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28th November 2013

Application reference number GS1AU/FSANZ/P1014

Dear Sir/Madam,

It is my pleasure to provide this submission to Food Standards Australia and New Zealand for **Proposal P1014 - Primary Production & Processing Standard for Meat & Meat Products.**

About GS1 Australia

GS1 is a global, not for profit, industry based organisation. GS1 Administers the GS1 System of standards – a global system that enable organisations of all sizes, across any sector, in any economy to uniquely identify items, locations, shipments and assets, automatically capture data about these items through barcodes and RFID technology and share this information with trading partners up and down their supply chain, regulators and other stakeholders.

The ultimately aim of the GS1 Systems is to improve the visibility and traceability of products not only within an organisation, but through an entire supply chain (both local and global) through a common set of standards.

GS1 Australia locally administers the GS1 System and has supported our 17,000 members across 18 sectors improve their supply chain visibility and traceability using GS1 Standards for the last 35 years.

GS1 Australia has a long history of working closely with the Australian Meat Industry dating back to the 1990s via the Red Meat Supply Chain Committee which included key industry associations; Meat & Livestock Australia (MLA), AusMeat, DAFF (formerly AQIS) and the Australian Meat Industry Council (AMIC).

About the Meat Sector

The meat and poultry industry continues to evolve to meet consumers' needs. Consumers today are much more knowledgeable and demanding about the foods they purchase. The increased focus on food safety and consumer awareness raises the need to identify and adopt business practices and standards that will aid the meat and poultry trading partners' ability to track and trace product throughout the supply chain.

The global trade of food is growing at a rapid rate to meet these consumer needs, and to meet the increasing demand from emerging economies. With globalisation comes the need to meet importing country requirements, both at the customer level and at the regulatory level. As a result, for traceability systems to be successful and widely implemented by industry, they must satisfy not only local requirements but also be compatible and interoperable in the global market.

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The GS1 Global Traceability Standard

Over many years, GS1 has worked on a global effort to develop a GS1 Global Traceability Standard (GTS).

The GS1 Global Traceability standard can help provide a single traceability process to comply with all quality and regulatory requirements. It ensures interoperability with trading partners, allowing for efficient recall or tracing of raw materials origin from upstream suppliers. It is a business process standard describing the traceability process independently from the choice of enabling technologies.

It defines minimum requirements for companies of all sizes across industry sectors and corresponding GS1 Standards used within information management tools.

The GS1 Global Traceability Standard (GTS) makes traceability systems possible on a global scale, for both small and large organisations, all along the supply chain, no matter how many companies are involved, no matter what enabling technologies (barcodes, RFID, EDI, Internet...) are chosen.

About the Meat and Poultry Guideline for the GS1 Global Traceability Standard

In order to assist the implementation of the GS1 Global Traceability Standard within specific sectors of the food industry, GS1 has developed a number of sector specific implementation guides.

In May 2013 in light of the horse meat - beef substitution issue in Europe, an international GS1 working group was formed to commence work on a Global Meat and Poultry Guideline which would apply GS1 standards to all levels of the meat supply chain in addition to incorporating labelling requirements for major meat markets around the world. Participating countries include USA, Canada, UK, Ireland, Russia, Denmark, Germany and NZ.

The scope of this guideline establishes both minimum requirements and best practices to share information between trading partners. This guide covers:

- Traceability practices from the primary producers through to processing, logistics and to the point of consumer sale;
- All meat and poultry products for human consumption;
- All levels of the product hierarchy, including pallets, cartons and consumer items; and
- Supply chain segments both domestic and international, including primary producers, processors, wholesalers, distributors, and retailers.

A draft version of the guideline is included in the supporting documentation.

About GS1 Recallnet

In addition to our supply chain traceability standards, we also provide targeted industry sectors with a range of industry solutions, designed to address specific business needs identified by industry participants. One of these industry solutions— GS1 Recallnet Food & Beverage, provides companies participating in a product recall event in the Australian Food & Beverage sector with an electronic portal in which to initiate and receive information relating to the product recall or withdrawal event, including mandatory regulatory reporting requirements, which in this case relates to FSANZ.

The accompanying documentation supporting this submission covers the work completed to date in more detail.

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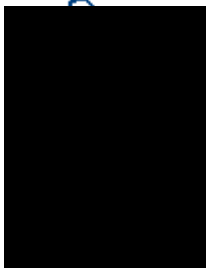
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In relation to P1014 - Call for submissions on Primary Production and Processing Standard for Meat and Meat Products, GS1 Australia would like to suggest that consideration be given to the role of Global Standards for Traceability and ensure that industry is provided with practical guidance on how to implement traceability system which is standards based, and globally compatible to ensure we can protect not only our local supply chain, but also Australia's reputation in the global market as a supplier of high quality and safe Meat and Poultry products.


Similarly, consideration should be given the role that GS1 Recallnet can play in the management of recalls in this sector throughout the entire chain, linking primary producers, packers, retailers and FSANZs in a common platform, for greater efficiency in recall management.

Regards,




General Manager – Industry Engagement
GS1 Australia

Contact for all matters relating to this submission:

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Executive Summary

Traceability: a fundamental need in the food supply chain

Why is traceability such a hot topic in the food sector? In 2011, the EU had nearly 4,800 product recalls, two-thirds of which were in food. Research by AMR in 2007 also found that 67% of EU and US food companies with sales of \$5Bn or more had recalls that cost at least \$20Mn. In the event of a food product recall, an effective traceability system which enables stakeholders and other parties to quickly identify the cause and remove affected products from the supply chain helps to minimise the risk to consumers and limit the economic impact and damage to brand reputation.

An efficient and effective food traceability system is important because it also....

- allows the food sector to respond to the increasing regulatory and other requirements
- ensures distribution route transparency
- improves the reliability of information shared with customers and with government authorities
- provides a way to protect against adulterated and counterfeit food products
- facilitates timely and effective recall procedures
- contributes to greater business efficiency
- improves risk management in a business and lower insurance costs

GS1 solution: one single traceability process for all food safety requirements

In a 2011 Aberdeen report, GS1 standards have been identified as a key enabler for companies performing well in terms of traceability (60% adoption of GS1 standards) versus other companies (20-30%). AMR's research showed that in a recall situation, on average only 43% of affected products are ever located and that it takes approximately 42 days to complete a product recall.

Aberdeen noted that GS1 standards were the differentiator between companies that performed traceability well and companies that don't

How could GS1's solution for food traceability make such a difference? Because it provides one single traceability process that meets all compliance needs (regulations, HACCP, ISO, IFS, BRC, GLOBALG.A.P...), helping companies ensure effective food safety management, both within their organisations and across the supply chain.

GS1's foundational concepts of **"identify, capture and share"** are at the core of the traceability process. The GS1 global solution for food traceability enables automated capture and exchange of traceability information, ensures interoperability between trading partners and provides upstream and downstream visibility across the food value chain. If a problem should occur, it enables a rapid identification and location of affected food products in the supply chain.

The GS1 solution for food traceability is composed of several elements:

- The suite of global standards for traceability: an application standard (the GS1 Global Traceability Standard, GTS) and associated technical standards to address fundamental concepts of identify, capture and share
- Traceability assessment services for on-site diagnosis of traceability systems performed by trained and accredited auditors (known as the Global Traceability Programme for MOs)
- Global traceability guidelines and best practices for specific sectors
- Training and implementation support by local GS1 organisations



Global recognition for GS1's solution is growing

GS1's expertise and contribution to traceability in the supply chain are increasingly recognised worldwide. For example, GS1 standards are supported by:

- **GFSI**, the Global Food Safety Initiative from The Consumer Goods Forum
- **ECR**, Efficient Consumer Response
- **GLOBALG.A.P.**, a private sector body that sets voluntary standards for the certification of production processes of agricultural (including aquaculture) products around the globe
- **ECPA**, the European Crop Protection Association

GS1 is regularly invited to regional and international conferences, including:

- The **United Nations Economic Commission for Europe's** annual meeting of the working party on Regulatory Cooperation and Standardization Policies
- The **International Consumer Product Safety Caucus**

GS1 has also recently been contracted by the **European Commission DG Sanco Health and Consumers Directorate-General** to support the EU Product Traceability Expert Group.

A toolkit to support all MOs

More than 25 GS1 Member Organisations are already deploying the GS1 food traceability solution in their markets. The GS1 suite of standards for traceability and its guidelines are the common basis for all. Global Traceability assessments go one step further and enable GS1 member organisations to offer one to one services to users for the implementation.

Successfully deploying traceability in your country means understanding your market's specific needs and drivers, determining what should be your offer of services, preparing material in your language, training your staff, increasing awareness, and promoting the launch of the GS1 food traceability solution. This process can be demanding, but it is also very rewarding. Besides being able to offer new services to a new type of user company, MOs launching traceability services also increase their legitimacy as an industry leader and boost the expertise, knowledge and skills of their staff.

The success of any GS1 MO is a success for the entire GS1 global organisation: that is the goal behind this Food Traceability Deployment Toolkit. The valuable experiences and key sharings of GS1 MOs already deploying traceability in the food sector are gathered here to help other MOs develop their business. In short: this toolkit shares first-hand knowledge acquired in real-life situations.

You will find in this toolkit:

- **Five Steps for MO Deployment**, a way to get started and develop food traceability activities in your country
- The **Value Proposition** of our solution, so you can develop communication strategies and material for your users
- **Case Studies** to clearly see the benefits companies are reaping from the GS1 Food Traceability solution and from GS1 Traceability assessments
- **Technical Information** to give you an understanding of the GS1 standards supporting the solution
- **Steps for Implementation**, a methodology based on best practices and lessons learned
- **Training Tools**, to train your staff or to educate users
- **Surveys**, to be used as tools to understand the market needs, trends and landscape
- **And more**

Successfully deploying traceability in your country can be demanding, but it is also very rewarding





GS1 Industry Guideline

Global Meat and Poultry Guideline

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1. Introduction

The meat and poultry industry continues to evolve to meet consumers' needs. Consumers today are more knowledgeable and are demanding more and detailed information about the foods they purchase. This includes the countries and regions of origin and processing as well as emotive information such as organic status, humane production methods, animal welfare, as well as many other. The increased focus on food safety and consumer awareness raises the need to identify and adopt business practices and standards that will aid the meat and poultry trading partners' ability to track and trace product throughout the global supply chains.

The meat and poultry supply chain is different from most other grocery supply chains. Most major grocery supply chains are relatively close supply chains. This is due to the fact that most major grocery products are branded products where the brand owners control their respective brands. The methods of control of the brands is often based on tight controls over the manufacturing and other links along the supply chain. This means that for most of the supply chain links the systems in use are either directly controlled by the brand owner or under contract to the brand owner. The use of product codes and other product attributes is issued and managed by the brand owner. The use of the GS1 system along these supply chains is used to create efficiency and provide common tools for the final distribution and retail end of the supply chain. Traceability is relatively straight forward due to the high level of control over the retail product attributes such as batch codes and use by dates. Should a voluntary or mandatory recall be required the brand owner can readily list a product or products to be recalled along with the identifying batch codes/ or use by dates.

The meat and poultry supply chain is often described as an open supply chain where the products are traded as commodities at different sections of the supply chain. At one end of the supply chain livestock is traded and at the other end cartons of retail primal cuts or trim are traded. This leads to a very high level of mixing of source products at the different sections of the supply chain.

Traceability is much more complex for meat and poultry than traditional grocery products. When you compare a can of soda to a retail pack of ground beef, the traceability of the soda's ingredients can be readily determined. The label of the pack of soda is likely to be pre-printed, the trade carton is likely to be pre-printed. The can of soda as well the trade carton and even the pallet is likely to be printed with a batch code and date code. A retail pack of ground beef may have been prepared as part of a several Tonne batch that may contain cartons from several processing facilities and many production dates. Each of the carton is likely to have a print on demand unique carton label and bar code. These processing facilities are often in different countries. Each processing facility may have processed hundreds if not thousands of animals per production date. The result is that retail packs of ground beef may have potentially been derived and blended from many tens of thousands of animals from hundreds of different farms spread around the globe.

With globalisation comes the need to meet importing country requirements, both at the customer level and at the regulatory level. Traceability is one of the fundamental requirements to ensure food safety and is often a requirement of food regulators. Understanding and complying with customer and regulatory requirements is a part of trading globally.

How is traceability managed in this complex supply chain where sourcing and blending of products have crossed country and language borders?

The only viable solution that is country and language independent is the GS1 system of global standards.

To achieve commercial efficiency as well as providing a high level of traceability of the global trade of meat and poultry products requires that all sector of the meat and poultry supply chain understand and correctly utilise the GS1 system of global standards. This GS1 industry guideline provide information, tools and models for delivering commercial efficiency and a high level of traceability along the whole global meat and poultry supply chain.

GS1 is a not-for-profit global standards organization with member affiliates in every country. Together with exporting and importing country regulators, national meat and poultry trade organizations and associations, they provide important resources that are able to help your company understand the most effective way to implement traceability with your trading partners. They can also help your company to connect with technology providers that serve the meat and poultry industry.

Some countries and markets have historic, commercial or regulatory requirements that differ from this global meat and poultry guideline. Country and market requirements will need to be considered and reviewed for compatibility with these global guidelines. Where an incompatibly or additional requirements are identified the country, market and customer requirements must be followed.

Large supermarket chains as well as institutional buyer often have either propriety or industry standards requirements for traceability. When correctly and fully implemented the GS1 system of global standards provides the tools to meet these requirements for traceability.

1.1. Purpose

Consumers expect safe and nutritious foods. They also expect all participants in the supply chain to have effective practices in place that allow for the rapid identification, location, and withdrawal of food lots when problems are suspected or confirmed. Ensuring that effective practices are in place across complex and global supply chains is an on-going challenge.

The domestic and international meat and poultry industries are comprised of a large array of trading partners, from the farmer or grower to internationally sourced suppliers. For this reason the Traceability for Meat and Poultry Implementation Guide has been developed to aid in the adoption of consistent business practices amongst all trading partners, both domestically and internationally, to effectively manage traceability for the meat and poultry industries.

Global supply chain inefficiencies exist in the meat and poultry industries that stem from the failure to adopt global standards. This document is intended to provide all members of the meat and poultry industries with guidance to develop and adopt business processes that provide traceability to products within the entire supply chain, regardless of size or technological sophistication.

The scope of this guideline is to provide practical guidelines to share information between trading partners on a global basis. This guide covers:

- Traceability practices from the primary producers through to processing, logistics and to the point of consumer sale;
- All meat and poultry products for human consumption;
- All levels of the product hierarchy, including livestock, carcasses, cartons, pallets, and consumer items; and
- Supply chain segments both domestic and international, including primary producers, processors, wholesalers, distributors, and retailers.
- Information about traceability at a regional, country and trading block levels for livestock birth, growing/finishing and processing, further processing and value adding through to distribution and retailing. This including blending or mixing of livestock and meat/ poultry along the supply chain.

Traceability is a business process that enables trading partners to follow products as they move through the supply chain. Each traceability partner must be able to identify the direct source and direct recipient of a product.

Global trading partners along the supply chain can use the GS1 standards to provide various levels of product traceability to enable business needs such as:

- To comply with regulatory requirements and guidance on recalls;
- To reduce business risks above and beyond legal compliance;
- Product recall and withdrawal (notably to achieve a greater degree of precision, to demonstrate control, increase efficiency, and reduce the cost of product recall or withdrawal);
- To comply with a trading partner's specifications;
- Efficient logistics management;
- Effective quality management;
- To support food safety;
- To provide information to end users and trading partners;
- To verify the presence or absence of product attributes (e.g., organic, dolphin safe, contains dairy or dairy by-products);
- Brand protection;
- Product authentication and anti-counterfeit policies;
- Visibility in supply and demand chain

The guidance recommended is based on GS1 global standards for supply chain management and product identification. These standards were developed by industry trading partners to optimize business practices across supply chains world-wide.

1.2. How do I Use the Document?

Step 1: If traceability or GS1 standards are new to your company, read the section titled “Key Traceability Standards” in Section 3.

Step 2: Read Section 4 to understand Traceability Principles.

Step 3: Read Section 5.5 to understand your company's Role(s) in the Supply Chain.

Step 4: Review the entire guideline for all roles to best understand the traceability process for the entire meat and poultry supply chain.

Step 5: Begin implementing, using the reference documents and appendices for assistance. Users should ensure they understand specific government and/or industry requirements for the markets (domestic and international) they serve.

1.3. Who can use this Document?

This is a practical guide that is intended for those responsible for implementing traceability in their company's operations and supply chain. The document provides an in principal as well as technical guide for traceability practices for meat and poultry primary producers, processors, exporters, importers, wholesalers, distributors, and also retailers.

2. Terminology

This section lists common terms that may be used in this document, and their alternate names.

Term	Definition	Also Known As
Carton	A trade level item made from cardboard or other disposable material. Outer food grade sealed container. This may include reusable containers such as plastic totes used for trade.	Case, Container, Box, Tote, Packet, Crate
Meat Off-cuts	Meat pieces and strips that are too small to sell and are used to make ground or minced meat.	Meat trimmings, Trim
Ground Meat	Finely chopped meat put through a grinder or mincer. This is used to make sausages, rissoles, etc. Example: “Ground Beef”.	Minced meat.
Grinding	The process of finely mincing or chopping meat to make ground or minced meat.	Mincing.
Ground Beef Tube or Chubs	Tubes of fresh or frozen ground (minced) beef in tube shaped vacuum sealed packaging.	
Batch Number	A number assigned to a production run of product, as is applicable to the company. For example, a batch might be assigned to all product packed in a day, or in an hour, or through a certain production line, etc.	Lot Number
Shelf Stable Food	Food that has been processed so that it can be safely stored in a sealed container at room temperature for a usefully long shelf life. Various preservatives and packaging techniques are used to extend a food's shelf life.	Ambient Food (food that can be stored at ambient or room temperature)

Establishment Number	Regulatory authorities' applied code to represent a registered location where meat and poultry is processed or stored. This applies to a "Processor".	
Best-By Date	<p>Date terminology is governed by country and region/state regulations and may vary between countries and states. Commonly, the best-by date is the date before which food is at its optimum for consumption. The vendor/ supplier guarantees the product quality and safety up to this date. After this date, food may still be safe to eat and may still be sold, but the seller should do regular quality/ freshness checks.</p> <p>Refer to customer or country/ region/ state regulatory definitions/ requirements.</p>	Best-Before Date
Sell-by Date	<p>Date terminology is governed by country and region/ state regulations and may vary between countries and regions/states. Commonly, the sell-by date is the expiration date of the food, or the end of its shelf life. After this date food must be removed from the shelves and must not be offered for sale as it may be unsafe to eat.</p> <p>Refer to customer or country/ region/ state regulatory definitions/ requirements.</p>	Use-By Date, Expiry Date
Primary Producer	Grower of live animals for the purpose of meat production.	Livestock producer, Livestock supplier, farm/farmer, ranch/rancher, feedlot.
Processor	<p>A place where animals are butchered, boned, minced, processed and packaged for food.</p> <p>Refer to country/ region/ state regulatory definitions.</p>	Abattoir, Slaughterhouse, Meat processing plant, Packing establishment, Meat Packer, Value adding establishment, Further processing establishment.
Advanced Shipping Notice	This is a document that details the individual trading units. This can also be a commercial invoice if sufficient detail is included on each traded item.	Delivery docket, Delivery Note or manifest.
Traceability	National Regulatory authorities, industry associations and customer have various definitions for traceability. For food production traceability is the structured process of being able to identify all source materials including country/ region of production and some level of batch or unit unique identification. Traceability for food production also means that ability to track forward along the supply chain based on a batch or some unique identification.	Track forward and Trace back.

3. Key Traceability Tools and Elements

3.1. GS1 Traceability Standard

GS1 (Global Standards One) standards are the “global language of business” and provide the framework required to support the traceability business process. This industry best practice implementation guideline is based on the GS1 Global Traceability Standard (GTS). Developed by industry, the standard defines the globally-accepted method for uniquely identifying:

- Trading partners (your suppliers, your own company, your customers, 3rd party carriers);
- Trading locations (can be any physical location such as a warehouse, packing line, storage facility, receiving dock or store);
- The products your company uses or creates;
- The logistics units your company receives or ships; and
- Transactions such as inbound and outbound shipments.

The GS1 Global Traceability Standard also defines the essential information that must be collected, recorded and shared to ensure “one step up, one step down” traceability. The standard is applicable to companies of all sizes and geography.

While the GS1 Global Traceability Standard may be implemented independently from any specific technology, best business practices require the adoption of bar coding on pallets, cartons (trade items) and consumer items. Businesses are further encouraged to adopt electronic messaging to exchange essential business information. These technologies will be explored in the sections that follow.

To obtain a copy of the Global Traceability Standard visit www.gs1.org

3.2. How Does my Company Uniquely Identify Products in the Supply Chain?

Many companies use a Stock Keeping Unit (SKU) or product code to identify a product within their distribution network. In the meat and poultry supply chains company SKUs or product codes are often cross referenced to distributor and retailer codes for the same product description. The SKU or product code is not a globally unique product identification, however. Thus it should not be used to identify traceable products moving within the supply chain.

The best practice is to assign a GS1 Global Trade Item Number (GTIN) for each traded item. A GTIN may be assigned at any level of the packaging hierarchy, for instance to a pallet, carton or consumer item, in order to make that level of the product hierarchy globally unique. In general practice for meat and poultry each trade item is given a serial number and processing data within the bar code. This allows for trade item level traceability and recall along the whole supply chain. Should a traceability event occur, reconciliation of all trade items can be easily completed by use of the serialised and date coded bar codes on the trade items.

3.3. Global Trade Item Number

What is a Global Trade Item Number?

A Global Trade Item Number (GTIN) is the standardized and globally unique way to identify items traded in the supply chain. Where there is a requirement to accurately order, invoice, price or receive your product, then the GTIN is the basic enabler. The GTIN provides a common language to support multiple business practices, including traceability.

How is a GTIN assigned to the traded items my company produces?

When product is sold under a brand name, the brand owner is responsible for assigning the GTIN. If the company is the brand owner, the first step is to approach your local GS1 Member Organization and apply for a GS1 company prefix. A brand owner typically owns the label for the product that is sold; this may also include non-branded packaging. The company prefix uniquely identifies your organization globally and serves as the basis for each individual product number assigned. Your company then assigns a GTIN to each one of your products and every packaging configuration using the GS1 company prefix.

If your company is not the brand owner, then you must use the brand owner's GTIN.

To learn more about GTIN assignment visit www.gs1.org

3.4. GS1 DataBar Expanded

What is the GS1 DataBar Expanded?

The GS1 DataBar Expanded, formerly known as the RSS (Reduced Space Symbology), is a new bar code that was designed by the standards organization GS1 to fit in small, space-constrained areas (e.g., on a PLU sticker). The official name of the particular GS1 DataBar that was designed for produce is called the GS1 DataBar Expanded Stacked. This particular bar code encodes the 14-digit Global Trade Item Number (GTIN) as well as additional information such as weight and "sell by" date. It is smaller than a UPC-A bar code or GS1, and therefore the bars and spaces are more precise.

GS1 DataBar Expanded Bar codes can deliver enhanced product identification at retail Point-Of-Sale (POS), can be used on small or hard-to-mark consumer products that could not previously be identified by bar codes, and can carry more information than the current GS1 retail POS bar codes allow. GS1 DataBar Expanded symbols can carry more data in the same amount of space, or the same quantity of data in less space than EAN/UPC bar codes.

An Enhanced Consumer Experience

1. GS1 DataBar Expanded will contribute towards an improved consumer shopping experience;
2. Better category management and stock control resulting in improved product availability and fewer wasted customer journeys;
3. Greater and clearer product information available on product packaging;
4. Increased customer usage and satisfaction with self-scanning checkouts as more products can be scanned;
5. Enhanced consumer and product safety through improved best-before and expiry date management;
6. Faster checkouts and less queuing as more products are scanned.

3.5. Product Hierarchy and Bar Code Use

There are a number of symbologies or data carriers used today in the meat and poultry industry to support bar coding of products. The level of information encoded into the bar codes differ dependant on the bar code symbology used. All bar code formats with the exception of the UPC-Type 2 and VMN-13 bar code, which is used on variable-weight consumer level products, contain a Global Trade Item Number (GTIN). The UPC-Type 2 and VMN-13 bar codes contain retailer specific item references and are not globally unique. For purposes of this document the meat and poultry supply chain utilizes the following bar codes at each level of the product hierarchy:

Pallet (Trade Item) Fixed-Weight and Variable-Weight	SSCC (Serialized Shipping Container Code) GS1-128 with AI "00"	 (00) 1 0023700 01844485 6
Carton (Trade Item) Fixed-Weight and Variable-Weight	GS1-128 (preferred option)	 (01) 9 0 023700 51695 7 (3202) 002423 (15) 082221 (21) 00235496

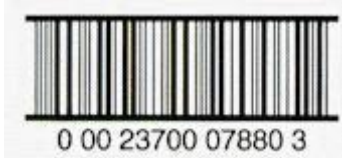




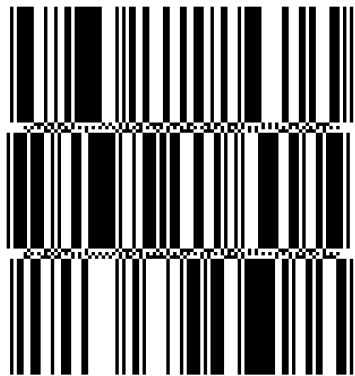
Carton (Trade Items) Fixed-Weight	ITF-14	
Consumer Item Fixed-Weight	UPC-A	
Consumer Item Fixed-Weight	EAN-13	
Consumer Item Variable-Weight	UPC-Type 2	
Consumer Item Variable-Weight (Restricted Circulation Number e.g. In- store number)	VMN-13	
Consumer Item Fixed and Variable-Weight With Use by date and batch code.	GS1 Databar (preferred option)	

Figure 1 – GS1 Identification Standards Table – Reference only, not to correct size or scale.

3.6. General GTIN Allocation Rules

GS1 publishes general guidance on GTIN allocation. The meat and poultry supply chain has product characteristics that are different from general grocery items, so additional GTIN allocation guidance is necessary. In addition to the general allocation guidelines, meat and poultry suppliers and brand owners should also allocate GTINs in accordance with the following rules:

- Assign separate GTINs for each product code.
- Assign separate GTINs for each different packaging type such as carton-ready, tray-ready, and store-processed product;

- Assign separate GTINs for each primary refrigeration state in which a product is marketed (e.g., if product is normally marketed in both a chilled and frozen state, assign different GTINs to each refrigeration state);
- Assign separate GTINs to product lots that have different marketing claims or production methods when such characteristics are an important marketing feature to buyers (e.g., free-range versus conventional poultry);
- Assign separate GTINs for each different pallet and carton configuration.

