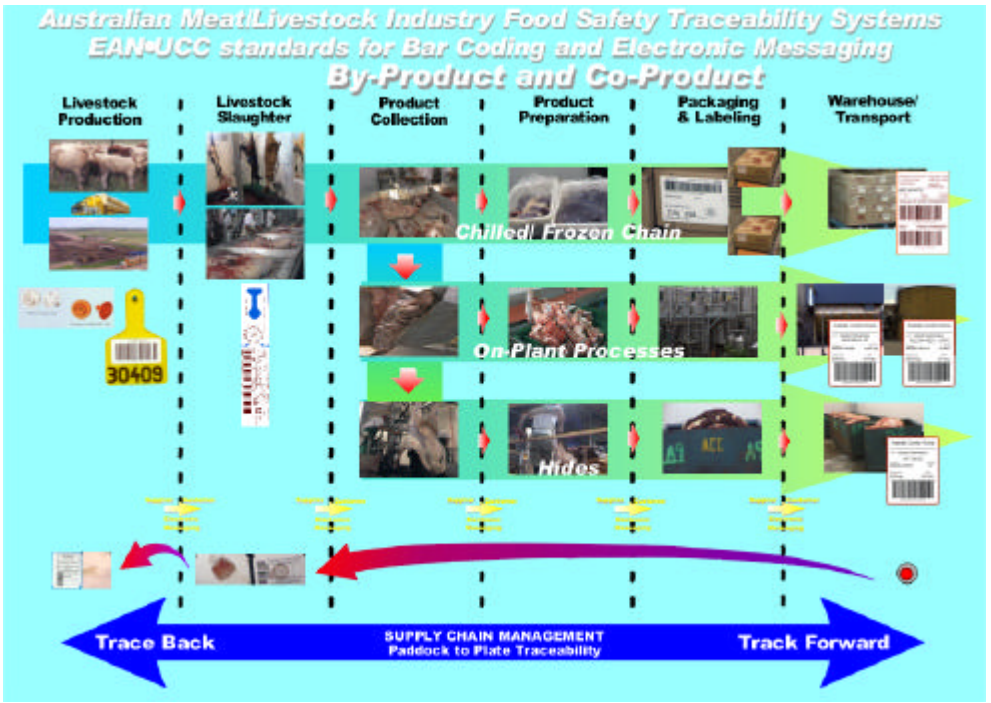
Meat Industry Demonstrations

by-products and co-products project

Demonstration project for traceability of by-products and co-products using the EAN•UCC system

Objective of Project

The demonstration project objective was to show the ability to trace co-products and by-products back to the carcases and even individual livestock using the EAN•UCC system. Linkages needed to be established through the slaughter, boning and any subsequent on-plant processes. The optimum level of linkage was determined by the combination of market requirements, practical limitations and cost considerations. The principles of the EAN•UCC system of products having a packaging level, a batch size and a labelling method work with by-products and co-products



Benefits to Industry

- The ability to directly link live animals with Foetal Blood and Organic Whole Blood through the EAN•UCC system.
- The ability to link individual carcases that comprised batches of tallow, meat meal and blood meal.
- The use of GTIN and application identifiers for serial numbers to ensure that the blood can be globally identified and traced back to the live animal.
- Hides have the ability to be uniquely linked to an individual carcase number and live animal identification.
- The use of SSCCs for each hide can ensure that the hide can be globally identified.

Outcome of Project

- Each of the by-products and co-products within the demonstration trial has been allocated an internal number that complies with the EAN•UCC system requirements as well as the Meat Industry Guidelines for Number and Bar Coding published by EAN.
- Linkage models were developed that identified the number of carcases to a finished product. This ranged from one to one for Foetal Blood and Organic Whole Blood through to a number of days for tallow and meat /blood meal.
- The EAN•UCC system was applied equally from single products such as foetal blood vacuum pack up to tanks of tallow.

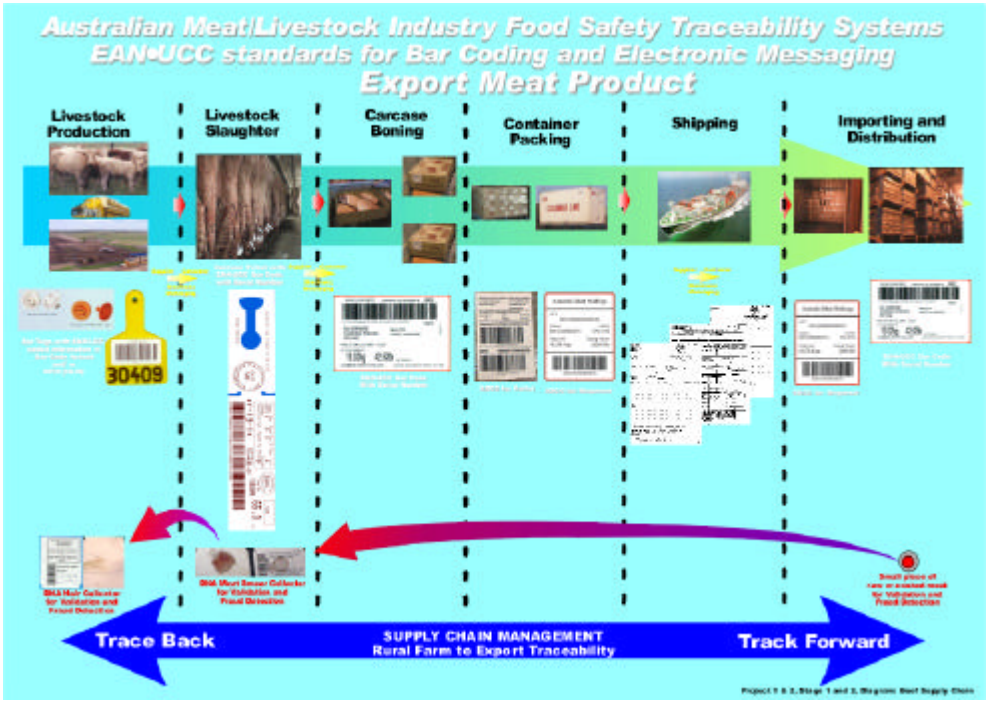
Meat Industry Demonstrations

export project

Demonstration project for simplification and increased efficiency for meat export by use of the EAN•UCC system for bar coding and e-messaging.

Objective of Project

The objective was to demonstrate the use of EAN•UCC Bar Code Labelling (with unique numbering per carton) and the use of EAN•UCC e-messaging (EANCOM DESADV message) to absolutely identify and track the shipment and/or each individual carton.



Benefits to Industry

- The reduced costs of exporting carton product yet providing a higher level of traceability and accountability.
- The reduced costs are achieved by the long-term objective of changing from port marks to the globally unique individual carton bar codes.
- Reduction in paper work achieved by using e-messaging for meat transfer certificates and health certificates.
- The ability to track forward and trace back carton product from processing to the final point of use.

Outcomes of Project

- The use of an SSCC (Serial Shipping Container Code) that identifies the consignment and links it to a Health Certificate, the physical shipping container and the individual carton serial numbers.
- The inclusion of the SSCC on the Health Certificate.
- The transfer via email to the Consignee (importer, customer, I-Store, etc) of an Electronic File (EANCOM DESADV Message) of the entire set of individual carton serial numbers, weights, production dates, establishment numbers and carton barcode numbers (EAN-14 with Application Identifiers).
- The information provided using the EAN•UCC system tools allowed the Consignee to prepare evidence that a specific group of cartons matched the details about a specific consignment/ health certificate.

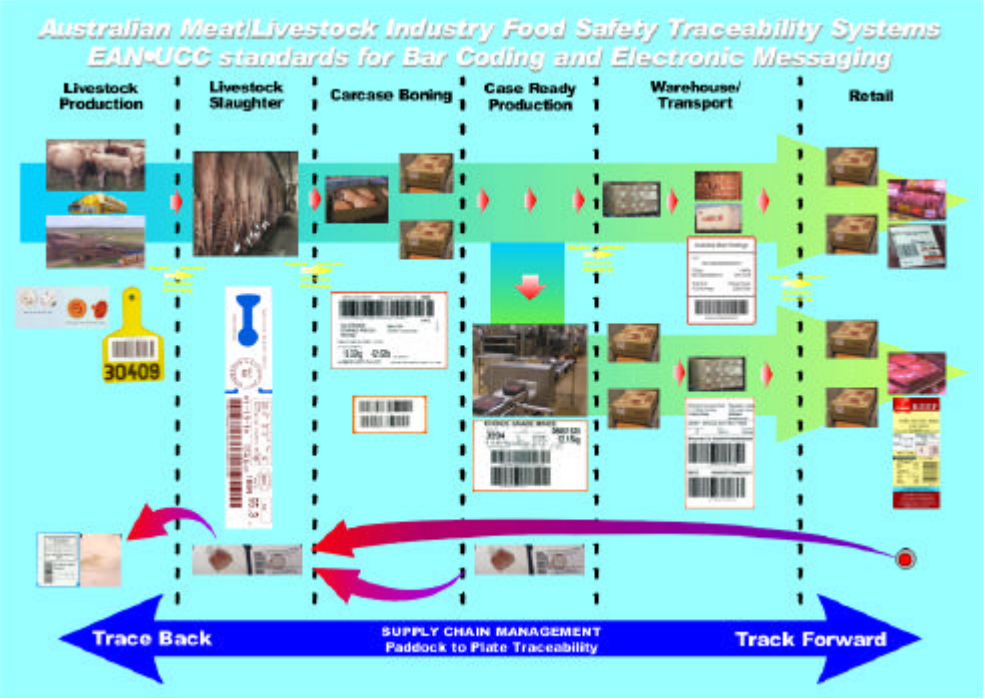
Meat Industry Demonstrations

value added and retail ready project

Demonstration project for simplification and increased efficiency for meat export by use of the EAN•UCC system for bar coding and e-Messaging.

Objective of Project

The domestic trial involved the development of EAN•UCC e-Messaging related to carton primal product and value added and retail ready product. The reason that retail ready product was chosen was because of its complexity and difficulty for tracking and tracing through the supply chain. The products that were chosen for the domestic trial were Coles specified products. These products could have been manufactured by number of different suppliers and as such this created a problem in unique carton serial numbers. The project had to demonstrate how product could be tracked and traced through the supply chain to retail as well as shorter lead-time and increasing efficiency by use of EAN•UCC system.



Benefits to Industry

- The ability for multiple suppliers to be able to supply product into one logistic system of a major retailer.
- The ability to track and trace product from retail back to all possible carcases used in the preparation of product.
- Shorter lead-time between order placement and product availability on the retail shelf by use of EAN•UCC e-messaging.
- Increase efficiency in order fulfilment for picking and cross docking.
- Lower operational costs for receiving, processing and fulling orders

Outcomes of Project

- Scan various cartons to make a pallet (each carton has a unique Serial number or SSCC)
- Create an SSCC for the pallet.
- Scan a number of pallets to create an SSCC for the shipment
- Send the e-message Despatch Advice to the customer
- The customer scans the shipment SSCC to match to the e-message
- The customer inventory can automatically be incremented by the cartons listed in the EDI, thus saving the cost of scanning every carton.
- The supplier can send a receiving advice e-message to the customer stating that the goods have been received.

The Cost Benefits

cost benefit for export carton product

Example 1 – Export Carton Product

Non-EAN Bar Coding; In this example each of the supply chain participants have computerised systems with scanning ability but the Processor is using a non-EAN numbering, bar code and e-messaging system.