To learn more about GTIN allocation rules visit www.gs1.org

3.7. Use of the GTIN Indicator

Within a GS1-128 bar code, the trade item's GTIN must be in a GTIN-14 data structure. A product with a GTIN-12 or GTIN-13 will require leading zeroes be included in the GTIN portion of the GS1-128. The first position of the 14-digit GTIN is used to indicate the packaging hierarchy level. The GTIN indicator value for consumer item items is always 0, and the packaging indicator for a variable-weight carton must always be 9. Otherwise, the indicator may be any value between 1 and 8 for identification of the product hierarchy when packaging levels are traded in the supply chain.

3.8. Use of Trade Item (Carton/ carcasses) Serial Numbers or Batch/Lot Numbers

Processors that label carcasses or cartons (including bulk or useable totes) that are trade items should be applying unique identification per trade item. The unique identification should be a processing or production date along with a serial number for that date. This approach ensures that for the purpose of traceability all trade units can be reconciled and verified along the supply chain. Meat and poultry trade items are unique as they contain meat or poultry derived from individual animal/ birds that may have been grown in different environments.

Where batch/lot coding is utilised as the method of identification traceability reconciliation cannot be undertaken as all of the trade items have the same coding. It is not possible to prove the trade items with a batch/lot code is or is not part of a specific shipment to along the supply chain. This is only possible by use of trade item serial numbers.

It is important to remember that the range of product assigned to a single batch/lot Number also defines the minimum amount of product that may be need to be removed from the supply chain in the event of a recall. This needs to be considered when defining your company's standard practice for setting the scope of each batch/lot Number for each type of product that it produces.

3.9. Use of Global Location Numbers

A Global Location Number (GLN) is a unique location identification number for a physical or legal entity. A GLN is a globally unique number that is assigned by the owner of the physical or legal entity using their GS1 company prefix.

The GLN used at a very high level to represent an entire corporation but can also be used at a granular level to represent a specific warehouse receiving door. It is recommended that trading partners in the meat and poultry industry at least assign GLNs to all of their physical locations to provide globally unique location identification for their traceability processes.

To learn more about GLN assignment visit www.gs1.org

4. Traceability Principles

Implementing a traceability system within a supply chain requires all parties involved to link the physical flow of products with the flow of information about them. Adopting industry standards for traceability processes ensures agreement about identification of the traceable items. This supports the visibility and continuity of information across the supply chain.

Supply chain traceability is the net result of two complementary business processes, referred to as external and internal traceability. External traceability involves the communication of product identity

and transport information between trading partners, while internal traceability involves the association of input products with output products when a trading partner creates a new product.

External Traceability - All traceable items must be uniquely identified and this information shared between all affected supply chain partners. External traceability for the meat and poultry industry is primarily based on the carton level of the product hierarchy. At a minimum, the identification of products for the purpose of traceability requires:

- The assignment of a unique GS1 Global Trade Item Number (GTIN); and
- The assignment of an individual (production date/ serial number) or batch/lot code.

To maintain external traceability, traceable item identification numbers must be communicated to trading partners on product labels and related paper or electronic business documents. This ties the physical products with the information requirements necessary for traceability.

Internal Traceability - Processes that parties maintain within their organization to link the identity of raw materials to the finished goods are those that enable internal traceability.

When a product is combined with others, processed, reconfigured, or re-packed, the new product must have its own unique product identifier (i.e., GTIN). The linkage must be maintained between this new product and its original inputs to maintain traceability. The label showing the lot identification of the traceable input item should remain on the packaging until that entire traceable item is consumed. This principle applies even when the traceable item is part of a larger packaging hierarchy.

Internal and External Traceability - End-to-end traceability requires that the processes of internal and external traceability be effectively conducted. Each traceability partner should be able to identify the direct source and direct recipient of traceable items. This is the "one step up, one step down" principle. This requires that supply chain partners collect, record, store, and share minimum pieces of information for traceability that are described in the sections that follow. To have an effective traceability system across the supply chain:

- Any item that needs to be traced forward or backward should be globally and uniquely identified; and
- All supply chain parties should implement both internal and external traceability practices. Implementation of internal traceability should ensure that the necessary linkages between inputs and outputs are maintained.

Regulatory Authorities and Trading Partner Traceability – Traceability requirements may be specified by regulatory authorities and trading partners. This may apply for domestic as well as export markets. These traceability requirements must be fully understood and integrated in to an organisation's systems.

4.1.1. Implementing Traceability Processes

In order to support best practices for maintaining a traceability process there are five basic business processes that should be put in place amongst trading partners. They include:

- 1) Plan and organize how to assign, collect, share, and maintain traceability information;
- 2) Determine how to align master data required for all products and trading partners and other physical locations;
- 3) Record traceability information as products are created and shipped and modified in form;
- 4) Request a trace using at least one of the four information sources listed:
 - GTIN or some form of the item identification;
 - GLN or some form of the traceability partners' name or attribute;
 - GLN of the physical location for the targeted product;
 - Dates or time periods for targeted product.
- 5) Use the information provided to take the appropriate action as required.

4.1.2. Traceability Data Retention

All companies are expected to maintain records that will facilitate timely and accurate traceability and support any product recalls. It is recommended that your company establish an internal data retention policy based on the following considerations:

- 1) Domestic and international regulatory authorities define requirements for record keeping, based on the type of product;
- 2) Length of time product may exist in the supply chain beyond the prescribed time. This is based on the type of product (chilled, frozen or shelf stable);
- 3) The needs to promptly retrieve data in the event of an epidemiological event which may, or may not implicate your product;
- 4) Industry agreements or customer requirements.

4.2. Traceability Definitions

Application Identifier (AI)	The field of two or more characters at the beginning of an Element String that uniquely defines its format and meaning.
Asset	An entity that is part of the inventory of a given company that has financial value (e.g., a product or a pallet).
Batch/Lot Number	<p>A batch unites products/items that have undergone the same transformation processes. Batch and Lot are considered synonyms. Batch and Lot number assignment is part of the manufacturing process. The format and application are defined by the supplier.</p> <p>GS1 Global definition: Reference number assigned by manufacturer to a series of similar goods or Meat and Poultry under similar conditions.</p>
Consumer Item	The trade item intended to be sold to the end customer.
External Traceability	External traceability takes place when instances of a traceable item are physically handed over from one trading partner (traceable item source) to another (traceable item recipient).
Fixed-Weight	A term used to denote that a product's weight is constant from carton to carton or from item to item. It is sometimes known as catch weight, set weight or fixed measure. Fixed-weight is sometimes defined as "Standard Weight." A fixed-weight product is typically priced per selling unit rather than per weight.
GLN (Global Location Number)	<p>The GS1 Identification Key comprising a GS1 Company Prefix, Location Reference, and Check Digit used to identify physical locations or legal entities.</p> <p>GS1 Global definition: Unique location number mandatory within the Global Data synchronization process to identify data owners/info providers, etc., such as Distributors, Brokers, and Manufacturers.</p>
GSIN (Global Shipment Identification Number)	The GS1 Identification Key comprising a GS1 Company Prefix, Shipment Reference, and Check Digit used to identify unique shipments.
GTIN (Global Trade Item Number)	<p>The format in which Global Trade Item Numbers (GTIN's) must be represented in a 14 digit reference field (key) in computer files to ensure uniqueness of the identification numbers.</p> <p>GS1 Global definition: A particular Global Trade Item Number, a numerical value used to uniquely identify a trade item. A trade item is any trade item (trade item or service) upon which there is a need to retrieve pre-defined information that may be planned, priced,</p>

	ordered, delivered and/or invoiced at any point in any supply chain.
Internal Traceability	Internal traceability takes place when a trading partner receives one or several instances of traceable items as inputs that are subjected to internal processes, to produce one or several instances of traceable items as output.
Label/Carton Markings	A tag, sticker, label, or printing on product packaging that provides information about the product inside.
Production/ Processing Date	A date reference used in accordance with the product type to assign a date value to lots or serial numbers of product for inventory management and as a general lot control reference. When referring to a date used for this purpose, this guide will use the term "Production Date". Production date is the source date to calculate resultant dates used for traceability at the retail level such as the Sell-By Date or Use-By Date.
Serial Number	A code, numeric or alphanumeric, assigned to an item for its lifetime. A unique individual item may be identified with the combined Global Trade Item Number and Serial Number.
SSCC (Serial Shipping Container Code)	The 18-digit GS1 System Identification Key comprising an extension digit, GS1 Company Prefix, Serial Reference, and Check Digit used to identify a logistic unit.
Traceability	Traceability is the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration.(GS1 Global Traceability Standard)
Traceable Item	A physical object where there may be a need to retrieve information about its history application or location. The level at which the traceable item is defined within a product packaging or logistical hierarchy is dependent on the industry and degree of control required. Could be tracked, traced, recalled or withdrawn. Could exist in multiple locations at the same time (for example, if identified at the trade item and batch level). A traceable item may be related to another traceable item.
Variable-Weight	A term used to denote that a product's weight varies from carton to carton or from item to item. It is sometimes known as random weight, or variable measure. A variable-weight product is typically priced on the true weight of the item rather than per selling unit.

Figure 2 – Traceability Definitions

5. The Meat and Poultry Supply Chain

There are different GS1 supply chain traceability models depending on the production method utilized along the supply chain. In this industry guideline there are four different models shown. These are Beef, Sheep/Lamb, Pork and Poultry. All other commercially produced species would generally fit into one of these four GS1 traceability models.

To determine the most applicable GS1 traceability model for an organization will require a review of the whole supply and the selection the best fit of the four models.

The four GS1 supply chain traceability models cover each supply chain section, methodology for identification and the flow of information. This includes overview of the key roles played by various supply chain parties.

5.1. Beef/ Veal Supply Chain

The global beef supply chain is characterized by a number of features:

- A very large number of primary producers (breeding, background and fattening/ finishing) supply cattle to other producers as well as to processors. Cattle may cross country borders, thus creating difficulty in tracing livestock origins. This level of cattle movement often results in the mixing of cattle from many sources, making traceability complex.
- Inputs to the growing of cattle fall into either grass fed or grain fed. Where grass is the primary feed source the traceability requirements relate to the properties where the cattle consumed the grass. Where grain is the primary feed source the traceability requirements relate to grain supply source and quality details, such as batch identification and chemical analysis.
- The methods, and their complexity, of property identification, individual animal identification and mob movement identification vary greatly from country to country. Often the methods for property identification, individual animal identification and mob movement identification are prescribed by national and/ or importing country authorities. Where cattle cross state or country borders there may be requirements for additional levels of traceability and identification.
- Processors receive cattle from many producers. The resulting cartons of meat from a day's production may be many hundreds, if not thousands of individual animals, which were supplied by tens, if not hundreds of producers. Any one carton of meat may have come from many different animals, from many producers. The level used for tracking livestock through processing to cartons varies from processor to processor. Some processors can track each animal (including origin information such as region/country of birth, fattening and finishing) from arrival through to production date/ serialised cartons. Some processors identify a production day or shift as a single batch, where traceability is limited to the processing date and shift. Processors often comply with minimum national and/or importing country or customer requirements. This may include lot/ batch segregation and labelling statements based on the animal's origin and husbandry practices.
- Product is predominately traded as carton (chilled and frozen) product, both domestically and internationally.
- The traded cartons have a range of uses, including:
 - Grinding;
 - Retail ready/ case ready preparation (slicing primal cuts into retail tray packs);
 - Food services;
 - Direct to retail store for in-store slicing/ tray packing.

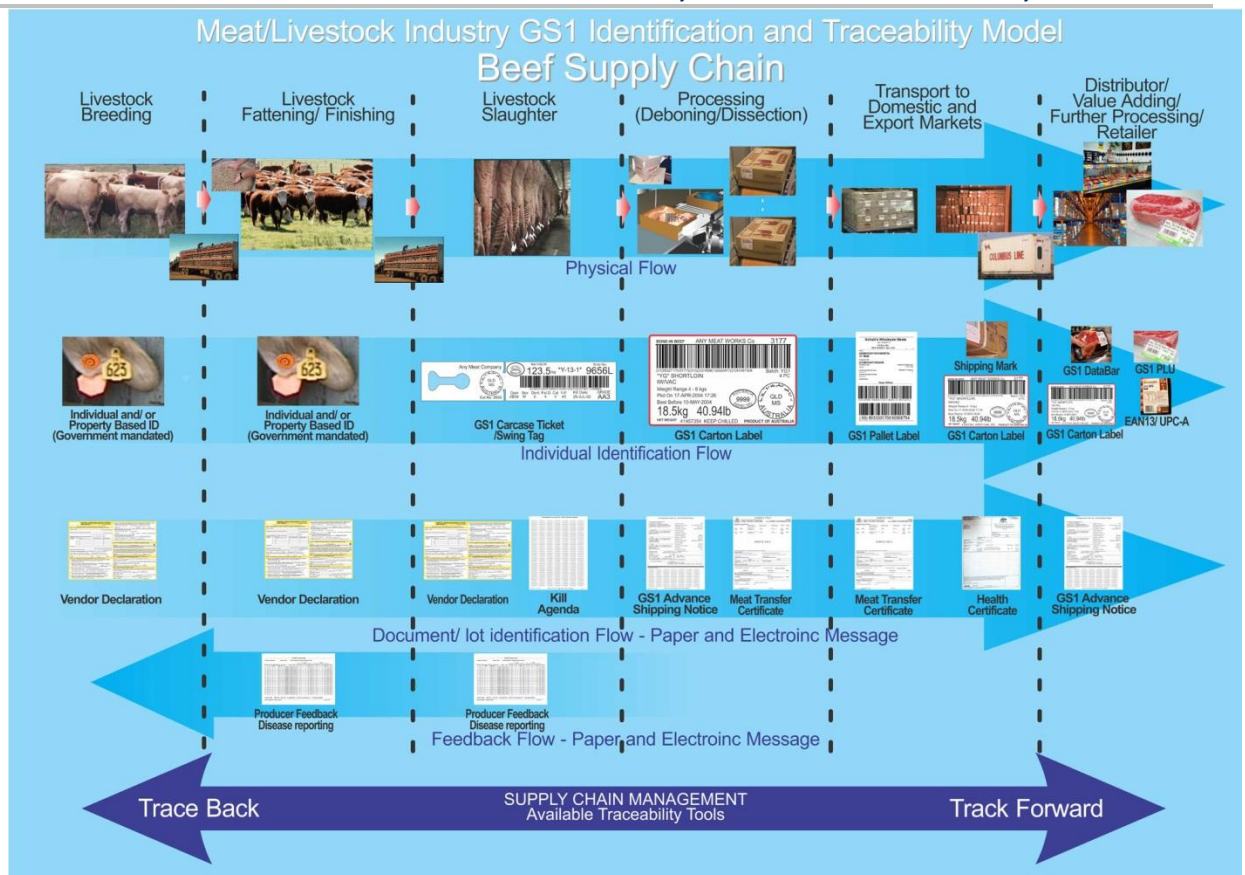


Figure 3 – Beef Supply Chain Traceability model

The above diagram shows a best practice model for the application of GS1 standards for beef traceability while complying with common regulatory requirements for individual livestock identification and mob movement identification.

The key traceability elements from the diagram include:

- Individual animal RFID ear tag (GS1 EPC or as specific for national/ market regulations)
- Feed (grain and supplements) batch and quality identification through supply documentation and serialised GTINs for feed supplements.
- Livestock mob movement declaration sent as an electronic message by use of GS1 Advance Shipping Notice.
- Carcase ticket with GS1 serialised GTIN link to individual animal ID.
- Carton product with GS1 serialised GTIN (can include GS1 EPC) label linked to carcase ticket for boning batch.
- Cartons packed on the pallet with GS1 SSCC and GTIN (can include GS1 EPC).
- Meat transfer certificate/ health certificate sent as electronic message using GS1 Advice Shipping Notice detailing all carton GS1 serialised GTINs.
- Retail packs (in-store or centrally packed) identified with:
 - GS1 EAN-13/ UPC-A (fixed weight product);
 - UPC-Type 2/ VMN-13 for variable weight store assign coding with price; or
 - GS1 DataBar Expanded with the attributes of:
 - GTIN;
 - Weight;
 - Price;
 - Expiry date;
 - Batch code or Serial number.

Specific supply chains may utilise additional levels of GS1 standards for individual animal identification such as the use of EPC Cattle tags and/or individual primal cut tags.



Figure 4 – Cattle EPC ear tag

5.2. Lamb/ Sheep Meat Supply Chain

The global lamb/ sheep meat supply chain is characterized by a number of features:

- A very large number of lamb and sheep producers (breeding, background and fattening/ finishing) supply animals to other producers, as well as to processors. Lambs and sheep may cross country borders creating difficulty in tracing animal origins. The result of this level of lamb and sheep movement often results in the mixing of animals from many sources, making traceability complex.
- Inputs to the growing of lambs and sheep are mostly from grass fed, with a small amount of grain fed. Where grass is the primary feed source the traceability requirements relate to the properties where the animals consumed the grass. Where grain is used for finishing, the source traceability requirements relate to grain supply source and quality details, such as batch identification and chemical analysis.
- The methods, and their complexity, of property identification, mob animal identification and mob movement identification vary greatly from country to country. Often the methods for property identification, mob animal identification and mob movement identification are prescribed by national and/ or importing country authorities. Where lambs and sheep cross state or country borders there may be requirements for additional levels of traceability and identification.
- Processors receive lambs and sheep from many producers. The resulting cartons of meat from a day's production may be from many hundreds, if not tens of thousands of individual animals, which were supplied by tens, if not hundreds of producers. Any one carton of meat may have come from many different animals, from many producers. The level used for tracking livestock through processing to cartons varies from processor to processor. Some processors can track each animal from arrival through to cartons. Some processors identify a production day or shift as a single batch, where traceability is limited to the processing date and shift. Processors often comply with minimum national and/or importing country requirements.
- Product is traded as carton (chilled and frozen) product, as well as carcasses (chilled and frozen) both domestically and internationally.
- The traded cartons and carcasses have a range of uses, including:
 - Retail ready/ case ready preparation (slicing primal cuts into retail tray packs);
 - Value adding/ further processing;
 - Food services;
 - Direct to retail store for in-store slicing/ tray packing.

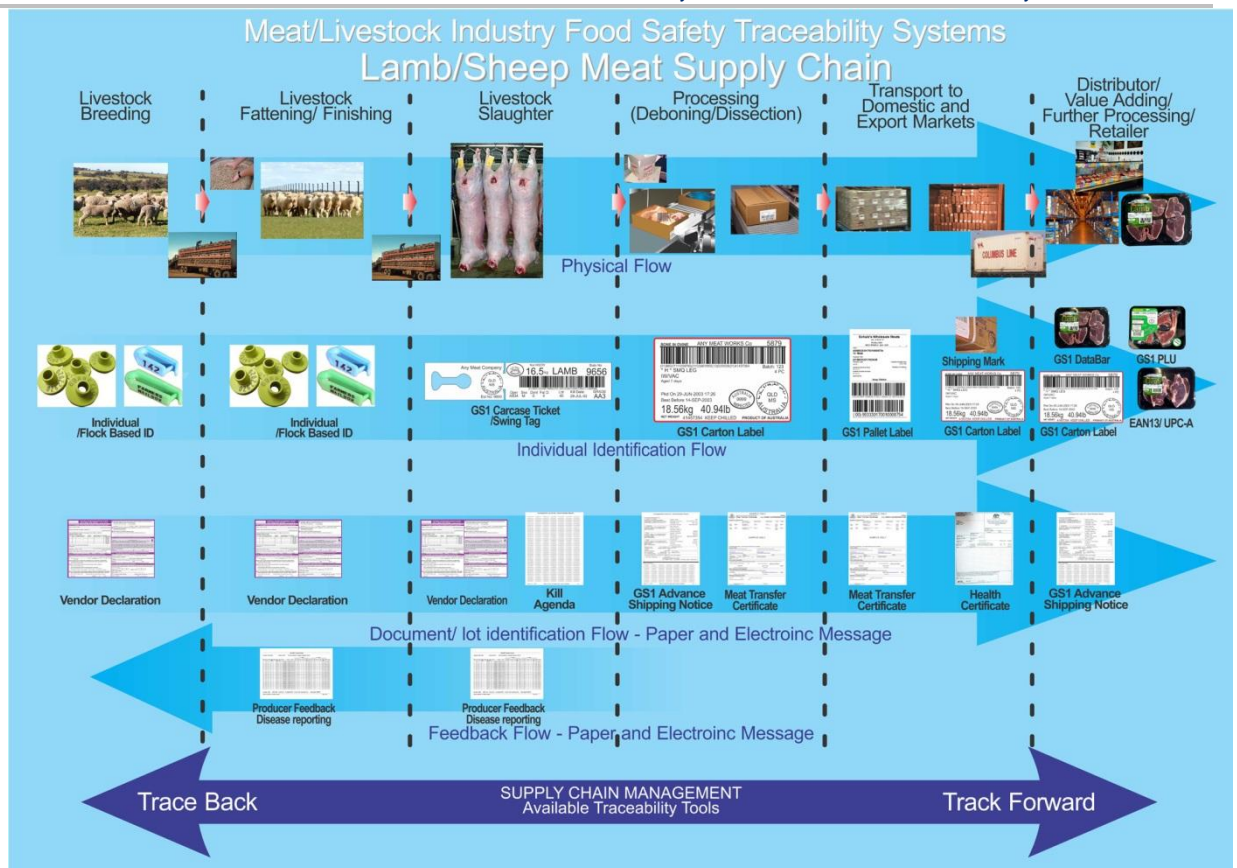


Figure 5 – Lamb/ Sheep Meat Supply Chain Traceability model

The above diagram shows a best practice model for the application of GS1 standards for lamb and sheep meat traceability while complying with common regulatory requirements for individual livestock identification and mob movement identification.

The key traceability elements from the diagram include:

- Mob animal ear tag (GS1 EPC or as specific for national/ market regulations);
- Feed (grain and supplements) batch and quality identification through supply documentation and serialised GTINs for feed supplements;
- Livestock mob movement declaration sent as an electronic message by use of GS1 Advance Shipping Notice;
- Carcass ticket with GS1 serialized GTIN link to individual animal ID;
- Carton product with GS1 serialized GTIN (can include GS1 EPC) label linked to carcass ticket for boning batch;
- Cartons packed on the pallet with GS1 SSCC and GTIN (can include GS1 EPC);
- Meat transfer certificate/ health certificate sent as electronic message using GS1 Advice Shipping Notice detailing all carton GS1 serialized GTINs;
- Retail packs (in-store or centrally packed) identified with:
 - GS1 EAN-13/ UPC-A (fixed weight product);
 - UPC-Type 2/ VMN-13 for variable weight store assigned coding with price; or
 - GS1 DataBar Expanded with the attributes of:
 - GTIN;
 - Weight;
 - Price;
 - Expiry date;
 - Batch code or Serial number.

5.3. Pork Supply Chain

The global pork supply chain is characterised by a number of features:

- A small number of primary producers (breeding, fattening/ finishing) supply piglets to growing cells producers. Animals at growing cells stay together for life. Market ready pigs are shipped to processing as a lot.
- Inputs to the growing of livestock fall predominantly as grain fed. Grain being the primary feed source requires that traceability relates to the grain supply source and quality details, such as batch identification and chemical analysis.
- The methods, and their complexity, for property identification, animal identification and lot movement identification vary greatly from country to country. Often the methods for property identification, animal identification and lot movement identification are prescribed by national and/ or importing country authorities. Where livestock cross state or country borders there may be requirements for additional levels of traceability and identification.
- Processors receive livestock from a limited number of producers. The resulting cartons of meat from a day's production may be from many hundreds, if not tens of thousands of individual animals, which were supplied by a limited number of producers. Any one carton of meat may have come from many different animals from a number of producers. The level used for tracking livestock through processing to cartons varies from processor to processor. Some processors can track each animal from arrival through to cartons. Some processors identify a production day or shift as a single batch, where traceability is limited to the processing date and shift. Processors often comply with minimum national and/or importing country requirements.
- Product is traded as carton (chilled and frozen) product, as well as carcasses (chilled and frozen), both domestically and internationally.
- The traded cartons and carcasses have a range of uses, including:
 - Retail ready/ case ready preparation (slicing primal cuts into retail tray packs);
 - Value adding/ further processing;
 - Food services;
 - Direct to retail store for in-store slicing/ tray packing.

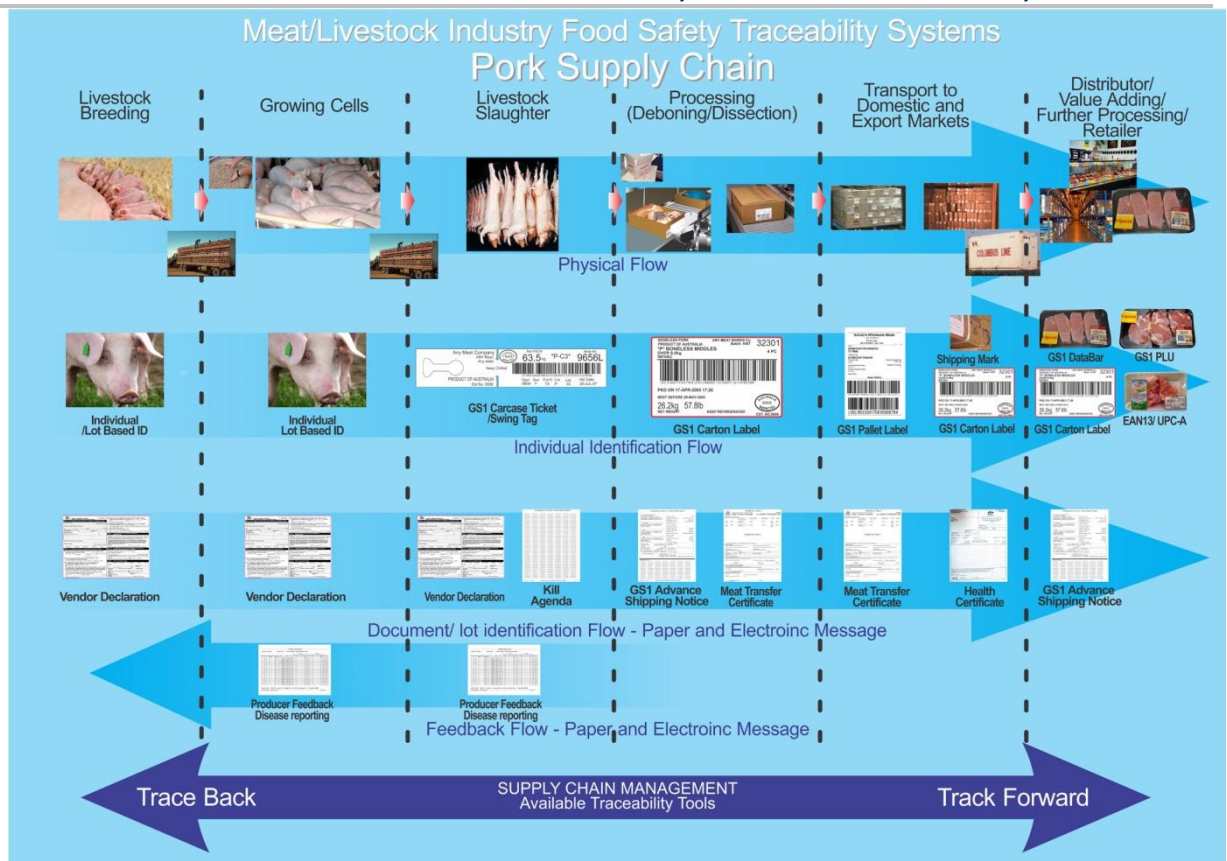


Figure 6 – Pork Supply Chain Traceability model

The above diagram shows a best practice model for the application of GS1 standards for pork meat traceability while complying with common regulatory requirements for individual livestock identification and mob movement identification.

The key traceability elements from the diagram include:

- Mob animal ear tag (GS1 EPC or as specified by national/ market regulations);
- Livestock mob movement declaration sent as an electronic message by use of GS1 Advance Shipping Notice;
- Carcase ticket with GS1 serialised GTIN link to individual animal ID;
- Carton product with GS1 serialised GTIN (can include GS1 EPC) label linked to carcase ticket for boning batch;
- Cartons packed on the pallet with GS1 SSCC and GTIN (can include GS1 EPC);
- Meat transfer certificate/ health certificate sent as electronic message using GS1 Advice Shipping Notice detailing all carton GS1 serialised GTINs;
- Retail packs (in-store or centrally packed) identified with:
 - GS1 EAN-13/ UPC-A (fixed weight product);
 - UPC-Type 2/ VMN-13 for variable weight store assigned coding with price; or
 - GS1 DataBar Expanded with the attributes of:
 - GTIN;
 - Weight;
 - Price;
 - Expiry date;
 - Batch code or Serial number.

5.4. Poultry Supply Chain

The global poultry supply chain is characterised by a number of features:

- A small number of primary producers (Hatchery) supply day-old chicks to a number of growing units (Broiler Farms). The birds stay at the Broiler Farms together for life. Market ready birds are placed into plastic crates or aluminium modules designed for good ventilation and safety from bruising during transport. These crates or modules are handled by specialist forklift equipment and loaded onto trucks for transport to the processing plant as a consignment. The birds do not move between growing cells and maintain that lot identification for life.
- Inputs to the growing of poultry is predominately from grain based feed. Where grain is the primary feed source the traceability requirements relate to grain supply source and quality details such as batch identification and chemical analysis.
- The methods, and their complexity, for property (hatchery and broiler farms) identification, bird identification and lot movement identification vary greatly from country to country. Often the methods for property identification, bird identification and lot movement identification are prescribed by national and/ or importing country authorities. Where birds cross state or country borders there may be requirements for additional levels of traceability and identification.
- Processors receive birds from the limited number of contract broiler farms. The resulting cartons of meat from a day's production may be from many thousands, if not tens of thousands of individual birds which were supplied by a limited number of producers. Any one carton of poultry may have come from many different birds from a number of producers. The level for tracking poultry through processing to cartons varies from processor to processor. Some processors can track each birds from arrival through to cartons. Some processors identify a production day or shift as a single batch, where traceability is limited to the processing date and shift. Processors often comply with minimum national and/or importing country requirements.
- Product is traded as carton (chilled and frozen) product, as well as bulk poultry carcasses (chilled and frozen), both domestically and internationally.
- The traded cartons and bulk poultry carcasses have a range of uses, including:
 - Retail ready/ case ready preparation (slicing primal cuts into retail tray packs);
 - Value adding/ further processing;
 - Food services;
 - Direct to retail store for in-store slicing/ tray packing.

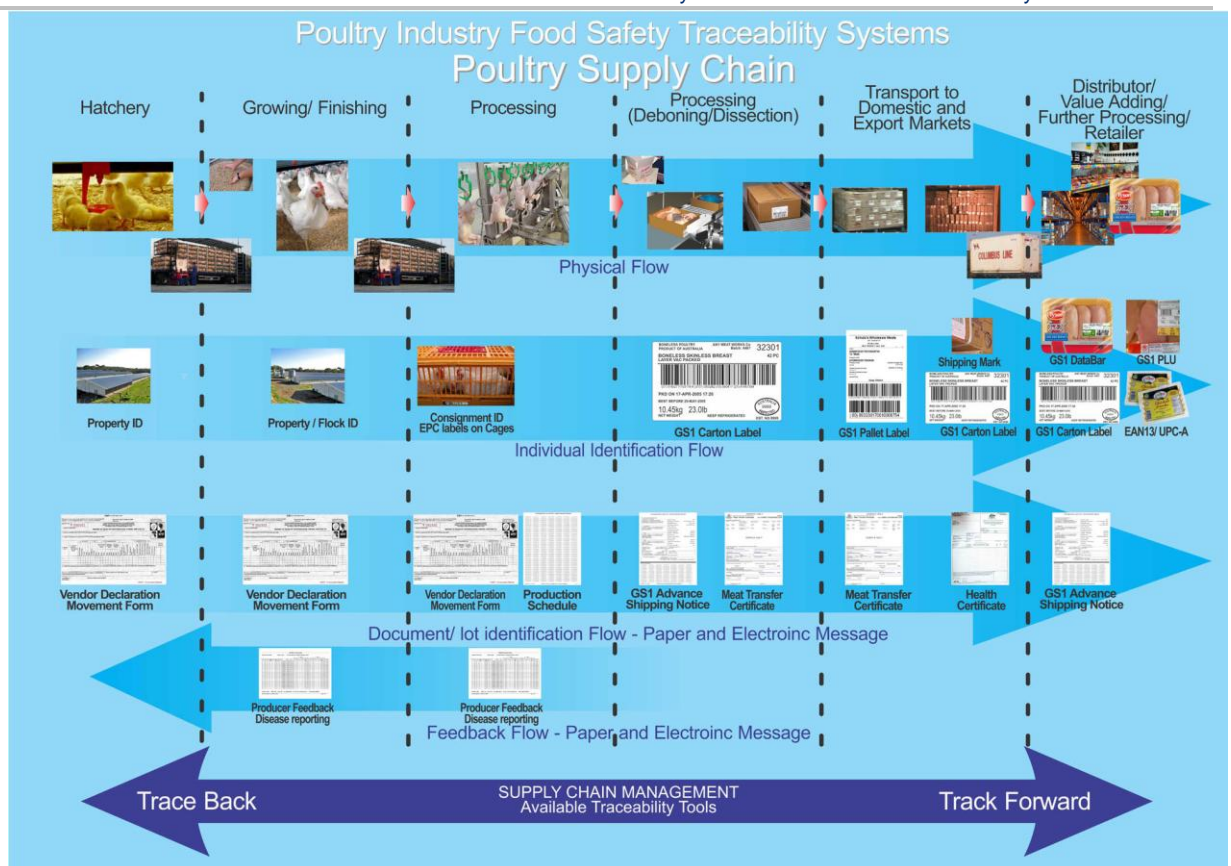


Figure 7 – Poultry Supply Chain Traceability model

The above diagram shows a best practice model for the application of GS1 standards for poultry traceability while complying with common regulatory requirements for individual bird identification and flock movement identification.

The key traceability elements from the diagram include:

- Property identification (Hatchery and Broiler farms);
- Individual bird leg tag (GS1 EPC or as specified by national/ market regulations) for certain movements or market requirements;
- Harvest cage identification (GS1 EPC, Application Identifier 80003 global returnable asset identifier, or as specified by national/ market regulations) linked to movement transaction;
- Harvest lot movement form sent as an electronic message by use of GS1 Advance Shipping Notice;
- Carton product or bulk unit product with GS1 serialized GTIN (can include GS1 EPC) label linked to slaughter batch/ lot which links to harvest cage identification;
- Cartons packed on the pallet with GS1 SSCC and GTIN (can include GS1 EPC);
- Poultry transfer certificate/ health certificate sent as electronic message using GS1 Advice Shipping Notice detailing all carton / bulk unit GS1 serialized GTINs;
- Retail packs (in-store or centrally packed) identified with:
 - GS1 EAN-13/ UPC-A (fixed weight product);
 - UPC-Type 2/ VMN-13 for variable weight store assigned coding with price; or
 - GS1 DataBar Expanded with the attributes of:
 - GTIN;
 - Weight;
 - Price;
 - Expiry date;

- Batch code or Serial number.

5.5. Roles in the Supply Chain

Figure 8 provides a list of the primary and support roles found in the meat and poultry supply chain and, if covered, where traceability guidance is provided in this document for each role.

Role	Activities	Alias / Examples
Primary Roles		
Livestock producer - Breeder, (supplier of live animals/ birds for growing)	Source feed Breed and ship	Suppliers of animals/ birds for growing/ finishing
Livestock Producer – Grower/ Finisher, (supplier of live animals/ birds for processing)	Source feed Source animals/ birds Grow, harvest and ship	Suppliers of animals/ birds for processing
Meat and Poultry processors	Slaughter, Process, Package, Label, Store, Sell, Ship carton, carcase and bulk product.	Processor/ Meatpacker, Supplier
Exporter/ Importer/ Wholesaler/ Trader	Buy and sell, export and import carton and carcase product. (May or may not physically handle the product.)	Traders, Distributor, Supplier
Retail Store	Receive, Store, Process, Package/Label, and Display; Sell to Consumer	Grocery Store, supermarket, grocery chains, shop.
Retail Distributor or Wholesaler	Receive, Store, Sell, Ship	Retail distribution centre, Distribution Centre, Import/Export warehouses, wholesaler warehouses
Support Roles		
Feed Stuff Supplier	Produce and ship	Suppliers of feed for animals destined for the meat industry. Traceability records for feed supplements and other raw ingredients needs to be maintained.
Medical Supplier	Produce and ship	Suppliers of medicines, medical supplies and medical equipment for veterinarians and producers of livestock. Traceability records for medicines needs to be maintained.
Packing Material Supplier	Produce and ship	Suppliers of packing material (crates, bags, boxes, labels, bins, clamshells, etc.)
Ingredient Supplier	Produce and ship	Feed manufacturers Feed supplement manufactures
Third Party Logistics Service Provider	Transport, Store	Truck / Rail / Ship / Air
Regulatory Organizations	Compliance oversight	Customs, Inspection, and Grading agencies

Figure 8 – Table of Roles

5.6. How is my Company Uniquely Identified?

A best practice for traceability is to use the GS1 Global Location Number (GLN) for company and location identification. A GLN is based on your company's GS1 Company Prefix number, thus ensuring global uniqueness.

Individual GLN's should be assigned to represent your company as well as any individual trading subsidiaries. GLN's should also be used to identify production, storage, shipping or receiving locations within your company to distinctly identify physical locations associated with traceability processes.

To learn more about GLN assignment visit www.gs1.org

5.7. Livestock Scenarios

Within the meat and poultry supply chain, livestock (beef, lamb/ sheep, pigs or poultry) can be considered trade items with unique attributes such as description, weight, age and growing history.

This information is often recorded on movement documents such as vendor declarations.

Where individual animal identification has been used, the individual identification is recorded at the time of movement to or from an identified property.

Where there is a regulatory or commercially defined requirement for individual animal, group of animals and/or movement recording and documentation, these requirements must be followed. Where possible, this information should be included in an electronic format to the receiver. The format for the electronic information should be the GS1 Advance Shipping Notice message format.

5.8. Trade Item Product and Packaging Scenarios

Within the meat and poultry supply chain, products are segmented between trade items and retail items. The market (domestic and export), and regulatory requirements differ greatly between trade and retail sectors.

Trade items may be fresh (chilled) or frozen, as well as fixed or catch weight product, or variable weight product.

Trade items can be summarised as:

Package Types	Definition	Product Examples
Chilled carcass or carcass portion (beef, lamb/ sheep meat, or pork) – variable weight	Whole or carcass piece that is supplied by a processor to an exporter, wholesaler, importer, value adder or retailer. Product is most often variable weight. Some product may be wrapped or have other outer covering method.	Fresh lamb carcass. Fresh pork carcass. Fresh beef/ veal carcass. Fresh pork leg.
Frozen carcass or carcass portion (beef, lamb/ sheep meat, or pork) – variable weight	Whole or carcass piece that is supplied by a processor to an exporter, wholesaler, importer, value adder or retailer. Product is most often variable weight. Some product may be wrapped or have other outer covering method.	Whole frozen lamb carcass. Whole beef quarters
Catch/ fixed weight carton fresh or frozen product (beef, lamb/ sheep meat, pork or poultry)	Variable weight carton product, where there is tight tolerance for minimum and maximum weight range. This may be packed as layer packed, vacuum packed, wrapped or other methods	22.7kg / 50lb frozen 80cl beef trim carton. Vacuumed packed primal cuts . Processed meats.
Variable weight carton fresh or frozen product (beef, lamb/ sheep meat, pork or poultry)	Variable weight carton product, where there is large tolerance for minimum and maximum weight range. This may be packed as layer packed, vacuum packed, wrapped or other methods	13.6kg / 30lb chilled beef Tenderloin carton. Vacuumed packed primal cuts . Processed meats.
Fixed weight bulk fresh or frozen product (beef, lamb/ sheep meat, pork or poultry)	Fixed weight bulk pack, typically a poly lined sided and lidded pallet sized container holding 1000kg/2200lb of product.	1000kg/ 2200lb frozen 80cl beef trim.
Palletized cartons or carcasses.	A number of similar or non-similar cartons or carcasses placed onto a pallet and wrapped and labeled with a gs1 SSCC that has the individual carton or carcass GS1 GTIN with attributes (bar code) linked to the GS1 SSCC.	42 carton (1000kg) pallet of 80cl frozen beef trim.

Figure 9 – Trade Item package summary

Most trade items have a company (processor) allocated GS1 Global Trade Item Number (GTIN). Where the company has multiple processing facilities the same GTIN is used for the same product, irrespective of the processing facility. To ensure traceability is maintained to the specific processing facilities, the company will use different additional information attached to the GTIN, such as a serial number that includes a processing facility code.

Where product is being packed for a specific 3rd party such as a product brand owner, the product brand owner may allocate the GTIN to be used. This is likely to include additional information attached to the GTIN such as a serial number that includes a processing facility code. This is used to differentiate which processing facility the brand owner has used.

If a company further processes and packages a product in the supply chain, such as the case with store-processed product, then that company becomes the manufacturer and is responsible for assigning a GTIN or item reference and traceability attributes. This may be achieved by using a combination of human readable and scannable product information. This information should also be stored for future retrieval, if necessary.

Whenever a carcass, carton, pallet or bulk product is loaded out of a processing facility the GS1 bar codes are recorded against the load out movement.

5.8.1. Variable Weight Carcase Label – Beef/ Veal

The bar code symbology used in the meat and poultry industries for variable weight Carcase ticket/ label is GS1-128. The GS1-128 bar code symbology allows secondary attribute information over and above primary global trade item identification to be represented in the bar code. Application Identifiers (AIs) effectively act as prefixes for this information and define the meaning and structure of the embedded data which follows.

The bar code symbology can also represent attribute information such as weight, slaughter date and serial numbers in a standard format. This ensures that the attribute information encoded by one company can also be scanned and interpreted by any other company in the supply chain.

Additional country, market or customer requirements may be applicable in certain circumstances. Contract the applicable representatives in those markets to determine the current requirements.



Figure 10 – Beef/ Veal carcase ticket/ label example

AI	Example Data & Format	Attribute Information
(01)	99327111031766 n14 - 14 digits numeric (fixed length)	Global Trade Item Number (GTIN) Item Identification. (Primary identification of the product carton) 9 indicates that it is a variable measure (weight) product 93271110 - GS1 Company Prefix. (7, 8 or 9 digits in length depending on the GS1 Prefix allocated) 3176 – Company product code or AUSMEAT code. 3, 4 or 5 digits in length 6 – Check Digit
(310n)	001235 n6 - 6 digits numeric (fixed length)	Net Weight – Kilograms In this example as n = 1, start at the very right of the measurement data field and count to the left 1 place. The net weight is 123.5kg. n represents the decimal point indicator, which shows where the decimal point is located.
(11)	020729 n6 - 6 digits numeric (fixed length)	Production Date (YYMMDD) Referred to as the 'Kill' or 'Slaughter' date in the meat industry In this example the kill date is 29th July 2002.
(21)	1249656L an...20 – alpha numeric up to 20 characters (variable length)	Serial Number In this example an 8 digit alpha-numeric serial number has been allocated.

Figure 11 – Minimum beef carcass bar code information required represented by Application Identifiers (AIs)

Note: Additional AI's can also be used at the supplier's discretion.

5.8.2. Variable Weight Carcass Label – Lamb/ Sheep meat

The bar code symbology used in the meat and poultry industries for variable weight Carcass ticket/ label is GS1-128. The GS1-128 bar code symbology allows secondary attribute information over and above primary global trade item identification to be represented in the bar code. Application Identifiers (AIs) effectively act as prefixes for this information and define the meaning and structure of the embedded data which follows.

The bar code symbology can also represent attribute information such as weight, slaughter date and serial numbers in a standard format. This ensures that the attribute information encoded by one company can also be scanned and interpreted by any other company in the supply chain.

Additional country, market or customer requirements may be applicable in certain circumstances. Contract the applicable representatives in those markets to determine the current requirements.

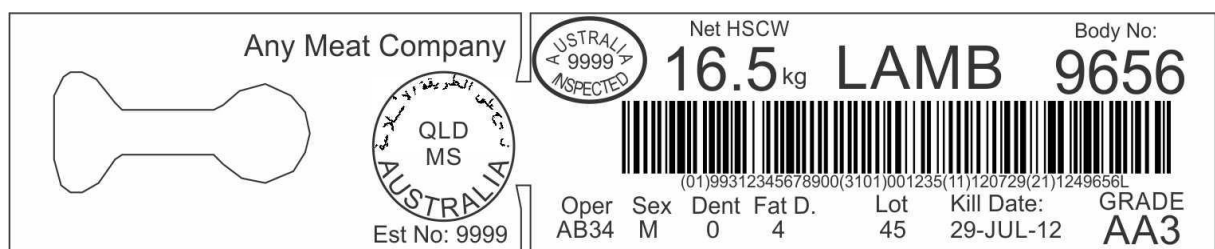


Figure 12 – Lamb/ Sheep Meat carcass ticket/ label example

AI	Example Data & Format	Attribute Information
(01)	99327111031766 n14 - 14 digits numeric (fixed length)	Global Trade Item Number (GTIN) Item Identification. (Primary identification of the product carton) 9 indicates that it is a variable measure (weight) product 93271110 - GS1 Company Prefix. (7, 8 or 9 digits in length depending on the GS1 Prefix allocated) 3176 – Company product code or Industry code. 3, 4 or 5 digits in length 6 – Check Digit
(310n)	001235 n6 - 6 digits numeric (fixed length)	Net Weight – Kilograms In this example as n = 1, start at the very right of the measurement data field and count to the left 1 place. The net weight is 123.5kg. n represents the decimal point indicator, which shows where the decimal point is located.
(11)	120729 n6 - 6 digits numeric (fixed length)	Production Date (YYMMDD) Referred to as the 'Kill' or 'Slaughter' date in the meat industry In this example the kill date is 29th July 2012.
(21)	1249656L an...20 –	Serial Number In this example an 8 digit alpha-numeric serial number has

	alpha numeric up to 20 characters (variable length)	been allocated.
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Figure 13 – Minimum lamb/ sheep carcass bar code information required represented by Application Identifiers (AIs)

Note: Additional AI's can also be used at the supplier's discretion.

5.8.3. Variable Weight Carcass Label - Pork

The bar code symbology used in the meat and poultry industries for variable weight Carcass ticket/ label is GS1-128. The GS1-128 bar code symbology allows secondary attribute information over and above primary global trade item identification to be represented in the bar code. Application Identifiers (AIs) effectively act as prefixes for this information and define the meaning and structure of the embedded data which follows.

The bar code symbology can also represent attribute information such as weight, slaughter date and serial numbers in a standard format. This ensures that the attribute information encoded by one company can also be scanned and interpreted by any other company in the supply chain.

Additional country, market or customer requirements may be applicable in certain circumstances. Contract the applicable representatives in those markets to determine the current requirements.

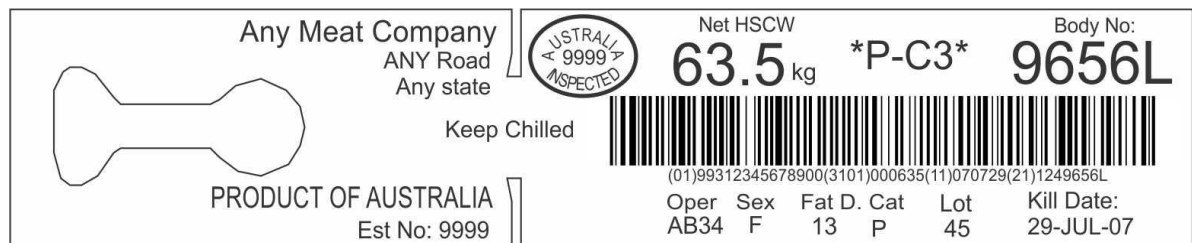


Figure 14 – Pork carcass ticket/ label example

AI	Example Data & Format	Attribute Information
(01)	99327111031766 n14 - 14 digits numeric (fixed length)	Global Trade Item Number (GTIN) Item Identification. (Primary identification of the product carton) 9 indicates that it is a variable measure (weight) product 93271110 - GS1 Company Prefix. (7, 8 or 9 digits in length depending on the GS1 Prefix allocated) 3176 – Company product code or Industry code. 3, 4 or 5 digits in length 6 – Check Digit
(310n)	001235 n6 - 6 digits numeric (fixed length)	Net Weight – Kilograms In this example as n = 1, start at the very right of the measurement data field and count to the left 1 place. The net weight is 123.5kg. n represents the decimal point indicator, which shows where the decimal point is located.
(11)	070729 n6 - 6 digits numeric	Production Date (YYMMDD) Referred to as the 'Kill' or 'Slaughter' date in the meat industry In this example the kill date is 29th July 2007.

	(fixed length)	
(21)	1249656L an...20 – alpha numeric up to 20 characters (variable length)	Serial Number In this example an 8 digit alpha-numeric serial number has been allocated.

Figure 15 – Minimum pork carcass bar code information required represented by Application Identifiers (AIs)

Note: Additional AI's can also be used at the supplier's discretion.

5.8.4. Variable Weight Carcass Ticket/ Label bar code technical elements

Concatenation

Concatenation (stringing AIs together) is an effective means of presenting multiple element strings in a single GS1-128 Bar Code Symbol and should be used to conserve space and optimize scanning operations.

Maximum Length

When concatenating AIs the maximum number of characters in the GS1-128 Bar Code Symbol must not exceed 48. This includes Function Code 1 (FNC1) when used as a field separator, but excludes auxiliary characters and the Symbol Check Character (Modulo 103).

The length of the GS1-128 Bar Code Symbol must never exceed 165mm, including the Quiet Zones (light margins).

Magnification

The size of the GS1-128 Bar Code Symbol depends on:

- The X-dimension (single bar width) chosen
- The number of characters encoded
- The number of non-numeric characters in the data

For the meat industry it was determined that it would be primarily a hand scanning requirement, which has an allowable magnification range of 25% - 100% (X-dimension 0.25mm – 1.02mm)

For GS1-128 Bar Code Symbols that are to be scanned in a general distribution environment (primarily automated scanning), the allowable magnification range is 48.7% - 100% (X-dimension 0.50mm – 1.02mm).

Height of Bars

The minimum bar height is 13mm. For scanning in a General Distribution (automated scanning) environment, the minimum bar height for a GS1-128 Bar Code Symbol is 32mm.

Human Readable Interpretation

Print the Human Readable Interpretation either above or below the symbol bars. Make sure the Application Identifiers (AIs) are clearly recognizable by placing them in brackets in the Human Readable Interpretation only.

5.8.5. Variable Weight Carton Label – Beef, Pork, Lamb

The bar code symbology used in the meat industry for variable weight carton labels is GS1-128. The GS1-128 bar code allows secondary attribute information over and above primary global trade item identification to be represented in the bar code. Application Identifiers (AIs) effectively act as prefixes for this information and define the meaning and structure of the embedded data which follows.

The bar code symbology can also represent attribute information such as batch numbers, serial numbers, expiry dates and weight in a standard format. This ensures that the attribute information encoded by one company can also be scanned and interpreted by any other company in the supply chain.

Additional country, market or customer requirements may be applicable in certain circumstances. Contract the applicable representatives in those markets to determine the current requirements.



Figure 16 – Trade Item Meat Carton label example 1 – EU importing compliant



Figure 17 – Trade Item Meat Carton label example 2 – US importing compliant



Figure 18 – Trade Item Meat Carton label example 3 – Japan importing compliant

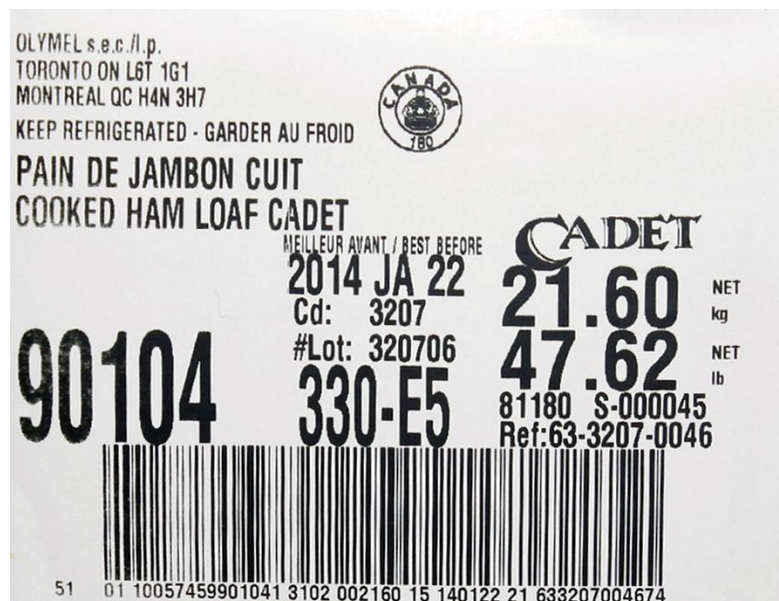


Figure 19 – Trade Item Meat Carton label example 4 – Canadian domestic compliant

AI	Example Data & Format	Attribute Information
(01)	99327111031766 n14- 14 digits numeric (fixed length)	Global Trade Item Number (GTIN) Item Identification. (Primary identification of the product carton) 9 indicates that it is a variable measure (weight) product 93271110 - GS1 Company Prefix. (7, 8 or 9 digits in length depending on the GS1 Prefix allocated) 3176 – Company product code or Industry code. 3, 4 or 5 digits in length 6 – Check Digit
(310n)	001856 n6 - 6 digits numeric (fixed length)	Net Weight – Kilograms In this example as n = 2, start at the very right of the measurement data field and count to the left 1 place. The net weight is 18.56kg. (n indicates that the position of the decimal point is n places to the left of the end of the number e.g. 3102) NB: Weight information is mandatory if the item is a variable weight trade item.
(13)	020729 n6 - 6 digits numeric (fixed length)	Production or Packaging Date (YYMMDD) Referred to as the date the meat is taken off the carcass or processed and placed in a carton. In this example the kill date is 29th July 2002.
(21)	1249656 an...20 – alpha numeric up to 20 characters	Serial Number In this example an 8 digit alpha-numeric serial number has been allocated. Where multiple lines or processes establishments pack product with the same GTIN, the serial number must

	(variable length)	include a coding method to identify the processing line or establishment.
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Figure 20 – Minimum meat carton bar code information required represented by Application Identifiers (AIs)

Note: Additional AI's can also be used at the supplier's discretion.