Steps		Cost $ per Truckload
1 – Processor applies Non-EAN Bar codes to carton and store on-site	(576 x 0.20)	$115.20
2 – Scan out of on-site store on to truck	(576 x 0.20)	$115.20
3 – Manually prepare MTC for load to 3rd party cold store (for 576 cartons)		$10.00
4 – Truck arrives at 3rd party cold store manual tally of carton, manual record of arrival		$30.00
5 – Manual tally of weights and place in storage	(576 x 0.50)	$288.00
6 – Enter manually in to computer system to record arrival of truckload		$20.00
7 – Manually complete MTC receipt record and return to processor		$5.00
8 – Processor manually reconciles MTC returns and holds on file		$3.00
9 – Processor prepares and faxes order to fill container with load of the 288 cartons.		$30.00
10 – Cold store manually enters order in to computer and faxes back details		$25.00
11 – Cold store manually pulls cartons to pack container, sorts by carton descriptions, establishment numbers and production dates.	(576 x 0.50)	$288.00
12 – Cartons Port Marked manually and checked by supervisor	(576 x 0.25)	$144.00
13 – Cold Store manually prepares information to health certificate		$25
14 – Enters health certificate data into EXDOC for health certificate		$10
Travel to US for unloading		
15 – Unload ship at destination – Manually match container to paper work		$50
16 – Cartons travel to bonded cold store – manual tally of cartons matched to paper work	(576 x 0.50)	$288.00
17 – FSIS inspection process and entry to US market (costs incurred by cold store in moving cartons around and manual identification)	(576 x 0.50)	$288.00
18 – Manually sort and pull carton to load for final customer checking description and weights and manually record	(576 x 0.50)	$288.00
		Total: $2022.40

EAN Bar Coding; In this example each of the supply chain participants have computerised systems with scanning ability all based on the EAN numbering, bar code and e-messaging system. The example is based on achieving electronic Port Marking and Meat Transfer Certificates.

Steps		Cost $ per Truckload
1 – Processor applies EAN Bar codes to carton and store on-site	(576 x 0.20)	$115.20
2 – Scan out of on-site store on to truck	(576 x 0.20)	$115.20
3 – Electronic MTC to 3rd party cold store (for 576 cartons)		$0.00
4 – Truck arrives at 3rd party cold store Match to e-Message		$1.00
5 – Automatic tally of weights and place in storage	(576 x 0.20)	$115.20
6 – Automatic update to computer system record arrival of truckload		$0.00
7 – Automatic electronic complete MTC receipt record and return to processor		$0.00
8 – Processor automatic reconciles MTC returns and holds on file		$0.00
9 – Processor prepares electronic order to fill container with load of the 288 cartons.		$10.00
10 – Cold store automatic process order in to computer and email back details		$1.00
11 – Cold store scans to pull cartons to pack container, sorts by carton descriptions, establishment numbers and production dates.	(576 x 0.20)	$115.20
12 – No Port Marked as each carton is unique		$.0
13 – Cold Store automatically prepares information to health certificate		$5
14 – Enters health certificate data into EXDOC for health certificate		$5
Travel to US for unloading		
15 – Unload ship at destination – Electronically match container to paper work		$20
16 – Cartons travel to bonded cold store – scan tally of cartons matched to paper w ork	(576 x 0.20)	$115.20
17 – FSIS inspection process and entry to US market (costs incurred by cold store in moving cartons around and scan identification)	(576 x 0.20)	$115.20
18 – Scan sort and pull carton to load for final customer checking description and weights	(576 x 0.20)	$115.20
		Total: $828.40

This simple example showed a cost saving of $1189 per container load or a saving of $2.06 per carton. If all the steps in the supply chain are analysed in detail the cost saving could be doubled.

The Cost Benefits

cost benefit for domestic carton/carcase product

Example 2 – Domestic Carton/ Carcase Product

Non-EAN Bar Coding; In this example each of the supply chain participants have computerised systems with scanning ability but the Processor is using a non-EAN numbering, bar code and e-messaging system.

Steps		Cost $ per Truckload
1 – Processor applies Non-EAN Bar codes to carton and carcases and stores on-site	(576 x 0.20)	$115.20
2 – Scan out of on-site store on to truck	(576 x 0.20)	$115.20
3 – Manually prepare MTC for load to 3rd party cold store (for 576 cartons/ carcases)		$10.00
4 – Truck arrives at 3rd party cold store manual tally of carton, manual record of arrival		$30.00
5 – Manual tally of weights and place in storage	(576 x 0.50)	$288.00
6 – Enter manually in to computer system to record arrival of truckload		$20.00
7 – Manually complete MTC receipt record and return to processor		$5.00
8 – Processor manually reconciles MTC returns and holds on file		$3.00
9 – Processor sales cartons and carcases to retails then prepares and faxes delivery details to Cold Store		$60.00
10 – Cold store manually enters delivery schedule in to computer and faxes back confirmation details		$40.00
11 – Cold store manually pulls truckload of carton/ carcases to fill delivery schedule, sorts by carton descriptions, carcase grades and production dates.	(576 x 0.60)	$345.60
12 – Cold store prints out various delivery dockets for each delivery and drop off at retailers	(576 x 0.25)	$144.00
13 – Retailers manually checks cartons and carcases against orders and ignores weight and other details	(576 x 0.50)	$288.00
14 – Processor raise invoices for retailer against manual records from cold store. Enters health certificate data into		$100.00
		Total: $1564.00

EAN Bar Coding; In this example each of the supply chain participants have computerised systems with scanning ability all based on the EAN numbering, bar code and e-messaging system. The example is based on achieving electronic Meat Transfer Certificates.

Steps		Cost $ per Truckload
1 – Processor applies EAN Bar codes to carton and store on-site	(576 x 0.20)	$115.20
2 – Scan out of on-site store on to truck	(576 x 0.20)	$115.20
3 – Electronic MTC to 3rd party cold store (for 576 cartons/ carcases)		$0.00
4 – Truck arrives at 3rd party cold store Match to e-Message		$1.00
5 – Automatic tally of weights and place in storage	(576 x 0.20)	$115.20
6 – Automatic update to computer system record arrival of truckload		$0.00
7 – Automatic electronic complete MTC receipt record and return to processor		$0.00
8 – Processor automatic reconciles MTC returns and holds on file		$0.00
9 – Processor sales via electronic messaging, web site and phone order and sends electronically to cold store.		$10.00
10 – Cold store automatic process order in to computer and email back details		$1.00
11 – Cold store scans to pulls truckload of carton/ carcases to fill delivery schedule, sorts by carton descriptions, carcase grades and production dates.	(576 x 0.20)	$115.20
12 – Cold store automatically sends electronically and prints out various delivery dockets for each delivery and drop off at retailers		$5
13 – Retailers Scans in to check cartons and carcases against orders and tally weight and other details	(576 x 0.20)	$115.20
14 – Processor automatically raise invoices for retailer against electronic records from cold store.		$5
		Total: $598.00

This simple example showed a cost saving of $961 per truckload or a saving of $1.67 per carton/carcase. If all the steps in the supply chain are analysed in detail the cost saving could be doubled.

The Cost Benefits

cost benefit for on-farm livestock production

Example 3 – Livestock Production

Non-EAN system; In this example each of the supply chain participants have limited computerised systems with email ability but all are using non-EAN numbering and e-messaging system. This example is based on 50 head.

Steps		Cost $ per head
1 – Producer uses simple computer system or manual system to record stock levels and stock types at birth or induction	(50 x 1.50)	$75.00
2 – Producer manually records dates and weights for the 50 head and enters information into computer at a later time	(50 x 2.50)	$125.00
3 – Producer manually records drug use and stock feed records over a 4 month period	(50 x 1.00)	$50.00
4 – Producer manually prepares the waybill, NVD and MSA declaration for 50 head. Records are kept and filed for required period.		$20.00
5 – Producer manually creates an invoice for the cattle and records into computer system		$30.00
6 – Gets manual feedback from next link in supply chain or from slaughter. Tries to match livestock details to performance	(50 x 1.00)	$50.00
7 – Producer manually sorts out invoice for transport and matches to sale.		$25.00
		Each Total: $375.00
		4 x $375.00
This process is repeated 4 time from Breeding to Slaughter		**Total for Life$1500.00**

EAN based systems; In this example each of the supply chain participants have computerised systems with email for e-Messaging ability all based on the EAN numbering and e-messaging system. The example is based on achieving electronic regulatory forms and records. This example is based on 50 head.

Steps		Cost $ per head
1 – Producer uses simple computer system to electronic capture information based on EAN.UCC system to record stock levels and stock types at birth or induction	(50 x 0.20)	$10.00
2 – Producer electronically records dates and weights for the 50 head	(50 x .50)	$25.00
3 – Producer electronically records drug use and stock feed records over a 4 month period by e-messaging and scanning	(50 x .20)	$10.00
4 – Producer electronically prepares and prints the waybill, NVD and MSA declaration for 50 head. Records are electrically kept and filed for required period. E-Message is sent to next link is supply chain.		$5.00
5 – Producer electronically creates an invoice for the cattle and sends as e-Message.		$5.00
6 – Gets e-message feedback from next link in supply chain or from slaughter. Electronically matches livestock details to performance	(50 x .10)	$5.00
7 – Producer electronically matches invoice for transport and to sale.		$5.00
		Each Total: $65.00
		4 x $65.00
This process is repeated 4 time from Breeding to Slaughter		**Total for Life$260.00**

This simple example showed a cost saving of $1,240 per truckload of 50 head of cattle over the life of the cattle. This equates to a saving of $24.80 per head. If all the steps in the supply chain are analysed in detail the cost saving could be doubled.

The Cost Benefits

cost benefit for feedlot livestock production

Example 4 – Feedlot

Non-EAN system; In this example feedlot ahs limited computerised systems with email ability but manually collects information and enters it using non-EAN numbering and e-messaging system. This example is based on 200 head.

Steps		Cost $ (per head)
1 – Feedlot uses simple computer system to record induction of cattle with weights, PIC, Vendors, NVDs, market and drugs used for individual animals	(200 x 4.00)	$800.00
2 – Feedlot manually records dates and weights at specific times for the 200 head individually and enters information into computer at a later time	(200 x 2.00)	$400.00
3 – Feedlot manually records drug use on an individual bases and stock feed records over a 6 month period	(200 x 2.00)	$400.00
4 – Feedlot manually records weights on exit from feedlot for each animal individually.	(200 x 2.00)	$400.00
5 – Feedlot manually prepares the waybill, NVD, MSA declaration and NFAS declaration for 200 head as four lots of 50 head. Records are kept and filed for required period.		$80.00
6 – Feedlot manually creates an invoice for the feeding of the cattle and records into computer system		$40.00
7 – Gets manual feedback from slaughter. Tries to match livestock details to performance	(200 x 1.50)	$300.00
8 – Feedlot manually sorts out invoice for transport and matches to sale.		$50.00
		Total $2470.00

EAN based systems; In this example the feedlot, producer and slaughter plant have computerised systems with email for e-Messaging ability all based on the EAN numbering and e-messaging system. The example is based on achieving electronic regulatory forms and records. This example is based on 200 head.

Steps		Cost $ (per head)
1 – Feedlot receives NVD from supplier electronically and matches to induction of cattle with weights, PIC, Vendors, NVDs, market and drugs used for individual animals	(200 x 2.00)	$400.00
2 – Feedlot electronically records dates and weights at specific times for the 200 head individually and enters information into computer automatically.	(200 x 1.00)	$200.00
3 – Feedlot electronically records drug use on an individual bases and stock feed records over a 6 month period	(200 x .50)	$100.00
4 – Feedlot electronically records weights on exit from feedlot for each animal individually.	(200 x 1.00)	$200.00
5 – Feedlot electronically prepares and prints the waybill, NVD, MSA declaration and NFAS declaration for 200 head as four lots of 50 head. Records are kept and filed for required period.		$10.00
6 – Feedlot electronically creates an invoice for the feeding of the cattle and records into computer system		$5.00
7 – Gets electronically e-message feedback from slaughter. Electronically matches livestock details to performance	(200 x .10)	$20.00
8 – Feedlot electronically matches invoice for transport and to sale.		$5.00
		Total $940.00

This simple example showed a cost saving of $1,530 for 200 head of cattle over six months of feeding. This equates to a saving of $7.65 per head.

Basics of Bar Coding

the EAN•UCC system

There are three distinct components of the EAN•UCC system:

- Standard numbering structures for the identification of goods, services, shipments, assets and locations
- Data carriers to represent the identification numbers in machine readable format
- e-Messaging standards to transmit the captured data between trading parties

Of these three areas, the key component of the EAN•UCC system is the numbering structure used of identification

The 3 basic components of the EAN•UCC system

Numbering structures for identification

The main elements of the numbering system covered here are:

Global Trade Item Number (GTIN)

An identification number to identify a trade item, which may be sold at, retail POS, which appears in a general distribution (warehouse) environment.