5.8.6. Variable Weight Carton Label - Poultry

The bar code symbology used in the poultry industry for variable weight carton labels is GS1-128. The GS1-128 bar code allows secondary attribute information over and above primary global trade item identification to be represented in the bar code. Application Identifiers (AIs) effectively act as prefixes for this information and define the meaning and structure of the embedded data which follows.

The bar code symbology can also represent attribute information such as batch numbers, serial numbers, expiry dates and weight in a standard format. This ensures that the attribute information encoded by one company can also be scanned and interpreted by any other company in the supply chain.

Additional country, market or customer requirements may be applicable in certain circumstances. Contract the applicable representatives in those markets to determine the current requirements.



Figure 21 – Poultry Carton label example

AI	Example Data & Format	Attribute Information
(01)	99327111031766 n14- 14 digits numeric (fixed length)	Global Trade Item Number (GTIN) Item Identification. (Primary identification of the product carton) 9 indicates that it is a variable measure (weight) product 93271110 - GS1 Company Prefix. (7, 8 or 9 digits in length depending on the GS1 Prefix allocated) 3176 – Company product code or AUSMEAT code. 3, 4 or 5 digits in length 6 – Check Digit
(310n)	001045 n6 - 6 digits	Net Weight – Kilograms In this example as n = 2, start at the very right of the measurement data field and count to the left 2 place. The

	numeric (fixed length)	net weight is 10.45kg. (n indicates that the position of the decimal point is n places to the left of the end of the number e.g. 3102) NB: Weight information is mandatory if the item is a variable weight trade item
(13)	050417 n6 - 6 digits numeric (fixed length)	Production or Packaging Date (YYMMDD) Referred to as the date the meat is taken off the carcass or processed and placed in a carton. In this example the kill date is 17 th April 2005.
(21)	1249656 an...20 – alpha numeric up to 20 characters (variable length)	Serial Number In this example an 8 digit alpha-numeric serial number has been allocated. Where multiple lines or processes establishments pack product with the same GTIN, the serial number must include a coding method to identify the processing line or establishment.

Figure 22 – Minimum poultry carton bar code information required represented by Application Identifiers (AIs)

Note: Additional AI's can also be used at the suppliers discretion.

5.8.7. Variable Weight Carton Label bar code technical elements

Concatenation

Concatenation (stringing AIs together) is an effective means of presenting multiple element strings in a single GS1-128 Bar Code Symbol and should be used to conserve space and optimize scanning operations.

Maximum Length

When concatenating AIs the maximum number of characters in the GS1-128 Bar Code Symbol must not exceed 48. This includes Function Code 1 (FNC1) when used as a field separator, but excludes auxiliary characters and the Symbol Check Character (Modulo 103).

The length of the GS1-128 Bar Code Symbol must never exceed 165mm, including the Quiet Zones (light margins).

Magnification

The size of the GS1-128 Bar Code Symbol depends on:

- The X-dimension (single bar width) chosen;
- The number of characters encoded;
- The number of non-numeric characters in the data.

For the meat industry it was determined that it would be primarily a hand scanning requirement, which has an allowable magnification range of 25% - 100% (X-dimension 0.25mm – 1.02mm)

For GS1-128 Bar Code Symbols that are to be scanned in a general distribution environment (primarily automated scanning), the allowable magnification range is 48.7% - 100% (X-dimension 0.50mm – 1.02mm).

Height of Bars

The minimum bar height is 13mm. For scanning in a General Distribution (automated scanning) environment, the minimum bar height for a GS1-128 Bar Code Symbol is 32mm.

Human Readable Interpretation

Print the Human Readable Interpretation either above or below the symbol bars. Make sure the Application Identifiers (AIs) are clearly recognizable by placing them in brackets in the Human Readable Interpretation only.

Bar Code Symbol Placement

The bar code symbols on units not intended for retail POS should be upright (i.e. in picket fence orientation) and placed on the sides of the unit. Each item shall have at least one bar code symbol, and two are highly recommended. The bar code symbols should be kept away from any vertical edges so that they are less likely to be accidentally damaged in transit.

All attempts should be made to maintain 100% scannability at all times.

The bar code symbol can be positioned anywhere along the face of the carton ensuring that the following GS1 recommendations are followed:

The lower edge of the vertical bars are exactly 32mm from the lower edge of the base of the carton.

No part of the bar code symbol including Quiet Zones (Light Margins) is closer than 19mm to any vertical edge.

5.8.8. Pallets Labels – Beef, Pork, Lamb, Chicken

The information following is a reference to meet the minimum requirement for pallet labelling. This application is supported and complimented by Application Identifiers and the GS1-128 Symbology. These are important components of the logistics label and apply to all of the specifications relating to the logistics label.

The purpose of the GS1 SSCC Logistics label provides information about the unit to which it is fixed. The core information on the label should be represented both in bar code and human readable form. There may be other information, which is represented in human readable form only.

This GS1 SSCC Logistics Label can be applied to a single item, or a grouping of several items made up to facilitate the operation of handling, storing and shipping. This can be a carton, a pallet, a container or any other similar type of packaging created for the purpose of handling, storing or shipping.

Note: Trading partners may request additional information in a separate bar code above the SSCC. Please ensure that you consult your trading partners.

Any Meat Works Co		Order Number
1 Long Street		32691005
Somewhereville		
KEEP CHILLED		
SSCC	Total Net Weight (kg)	
(00) 993124380000000012	1139.4 kg	
Product GTIN	Number of cartons	
(01) 99312438260074	42	
75CL BEEF TRIM		
Oldest Packed On Date	04-Jul-13	
Newest Packed On Date	05-Jul-13	
 (02) 99312348260074(3101)011394(13)130704(37)42		
 (00)393124380000000012		

Figure 23 – SSCC Pallet label example

5.8.8.1. Allocating an SSCC

The SSCC is a unique, non-significant, eighteen-digit number, which is assigned by the company constructing the logistic unit. It remains the same for the life of the logistic unit. The SSCC is encoded in a GS1-128 Bar Code Symbol, and is identified by the Application Identifier (00).

When assigning an SSCC, an individual SSCC number must not be reallocated within one year of the shipment date from the SSCC assignor to a trading partner.

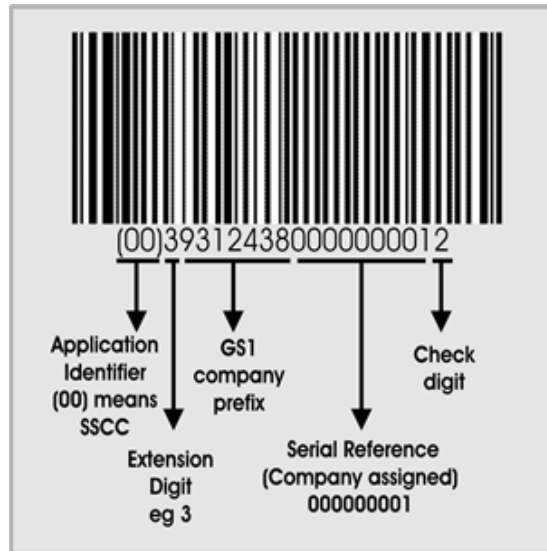


Figure 24 – SSCC Pallet label explained

5.8.8.2. The Application Identifier (AI) identifies the number that follows as an SSCC.

The Extension Digit Any number between 0-9 is used to increase the capacity of the Serial Reference within the SSCC. It is assigned by the company that constructs the SSCC.

The GS1 Company Prefix, either 7, 8 or 9 digits in length, should belong to the company originating the logistic unit, which is not always the brand owner. It makes the SSCC unique worldwide, but does not identify the origin of the unit.

The Serial Reference, either 7, 8 or 9 digits in length, is structured at the discretion of the company responsible for its assignment to uniquely identify each transport package. The method used to allocate the Serial Reference is at the discretion of the company bar coding the unit.

The Check Digit is mathematically calculated and ensures the whole number is correct. Correct calculation is essential for successful scanning of the bar code symbol.

5.8.8.3. Labelling the Logistic Unit

The organization responsible for the printing and application of the label determines the content format and the dimensions of the label. However, the SSCC is the minimum requirement in the logistics label. Any other information over and above the SSCC should comply with the specification of this section and with the proper use of AIs.

Label Layout

For each label applied to the logistic unit, the top section contains free format information, the middle section contains text information and the Human Readable Interpretation of the bar code symbol(s), and the lowest section contains the bar code symbols. In all cases the SSCC is placed in the lowest portion of the label.

Magnification

The magnification range for the GS1-128 Bar Code Symbol containing the SSCC is 48.7% to 92.5%.

The magnification range for bar code symbols on the logistics label that do not contain the SSCC is 25% - 100%. However if a magnification factor of less than 48.7% is used it is likely that the reading distance will be reduced.

For all symbols, selecting a magnification factor at the higher end of the permissible range will always enhance the scanning reliability.

Height of Bars

The minimum bar height for the GS1-128 Bar Code Symbol containing the SSCC is 32mm. For other bar code symbols on the logistics label a minimum height of 27mm is acceptable based on historic specifications, but a migration to 32mm should be made.

Human Readable Interpretation

To facilitate key entry Application Identifiers should be set apart from the data by the use of brackets. The brackets are strictly for the Human Readable Interpretation and must not be encoded in the bar code symbol.

Label Location

Whilst the absolute minimum requirement for logistic units is one logistics label, for efficiency of scanning it is strongly recommended that at least two sides of the item be bar coded with the same data.

5.9. Retail Item Product Codes and Packaging Scenarios

Generally, products are delivered by suppliers to retailers, wholesalers, or distributors in one of the following package types:

Package Types	Definition	Product Examples
Fixed-Weight Case-Ready	Consumer level items ready for sale to the consumer. Product is processed, packaged, and labelled for consumer sale by supplier.	Ready to Eat chicken nuggets, Heat & Serve roast beef, vacuum packed sliced ham
Variable-Weight Case-Ready Pre-Priced	Consumer level items ready for sale to the consumer. Product is processed, packaged, labeled, and pre-priced for consumer sale by supplier.	Chicken leg quarters, pork tenderloins, ground beef chubs
Variable-Weight Case-Ready Un-Priced	Processed, packaged, and partially labeled for consumer sale by supplier. Final pricing for consumer sale is done by the retailer.	Hams, whole turkeys, chilled meat cuts, marinated poultry parts
Tray-Ready	Processed and bulk packed into variable-weight sealed bags by supplier. Packaged for consumer sale and labeled by retailer.	Bulk bacon, bulk sausage, smoked ham hocks, chilled and smoked turkey parts
In-Store Processed	Wholesale cuts of meat vacuum packed by supplier. processed, packaged, and labeled for consumer sale by retailer.	Meat primal cuts, sub-primal cuts, ground beef
Fix weight – long shelf life	Frozen fixed weight products.	500gram frozen beef patties

Figure 25 – Meat and Poultry Retail Package Types

5.9.1. UPC-Type 2 \ VMN-13 (PLU)

5.9.1.1. What is a UPC-Type 2 \ VMN-13 code (PLU)?

There is a common industry practice for in-store pricing in the bar codes on variable weight meat and poultry retail units. These price look-up codes, commonly called PLU codes, PLU numbers, PLUs, produce codes, produce labels, UPC-Type 2, retail Variable Measure Item (VMN-13) or AI02 identifiers, are identification numbers affixed to products in stores.

For meat and poultry retail packs, the price is included in the PLU. The price is limited to a \$99.99 retail price, when both modulo and price check digits are active in the code. This becomes an issue when retailers sell very large cuts of meat (i.e. quarter of lamb or a large quantity of lobsters). The number of items that exceed the \$99.99 limit will continue to increase over time as "shopping club" stores increase in popularity and global reach.

When prefix 02 is used to identify a retail Variable Measure Item, GS1 recommends that the Four-Digit Price with Price Verifier Digit format be used.

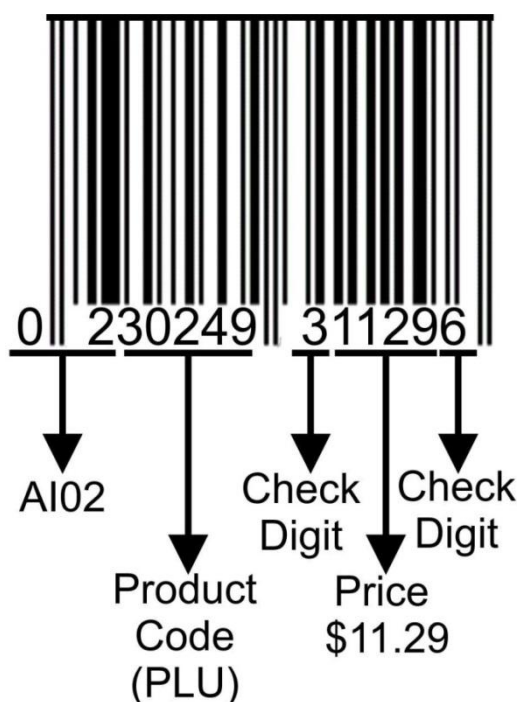


Figure 26 – UPC-Type 2 or VMN-13 – PLU (Variable measure retail example with price)

5.9.1.2. When is a UPC-Type 2/ VMN-13 (PLU) used?

The UPC-Type 2 / VMN-13 (PLU) is used for:

- The Variable-Weight Case-Ready product that is Pre-Priced;
- In-Store processed and packed product.



Figure 27 – UPC- Type 2/ VMN-13 (PLU) retail Variable Measure Number example

5.9.2. EAN 13

5.9.2.1. What is EAN 13 code?

The EAN-13 Bar Code is used to encode a GTIN-13, and can be scanned in both a retail POS and a General Distribution Scanning Environment. It is a 13 digit (12 data and 1 check) bar coding standard which is a superset of the original 12-digit Universal Product Code (UPC) system developed in the United States. The EAN-13 bar codes are used worldwide for marking products often sold at retail point-of-sale. The numbers in an EAN bar code can be used to understand the characteristics of the product, including its origin and manufacturer.



Figure 28 – EAN-13

5.9.2.2. When is an EAN-13 used?

The EAN-13 is used for:

- Fixed Weight Case-Ready pre-priced;
- Fixed Weight Case-Ready in-store priced;
- Fixed Weight Case-Ready non-priced. E.g. price is displayed and shown at time of scanning.
- Fixed Weight frozen products. These use EAN-13 and UPCA (U.S.) codes. GS1 DataBar Expanded is not used as there is no use-by date on the label.



Figure 29 – EAN-13 fixed weight example

5.9.3. GS1 DataBar Expanded

5.9.3.1. What is GS1 DataBar Expanded code?

The GS1 DataBar, formerly known as the RSS (Reduced Space Symbology), is a new bar code that was designed by the standards organization GS1 to fit in small, space-constrained areas (e.g., on a PLU sticker). It can carry more information and identify small items than the current EAN/UPC bar code.

GS1 DataBar Expanded bar codes enable GTIN identification for fresh variable measure and hard-to-mark products like loose produce. Additionally, GS1 DataBar Expanded can carry GS1 Application Identifiers such as serial numbers, lot numbers, and expiration dates, creating solutions to support product authentication and traceability for fresh food products.

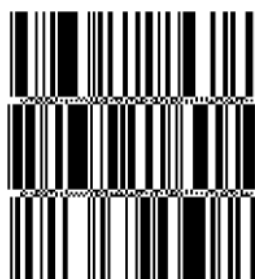


Figure 30 – GS1 DataBar expanded - With AIs for product code, weight, Used-by date and Batch code

5.9.3.2. When is a GS1 DataBar Expanded used?

The GS1 DataBar Expanded used for:

- Fixed Weight Case-Ready pre-priced – To include the product code, price, use-by date and batch code/ serial number;
- Fixed Weight Case-Ready in-store priced – To include the product code, use-by date and batch code/ serial number;
- Variable Weight Case-Ready pre-priced – To include the product code, weight, price, use-by date and batch code/ serial number;

- Variable Weight Case-Ready in-store priced – To include the product code, weight, use-by date and batch code/ serial number.



Figure 31 – GS1 DataBar Expanded variable weight example

5.9.4. Variable-measure fresh produce and GS1 DataBar Expanded

Pilot projects have taken place with variable measure fresh produce for meat and poultry using GS1 DataBar Expanded to encode additional information such as best-before date, country of origin, batch number and weight. By ensuring accurate and complete sales information for these products, retailers benefit from:

- Greater flexibility over discounted pricing;
- More accurate stock replenishment;
- Less waste;
- Higher margins.

Traceability, Not Just Product Codes

There is an increasing need for traceability based on identities (lots/batches of products, serialized products, weights and use-by dates) and not just stock-keeping product codes identified with GTINs.

There is an increasing need to identify items using attributes carried by bar codes or tags.

The GS1 DataBar Expanded allows new product types and special applications to be managed with more detail and on a global basis. This is considered very necessary for fresh food groups and variable measure products sold at retail level, such as meat and poultry.

In addition, the GS1 DataBar, with its reduced size, can make it possible to mark products where the bar code competes for limited package panel space with a full size, full performance bar code symbol.

High-level benefits to expanded automatic identification include:

- Elimination of product code (PLU, SKU) entry errors, whether at a cashier or self-checkout POS;
- Variable weight product and category management;
- Best-before and use-by date management;
- Traceability to different sources;
- Product recall management;
- Reduce numbering capacity stresses for small EAN-8 & UPC-E symbols.

Business Case Benefits for Specific Store Departments

Meat and Poultry

GS1 DataBar Expanded provides a solution for meat and poultry to enhance current practices and solve tactical identification problems.

Some demonstrated business benefits include:

The end of price limitations: Currently, GS1 Prefix 02, commonly called PLU, is limited to a \$99.99 retail price, when both modulo and price check digits are active in the code. This becomes an issue when retailers sell very large cuts of meat (i.e. quarter of lamb or a large quantity of lobsters). The number of items that exceed the \$99.99 limit will continue to increase over time as "shopping club" stores increase in popularity and global reach.

Sell-by/expiration date management: The GS1 DataBar Expanded permits systematic identification of product dates. A stop-sale provision can be enacted at the POS when a product has exceeded its expiration date. Automated markdowns can be enabled as a product approaches its sell-by date. Product rotation in display cases is easier to manage. The GS1 DataBar Expanded will also bridge capability differences between regional market usages.

Better understanding of consumer buying habits: Understanding consumer buying trends based on sell-by date, as well as by tracking sales to a specific producer or distributor, can assist with both markdown and replenishment strategies.

Product weight management: Adding the product weight to the code structure would assist with measuring profitability.

Sales area identification: Service case meat sales are often not differentiated from regular counter sales and the GS1 DataBar Expanded could assist with identifying these products.

Data synchronization: Replacing localized variable measure codes on variable weight consumer products with industry standard GTINs and using standard application identifiers to code variable attribute(s) would better align with GDSN GTIN product identification practices. Evaluation and management tools commonplace in other departments could be used.

Traceability: At the supply, item and store levels.

5.10. Impact of Batch/Lot and Serial Numbers on Traceability

Each partner in the supply chain shall provide and/or capture certain product information to enable forward and backward (one up/one down) traceability. It is imperative that the supplier establish a carton-level product marking protocol that can be used for traceability by supplier, retailer, wholesaler, and distributor in normal business operations, as well as to locate specific products in the event of a product recall situation.

Of critical importance, should a product traceability or recall situation occur, is that the supplier be able to convey to their trading partner(s) the required information to enable a precise search for the identified product. It is incumbent upon the supplier to identify to their trading partners the type of data that will normally be provided for product traceability (i.e., Batch/ Lot or Serial Number) as described in **Figure 31**.

As a minimum, a supplier must assign a Batch/Lot Number for carton-level traceability. (Within the GS1 bar code system, a Batch/Lot Number is assigned an Application Identifier of 10). However, due to the widespread use of serial numbering in this industry on variable-weight cartons, and the limited data carrying capacity of the GS1-128 bar code, a serial number will at times be substituted for the Batch/ Lot Number in the bar code.

If a Batch/Lot Number, AI "10" is present in the carton bar code, the receiving partner should manage the traceability of the product using that value. However, if an AI "10" Batch/ Lot Number is not present, then an AI "21" Serial Number must be present and that is the number the receiving partner must record to track the product. If both numbers are present, as sometimes happens on fixed-weight product, the receiving partner need only track the AI "10" Batch/Lot Number.

Carton Bar Code Contents	Number Used For Tracking Carton
-------------------------------------	--

Batch/Lot AI “10”	Serial AI “21”	
•		Batch/Lot Number
	•	Serial Number
•	•	Batch/Lot Number

Figure 32 – Priority of Batch/ Lot and Serial Numbers for Tracing Cartons

Suppliers that use a carton Serial Number for product tracking in place of a Batch/ Lot Number must manage the Serial Number in a way that it affords a similar level of traceability as would be provided by a Batch/ Lot Number.

When the GS1 DataBar Expanded is applied for retail meat and poultry packs, the use of Batch/ Lot or Serial AIs is recommended as part of the traceability model. By correctly recording each and every Batch/ Lot or Serial sold, one can identify which product recall protocols to apply in the case of a recall. If none of the effected product has been sold then the recall is internal only, with no impact on customers. Without the use of GS1 DataBar Expanded with Batch/ Lot or Serial AIs it would be very difficult to determine how many or which batches of product have been sold and how many are still in-store.

5.11. Industry Practice for Product Dates

5.11.1. For carcass and non-retail trade cartons/ bulk units

The production or packaging date is used at the carcass and carton (non-retail trade items) level to determine the “use-by”/ “best-before”/ “freeze-by” dates. Production date is critical for inventory management of dates.

For carcass product, AI “11” is used to represent the ‘Kill’ or ‘Slaughter’ date of the animal.

For non-retail trade cartons the AI “13” is used to represent the “Production” or “Packaging” date. This date is referred to as the date the meat is taken off the carcass or processed and placed in a carton.

Domestic and importing country regulations, as well as specific markets may specify certain human readable date information and formats for non-trade items.

5.11.2. For Retail items

Retail items generally have consumer perishable dates in human readable formats.

Domestic and importing country regulations, as well as specific markets may specify certain human readable perishable date information and formats for retail items.

When using GS1 DataBar Expanded for retail items use the:

- AI “15” where the product is specified as having a “Best-before date” or “Freeze-by date”;
- AI “17” where the product is specified as having a “Use-by date” or “Expiration date”.

Most countries have regulations governing the definition and use of consumer packaged item dates. Refer to these regulations for correct usage of dates.

6. Maintaining Traceability across the Product Hierarchy

The best practice for traceability is to identify traceable products by their GTIN and the associated production Batch/ Lot or Serial Number information. This information must be available in human readable format, and best practices are that the information also be available in scannable format.

Products should have a standard identification at all levels of the product hierarchy (shipment, pallet, carton, and item). **Figure 33** identifies information that should be used to identify each level. Linking the standard product identification with human readable and potentially scannable traceability attributes for each level of the product hierarchy ensures traceability.

Hierarchy Level	Hierarchy Standard Identification
Consumer Item	GTIN or Product Description and Brand Owner, AND Lot Control Date OR Batch/Lot Number
Carton	GTIN, weight, production date and Batch/Lot Number OR Serial Number
Carcase	GTIN, weight, production date and Batch/Lot Number OR Serial Number
Pallet	Serial Shipping Container Code (SSCC)
Shipment	Purchase Order Number(s) or Global Shipment Identification Number (GSIN)

Figure 33 – Table of Hierarchy Levels

6.1. Minimum Requirements for Consumer Item Traceability

The ultimate output of carton-ready, tray-ready and store-processed product is consumer-packaged product sold to a final consumer. This section details how retailers, wholesalers, and distributors manage the minimum required traceability data for these consumer item products.

Consumer item traceability must allow consumers to identify suspect product, so human readable information is essential. Therefore, consumer item traceability requires the use of human readable information on both fixed-weight and variable-weight consumer items.

Fixed-Weight consumer items have a scannable UPC-A bar code that includes a GTIN, but no additional traceability attributes. Variable-Weight consumer items have a scannable UPC-Type 2 bar code that includes an item reference. While the item reference provides the retailer with high-level information about the type of product sold, it fails to provide effective traceability with point-of-sale scanning. Therefore, retailers, as well as consumers, are largely dependent on human readable information for consumer item traceability for all items that have a UPC-A or a UPC-Type 2 bar code.

The party responsible for packaging, labelling, bar coding, and setting the shelf-life date of the consumer items varies with the packaging type. **Figure 34** below highlights the packaging type and whether the supplier or the retailer has responsibility:

PACKAGING TYPE	PACKAGING		LABEL PLACEMENT		UPC-TYPE 2 ITEM REFERENCE		SHELF LIFE DATING	
	Supplier	Retailer	Supplier	Retailer	Supplier	Retailer	Supplier	Retailer
Fixed-Weight Carton Ready	●		●		N/A	N/A	●	
Variable-Weight Carton Ready, Pre-priced	●		●*	●*		●		●
Variable-Weight Carton Ready, Un-priced	●			●*		●		●
Tray-Ready		●		●		●		●
Store-Processed (Full Service and Packaged)		●		●		●		●

Figure 34 – Responsible Party for Consumer Item Traceability Data

Fixed-Weight consumer items are packaged and labelled by suppliers and the traceability information for this packaging type is always the responsibility of the supplier. Although carton-ready consumer

items are always packaged by the supplier, they may be pre-priced or un-priced when delivered to retailers. In either case, the retailer always determines the Sell-By or Use-By Date and item reference number. When labelling is performed by the supplier, the retailer communicates this information to the supplier before the UPC-Type 2 bar code labels are printed. **Figure 34** below shows those traceability elements required on consumer-item products:

DATA ELEMENT	Scan Length	CARTON-READY		STORE-PROCESSED	
		Hmn Rdbl	Scan	Hmn Rdbl	Scan
Brand Owner/ Company Name	N/A	●		●	
Consumer Item Product Description	N/A	●		●	
Global Trade Item Number (GTIN)	2+14		●*		●*
Item Identification Number	5		●^		●^
Lot Control Date OR Batch/Lot Number	N/A	●		●	

Hmn Rdbl = Human Readable label text; Scan = Bar coded using the UPC-A;

*Only on fixed-weight items with a UPC-A bar code

^Only on variable-weight items with a UPC-Type 2 bar code

Figure 35 – Consumer Level Data Requirements for Traceability

6.2. Minimum Requirements for Carton Traceability

The minimum requirements for carton level traceability rely upon a combination of the GTIN and Batch/ Lot or Serial Number. The figure below provides a summary of scannable and human readable traceability attributes.