Attribute Data

A method of identifying information about a trade item over and above product identity, such as batch number, production date.

Serial Shipping Container Code (SSCC)

For the unique identification of logistic units.

Data Carriers (Bar Codes)

The numbers are represented in data carriers that enable automatic capture of the data. At present only the EAN/UPC bar code symbology is used at retail POS.

In the general distribution environment of a warehouse, all symbologies can be used, EAN/UPC, ITF-1 4 and UCC/EAN-128:

- EAN/UPC bar codes are used for non retail trade items that may also cross retail POS
- ITF-14 bar codes are robust and therefore better suited for direct printing onto corrugated cardboard
- UCC/EAN-128 bar codes allow attribute data as well as product identification to be encoded

In the future new symbologies or data carriers may be introduced as technology improves. In the near future reduced space symbology (RSS), composite symbologies and radio frequency identification (RFID) tags will be introduced for use as data carriers.

Cartons and Carcases

product codes and bar coding

EAN Australia allocates a parcel of numbers to member companies. These numbers include a prefix to identify a company and a set number of digits to identify products (which members themselves allocate sequentially), followed by a 'check digit' which is mathematically calculated to verify that the details of the EAN•UCC number are correct.

Introduction

A trade item is any item (product or service) for which there is a need to retrieve pre-defined information that may be priced, ordered or invoiced for trade between participants at any point in the supply chain.

A trade item may be a single, non-breakable unit. It may also be a standard and stable grouping of a series of single items. Such a unit may be presented in a wide variety of physical forms: a fibreboard carton, a covered or branded pallet, a film wrapped tray, a crate with bottles, etc.

Trade items consisting of a single unit are identified with a unique Global Trade Item Number (GTIN). Standard groupings of identical or different units are identified with a separate, unique GTIN.

There are two main types of trade items dealt with in this brochure - retail trade items and non-retail trade items.

- A retail trade item is any item that is intended to be sold to the final consumer through retail POS
- A non-retail trade item is any item that is traded between companies and not primarily intended for sale to consumers at retail POS

The reason for this distinction is the differing requirements for retail and non-retail numbers and bar codes.

Within the Australian retail industry, trade item numbers have historically been referred to as APNs and TUNS.

Whilst this terminology may still occasionally be encountered, the correct term for any trade item number is GTIN.

Re-using numbers

A deleted EAN•UCC number must not be re-used for a minimum of four years after the date a product was last issued into the marketplace. When re-issuing EAN•UCC numbers, give consideration to the product type and its possible life in the market. It may be advisable for some trade items to never re-issue GTINS

Creating Global Trade Item Number

The EAN/UCC-1 4 number is created by prefixing the existing GTIN of the retail/consumer trade item with an indicator (logistical variant) and recalculating the check digit. An indicator is a number between 1 and 8. Different indicators are used to identify different levels of trade items not sold at retail POS. Indicators should be non meaningful and are used only to create additional unique 14 digit EAN•UCC numbers. The indicator of 9 may only be used on variable measure trade items and identification must be completed with the measure or quantity information.

- This option is only applicable for trade items containing identical consumer
- This number can then be represented in either a UCC/EAN-1 28 or ITF-1 4 bar code

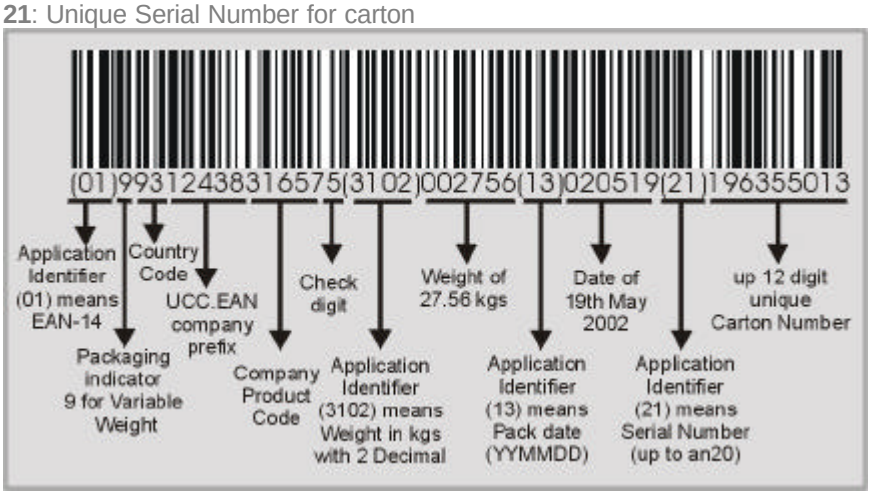
Attribute Information

for cartons and carcases

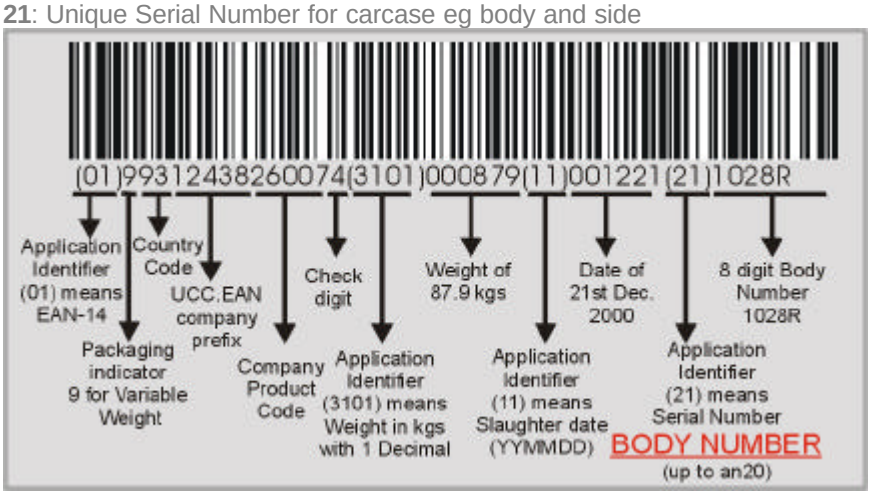
Attribute Information is any variable information that must be a bar code over and above the product identification numbers include Use By Dates, Batch Numbers and Serial Numbers information is shown using EAN•UCC Application Identifier UCC/EAN-128 bar code which convey a wide range of logistical and attribute information.

Application Identifiers seen in an UCC/EAN-128 for meat product include:

Carton:
01: To indicate the following digits form a 14 digit non-retail GTIN (country, company and product code)
3102: Weight in kgs with two decimal places
13: Packing Date (for cartons)
21: Unique Serial Number for carton



Carcase:
01: To indicate the following digits form a 14 digit non-retail GTIN (country, company and product code)
3102: Weight in kgs with two decimal places
11: Kill Date (for carcases)
21: Unique Serial Number for carcase eg body and side



Application Identifiers (AIs)

An Application Identifier can encode 100s of types of information about items and shipments into a standard format, which leads to more efficient processes for trading partners participating in the transport and distribution chain. All parties handling those goods at any stage of the supply chain can access information about goods from the same bar code, eliminating the need to re-label goods or separately transmit information. Please refer to User Manual for the complete Application Identifiers list.

Structure of Application Identifiers

AIs are between two to four digits long and precede the accompanying data. Due to the dynamic nature of the Application Identifier information, bar codes usually cannot be pre-printed, but must be applied 'live' or on-line at the production site or warehouse.

The option of Concatenation

Application Identifiers allow bar code 'Concatenation', which literally means, 'linking together'. In this process several bar codes can be linked into a single bar code, while allowing each individual data group to re - main identified by its Application Identifier.

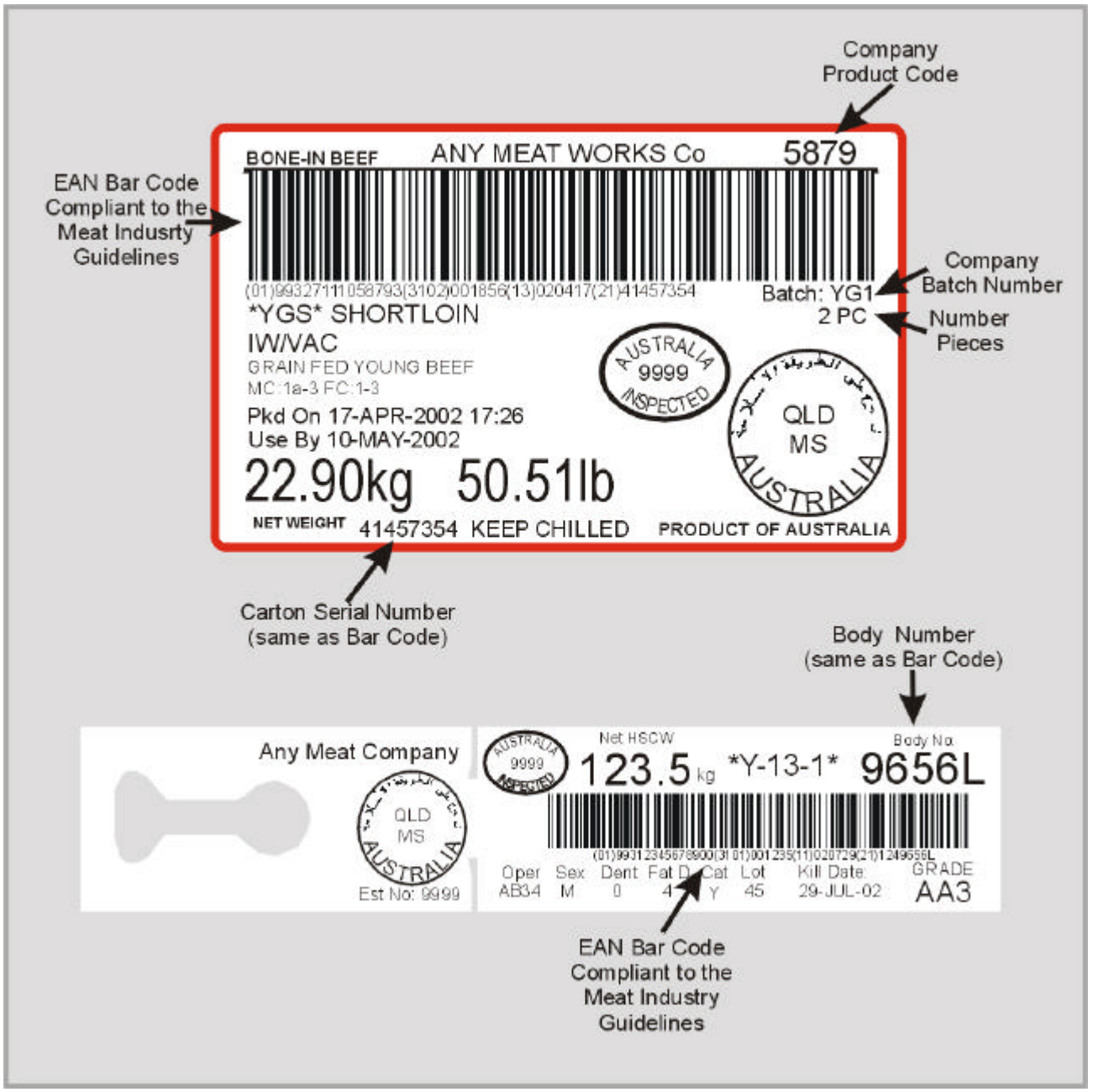
International compatibility

Application Identifiers numbers and UCC/EAN-128 bar codes are internationally compatible in the jurisdictions of both EAN International and the UCC. As a result, they can communicate information within a single company, between companies within an industry and across the globe.

Examples

for cartons and carcases

Examples of Attribute Information as it is applied to carton labels and carcase tickets:



Pallets and Shipments

Logistic Units Numbering and Bar Coding

A logistic unit is an item of any composition established for transport and/or storage, which needs to be managed through the supply chain, and may include cartons and pallets, The Serial Shipping Container Code (SSCC) is a standard identification number, used for the unique identification of logistic (transport and/or storage) units.