Because of differences in production practices and bar code size constraints, traceability labelling practices vary depending on the type of meat or poultry product produced. The primary difference is between variable-weight products and fixed-weight products, and between refrigerated and frozen or shelf-stable products. These differences are summarized in **Figure 36** below:

DATA ELEMENT	Scan Length	VARIABLE-WEIGHT			FIXED-WEIGHT		
		Hmn Rdbl	Scan	ASN	Hmn Rdbl	Scan	ASN
Supplier Company Name	N/A	●			●		
Supplier Product Number /Item reference	N/A	●			●		
Carton-Level Product Description	N/A	●			●		
Global Trade Item Number (GTIN) AI "01"	2+14		●	●		●	●
Batch /Lot Number AI "10"	2+12 max	●	●*	●	●	●	●
Serialized Carton Code (AI "21")	2+12 max			●^		●^	●^

Hmn Rdbl = Human Readable label text; Scan = Bar coded; ASN = Advance Ship Notice/Ship Notice Manifest; AI = Application Identifier

* = Use Serial Number when present on carton and useful for traceability and use Batch/Lot Number if no Serial Number present on carton.

^ = Include Serial Number when present on carton and useful for traceability

Figure 36 – Carton Level Data Requirements for Traceability

Both variable-weight and fixed-weight product cartons must be clearly labelled with the same human readable core traceability information. Human readable numbers should be clearly labelled data elements such as the text "Batch Number" followed by the batch number value. Human readable numbers located below each GS1 bar code are not considered to meet the human readable requirement because they are not clearly labelled data elements. Even though logistics supply chain operators may be able to interpret application identifier code numbers (such as "10" for the Batch/ Lot number), the application identifier is not a substitute for a clearly labelled data element.

The GS1-128 bar code standards allow for the use of Application Identifiers (AI) to define different data elements in a bar code on each carton. A fixed-weight product carton should always contain a Batch/ Lot Number (AI "10") within the carton bar code. Optionally, a Serial Number (AI "21") can also be included. If both are available, the Batch/ Lot Number should still be used for the traceability of

fixed-weight products. A date is also typically included in the bar code for shelf-life management. Net weight information is obviously not needed in the bar code, and its absence allows for the consistent inclusion of the Batch/ Lot Number.

Figure 16 is an example of a fixed-weight carton label that contains all of the required traceability information:

Some suppliers assign a Serial Number to each variable-weight carton to ensure that cartons are not scanned more than once when loading pallets. When Serial Numbers are present on variable-weight cartons and used for traceability of product, include the carton Serial Number (AI “21”) in the GS1-128 bar code. If Serial Numbers are not used for traceability, then include the Batch/ Lot Number (AI “10”). Ideally, both data elements would be included in the bar code. But because of the limited data carrying capacity of the GS1-128 bar code (48 digits), both a Serial Number and a Batch/ Lot Number cannot be included in the bar code along with the GTIN, Net Weight, and Product Date that are also required for logistics management of variable-weight cartons.

6.3. Minimum Requirements for Pallet Traceability

The standard business practice is to assign a GS1 Serial Shipping Container Code (SSCC) to each pallet once all cartons are in place. To manage product traceability at the pallet level, labels must be attached to the loaded pallet to provide a means of identifying that logistics unit to trading partners. The label must show a logistics unit identifier, such as the Serial Shipping Container Code (SSCC), in an easy-to-read human readable form, as well as an optional scannable GS-128 bar code.

Typically, this shipment identification exists only for the duration of the shipment between trading parties, as shipments are broken down upon arrival and it is not intended to be considered a primary identifier for product traceability. However, it can provide some links when contents are related to the larger shipment identifier. Unique shipment identification information may be used as a reference, along with other document identification like Bill of Lading, Manifests, Shipping Notice, etc.

Each SSCC number that is assigned is unique to the individual logistics unit and is based on your company's GS1 Company Prefix number. This ensures unique SSCC numbers world-wide.

The SSCC is typically part of a larger label affixed to the pallet. Additional information may be shown on the label, depending on the requirements of the trading partner. Most often the additional human readable information includes the shipper name and address, the carrier, and the delivery information.

Over time, your company will exhaust its pool of available SSCC numbers. For this reason, it is important that your company manage the re-use of SSCC numbers so as not to conflict with logistics units already in the supply chain. The best practice is to not re-issue an SSCC number for a period of at least one year.

To fully utilize the SSCC bar code, the bar code should be used in conjunction with an EDI 856 Advance Ship Notice (ASN). The SSCC can then be used as a reference key to additional logistical information provided in the ASN.

Additional information about SSCC assignment may be found at www.gs1.org

6.4. Minimum Requirements for Shipment Traceability

Bills of Lading (BOL) and Manifests are paper-based documents created by a supplier or shipper and sent with a shipment or order to the product recipient. The Bill of Lading is the legal document summarising information about the goods being transported. The Manifest document describes individual order details such as product GTINS, individual carton weights, etc. Advance Shipping Notices (ASNs) are electronic messages created by a supplier and sent to a product recipient using Electronic Data Interchange (EDI) that communicates the same shipment information as the Bill of Lading and Manifest.

The traceability data elements required are the same for all meat and poultry products, both variable-weight and fixed-weight, and refrigerated, frozen, and shelf-stable. Best Practices are that the following data elements are included in the paper-based Manifest and the electronic ASN:

- Global Trade Item Number;
- Batch/Lot or Serial Numbers.

In addition, other useful information such as the following may be included:

- Stock Keeping Unit (SKU) or other supplier product identification reference;
- Production Date IF Product is for retail store-processing or food service use;
- Sell-By Date OR Use-By Date IF carton-ready or consumer-ready product;
- Country Establishment Number;
- Country of Origin Labelling Statement OR ISO Country Number(s).

The shipment information includes the capability to define relationships between the shipment, purchase orders, pallets, and cartons present in the order and the traceability and logistical management data for each. These relationships should be clearly defined in each electronic message.

The data model for traceability information and the relationship of this information to each level of the traceable item hierarchy is shown below.

6.5. Maintaining Traceability for Product from Live Animal Providers

Live animal providers deliver product in various logistic units. Each logistics unit should be individually traceable. Information used to insure traceability includes:

- Provider Identity;
- Accurate herd/ house/ pen information, depending on species of the animals received;
- Purchase Order Number or Live Receiving Ticket of received animals;
- Date of Receipt;
- Carrier Name and Trailer Number;
- Count of Animals.

Live animal product lots must be traceable. This is accomplished by associating each animal lot identification number with the GTIN and Batch/ Lot Number of the output product it is used to produce.

6.6. Maintaining Traceability for Other Product Inputs

Packaging materials, seasonings, marinades, and other product inputs are used in the production process by suppliers and retailers. These product lots must be traceable. This is accomplished by associating each product lot identification number with the GTIN and Batch/ Lot Number of the output product it is used to produce.

Product sourced from other suppliers should be identified by the GS1 Global Trade Item Number (GTIN) and Batch/ Lot Numbers provided by the supplier. The assignment of GTINs for each product traded (i.e., all product configurations) is the responsibility of the brand owner and must be recorded in the supplier's internal systems prior to being processed or traded.

GTIN and Batch/ Lot or Serial Number information is shown on individual carton labels. The GTIN and Batch/ Lot or Serial Number of each input product must be associated with the GTIN and Batch/ Lot Number of the output product.

7. Best Practices for Maintaining Traceability

Traceability processes are only as good as the weakest link. Therefore it is important for suppliers, retailers, distributors, and wholesalers to understand the value of collecting and maintaining product information that supports "one up/ one down" traceability.

Best practices for maintaining traceability for the suppliers, retailers, wholesalers, and distributors is to capture all traceable information and store it within their systems by scanning the information directly from the carton and/ or consumer item bar codes. Scanning enables data to be captured, stored, and retrieved without the need to visually review the human readable information and manually key that information into systems.

While the process of scanning cartons outbound from warehouse to a store is the exception today, more and more retailers, distributors and wholesalers are putting processes in place to collect and store at least the minimum product information required to support traceability. Product can be scanned as it enters a distribution centre, as it is shipped out of the distribution centre, as it is received at a retailer store, or as it is opened for processing or consumer display.

Best practices would be for a retailer, wholesaler, or distributor to mimic the product information data requirements recommended for the supplier traceability best practices. The more holistic the view of the product flowing within the supply chain, the more accurate the information used in the traceability process.

Critical tracking events identify those core business processes where traceability data capture is vital to a successful traceability process. The following figure illustrates those key events for the meat and poultry supply chain.

CRITICAL TRACKING EVENTS FOR MEAT AND POULTRY TRACEABILITY

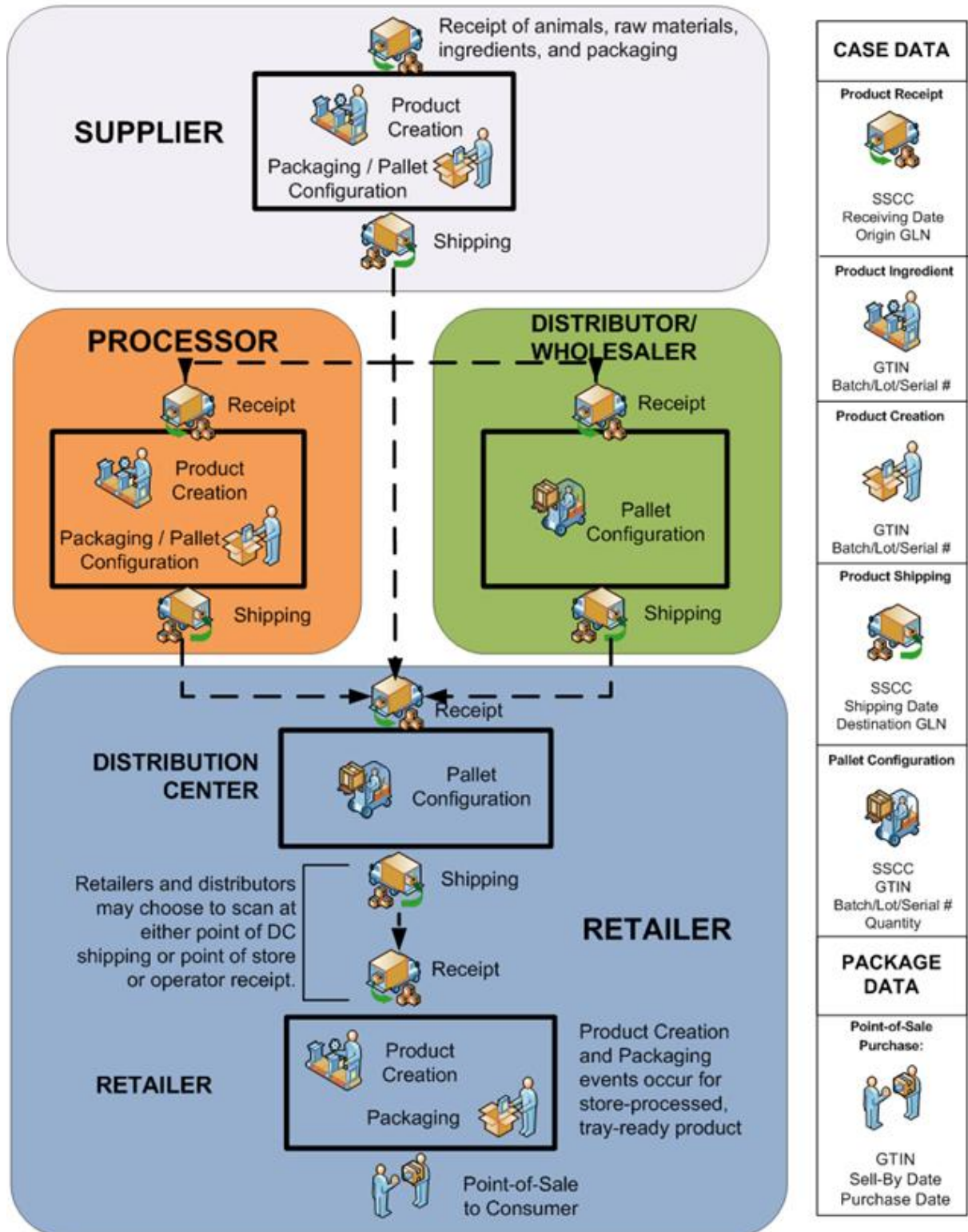


Figure 37 – Critical Tracking Events for Meat and Poultry Traceability

The following diagram summarizes the traceability and logistical data that is typically collected and reported by the supplier to each customer for those critical tracking events noted above:

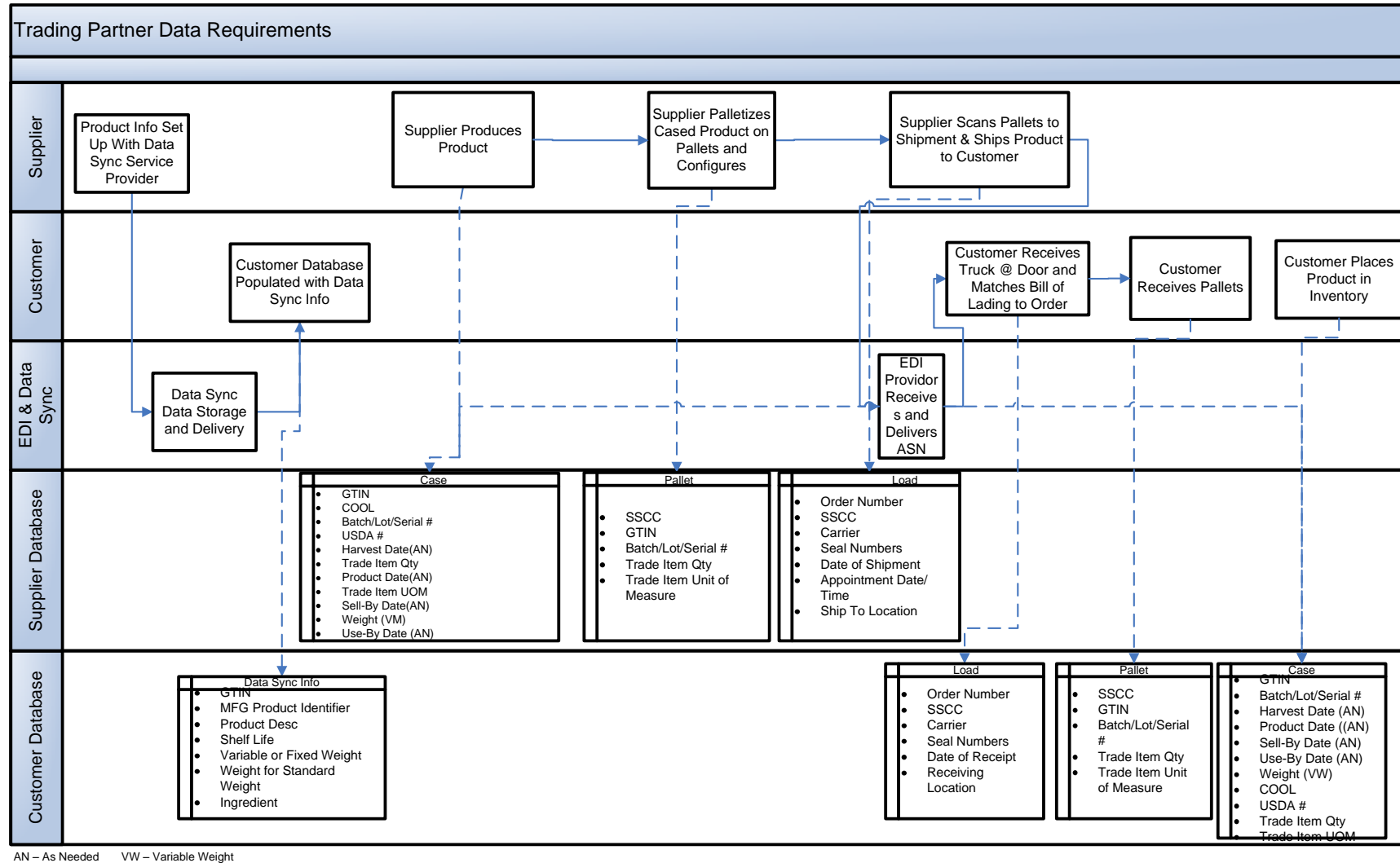


Figure 38 – Trading Partner Data Requirements Diagram

7.1. Best Practices for Consumer Item Traceability

January 2010 is the sunrise date for the adoption of the GS1 DataBar Expanded. This new bar code symbology standard allows up to 74 numeric characters or 41 alpha/ numeric characters of information to be included on a consumer item bar code. Once this symbology is adopted, all product information required for traceability can be encoded into the bar code. The need to combine human readable information to the scannable information will no longer be necessary. Using the GS1 DataBar Expanded, the required traceability data can be included on each package.

Adoption timelines will occur between 2010 and 2014, depending on the product category. Perishables, pharmaceuticals, and coupons are being implemented first as work has been underway for a few years to develop their requirements. As GS1 standards have been finalized for meat and poultry, adoption will begin.

The GS1 DataBar Expanded symbology will enable the meat and poultry industry to move away from the retailer specific UPC-Type 2 bar code which does not support the encoding of a GTIN and other data elements critical for traceability. Implementing the GS1 DataBar Expanded at the consumer item level will greatly aid in the ability to capture traceability information electronically as product flows from a retailer to the consumer. Critical traceability data elements that should be encoded into a GS1 DataBar Expanded include:

- Global Trade Item Number (AI “01”); and
- Lot Control Date [Sell-By Date (AI “15”), Use-By Date (AI “17”), Production Date (AI “11”), or Packaging Date (AI “13”)] OR Batch/Lot Number (AI “10”).

The table below summarizes the information that must be present to enable traceability in human-readable form, in scannable consumer item GS1 Databar, and in the electronic commerce Advance Shipping Notice:

DATA ELEMENT ? = Mandatory	Scan Length	SCAN	ASN
Global Trade Item Number (GTIN) (AI “01”)	2+14	●	●
Sell-By-Date (YYMMDD) (AI “15”) OR Use-By-Date (YYMMDD) (AI “17”)	2+6	●	●
OR Batch/ Lot Number (AI “10”)	2+N	●	●

Scan = Bar coded using the GS1 Databar;
ASN = Advance Ship Notice/Ship Notice Manifest;
AI = Application Identifier

Figure 39 – Best Practice Consumer Level Data Requirements for Traceability

Note that both the GTIN and one of the Lot Control Dates will typically be included in the GS1 DataBar. The reason for this is that the GTIN is required for product identification and the Lot Control Date for its value in managing product shelf life. But Lot Control Dates are also used effectively by suppliers to recall and trace fixed-weight and variable-weight products at the consumer level.

Some consumer-level products, such as fresh tray-packed poultry, often draw product from several different Batch/ Lots and combine them into Lots designated by a Sell-By or Use-By Date. In such cases, the Lot Control Date is the element a supplier uses to recall product. In these cases, the GTIN and the Lot Control Date are required in the GS1 DataBar Expanded for traceability.

However, when a supplier uses a Batch/ Lot number to recall and track product at the consumer level, the Batch/ Lot Number should also be included in the GS1 DataBar Expanded and captured at the time of sale. In these cases, the GTIN and the Batch/ Lot Number are required in the GS1 DataBar Expanded for traceability, and a Lot Control Date will also be present for inventory

management. The GS1 DataBar Expanded may contain other application identifiers for purposes unrelated to traceability, such as the weight and extended price of the item.

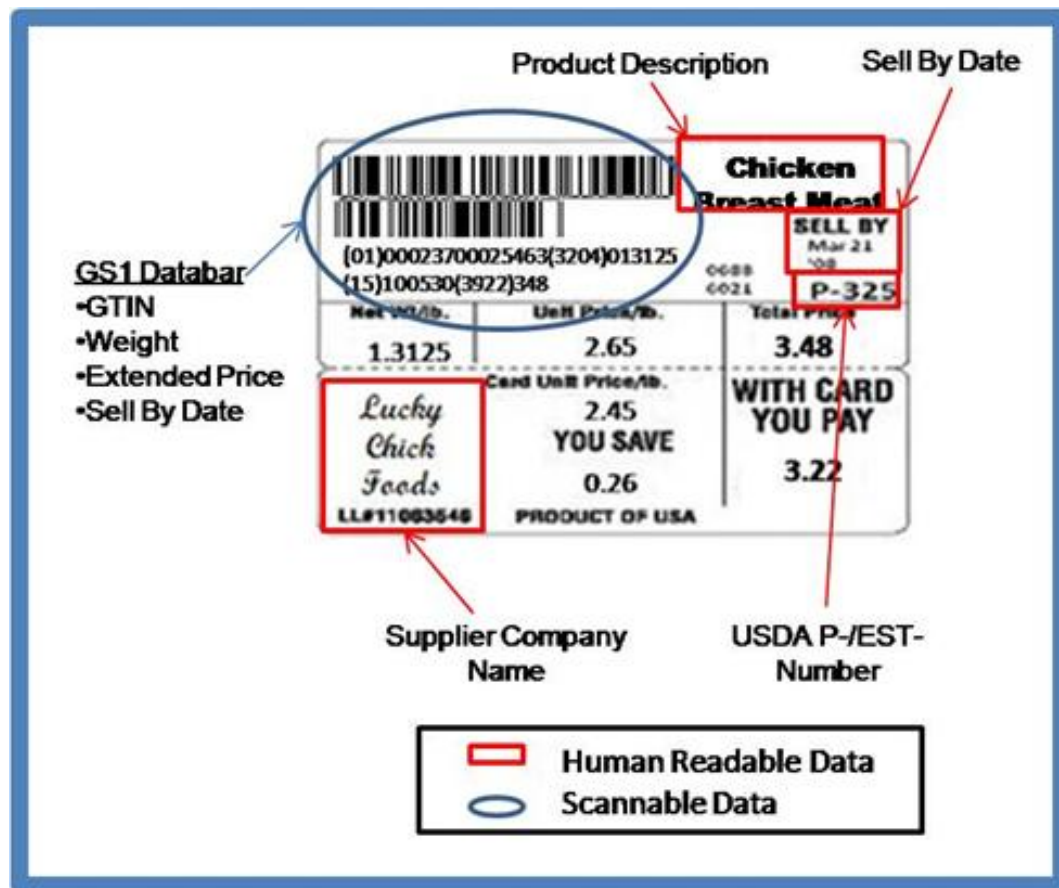


Figure 40 – Best Practice Consumer Item label with GS1 DataBar Expanded

Additional country, market or customer requirements may be applicable in certain circumstances. Contract the applicable representatives in those markets to determine the current requirements. An example of additional requirements is country of breeding, country of fattening and court of finishing should they be different.

For implementation information about the GS1 DataBar Expanded, go to www.gs1.org

7.2. Best Practices for Carton Level Traceability

Best practices for carton traceability for the retailer are achieved by electronically capturing the traceability information of the carton and associating that information with all movements of that product across the supply chain. The carton level traceability attributes that should be captured through the bar codes or ASNs, electronically stored, and retrieved upon demand are:

DATA ELEMENT	Scan Length	VARIABLE-WEIGHT		FIXED-WEIGHT	
		Scan	ASN	Scan	ASN
Global Trade Item Number (GTIN) (AI "01")	2+14	●	●	●	●
Batch/Lot Number (AI "10")	2+12 max	●*	●	●	●
Serialized Carton Code (AI "21")*	2+12 max		●^	●^	●^

Scan = Bar coded; ASN = Advance Ship Notice/Ship Notice Manifest; AI = Application Identifier

* = Use Serial Number when present on carton and useful for traceability and use Batch/Lot Number if no Serial Number present on carton.

^ = Include Serial Number when present on carton and useful for traceability

Figure 41 – Best Practice Carton Level Data Requirements for Traceability

Figure 42 below shows the best practice flow of traceability information for meat and poultry:

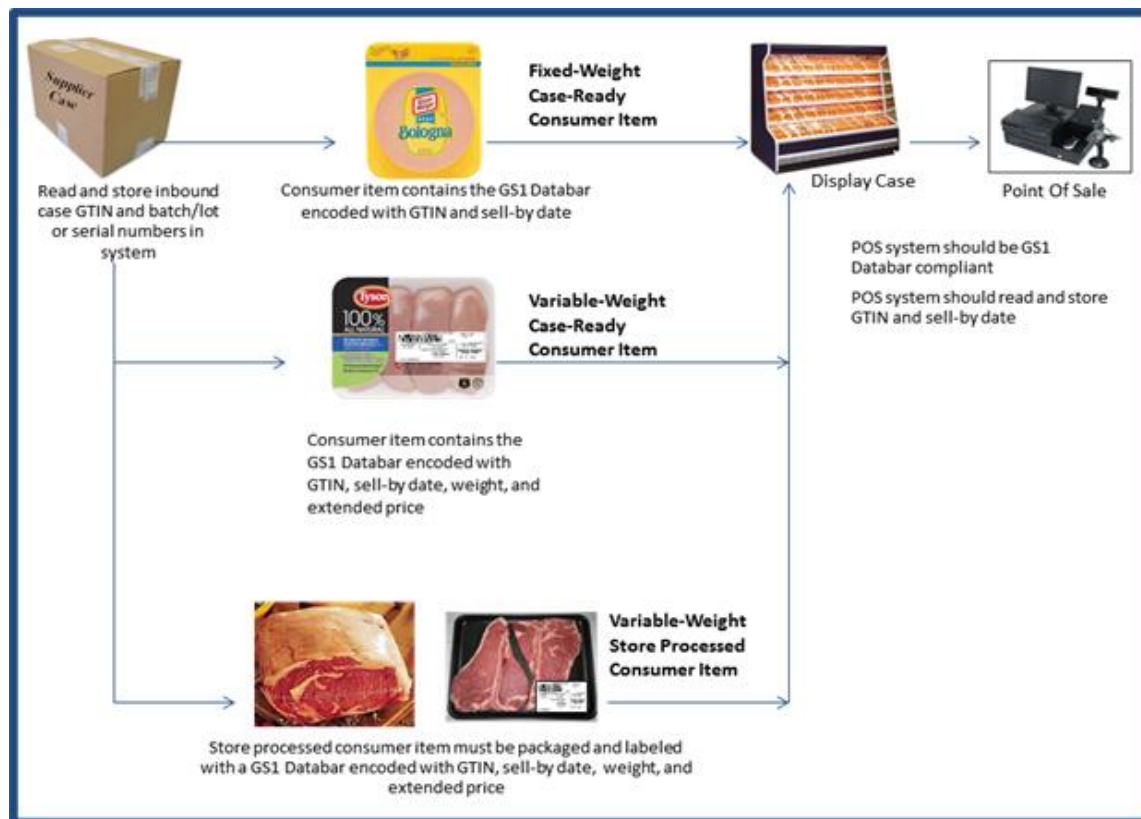


Figure 42 – Traceability Best Practices

7.3. Capturing Supplier Product Data

Best practices are for retailers, wholesalers, and distributors to capture logistics unit and product information electronically from their suppliers to maintain traceability and manage product inventory. The use of GS1 international standards for marking products (GTINs) and pallets (SSCCs) in the supply chain is a primary enabler for maintaining product visibility throughout the supply chain. The SSCC uniquely identifies each pallet, and, using electronic Advance Ship Notice (ASN) information available from many suppliers, it can also be used to access information for all cartons on that pallet.

When full pallet quantities are shipped from the warehouse to the retail store, scanning the SSCC from the pallet and using the information from the ASN provides traceability information for the wholesaler or distributor. If that pallet has not been re-configured since it was received from the supplier, the original information collected during the receiving process (i.e., the scan of the SSCC tied to the ASN information) may be used to support traceability. It is the “owner” of the pallet configuration that is responsible for the accuracy and attributes that are associated with the product configured on the pallet.

In the meat and poultry industry the use of human readable information captured is used in conjunction with electronic scanning. As a result, traceability processes are dependent on both electronic and human readable traceability information. The best practice is to scan the carton when breaking the product down to a consumer item in order to tie the carton to the consumer item.

7.4. Outgoing Product to Stores

Retailers, wholesalers and distributors should capture information about outbound product going from a warehouse to a store. This information may be captured at any point in the product movement, such as from the warehouse outbound to the store, at arrival at the store, or when the product is being broken down to a new consumer item or placed into self-service display cartons. To enable traceability, retailers, wholesalers and distributors should identify the GTIN, Batch/ Lot or Serial Number and quantity of cartons in each order sent to a store. This supports the “one up/one down” principle of tracing a product’s movement through the supply chain.

7.5. Advance Ship Notice

The Advance Shipping Notice (ASN), an electronic data file sent from suppliers to receivers, can be used as an efficient alternate to carton scanning. Retailers can process the ASN to capture, for each pallet identified by a Serial Shipping Container Code (SSCC), the GTIN, carton Serial Number, and/ or Batch/ Lot Number of each carton on the pallet. When a shipment is received, retailers that use ASNs only need to scan the SSCC of each pallet in the shipment rather than each carton in the shipment individually.

Similarly, distributors or retailers that break down pallets and restack cartons onto outbound pallets should scan carton bar codes and create a new ASN to be sent to the subsequent receiver of the product. In this way, the flow of traceability information for that product is always efficiently available to all partners in the supply chain.

Figure 43 below shows the best practice flow of traceability information at the carton level for retailers using the ASN:

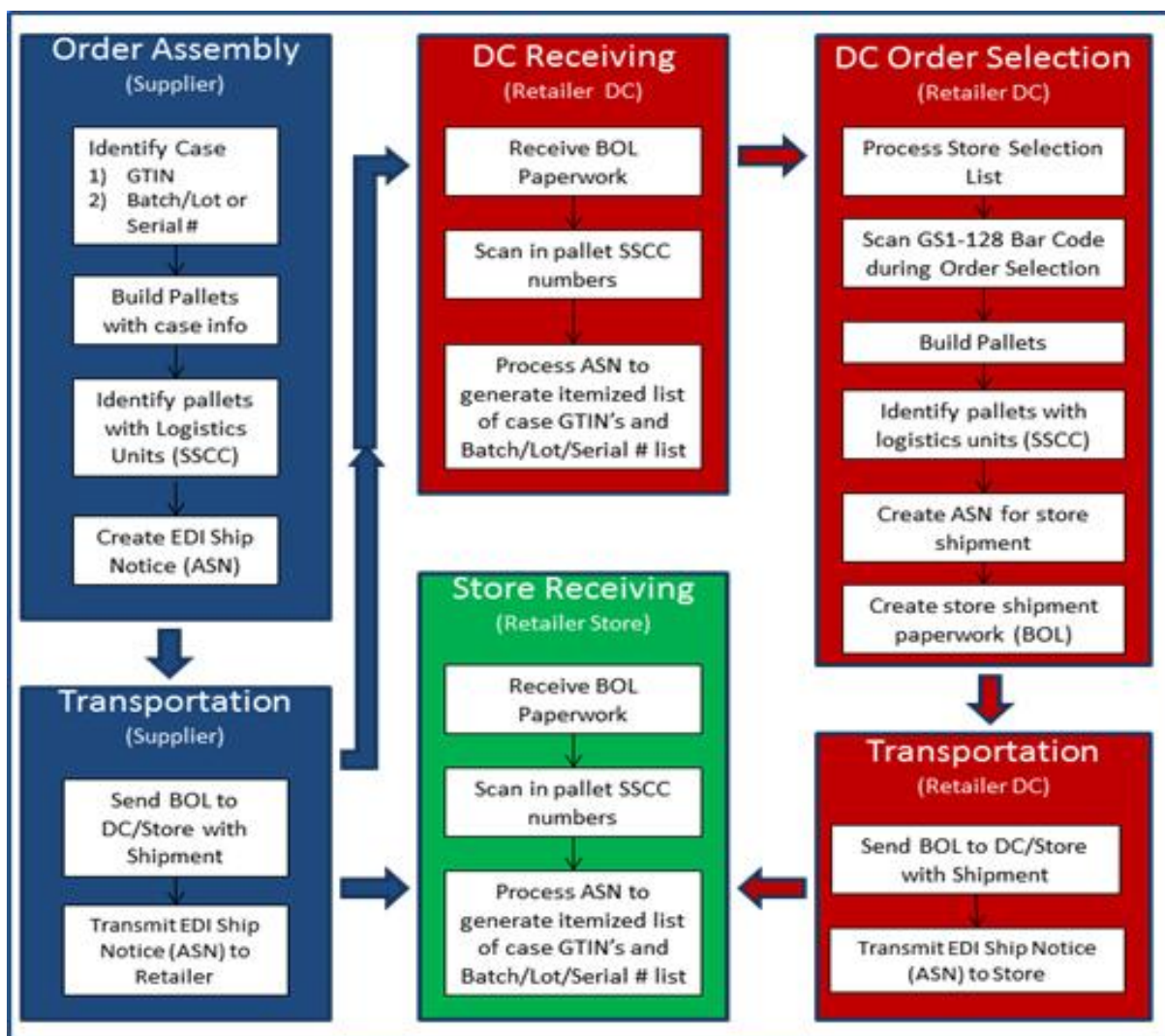


Figure 43 – Best Practices for Case Level Traceability

7.6. Potential Contributions of RFID Technologies

Radio Frequency Identification (RFID) has made some inroads in the logistics area of the supply chain. RFID technology, when applied to the carton level of the product hierarchy, has shown potential to be a contributing technology for enabling traceability.

One of the primary benefits of RFID is the ability to track product through the various points of the supply chain in a passive nature. RFID technology has the ability to see movement of product during normal business actions without the labor and special effort of scanning by logistics personnel.

The technology involves a combination of passive RFID tags and tag readers placed at critical points in the logistics chain to capture data from the tags. Using data captured from these critical control points, the business user can track the movement of product through the supply chain without human intervention.

7.6.1. Electronic Product Codes

RFID tags that use a standardized method to identify products and to read and write tag information, as those tags progress through the supply chain, are designated Electronic Product Code (EPC) compliant tags. EPC tags can contain a number of different types of data including:

- GS1 Serial Shipping Container Codes (SSCC);
- GS1 Global Locations Numbers (GLN);
- Serialized versions of a GTIN (SGTIN);
- Global Returnable Asset Identifier (GRAI).

Of the data types available for use with EPC tags, the Serialized GTIN is probably the most likely to bring benefit for the tracking and tracing of meat and poultry products.

7.6.2. Serialization GTIN

A serialized GTIN, or SGTIN, is a combination of a GTIN and Serial Number. By its nature, an SGTIN identifies a specific instance of a product, not just the product, as a GTIN does. In other words, instead of identifying a generic carton of the product, an SGTIN identifies a specific carton of a specific product.

7.6.3. Electronic Communications for RFID

In order to get full benefit of RFID technologies, all trading partners must freely exchange information about tags in the supply chain. With the free flow of RFID tag information, all trading partners can know at any given time the location of product for which they have responsibility.

7.6.4. RFID Conclusions

While RFID has many potential benefits in the future, it is not presently considered to be a viable method of tracing product at the global level because of the operational and the implementation costs. However, this technology may become a viable alternative in the future as these costs go down.

8. Meat and Poultry Recalls

8.1. Recall Goals

The primary objective of traceability is prompt and accurate product recall. The overriding goal of any recall is to ensure that targeted product is quickly and easily removed from the supply chain and not consumed by consumers. A secondary goal is to minimize the amount of non-targeted product that is also removed from the supply chain as part of a recall. Efficient trace or recall requests require that the target items are identified using their unique identifier numbers.

Importing/exporting regulatory authorities and markets (buyers) define product recalls and a market withdrawal definitions and responsibilities. These definitions and responsibilities must be known and understood by organisations supplying products to those markets.

This document provides general guidelines and best practice models for recalls. Refer to specific market requirements to determine suitability for that market.

8.2. Recall Definitions

Carton end label is a printed label affixed to a carton of product that denotes lot-specific information about the product placed in the carton.

Carton end panel is the side of a carton to which the carton end label is affixed, which is typically the shortest vertical surface of the carton. The carton end panel may also contain printed, non-lot specific information such as the supplier's name and address.

Carton product is product that has not been removed from the supplier's shipping container, which is typically a carton.

Human readable information is print on the carton end label or carton end panel of a size sufficient to be readily noticeable, legible, and understandable without special training or knowledge of code values or syntax.

Market Withdrawal is a firm's removal or correction of product that involves minor infraction that does not cause product to be adulterated or misbranded.

Recall is a firm's removal of distributed meat or poultry products from commerce when there is reason to believe that such products are adulterated or misbranded is a common regulatory authority definition.

Recall notice is a notification from a supplier to a retailer or distributor that provides sufficient product identification information to allow the retailer or distributor to effectively identify and remove target product from the supply chain.

Scannable information is information that is encoded in a bar code.

Scope is the range of the product being recalled.

8.3. Recall Principles

In general, suppliers should provide to wholesalers, distributors, or retailers the information needed to quickly and effectively remove the targeted product from the supply chain regardless of the technological level of the retailer or distributor. The information must be specific enough to accurately delineate the scope of the recall, meaning what product and/or what Batch/ Lot of product, or what location the product was delivered to and when.

To ensure preparedness in the event of an incident, every company should have a traceability team in place and simulate recall events regularly to test the effectiveness and timeliness of their traceability processes and systems.

8.4. General Recall Steps

Trading partners who wish to initiate a recall request must communicate to their trading partners at least the product identification, and as much of the additional information listed below, when available, to aid in the retrieval of the target products:

- Product identification or an attribute of the product;
- Trading partners affected;
- Location of the product;
- Delivery date/time period.

Notification to trading partners should include all the necessary information to help the partner identify where product is in their distribution system. In turn, trading partners should identify to the supplier how far into the supply chain the product has gone, and specifically if any of the targeted product has reached consumers.

If targeted product has reached consumers, public notification of a recall should be initiated. It is assumed that if targeted product has reached store shelves, it has reached the consumer. If possible, supply chain partners should directly contact purchasing consumers.

Guidance for disposition of any target product remaining in the supply is determined by the supplier. It generally involves destruction of the product or return to a supplier facility.

8.5. Scope of Recall

The scope of a recall notice can be as specific as a single product produced at a single facility on a specific date and time, or as broad as all products produced by a supplier. As an example, a recall could include:

- All products of a given facility, regardless of GTIN or production date;
- All products of a given GTIN, regardless of production date;

- Products of a given GTIN, produced within a specific date range;
- Products of a given GTIN, produced within a specific date range at a specific facility;
- Products of a given GTIN, produced within a specific date range at a specific line at a facility;
- Products of a given GTIN of a given Batch/ Lot Number or range of Serial Numbers

A combination of product and party data, such as the product GTIN and the trading partners' GLNs, along with transactional data about the physical flow of the products, will best enable the successful retrieval of the target product.

The granularity of the product information required is dependent upon the scope of the recall request. It is recommended that, at minimum, the information include the GTIN and Batch/ Lot Number(s) or Serial Number(s).

For retailers, wholesalers, and distributors, usually two methods may be used to identify targeted product:

1. Human readable identification, in which an employee is responsible for visually identifying which cartons or retail packages need to be removed typically from a store, cooler, service carton, or freezer;
2. Electronic identification, in which the information captured from carton bar codes or from a supplier electronic message is used to identify which cartons or consumer packages need to be removed typically from a warehouse or distribution centre (DC) or store.

Typically a combination of human readable and electronic identification is used to find all products in the supply chain. As an example, for a recall of a given Batch/ Lot or Serial Number of a given GTIN, employees of the retailer, wholesaler, or distributor may visually review product cartons in a cooler or warehouse to locate targeted product, or a warehouse manager will use the warehouse inventory management system to locate targeted product in storage.

Retailers will typically use a combination of human readable and electronic identification to find all products in the supply chain. As an example, for a recall of a given Batch/ Lot or Serial Number of a given GTIN, employees of the retailer may visually review product cartons in a store cooler to locate targeted product, and a warehouse manager will use the warehouse inventory management system to locate targeted product in storage.

Electronic identification can, in theory, be implemented as part of a regular inventory management process, depending on the extent of scanning within the retailer's operations. If the retailer scans cartons leaving the retailer's distribution centre, before product is further processed and packaged at the retailer's store, and also scans a GS1 DataBar Expanded on consumer items at the point-of-sale, the retailer would have high visibility to the presence and location of targeted product throughout the retailer's distribution system.

A more likely scenario is a combination of human readable and electronic identification, or even human identification only. Identification will be fully human readable if a retailer lacks scanning ability within their DC or production centre. Furthermore, if retailers have not implemented the use of the GS1 DataBar Expanded at the point-of-sale then removal of product from service cartons must be through human identification.

It is the responsibility of the supplier initiating the recall to provide all trading partners with both human readable and scannable product identification information to support the use of both human readable and electronic identification of recalled product.

8.6. Logistics Information

For all product recalls, regardless of scope, the supplier must provide to the wholesaler, retailer, or distributor logistics information on product deliveries. Suppliers must provide the following logistics information for all recalls:

- Name and address of transporting company;
- GLN of store or DC delivered to, on a facility-by-facility basis;
- Total logistics units delivered to each; and
- Delivery date, and, if available, delivery time and dock door.

8.7. Scannable Data

For all product recalls, regardless of scope, the supplier must provide the wholesaler, distributor, and retailer the information for the recalled product that is contained on the applicable bar code, for all product hierarchy levels.

HIERARCHY LEVEL	BAR CODE TYPE	BAR CODE DATA
Carton	GS1-128	GTIN AND Batch/ Lot/ Serial Number
Fixed-Weight Consumer Item	UPC-A / GTIN-13	GTIN
Variable-Weight Consumer Item	UPC-Type 2/ VMN-13	Item Reference Number
Fixed-Weight and Variable-Weight Consumer Item*	GS1 Databar	GTIN AND Lot Control Date OR Batch/ Lot Number

*Available after GS1 DataBar Expanded adoption

Figure 44 – Scannable Recall Data

8.8. Batch/ Lot and Serial Number Ranges

In a recall situation a supplier will provide either Batch/ Lot or Serial Numbers to the wholesaler, distributor, and retailer. A supplier should ideally provide the starting and ending Batch/ Lot or Serial Numbers when the suspect values are part of a range of numbers.

The effectiveness of any recall is, in part, dependent upon the ease with which recalled product can be identified. Providing non-sequential Batch/ Lot or carton Serial Numbers instead of sequences of Batch/ Lot or Serial Numbers will significantly increase the complexity of a visual recall of product. It also increases the likelihood of all recalled product not being removed from the supply chain.

If a supplier is unable to provide a single or a limited number of numeric sequences to the distributor or retailer, other traceability information, such as Lot Control Date (e.g. Production or Sell-By Date), or an establishment number, should be provided. While this will increase the likelihood of removing unrecalled product, retailers, distributors, and wholesalers need manageable product information that ensures the complete recall of all target products and the safety of all consumers.

8.9. Human Readable Information

The human-readable information a supplier will need to provide in a recall varies depending on the scope of the recall. Suppliers must provide to wholesalers, distributors, and retailers the consumer item information, in addition to carton information, that is needed to quickly and effectively identify and remove targeted product from store coolers and consumer display cases. Supplier-provided information must be specific enough to accurately delineate the scope of the recall while respecting the staffing challenges that retailers face in recall situations. The following shows the human readable information that would typically be provided for each type of product recall at the carton or consumer item level:

- Supplier Company Name;
- Supplier Product Number or Item Code;
- Carton-Level Product Description;

- Establishment Number;
- Date Information.

9. Summary

Traceability in the meat and poultry industry can be implemented at a fundamental level across the supply chain when each trading partner can identify itself by GLN, and its product by GTIN and Batch/ Lot or Serial Number. GS1 standards facilitate the ease of managing this traceability information electronically, and the adoption of carton scanning, the use of Advanced Shipping Notice electronic messages, and the use and scanning of the GS1 DataBar Expanded on consumer packages at point-of-sale will dramatically enhance the effectiveness of supply chain to trace and recall meat and poultry products.

Adoption of the GS1 DataBar Expanded and the GS1-128 bar code formats encoding both the GTIN and Batch/ Lot or Serial Number for traceability processes provide the foundation for a successful traceability system. Additionally, capturing, storing, and sharing that information with your trading partners promotes timely and accurate traceability processes.

To be successful in this process, a trading partner that processes, packages, and/ or labels product, should ensure that all inbound product batches are linked to outbound product batches so that there is no breakdown in the ability to trace product flow through the supply chain. Minimum requirements for traceability may always depend to a certain extent on human readable information, but the best practice for all supply chain partners is to build a traceability process that allows for electronic data capture, storage, and retrieval of critical product traceability information for all product hierarchy levels throughout the supply chain, from the farm to the ultimate consumer.

10. Appendix and Reference Documents

10.1. Global Traceability Standard

http://www.gs1.org/docs/gsmpt/traceability/GS1_Global_Traceability_Standard_i1.pdf

10.2. Building the Fresh Foods Supply Chain of the Future

http://www.fmi.org/forms/uploadFiles/28DBC00000008.toc.RoadmapFinal_exec.pdf

10.3. GS1 Databar

<http://www.gs1.org/barcodes/databar>

10.4. GS1 Application Identifiers

Application Identifiers Relevant for the Meat and Poultry Supply Chain

Notes: (*) The first position indicates the length (number of digits) of the GS1 Application Identifier. The following value refers to the format of the data content.

(**): If only year and month are available, DD must be filled with two zeroes.

(***): The fourth digit of this GS1 Application Identifier indicates the implied decimal point position.

Example:

- 3100 Net weight in kg without a decimal point

- 3102 Net weight in kg with two decimal points

(FNC1): All GS1 Application Identifiers indicated with (FNC1) are defined as of variable length and must be limited by a Function 1 Symbol Character unless this Element String is the last one to be encoded in the symbol.

AI	Data Content	Format*	FNC1 Required
00	SSCC (Serial Shipping Container Code)	n2+n18	
01	Global Trade Item Number (GTIN)	n2+n14	
10	Batch or Lot Number	n2+X..20	(FNC1)
11 (**)	Production Date (YYMMDD)	n2+n6	
13 (**)	Packaging Date (YYMMDD)	n2+n6	
15 (**)	Best Before Date (YYMMDD)	n2+n6	
17 (**)	Expiration Date (YYMMDD)	n2+n6	
254	GLN Extension Component	n3+X..20	(FNC1)
30	Count of Items (Variable Measure Trade Item)	n2+n..8	(FNC1)
310 (***)	Net weight, kilograms (Variable Measure Trade Item)	n4+n6	
320 (***)	Net weight, pounds (Variable Measure Trade Item)	n4+n6	
330 (***)	Logistic weight, kilograms	n4+n6	
390 (***)	Applicable Amount Payable, local currency	n4+n..15	(FNC1)
391 (***)	Applicable Amount Payable with ISO Currency Code	n4+n..15	(FNC1)
392 (***)	Applicable Amount Payable, single monetary area (Variable Measure Trade Item)	n4+n..15	(FNC1)
393 (***)	Applicable Amount Payable with ISO Currency Code (Variable Measure Trade Item)	n4+n3+n..15	(FNC1)
410	Ship to - Deliver to Global Location Number	n3+n13	
411	Bill to - Invoice to Global Location Number	n3+n13	
412	Purchased from Global Location Number	n3+n13	
413	Ship for - Deliver for - Forward to Global Location Number	n3+n13	
414	Identification of a Physical Location - Global Location Number	n3+n13	
415	Global Location Number of the Invoicing Party	n3+n13	
422	Country of Origin of a Trade Item	n3+n3	(FNC1)
423	Country of Initial Processing	n3+n3+n..12	(FNC1)
424	Country of Processing	n3+n3	(FNC1)
425	Country of Disassembly	n3+n3	(FNC1)
426	Country Covering full Process Chain	n3+n3	(FNC1)
7002	UN/ECE Meat Carcasses and Cuts Classification	N4+X..30	(FNC1)

10.5. Glossary

Term	Description
Actor	An actor is a role that a user plays with respect to a system.
Application Identifier (AI)	The field of two or more characters at the beginning of an Element String that uniquely defines its format and meaning.
ASN	Advanced Shipping Notice. A notification of pending deliveries, similar to a packing notice. Usually sent in electronic format.
Batch/ Lot Number	<p>A batch unites products/ items that have undergone the same transformation processes. Batch and Lot are considered synonyms.</p> <p>GS1 Global definition: Reference number assigned by manufacturer to a series of similar goods or Meat and Poultry under similar conditions.</p>
Consumer item	The trade item intended to be sold to the end customer.
Event	Is an occurrence of a process in a specific time or a period of time.
External Traceability	External traceability takes place when instances of a traceable item are physically handed over from one trading partner (traceable item source) to another (traceable item recipient).
GLN (Global Location Number)	<p>The GS1 Identification Key comprising a GS1 Company Prefix, Location Reference, and Check Digit, used to identify physical locations or legal entities.</p> <p>GS1 Global definition: Unique location number mandatory within the Global Data synchronization process to identify data owners/ info providers, etc., such as Distributors, Brokers, and Manufacturers.</p>
GSIN (Global Shipment Identification Number)	The GS1 Identification Key comprising a GS1 Company Prefix, Shipment Reference, and Check Digit used to identify unique shipments.
GTIN (Global Trade Item Number)	<p>The format in which Global Trade Item Numbers (GTIN's) must be represented in a 14 digit reference field (key) in computer files to ensure uniqueness of the identification numbers.</p> <p>GS1 Global definition: A particular Global Trade Item Number, a numerical value used to uniquely identify a trade item. A trade item is any trade item (trade item or service) upon which there is a need to retrieve pre-defined information that may be planned, priced, ordered, delivered and/ or invoiced at any point in any supply chain.</p>
GRAI	Global Returnable Asset Identifier.
GS1 System	The specifications, standards, and guidelines administered by GS1.
Identification	The identity assigned to an item or party that is needed to access other relevant information about the item or party.
Identification Carrier	Mark/ tag/ label/ accompanying document sometimes called "passport" or "identity card" in some industry sectors.

Term	Description
Internal Process	A series of actions, changes or function(s) within a company or organization that brings about a result.
Internal Traceability	Internal traceability takes place when a trading partner receives one or several instances of traceable items as inputs that are subjected to internal processes, before one or several instances of traceable items are output.
Link	Recording the information necessary to establish the relationship to other relevant information.
Location	A place where a traceable item is or could be located [ISO/CD 22519]. A place of production, handling, storage and/ or sale.
Logistic Unit	An item of any composition established for transport and/ or storage that needs to be managed through the supply chain.
Lot Control Date	A date reference used in accordance with the product type to assign a date value to lots of product for inventory management and as a general lot control reference. When referring to a date used for this purpose, this guide will use the term “Lot Control Date” as a general reference to either the Sell-By Date, Use-By Date, Production Date, or Packaging Date that is used by the supplier for this purpose.
Master Data	<p>Master Data describes each item and party involved in supply chain processes. Master data is defined as data having the following characteristics:</p> <ul style="list-style-type: none"> • Permanent or lasting nature; • Relatively static, not being subject to frequent change; • Accessed/ used by multiple business processes and system applications. <p>Can either be neutral or relationship dependant.</p>
Party	A party (or) location is any legal, functional or physical entity involved at any point in any supply chain and upon which there is a need to retrieve pre-defined information. A party is uniquely identified by a GS1 Global Location Number.
Process	A series of actions or steps towards achieving a particular end. Examples of common processes include Production, Transformation, Quality Control, Storage, Transportation, Movement, Recycle, Return, Packing, Receiving, Traceability.
Product Description	GS1 Global definition: A piece of information reflecting a characteristic related to an identification number [e.g., an expiration date or a product description related to a GTIN®].
Quantity	A precise number of articles, pieces or units. Used in conjunction with Unit of Measure.
Receipt Date	GS1 Global definition: Date/time upon which the goods were received by a given party.
Record	Act of creating a permanent piece of information constituting an account of something that has occurred.
SSCC (Serial Shipping Container Code)	The 18-digit GS1 System Identification Key comprising an extension digit, GS1 Company Prefix, Serial Reference, and Check Digit used to identify a logistic unit.

Term	Description
SGTIN (Serialized Global Trade Identification Number)	SGTIN is a method of identifying unique items at the unit or retail level as well as at the carton levels. It is composed of a GS1 assigned Company Prefix and Item Reference (GTIN), combined with a Serial Number. Where UCC/EAN bar codes have traditionally been used, the SGTIN specification combined with an RFID tag can give visibility beyond the Item Reference right down to the exact Serial Number of the item.
Share	Act of exchanging information about an entity or traceable item with another Trading Partner.
Ship Date	GS1 Global definition: Date on which goods should be shipped or despatched by the Supplier.
Ship from Location	GS1 Global definition: Identification of the party from where goods will be or have been shipped.
Ship to Location	GS1 Global definition: Identification of the party to where goods will be or have been shipped.
Shipment	An item or group of items delivered to one party's location at one moment in time that have undergone the same despatch and receipt processes.
Shipment Reference Number	GS1 Global definition: The reference number assigned to a shipment.
Traceability	Traceability is the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration.(GS1 Global Traceability Standard, issue 2) [ISO 9001:2000] Traceability is the ability to trace the history, application or location of that which is under consideration.
Traceability Data	Any information about the history, application or location of a traceable item. This may be either Master Data or Transactional Data.
Traceable Item	A physical object where there may be a need to retrieve information about its history, application or location. The level at which the traceable item is defined within a product packaging or logistical hierarchy is dependent on the industry and degree of control required. Could be tracked, traced, recalled or withdrawn. Could exist in multiple locations at the same time (for example, if identified at the trade item and batch level). A traceable item may be related to another traceable item. See also definition for process.
Trace Request	A formal inquiry about the history, application or location of a traceable item. A request can trigger subsequent trace requests up or down the supply chain in order to fulfil the original request. The requesting party requires a response from the data source.
Tracing (Tracing Back)	The ability to identify the origin attributes, or history of a particular traceable item located within the supply chain by reference to records held. "Tracking back" and "tracking forward" are the preferred terms used in this document.
Tracking (Tracking Forward)	The ability to follow the path of a traceable item through the

Term	Description
	supply chain as it moves between parties.
Trade Item	Any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in any supply chain.
Trading Partner	Any Supply Chain Partner that has a direct impact on the flow of goods through the supply chain. Examples include Third Party Logistics Provider, Manufacturer, Retailer, wholesaler, distributor, and Grower.
Transformation	A change to the nature of a traceable item that changes the identity and/or the characteristics of the traceable item. The act of changing the item such as combining ingredients to make a finished product or carton picking to create a new pallet. Transformation can be production, aggregation, grouping, splitting, mixing, packing and repacking traceable items.
Transporter	The party that handles and or stores the traceable item from one point to another without transforming the item. Receives, carries, and delivers on or more traceable items. The Transporter may only have "possession, custody, control" of a traceable item, as distinct from ownership.
Unit of Measure	The unit of measure relating to a specific quantity.