At various points on the way from sender to final recipient, the bar code can be scanned to identify the shipment. The unique number will also be used in electronic messages regarding the shipments progress, allowing all participants in the transport and distribution chain to access the information. An SSCC is a unique 18 digit number with the following structure:

- **Application Identifier**: (00)
- **Extension Digit or Packaging Indicator**: Single digit used to increase the capacity of the Serial Reference within the SSCC
- **Country Prefix**: two digits to identify the nationality of the issued number
- **Company prefix**: five or seven digit number to identify the company issuing the number
- **Serial Reference**: Uniquely identifies a shipping unit and is issued sequentially by the shipping company. The number must not be re-used for at least 12 months
- **Check Digit**: Mathematically verities the validity of the whole number

An SSCC is allocated by a sender to a shipping unit once the unit is packed. If multiple shipments are received from multiple senders to a single consolidating centre, and if they are able to be consolidated into one shipment, then the consolidators will be required to allocate their SSCC to the final shipment.

When coupled with the electronic delivery device, the value of the SSCC comes from its ability to identify a shipment regardless of its contents. For example, some shipments may consist of pallets or containers of the one product while others could be shipments of mixed products or single products. In each case, the shipment receives a unique number and this SSCC identifies that shipment for its lifetime within the transport and distribution chain.

e-Messaging

the basics

The terms electronic data exchange (EDI) and e-Messaging, used within the context of this document, apply to the various syntax-based standards available to transact commercial documents electronically. The types of documents applicable for the meat industry include National Vendor Declarations, Market Vendor Declarations (MSA, NFAS), Meat Transfer Certificates, Health Certificates as well as consignment and transport information.

Today, the majority of data in commercial paper documents is generated from existing Computer applications. These paper documents are printed and copied before the information they contain is finally communicated by mail or fax. In turn, the business partner re-keys all this information into another computer application for further processing. An increasing number of companies have found this process extremely slow, costly and unreliable. The need for a faster, cheaper and more accurate solution for exchanging commercial data has become a significant priority for many companies and organisations.

In the traditional sense, EDI (or Electronic Data Interchange) can be conceptualised as paperless trading. A common and useful definition for EDI is:

"the transfer of structured data, by agreed message standards, from one computer application to another by electronic means and with a minimum of human intervention."

The structuring of data by agreed message standards implies that the data or information to be exchanged is recognisable, in content, meaning and format, allowing it to be processed automatically and unambiguously by computers. Two companies deciding to implement EDI are by definition agreeing on the type of data they will exchange, and how the data will be presented. The implementation of EDI demands a much greater degree of co-operation, collaboration and sharing of information between business partners, effectively building trading partner relationships.

The electronic exchange of data (or e-Messaging) provides trading partners with an efficient business tool for the automatic transmission of commercial data. Companies do not need to worry about different and/or incompatible computer systems.

Through the use of the EAN's traditional e-Messaging guidelines, EANCOM, based on the international UN/EDIFACT standard, and EAN•UCC 's emerging e-Messaging standard EAN•UCC XML, created specifically for data exchange over Internet, data may be communicated quickly, efficiently and accurately, irrespective of users' internal hardware and software types.

EAN International does not see XML replacing traditional EDI syntaxes such as UN/EDIFACT. At their lowest levels XML and UN/EDIFACT are supply EDI syntaxes, both of which have strengths and significant weaknesses.

EAN's offerings of EANCOM, and EAN•UCC XML, as complementing each other, provide opportunities for users to select the appropriate syntax for their e-Messaging business needs.

e-Messaging

demonstration projects and e-Messaging

The various demonstration projects relied heavily on the use of e-Messaging to achieve rapid and accurate movement of information along the supply chain. Each of the demonstration project brought different needs that had to be achieved through the use of EAN•UCC e-Messaging.

EAN/NLIS Integration Project

EAN•UCC e-messages were developed during this project for the following functions:

- Electronic messages for the National Vendor Declarations, Way Bills, MSA Declaration and NFAS Declarations as well as for consignment information
- Electronic messages for producer feedback.
- Electronic messages for enquiry to the National Livestock Identification Scheme (NLIS) of live animal history
- Electronic messages for response from the National Livestock Identification Scheme (NLIS) of live animal history

By-Products and Co-Products Project

EAN•UCC e-messages were developed during this project for the following functions:

- Electronic messages for consignment of tallow, meat meal and other bulk products
- Electronic messages for foetal blood, whole organic blood and other specialised products.

Export Project

EAN•UCC e-messages were developed during this project for the following functions:

- Electronic messages for the export consignments for container loads and bulk ship loads.
- Electronic messages for Meat Transfer Certificates and other truck load information for export and domestic purposes.

Value Added and Retail Ready Project

EAN•UCC e-messages were developed during this project for the following functions:

- Electronic messages for order and delivery requirement placement on processing and logistic facilities
- Electronic messages for truck load consignment of retail ready and value added product fro direct consignments and for cross docket purposes.

The EAN•UCC system

EAN•UCC numbering and bar codes are designed to deliver one fundamental benefit:

to ensure that your organisation operates as efficiently as possible and integrates seamlessly with your trading partners.

The ultimate aim is to maximise the competitiveness of your supply chain.

The EAN•UCC system allows continuous improvement in e-commerce supply chain management practices by providing international standards for item identification, data capture, electronic messaging and data synchronisation. These standards are also being enhanced and expanded to reflect business needs and advances in technology.

Through the automation of business processes, the EAN•UCC system drives increasingly fast, efficient and accurate flow of information between trading partners, factors that are fundamental to the success of any business.

EAN•UCC numbers and bar codes permit organisations of any size to order, track, trace, deliver and pay for goods across the supply chain, anywhere in the world.

EAN•UCC 'openness' ensures worldwide product recognition

Because the EAN•UCC system is a universal global standard, all users follow the same coding rules. As a result, EAN•UCC numbers and bar codes can be recognised by trading partners anywhere in the world.

What's more, the numbers issued by EAN are completely unique, so no product (livestock, carton, carcase, pallet, shipment) can be confused for another.

Where did the EAN•UCC system come from?