11. Country and Market Specific Regulatory Requirements

Country specific requirements are maintained in the following sections. Certain countries and markets have historic, commercial or regulatory requirements that differ from this global meat and poultry guideline. Country and market requirements will need to be considered and reviewed for compatibility with these global guidelines. Where an incompatibility is identified the country and market requirements should be followed.

For specific requirement, contact the GS1 organisation in your country and if exporting the GS1 organisation in the importing country.

To find your local GS1 organisation, visit the GS1 International website: www.gs1.org

11.1. U.S. Specific Requirements

www.gs1us.org

11.1.1. Regulatory Compliance and Market Access

11.1.2. GS1 Industry Guidelines and Demonstration Projects

Traceability in the U.S Food Supply: Economic Theory and Industry Studies: This document is published by the United States Department of Agriculture. It is an investigation in to the traceability baseline in the US and finds that private-sector food firms have developed a substantial capacity to trace. They balance the private costs and benefits to determine the efficient level of traceability. This document can be found on the USDA website at:

www.ers.usda.gov/USDA_traceability_report.pdf

<http://www.fda.gov/RegulatoryInformation/Legislation/ucm155733.htm>

11.2. Australia Specific Requirements

For further technical information please refer to the GS1 Australia User Manual - Numbering and Bar coding by visiting the information library at www.gs1au.org or contact GS1 Australia on 1300 366 033.

11.2.1. Australia Regulatory Compliance and Market Access

www.ausmeat.com.au

www.mla.com.au

www.daff.com.au

<http://www.foodstandards.gov.au/Pages/default.aspx>

ANZFA: Australia and New Zealand Food Authority. A bi-national Government agency that administers the Australia New Zealand Food Standards Code, which lists requirements for foods such as additives, food safety (including use-by, expiry dates, etc.), labelling and GM foods. Enforcement and interpretation of the Code is the responsibility of state and territory departments and food agencies within Australia and New Zealand.

11.2.2. Australia GS1 Industry Guidelines and Demonstration Projects

EPC Network Australian Demonstrator Project Report: This document discusses The National Demonstrator Project as an opportunity to demonstrate the benefits of Radio Frequency Identification (RFID) technology and the use of the entire EPC Network in the supply chain. The document is at:

http://www.gs1au.org/assets/documents/info/case_studies/case_epc_demo.pdf

11.2.3. New Zealand Specific Requirements

11.2.4. New Zealand Regulatory Compliance and Market Access

<http://www.foodstandards.gov.au/Pages/default.aspx>

ANZFA: Australia and New Zealand Food Authority. A bi-national Government agency that administers the Australia New Zealand Food Standards Code, which lists requirements for foods such as additives, food safety (including use-by, expiry dates, etc.), labelling and GM foods. Enforcement and interpretation of the Code is the responsibility of state and territory departments and food agencies within Australia and New Zealand.

11.2.5. New Zealand GS1 Industry Guidelines and Demonstration Projects

11.3. UK Specific Requirements

11.3.1. UK Regulatory Compliance and Market Access

11.3.2. UK GS1 Industry Guidelines and Demonstration Projects

11.4. EU Specific Requirements

11.4.1. EU Regulatory Compliance and Market Access

11.4.2. EU GS1 Industry Guidelines and Demonstration Projects

11.5. Japan Specific Requirements

Japanese GS1 website: www.gs1jp.org

11.5.1. Japan Regulatory Compliance and Market Access

11.5.2. Japan GS1 Industry Guidelines and Demonstration Projects

Meat labelling

http://www.gs1jp.org/2009/solutions/04_2.html

11.6. South Africa Specific Requirements

11.6.1. South Africa Regulatory Compliance and Market Access

11.6.2. South Africa GS1 Industry Guidelines and Demonstration Projects

South African Poultry Association (SAPA) <http://www.sapoultry.co.za/>

11.7. Germany Specific Requirements

11.7.1. Germany Regulatory Compliance and Market Access

11.7.2. Germany GS1 Industry Guidelines and Demonstration Projects

11.8. France Specific Requirements

11.8.1. France Regulatory Compliance and Market Access

11.8.2. France GS1 Industry Guidelines and Demonstration Projects

11.9. Denmark Specific Requirements

11.9.1. Denmark Regulatory Compliance and Market Access

11.9.2. Denmark GS1 Industry Guidelines and Demonstration Projects

11.10. Ireland Specific Requirements

For further technical information please refer to the GS1 Ireland User Manual - Numbering and Bar coding by visiting the information library at www.gs1ie.org or contact GS1 Ireland on +353 (0)1 208 0660.

GS1 Ireland:

The Nutley Building
Merrion Road
Dublin 4

Ireland

11.10.1. Ireland Regulatory Compliance and Market Access**11.10.2. Ireland GS1 Industry Guidelines and Demonstration Projects**

Feile Foods: A GS1 DataBar Expanded Implementation Case Study: This document is in response to the Pork Dioxin Contamination crisis at the end of 2008 that cost the pork industry €1 billion and highlighted how farm-to-fork traceability was a broken chain that needed to be fixed. The use of the GS1 DataBar Expanded to significantly enhance traceability is discussed. The document is at:

http://www.gs1.org/docs/barcodes/databar/1_1_GS1_Ireland_Feile_Foods.pdf

11.11. Canada Specific Requirements**11.11.1. Canada Regulatory Compliance and Market Access****11.11.2. Canada GS1 Industry Guidelines and Demonstration Projects**

Can-Trace Integration Final Report April 2006: this document assist in integrating the mandatory Can-Trace data elements into the traceability requirements of existing on and off farm programs pertaining to food safety and food quality. The document is at:

<http://www.can-trace.org/portals/0/docs/Can-Trace%20Integration%20Final%20Report%20April%202006%20-%20mjt.pdf>



GS1 and ISO

Partnering for Standards



GS1 and ISO: Partnering for Standards

GS1 designs and manages a global system of supply chain standards

Some people think that GS1 is a company that sells barcode numbers — but that's simply not an accurate picture. In fact, GS1 is a not-for-profit organisation that for the past 30 years has been dedicated to the design and implementation of global standards for use in the supply chain.

The GS1 System does indeed include data and application standards for bar codes. But it also encompasses electronic business messaging standards, standards for secure and continuous data synchronisation, standards for using the Electronic Product Code with radio frequency identification (RFID) technology, and more.

These GS1 standards provide a framework that allows products, services, and information about them to be exchanged efficiently and securely for the benefit of businesses and the improvement of people's lives, everyday, everywhere.

Originally created by manufacturers and retailers to improve the efficiency of the distribution of food and consumer goods to retail stores, GS1 standards today are used by hundreds of thousands of companies in dozens of sectors including healthcare, transportation and logistics, aerospace, defence, high tech, and still, of course, the retail supply chain.

GS1 provides services and support to users of its standards

Beyond simply designing and maintaining standards, GS1 also provides training, implementation support, and a wide range of community management services. All of our day-to-day efforts are focused on our belief in the importance of robust, international, consensus-based standards.

As GS1 standards penetrate more highly regulated sectors such as healthcare, defense, food safety and chemicals, and are deployed to provide new services such as food traceability or anti-counterfeiting efforts, broader understanding of our collaborative work with ISO, and the associated acceptance of GS1 standards by national regulators, will be even more important.

GS1 and ISO share the same values

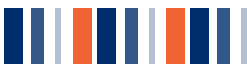
GS1 enjoys strong working partnerships and alliances with a variety of trade associations, governmental organisations and standards bodies, including:

- AIM Global: The Association for Automatic Identification and Mobility
- HL7: Health Level 7
- ICCBBA: The International Council for Commonality in Blood Bank Automation
- ISBN: International Standard Book Number
- ISSN: International Standard Serial Number
- ISO: The International Organization for Standardization
- UN/CEFACT: The United Nations Centre for Trade Facilitation and Electronic Business
- WCO: The World Customs Organization
- WHO: The World Health Organization

GS1's working relationship with ISO, the International Organization for Standardization, is a particularly long and active one. ISO is the world's largest developer of standards. Headquartered in Geneva, it represents 158 national standard bodies: one per member country. A number of GS1 staff members participate actively in ISO standard development committees, or even serve as their Chair or secretariat.

GS1 and ISO share the same values and the same beliefs in the vital importance of neutral, global standards. GS1 understands and respects the significant weight the ISO stamp carries, and the reluctance some companies feel to use standards that do not carry it. This is one reason why so many GS1 Standards are ISO-compliant, as well as why GS1 has adopted many ISO standards. This compliancy covers standards for Identification, GS1 Bar Codes, and Electronic Data Interchange, as well as standards for RFID via the significant contributions GS1 EPCglobal makes to ISO.

Working with GS1 standards means working with ISO-compliant standards, with the added value of services, training and implementation support.



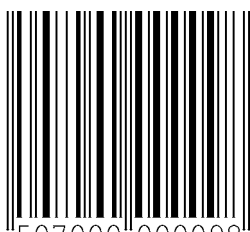
GS1 standards recognised by a published ISO standard:

- GS1 GTIN (Global Trade Item Number)
- GS1 GLN (Global Location Number)
- GS1 SCCC (Serial Shipping Container Code)
- GS1 GRAI (Global Returnable Asset Identifier)
- GS1 GIAI (Global Individual Asset Identifier)
- GS1 GSRN (Global Service Relation Number)
- GS1 GDTI (Global Document Type Identifier)
- GS1 Data Attributes and Application Identifiers
- Some GS1 Application Specifications (e.g. Logistic Units)
- GS1 BarCodes (EAN/UPC, GS1-128, ITF-14, DataMatrix)
- GS1 DataBar™
- GS1 eCom EANCOM syntax
- GS1 eCom XML syntax
- GS1 EPCglobal Gen 2 air interface

GS1 standards partially recognised by ISO, or recognition in process:

- Some GS1 Application Specifications
- GS1 Global Data Dictionary
- GS1 GDSN Data Pool certification process
- GS1 EPCglobal EPC numbers
- GS1 EPCglobal Gen 2 conformance and performance
- GS1 EPCglobal software interface standards





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GS1 Standards for Food Traceability

Global Traceability Standard Summary

The GS1 Global Traceability Standard is an application standard, functioning as a framework for establishing systems to track and trace various products all along the supply chain. It defines what the traceability process encompasses and shows the corresponding GS1 numbering, automatic identification data capture (AIDC) or data communication standards that must be in place for best practice applications. The **Global Traceability Standard** is **independent** from the choice of **enabling technologies**: this choice is up to each operator so it can choose the most relevant tools according to their strategy and environment. The Global Traceability Standard is the cornerstone for the interoperability of traceability systems between trading partners.

The Global Traceability Standard addresses and supports various levels of traceability for business needs such as:

- Compliance with regulatory requirements (HACCP, British Retail Consortium, IFS, FSSC 22000)
- Exclusion of business needs above and beyond legal compliance
- Facilitation of effective product recall and withdrawal (in particular to achieve a greater degree of precision, to demonstrate control, to increase efficiency and minimize costs in an event of recall or product withdrawal)
- Compliance with trading partner's specifications
- Ensure consumer safety and protection of brand reputation
- Support of consumer's safety and trust in a product's branding
- Efficient logistics and effective quality management through visibility in the supply chain
- Product authentication
- Anti-counterfeiting policies

Emphasizing the need for identification, capturing and sharing information, the scope of the GS1 Global Traceability Standard encompasses:

- Identification of parties, items and events
- Labeling and/or marking and/or tagging of products

- The nature and type of data to be captured and shared
- Creation of a reliable traceability database
- Communication and information sharing
- Identification and management
- Retrieval/search for information

Understanding the **Global Traceability Standard** is critically important as it is the **pre-requisite** for understanding the **Global Traceability Control Points & Compliance Criteria-Food checklist**.



Go to: http://www.gs1.org/docs/gsmpt/traceability/Global_Traceability_Standard.pdf for a printable version

Global Traceability Control Points & Compliance Criteria-Food Summary

The GS1 Global Traceability Control Points & Compliance Criteria-Food, better known as the GS1 Global Traceability Checklist is based on international regulatory requirements (Regulation CE No. 178/2002 & Public Health Security and Bioterrorism Preparedness and Response Act 2002) and food safety standards references. As such, it follows referenced traceability and codification standard documents notably the GS1 Global Traceability Standard, GS1 General Specifications and ISO 22005:2007, Traceability in feed and food chain – General principles and basic requirements for system design and implementation.

This document is a methodological checklist, functioning as a traceability conformance tool to ensure that all required data and information is recorded coherently with what occurs along the supply chain, starting from the point of production until consumption/use. The **Global Traceability checklist** is the way to **check compliance with the GS1 Global Traceability Standard**. This tool was developed for proactive monitoring of manufacturers' products and processes, thus helping safeguard product security, quality, certification, origin and content whilst complying with national and international traceability regulations as well as recall regulations.





In short, the GS1 Global Traceability Checklist helps:

- Identification of gaps in the organisation's traceability system
- Conformity towards international and /or national traceability standards
- Provide a methodology for traceability implementation
- Monitor traceability in the manufacturing process and product

In addition, the GS1 Global Traceability Checklist sets the audit criteria for the GS1 Global Traceability Programme defining essential elements in 12 sections, covering 104 Control Points. It is one of the most important documents needed as the basis of conducting a Global Traceability Assessment. The 104 Control Points are divided into 4 levels:

- | | |
|-------------------------------|---------------------|
| • Mandatory Musts | (28 control points) |
| • Mandatory Conditional Musts | (29 control points) |
| • Optionals | (10 control points) |
| • Recommendations | (37 control points) |

To obtain full compliance against the GS1 Global Traceability Assessment, the applicant needs to successfully comply with achieving 100% for the Mandatory Musts and Mandatory Conditional Musts. In other words, the applicant **cannot have non-compliances** for these **2 categories in the Global Traceability Audit**. An interested party can follow the Global Traceability Standard and Global Traceability Programme courses to acquire auditing skills, using this checklist. The Global Traceability Programme is managed by GS1 Global Office with GS1 Member Organisations who have Global Traceability accredited auditors.



Go to: <http://www.gs1.org/docs/gsmpt/traceability/GTS-Control-Compliance-Food-i3.pdf> for a printable version

Other standards supporting traceability

The GS1 solution comprises of a suite of global standards and this not only includes the Global Traceability Standard but also standards on Barcode Identification, eCom, GDSN and EPC Global. These standards are supporting GS1's philosophy of identify, capture and share throughout the whole food supply chain. To date, eCom has a deployment toolkit (Order to Cash). Other toolkits such as Fresh Foods and Barcode Identification will also help MOs use GS1 standards to support implementation.

In February 2012, the GS1 Architecture Group published the **GS1 Architecture Principles** and **GS1 System**

Architecture document. Since traceability involves most of the GS1 standards, all MO Traceability experts need to:

- Be fully conversant with these documents and understand the GS1 Architecture principles
- Understand the key concepts in the GS1 System Architecture document and be able to use the vocabulary described in the GS1 System Architecture document, relevant to traceability (compound key, application standard, etc). All standards will be aligned with this vision and vocabulary. If they are not, corrections will be considered for their next review or inputs should be discussed with the GS1 Architecture Group.



Go to <http://www.gs1.org/gsmpt/kc> for printable Barcode Identification, eCom, GDSN and EPC Global standards. To read more about the GS1 Architecture Principles and GS1 System Architecture, go to http://www.gs1.org/gsmpt/process/arch_group

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Guide to Information Standards

Numbering, Bar Coding and
eMessaging for the Australian
Red Meat Industry

Version: 1
Issue date: 21st May 2007

Use of this publication

Australia has well established traceability and product integrity systems. In addition the GS1 System is being adopted on a voluntary basis by the Australian red meat industry. The Australian Meat Industry and Language Standards Committee has endorsed this Guide to Information Standards as the solution for the Australian red meat industry to adopt for numbering, bar coding and electronic messaging.

Care is taken to ensure the accuracy of the information contained in this publication. However the Publisher cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests.

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Numbering & bar coding for carcase tickets & wrapped non-retail red meat carcasses

Numbering & bar coding for carton labels for carton & bulk non-retail red meat products

Numbering & bar coding for pallet labels for non-retail red meat products

Electronic messaging for cattle and sheep National Vendor Declarations (eDEC)

Electronic messaging for Meat Transfer Certificates MTCs (eMTC).

Information fact sheet

GS1 Cost Benefit Analysis

About this document

This information document describes numbering, bar coding and electronic messaging (eMessaging) standards for specific red meat supply chain activities, including processes such as carton labelling, carcass ticketing and pallet labelling as well as electronic messaging for National Vendor Declarations (eDEC) and Meat Transfer Certificates (eMTC). The document also details some project summary information for reference purposes.

A number of fact sheets have been developed to support this document. These are:

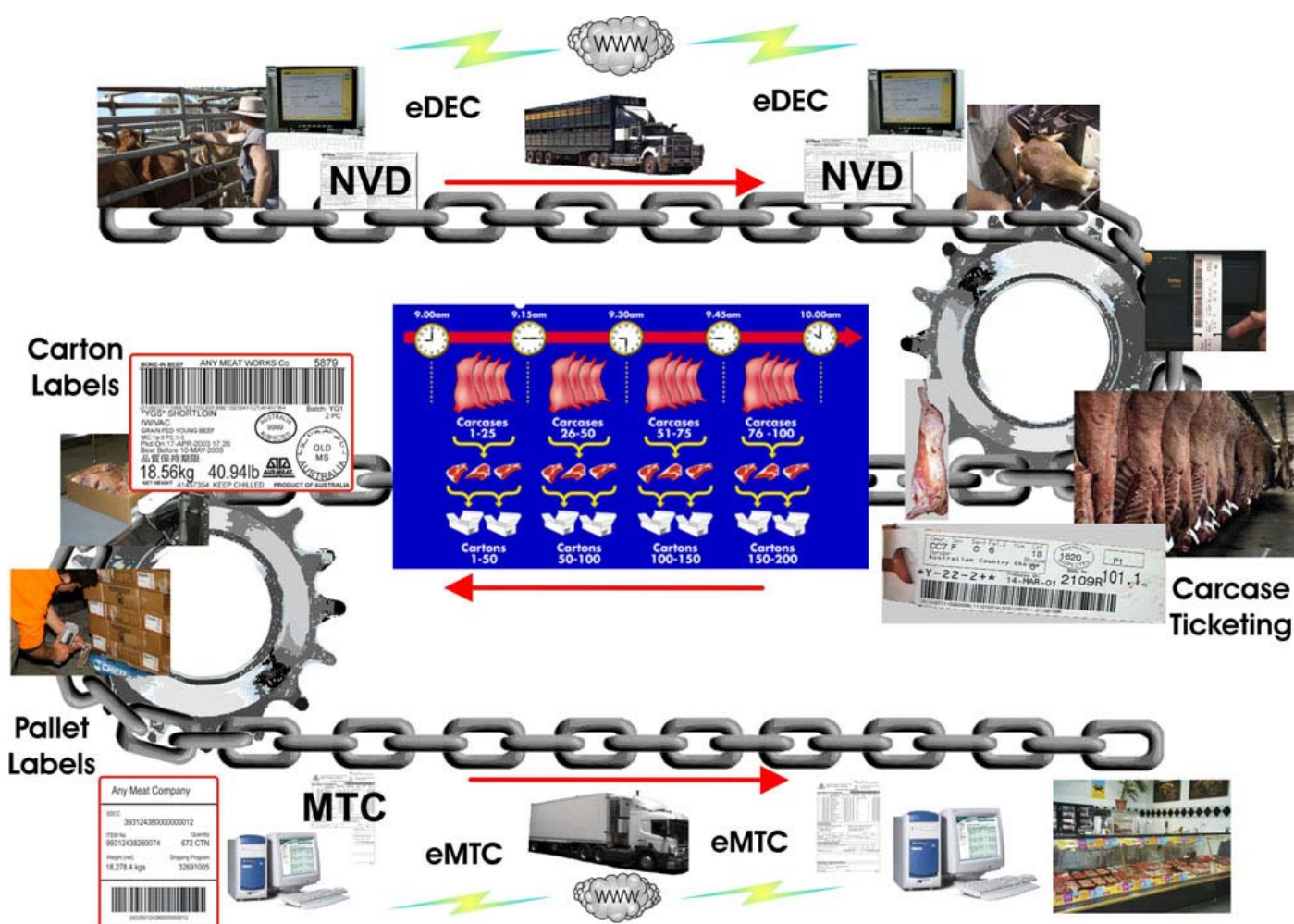
Technical

- Numbering and bar coding for carcass tickets.
- Numbering and bar coding for carton labels for carton and bulk non-retail red meat products.
- Numbering and bar coding for pallet labels for non-retail red meat products.
- Electronic messaging for cattle and sheep NVDs (eDEC).
- Electronic messaging for Meat Transfer Certificates MTCs (eMTC).
- (For livestock identification methods refer to the National Livestock Identification Scheme)

Information

- Cost Benefit Analysis

The diagram below shows the red meat supply chain for non-retail trade product and identifies each of the activities that are covered in the Technical Fact Sheets. The diagram shows how the relationship of each of the activities and their respective importance along the supply chain.



All of these documents were developed from global standards for trade and commerce. For more information on these global standards please refer to the ***GS1 Australia User Manual - Numbering and Bar Coding*** or contact GS1 Australia www.gs1au.org.

Acknowledgments

Major contribution has been provided by:

- Meat and Livestock Australia (MLA)
- GS1 Australia
- AUS-MEAT
- AQIS
- AMIC

The Benefits

Standards for numbering, bar coding and eMessaging

The use of global standards for numbering, bar coding and eMessaging offers benefits to all parties in the red meat industry supply chain by reducing costs, saving time, providing traceability and increasing accuracy through management of the entire 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 (refer to NLIS)
- Electronic NVD, Waybills and other regulatory and market access forms (eDEC)
- Producer feedback matched to properties, mob and even individual animals

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

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

Meat Industry Demonstrations

GS1/NLIS integration project

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

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:

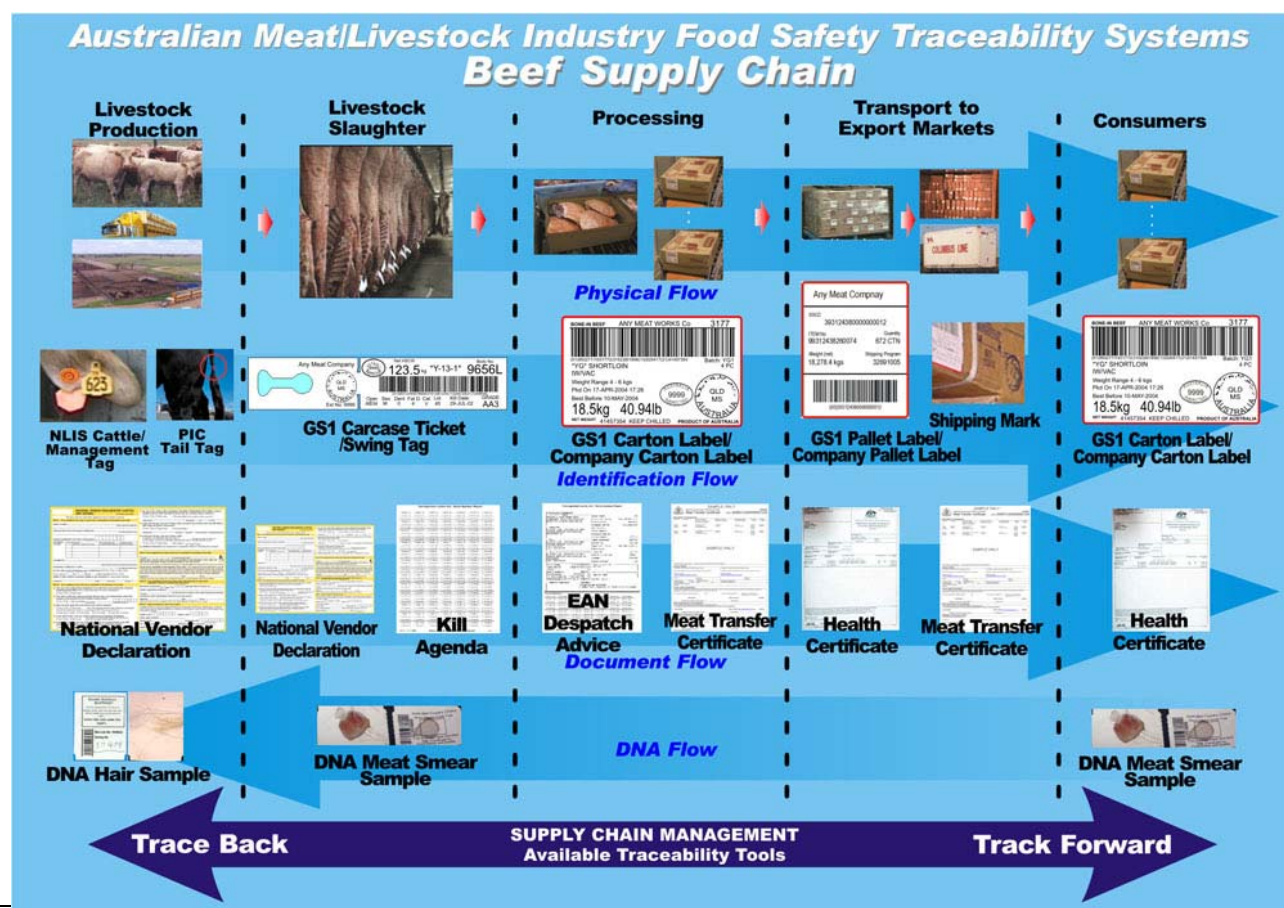
- Capture and record information on mob and consignments which included individual livestock identification by use of NLIS devices in the feedlot based on GS1 numbering and eMessaging standards
- Electronic Messaging to the NLIS database of regulatory data based on GS1 eMessaging standards
- Electronic Messaging between the Feedlot and ACC head Office of commercial information based on GS1 numbering and eMessaging standards

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 based on GS1 numbering and eMessaging 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.