The EAN•UCC system was collaboratively developed by EAN International and its partner organisation, the Uniform Code Council (UCC) in the U.S.A.

It is recognised by the International Standards Organisation (ISO), the European Standardisation Committee (CEN) and the American National Standards Institute (ANSI).

Today, around 900,000 member companies in 128 countries use EAN•UCC standards as part of their daily business communications, representing over 5 billion scanning transactions a day.

EAN Australia

EAN Australia is non-profit organisation that locally administers the global multi-industry system of identification and communication for products, services, assets and locations - the EAN•UCC system.

Implementation

Making a Start

There are three elements to the EAN - UCC system:

- Standard numbering
- Standard bar coding and/ or RFID
- e-Messaging standards

All these elements are necessary to achieve the benefits of contemporary business best practice, including Just in Time manufacturing (JIT), Quick Response distribution (QR), Efficient Consumer Response (ECR) and overall Supply Chain Management (SCM).

Full implementation can be both demanding and complex, involving fundamental changes to an organisation's internal business processes and computer systems, but also to relationships with trading partners. Changes of this nature often referred to as business process re-engineering which may involve other parties in the other parties in the supply chain. The end result is a process called inter-enterprise integration.

It is important to keep in mind, however, that full implementation does not have to take place in one step. A proper business plan will help to carry out the process over an extended period of time, which can smooth the impact of cultural, operational and organisational changes.

Implementation or just compliance?

Partial implementation of the EAN•UCC system - possibly to comply with the needs of a trading partner - should not be confused with a planned implementation of the system with a clear objective of achieving desired operational and administrative efficiencies.

Compliance will bring benefits to a relationship with a trading partner. Implementation offers the full spectrum of cost savings and benefits.

There are Strategic reasons to implement the system; for example, when your Organisation wishes to introduce the benefits of efficient supply chain management throughout all departments, extend into the supply chains of other business partners and create a free flow of information between all parties involved to effect costs and efficiencies.

There are also Tactical reasons; for example when your Organisation wishes to achieve efficiencies in specific business procedures such as inventory or production control, based on the additional flow of information enabled by the adoption of bar codes and EAN•UCC numbering.

Implementation

8 steps to implementation

Note that before an Organisation can commence implementing the EAN•UCC system, it must have attended to the following tasks:

- Become a member of EAN Australia
- Receive an EAN•UCC company prefix, providing access to all the benefits and services available to EAN Australia members

Step 1:
Form a project management team

Larger organisations will wish to include all the people who will be affected by the proposed implementation, including people from management, manufacturing, sales, information systems and finance. All these areas will be affected, and must understand and support the project.

Smaller organisations may only be able to devote one or two key people to drive the project.

Management support is essential to successful implementation. The full support of the CEO is essential, as is the presence of a senior manager who can champion the project through upper management discussions.

Step 2,
Identify your objectives

The role of the team is to define objectives and identify the first project to be accomplished, hence the first project must have achievable objectives with clear, highly visible benefits. The project must not only be a success, but must stimulate further stages in the adoption and implementation of the full EAN•UCC system.

Understand all customer and business requirements, and define achievable objectives. Remember that your own suppliers and trading partners will be affected, so keep them informed of your plans.

Step 3:
Prepare a business case

A business case will be essential to win the support of Organisation owners or management. Clearly show how the information collected using the EAN•UCC system will bring specific benefits to the business - for example, maintaining or growing a relationship with a valued customer, or pursuing a new trading relationship.

Step 4:
Apply EAN•UCC numbers and bar codes to retail items

The first step in the practical implementation of the EAN•UCC system begins with the application of bar codes and EAN•UCC numbers to the retail products you manufacture and distribute. You may need to invest in appropriate hardware and software, and integrate numbers into computer systems. All items sold will require unique numbers and codes, including individual items, multiple packs and cartons. The various types of numbers and their associated bar codes are described in the 'Applying the Bar Code' section.

Implementation

Step 5:
Apply EAN - UCC numbers and bar codes to non-retail items

The second step in the implementation of the EAN•UCC system is to apply bar codes and EAN•UCC numbers to items not sold through traditional retail outlets. This can include individual, multiple-packed industrial products, and products for specialist end-users. Again, you may need to invest in appropriate hardware and software, and integrate numbers into computer systems, as well as making decisions on how bar codes should be applied (pre-printed or via label).

Step 6:
Apply EAN•UCC numbers and bar codes containing variable data

There are four reasons to bar code variable data: for product identification, product track and trace, product measurement, and logistical purposes. This level of identification and data capture usually involves specialised equipment such as on-site label printing or application and scanning technology, as well as an investment in computer hardware and software that can manipulate the data gathered. You will also need to make decisions regarding.

- The additional data needed to assist your business processes. This can include batch numbers, serial numbers, production dates, use-by dates, customer purchase order numbers, as well as ship-to and bill-to locations
- The best means of application of variable bar codes; normally by printing or applying codes on site

Step 7: Apply EAN•UCC numbers and bar codes to logistical units

Bar coding of logistical units adds further flexibility to tracking and tracing consignments of products both within your company (through manufacture and warehousing) and externally (transport and distribution).

Bar coding of logistical units takes your capability beyond coding pallets of a single type of packaged retail product. It enables the capture of data for cartons and pallets of mixed products, as well as goods such as racks of clothes and bundles of steel.

At this stage, you will need to make decisions on the following:

- Allocation of Serial Shipping Container Codes (SSCCs) to logistical units
- The best and most efficient means of application of logistical unit bar codes
- The acquisition of appropriate hardware and software
- Integration of the SSCC information into your computer systems, to enable business objectives to be achieved.

Step 8
e-Messaging

e-Messaging is the ultimate goal of all businesses wishing to take advantage of the speed and efficiency of trading electronically, with ordering and invoicing taking place as completely paperless computer-to-computer transactions.

It will be necessary to analyse business processes to establish where e-commerce can be introduced, in order to facilitate order processing, receiving or despatch.

Only then should introduction of e-Messaging technology, acquisition of appropriate hardware and software, and integration of e-Messaging into electronic records processing applications be undertaken.

It is important to remember that by moving progressively, you will be able to observe the benefits that result from each stage, and you will be motivated to maximise the potential benefits.