Meat Industry Demonstrations

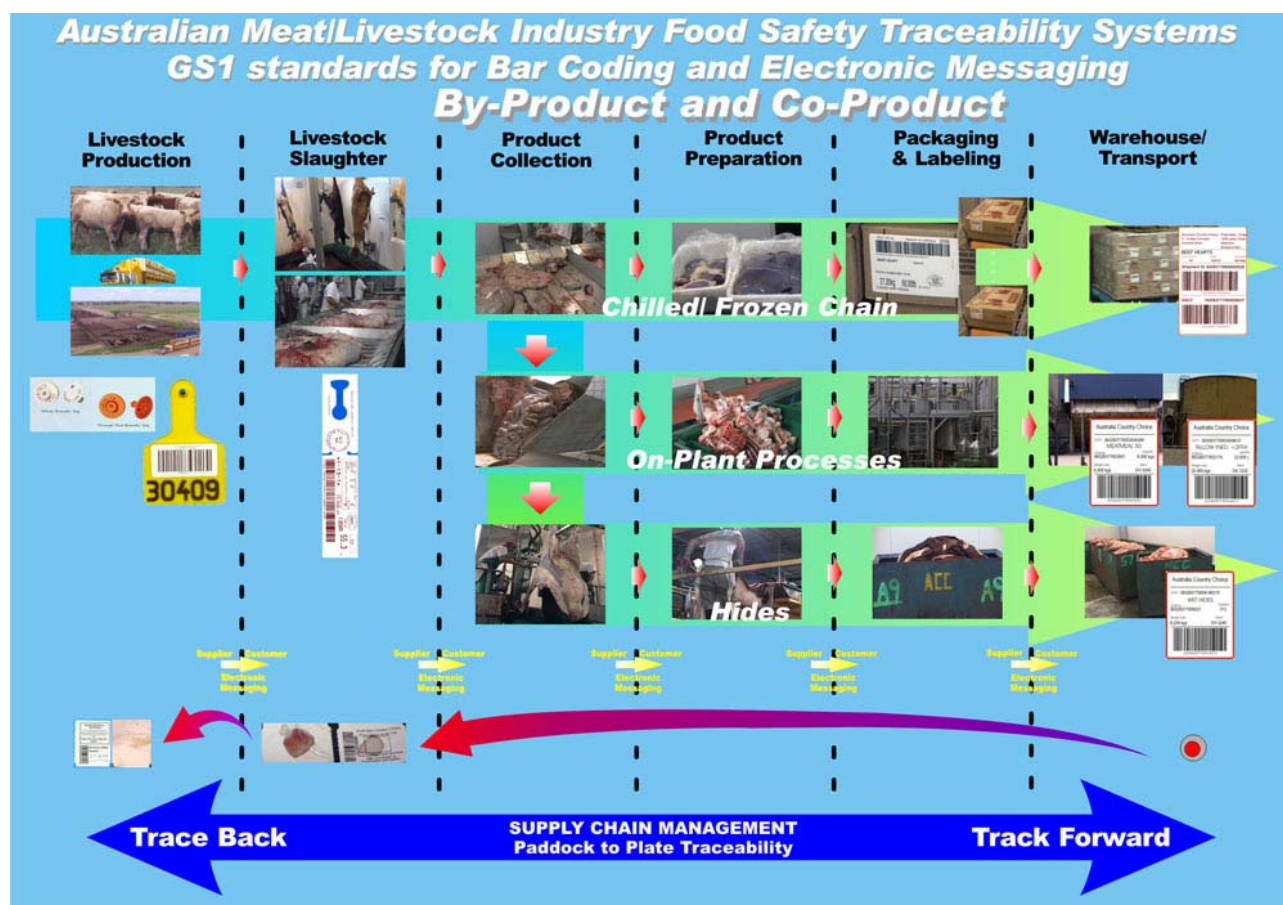
By-products and co-products project

Demonstration project for traceability of by-products and co-products using the GS1 System

The demonstration project objective was to show the ability to trace co-products and by-products back to the carcasses and even individual livestock using the GS1 System. Linkages needed to be established through the slaughter, boning and subsequent on-plant processes. The optimum level of linkage was determined by a combination of market requirements, practical limitations and cost considerations. The principles of the GS1 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 GS1 System.
- The ability to link individual carcasses that comprised batches of tallow, meat meal and blood meal.
- The use of Global Trade Item Numbers (GTINs) and 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 Serial Shipping Container Codes (SSCCs) for each hide can ensure that the hide can be globally identified.



Meat Industry Demonstrations

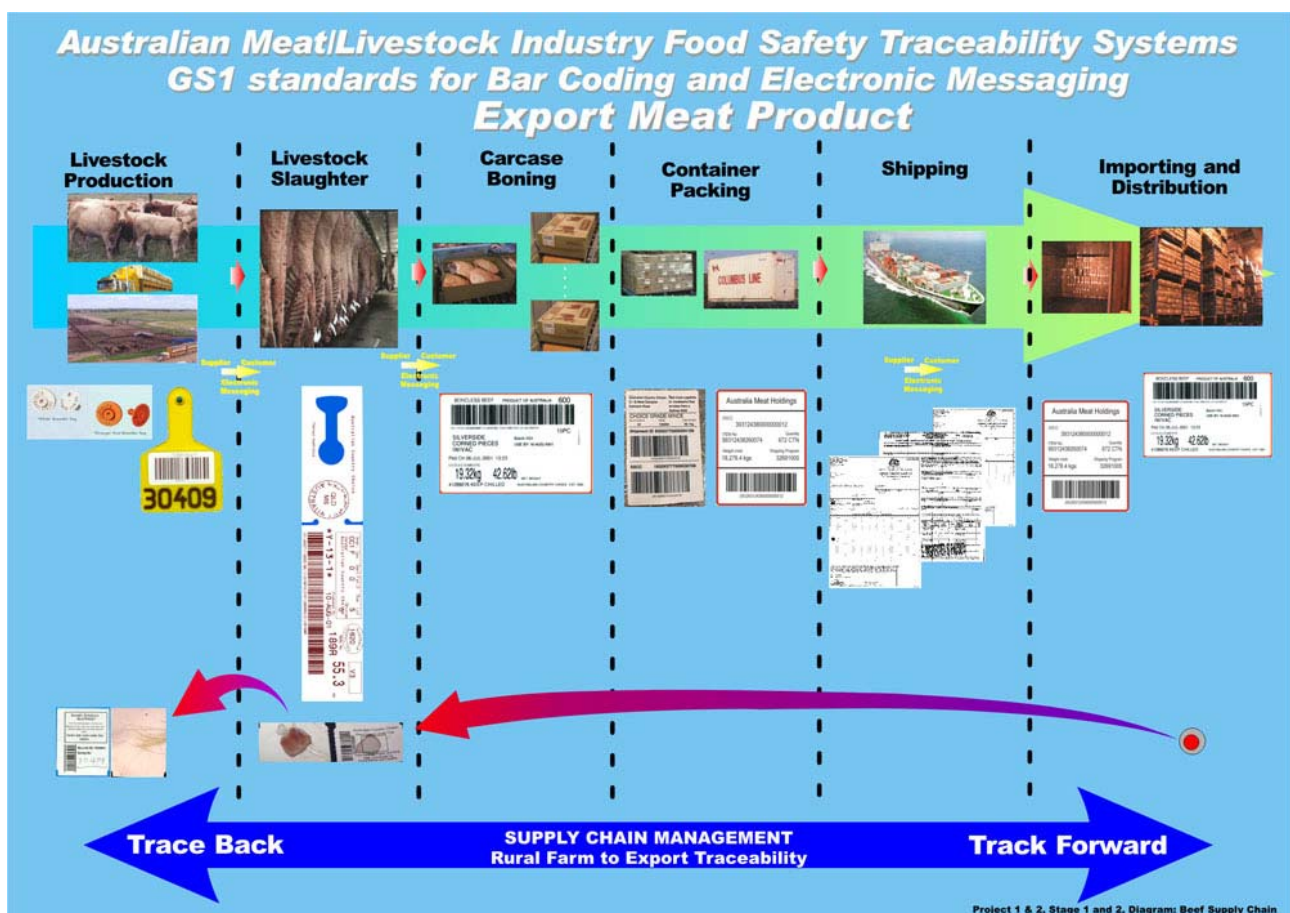
Export project

Demonstration project for simplification and increased efficiency for meat export by use of the GS1 System for bar coding and eMessaging.

The objective was to demonstrate the use of GS1 bar code labelling (with unique numbering per carton) and the use of GS1 eMessaging (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 eMessaging 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.



Meat Industry Demonstrations

Value added and retail ready project

Demonstration project for traceability for value added and retail ready products from processing facilities to retail shelf, by use of the GS1 System for bar coding and eMessaging.

The domestic trial involved the development of GS1 eMessaging 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 a 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 the GS1 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 carcasses used in the preparation of product.
- Shorter lead-time between order placement and product availability on the retail shelf by use of GS1 eMessaging.
- Increase efficiency in order fulfilment for picking and cross docking.
- Lower operational costs for receiving, processing and fulfilling orders



Meat Industry Demonstrations

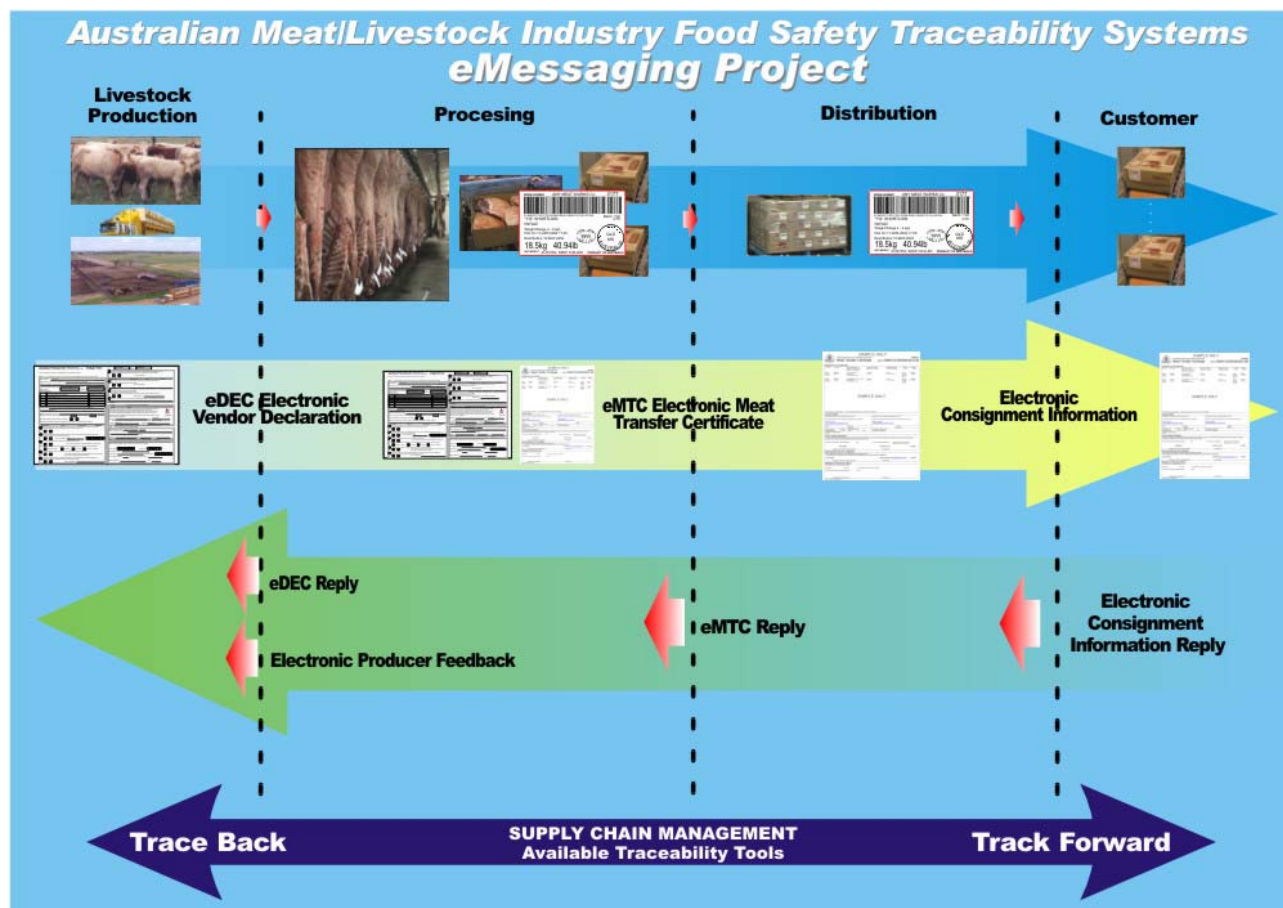
eMessaging project

Demonstration project showing a GS1 compliant e-Business system installed at a meat processing plant and demonstrating the supply chain benefits.

There are significant benefits to the meat industry in moving to an e-Business environment, however there are different coding and communications standards in place between plants and levels of the supply chain. This project demonstrates the implementation of internationally accepted standards and the benefits of a standard system.

Benefits to Industry

- Reduced operating costs by reducing labour and eliminated paper documents
- Improved accuracy and timeliness of data both internally and in its interaction with suppliers and customers
- Based on simple e-mail systems giving it a simple and universal interface while requiring very little bandwidth making suitable for communication with producers on dial-up lines
- Replace the paper based system with a wholly electronic system
- Combining NVD's, MSA Declarations and NFAS Declarations into an electronic version
- Notifying Consignors of Receipt of cattle electronically



The GS1 System

The GS1 System allows continuous improvement in supply chain management practices by providing international standards for item identification, bar coding, data capture, electronic messaging and data synchronisation.

Through the automation of business processes, the GS1 System drives increasingly fast, efficient and accurate flow of information between trading partners, factors that are fundamental to the success of any business.

GS1 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.

GS1 'openness' ensures worldwide product recognition

Because the GS1 System is a universal global standard, all users follow the same coding rules. As a result, GS1 numbers and bar codes can be recognised by trading partners anywhere in the world. What's more, the numbers issued by GS1 are completely unique, so no product (livestock, carton, carcase, pallet, shipment) can be confused for another.

Where did the GS1 System come from?

The GS1 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 1,000,000 member companies in 145 countries use GS1 Standards as part of their daily business communications, representing over 5 billion scanning transactions a day.

GS1 Australia

GS1 Australia is non-profit organisation that locally administers the global multi-industry system of identification and communication for products, services, assets and locations - the GS1 System.

Components of the GS1 System

There are three distinct components:

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

Of these three areas, the key component of the GS1 System is the numbering structure used for identification.



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 Point-of-Sale (POS) and/or which appears in a general distribution (warehouse) environment.
- Application Identifiers (AIs)
A method of identifying information about a trade item over and above product identity, such as batch number or production date.
- Serial Shipping Container Code (SSCC)

For the unique identification of logistic units.

Data Carriers (Bar Codes)

The GS1 unique numbers are represented in data carriers that enable automatic capture of the data. The red meat industry has determined that the GS1-128 Bar Code is to be used for carcase ticketing, carton labels and pallet labels. This allows attribute data as well as product identification to be encoded.

Alternate GS1 Data Carriers such as GS1 Data Bar (formerly RSS) and radio frequency identification (RFID) tags are also available for use.

Refer to the applicable Technical Fact Sheets for detail.

eMessaging

The terms electronic data exchange (EDI) and eMessaging, 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.

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 electronic exchange of data (or eMessaging) 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.

Refer to the applicable Technical Fact Sheets for detail.

Cartons and Carcases

GS1 Australia allocates a parcel of numbers to member companies. These numbers include a GS1 Company Prefix to identify the company and a range of numbers to identify products (which members themselves allocate sequentially), followed by a Check Digit which is mathematically calculated to verify that the details of the GS1 number (GTIN) are correct.

Introduction

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 Global Trade Item Numbers (GTINs).

There are two main types of trade items identified in this document - 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.

Re-using numbers

A deleted Global Trade Item Numbers (GTINs) 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 GTINs, 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 a GTIN-14

The GTIN-14 number is created by the company applying the bar code. A variable weight indicator of 9 is used on carcases and carton bar codes and must be completed with the measure information.

Attribute Information

for cartons and carcasses

Attribute information is any variable information that must be represented in a bar code over and above the product identification numbers. Attribute information includes Use By Dates, Batch Numbers and Serial Numbers and are encoded into a GS1-128 Bar Code.

Application Identifiers (AIs)

The GS1 System has hundreds of types of Application Identifiers to enable attribute information about items and shipments using 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 the **GS1 Australia User Manual - Numbering and Bar Coding** 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 remain identified by its Application Identifier.

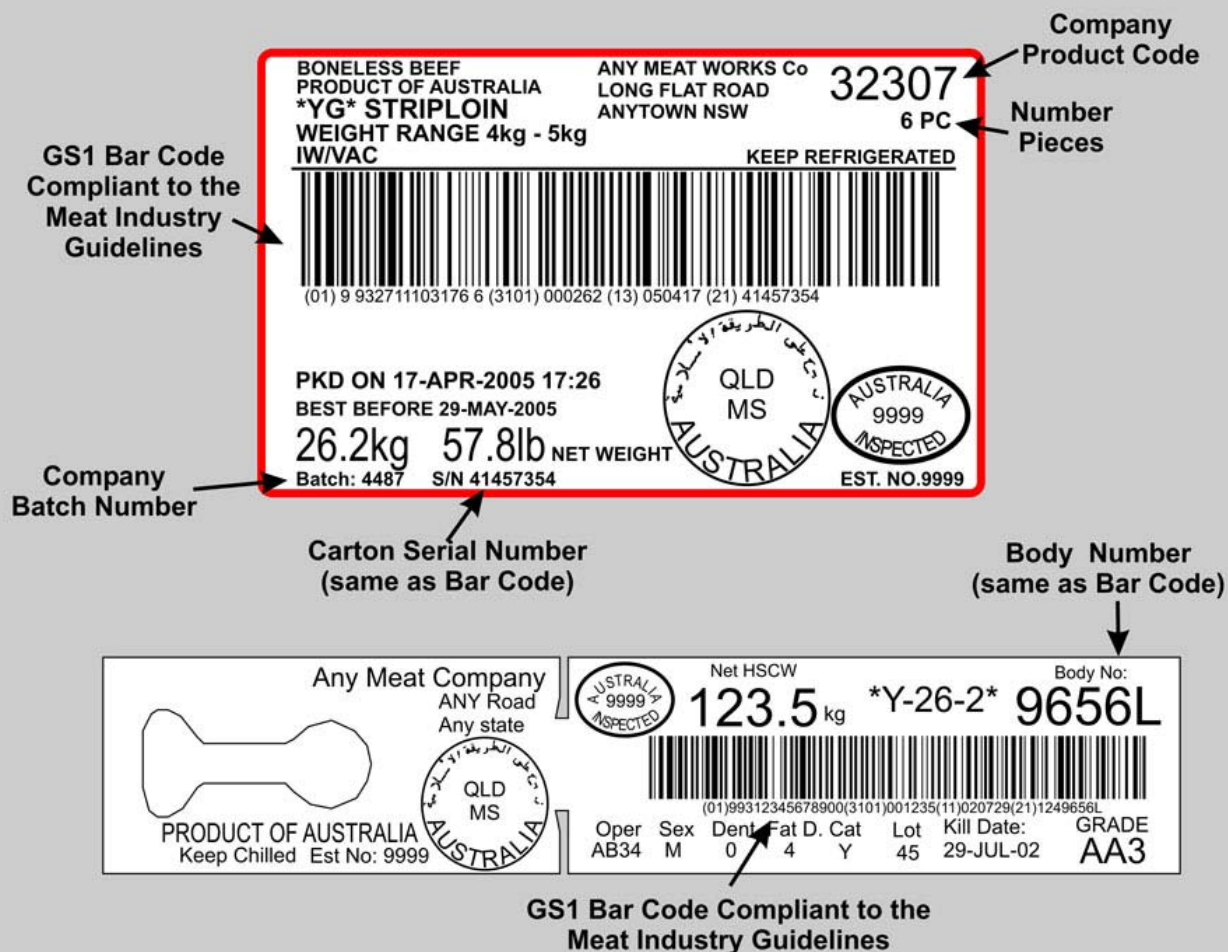
International compatibility

Application Identifiers and GS1-128 Bar Codes are internationally compatible throughout GS1 Global (which now includes the UCC). As a result, they can communicate information within a single company, between companies within an industry and across the globe.

Refer to the applicable Technical Fact Sheets for detail.

for cartons and carcasses

Examples of Attribute Information as 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 encoded in the bar code will also be used in electronic messages regarding the shipment's progress, allowing all participants in the transport and distribution chain to access the information. A SSCC is a unique 18 digit number. If your company is a member of GS1 Australia the following structure will apply:

- **Application Identifier:** (00)
- **Extension Digit or Packaging Indicator:** Single digit between 0-9 used to increase the capacity of the Serial Reference within the SSCC
- **Country Prefix:** two digits to identify the nationality of the issued number
- **GS1 Company prefix:** five, six 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 verifies the validity of the whole number

When coupled with an 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.

Refer to the applicable Technical Fact Sheets for detail.

Implementation

Making a Start

It is important to understand 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 GS1 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 GS1 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 GS1 numbering and bar coding.

Steps to Implement

The GS1 Standards have been available and used in many industries, including the red meat industry for more than 10 years so your system vendors should know about the GS1 System. Almost all bar code printers that are less than 8 years old can print the GS1 Bar Codes.

There are several steps that need to occur to implement the GS1 System successfully in your organisation.

The steps defined here have been tailored to suit different size organisations operating in the red meat industry.

These steps should be used in conjunction with the applicable technical fact sheet.

For a processor who is currently applying bar coded carcass tickets and/ or carton labels:

1. Check your carcass ticket system and/ or carton labelling system is GS1 capable by contacting your system vendor. If not then enquire whether it can be upgraded to become GS1 capable.
2. Apply to GS1 Australia to become a member and obtain a GS1 Company Prefix number. This number makes up a component of your bar code and uniquely identifies your company.
3. Review your product codes for compatibility with the GS1 System. Options for product numbers (GTINs) are:

- Match your product codes to the bar code number product codes (GTIN).
 - Use different bar code products codes to you human readable product codes and use the scanners and computer to match the different numbers.
4. Generate some test carton label / carcase tickets and confirm that the bar code number matches the requirements outlined in the applicable technical fact sheets
 5. Send some samples bar codes to GS1 Australia for verification.
 6. Once you receive a satisfactory verification report, start using the GS1 compliant numbering and bar coding on your carcase tickets/ carton labels.

For a processor who is not currently applying bar coded carcase tickets and/ or carton labels:

1. Check your carcase ticket system and/ or carton labelling system is GS1 capable by contacting your system vendor. If not then enquire whether it can be upgraded to become GS1 capable.
2. Once you have a carton labelling/ carcase ticketing system that can generate the GS1 Bar Codes, apply to GS1 Australia to become a member and obtain a GS1 Company Prefix number. This number is incorporated into your bar code and uniquely identifies you.
3. Review your product codes for compatibility with the GS1 System. Options for product numbers are:
 - Match your product codes to the bar code number product codes (GTIN).
 - Use different bar code products code to you human readable product codes and use the scanners and computer to match the different numbers.
4. Generate some test carton label / carcase tickets. Confirm that the bar code number matches the requirements outlined in the applicable technical fact sheets.
5. Send some samples to GS1 Australia for verification. You will receive a verification report.
6. Once you receive a satisfactory verification report, start using the GS1 compliant numbering and bar coding on your carcase tickets/ carton labels.

For a processor or cold store that is not currently applying GS1 (SSCC) Pallet labels:

1. Determine where and when the pallet labels will be applied. This is most likely be where the pallets are scanned and wrapped. You will need to have a computer and bar code label printer as well as suitable software at that location. Check with the vendors that any system offered is GS1 capable.
2. Once you have a pallet labelling system that can generate GS1 SSCC Bar Codes, apply to GS1 Australia to become a member and obtain a GS1 Company Prefix number. This number is part of your SSCC bar code and uniquely identifies you.
3. You may prepare pallet labels for cartons that you have produced or that have arrived into your cold store.

4. Generate some test pallet labels and see that the bar code number matches the requirements outlined in the applicable technical fact sheets
5. Send some samples to GS1 Australia for verification.
6. Once you receive a satisfactory verification report, start using the GS1 compliant numbering and bar coding on your pallet labels.

Refer to the applicable Technical Fact Sheets for detail.

Current Fact Sheets

The current Technical Fact Sheets are:

- Numbering and bar coding for carcase tickets and wrapped non-retail red meat carcasses.
- Numbering and bar coding for carton labels for carton and bulk non-retail red meat products.
- Numbering and bar coding for pallet labels for non-retail red meat products.
- Electronic messaging for cattle and sheep National Vendor Declarations (eDEC).
- Electronic messaging for Meat Transfer Certificates MTCs (eMTC).
- (Note for livestock identification methods refer to the National Livestock Identification Scheme).

Numbering and bar coding for carcase tickets and wrapped non-retail red meat carcasses.

This technical fact sheet covers the requirements for the numbering that comprises the bar code and the size and shape of the bar code applied to carcasses that are traded or moved between establishments. This technical fact sheet is applicable to whole and part red meat carcasses as well as wrapped carcasses where the wrapped or non-wrapped, whole or part carcase is on a hook.

Numbering and bar coding for carton labels for non-retail carton or bulk red meat product.

This technical fact sheet covers the requirements for the numbering that comprises the bar code and the size and shape of the bar code applied to carton or bulk packaging that are traded or moved between establishments. This technical fact sheet is applicable to variable weight or catch weight non-retail edible red meat product. The red meat products covered by this technical fact sheet includes full sets, primal cuts, trim, bone, offal as well as any mix of these products.

Numbering and bar coding for pallet labels for non-retail red meat products.

This technical fact sheet covers the requirements for the numbering that comprises the bar code and the size and shape of the bar code applied to pallet, bulk packaging or other grouped products for the purposes of making consolidated transport units (pallets, jumbo pallets, bulk packs, loose packed truck or trailers and containers) that are traded or moved between establishments.

Electronic messaging for cattle and sheep NVDs (eDEC).

This technical fact sheet covers the steps and requirements for creating, sending, receiving and printing electronic National Vendor Declarations (eNVD) related to the movement of cattle and sheep where a paper NVD would normally have been required.

Electronic messaging for Meat Transfer Certificates MTCs (eMTC).

This technical fact sheet covers the steps and requirements for creating, sending, receiving and printing electronic Meat Transfer Certificates (eMTC) related to the movement of carcase, carton and bulk products between establishments where a paper Meat Transfer Certificate would normally be required.

The current information fact sheet is:

- GS1 Cost Benefit Analysis