What does Traceability really mean and why is there a commercial reason to look at Traceability.

Since the outbreak of mad cow disease and the threat of bioterrorism reached new heights, traceability has become essential to doing business around the globe but what does "track and trace" really mean? Here, we explain how traceability systems work and how Australian businesses can harness them for profit.

The most obvious benefits of traceability for Australian business are access to the many international markets that mandate these systems and reduced liability. Less well understood are the massive, often multi-million dollar, savings the systems that underpin traceability can reap for entire industries.

But what is "traceability"? Put simply, traceability is a system that shows the movement of goods as they travel from primary producer to plate and involves "tracking" and "tracing". Tracking, or following a product, group of products or product derivatives forward to the retail shelves is matched with tracing materials back to their origins. The concept of tracking and tracing only applies to a moment in time because, afterwards, the goods may have moved.

Traceability is rapidly becoming law in many countries around the world as regulators work to contain outbreaks of disease or limit the ability of terrorists to conduct broad scale poisonings. When traceability works well, authorities can act quickly to identify the cause, isolate the source and remove affected goods from the supply chain - fewer of the 'bad' goods reach consumers and the scale of the recall is much smaller. In real terms, that might mean lives saved and millions of dollars of stock preserved.

Cost, liability and market access: three good reasons for traceability
The mandating of these systems means traceability's biggest immediate benefit to business is market access. If your supply chain can not demonstrate traceability, then many markets will be closed to you.

Traceability has other benefits too. Because they allow the source of problems to be found swiftly, traceability systems also reduce the impact of recalls, which have historically been very high. When minute traces of benzene, a cancer-causing chemical, were found in samples of Perrier mineral water in 1999, the costs were enormous. The recall saw 280 million bottles of Perrier removed from store shelves around the world because traces of benzene got into one batch from a faulty filter. Aside from the damage to Perrier's brand, the crisis cost the company a total of one billion francs (US$186.6 million). The cost would only have been a tiny fraction of this if the single contaminated batch was quickly isolated.

Still, although the cost of recalls is high, the risk to the average Australian business of an occurrence is quite small and traceability takes on an 'insurance' role rather than an operational one. The traceability system must withstand legal challenge and be total integrated into the operational aspects of the business. It can not be added on.

When disaster strikes: what happens without traceability
To see the difference a traceability system makes in the midst of a crisis, imagine someone in the US discovers dangerous levels of a banned chemical a carton of frozen meat. What would happen without traceability?

First, all product from the shipment is tested. Of course, the shipper and plant supplying the product need to be informed. Because the product in a single shipment comes from several plants and carries many different production dates, this is time consuming.

Testing reveals several, but not all, of the cartons in the shipment were contaminated. The US authorities turn to the codes printed on the cartons, searching for a pattern. Batch codes might be too broad in the event of long production runs - serial numbers are more precise. They hope for codes that reveal the plant of origin and the dates of production.

Analysis of the codes shows the contaminated frozen meat came from one plant across a few production days but was over six months old. The chilled meat that was produced at the same time would all have been sold. Some of the company's product went into domestic meat pies and ground beef pizza topping.

The company faces a host of vital questions. Which production batches are affected, what recall protocol should be implemented and where have all the other cartons from the production dates gone? Does the company recall the tallow, meat meal, pet food and foetal blood?

Those same questions ripple along the supply chain. Distribution companies pick and send the meat products around the world. Whether each of them tracks the serial numbers or just the product types will be critical to the time taken to find the contaminated cartons.

The wash-up without traceability

The company was placed into receivership the day after the problem was made public because it could not readily identify where the product had gone and which derivative products were affected. The product liability and recall costs were so high that it was no longer solvent.

As the problem spanned three consecutive production days, investigators suspect the cause was contaminated cattle. Because it was frozen and over six months old, trim was the only product available to test. The company determined that it was not all trim product but only random trim product from the production days. The NLIS tag records and the NVDs that related to the cattle shipments showed the 3000 cattle killed over the three problematic days were purchased from a saleyard, a feedlot and by direct consignment from 120 different properties. It appeared that the problem was only from a few cattle but it was impossible to say which of them.

How traceability systems help investigators find the cause and limit the damage

The same scenario has a dramatically different conclusion when a traceability system is in place. Imagine this time the company uses GS1 bar codes with unique serial numbers and that each and every carton is scanned throughout the distribution channel. The product in question is identified by its GS1 bar codes and the specific production dates and times determined.

The affected product all came from one specific production line and different product lines were processing the same batch of cattle but the chemical was not found in any product from the other lines.

Reviewing the maintenance records for production equipment, the company discovers that a service had been completed on the one plastic bulk liner packaging machines for that line. The records reveal the batch codes of the materials used for the maintenance and show that a lubricant was used on the machine for producing the plastic carton liners. That lubricant batch was not used on any other machine.

The company's production records trace forward specific cartons of trim produced before and after the service. Some serial numbers are traced to cold storage facilities and cartons there are tested. Those produced before the maintenance were free from contamination, while those produced after the maintenance were contaminated. The lubricant brand, type and batch code are referred to the manufacturer, which acknowledged that the chemical is present in very small quantities in the lubricant. The meat processing company's insurance company takes legal action against the maintenance company and lubricant manufacturer for damages.

How traceability works: connecting data 'islands'
The two examples illustrate why identification systems must be transparent along the supply chain. In the first scenario, the company believed that the contamination came from the cattle but did not have good enough systems to determine the real cause or adequately trace forward and track back to prove or disprove the source.

Effective traceability systems are based on common standards for codification/ numbering (product codes, serial number, product attributes), identification (bar coding, RFID, etc) and communication (electronic messaging, and so on) along the whole supply chain. In our hypothetical meat contamination case, the standards for codification and bar coding of the lubricant would be the same as for the cartons of meat or the veterinary drugs used on the cattle. If a single link in the supply chain uses proprietary or incompatible systems, crucial data will be lost.

The GS1 System: a global trading system ready-made for traceability
For Australian industry, half the work involved in setting up traceability systems is already done. The GS1 set of identification standards used by millions of businesses worldwide across almost every industry sector is the ideal foundation for traceability.

While the grocery industry has relied on the GS1 System (previously known as EAN.UCC) for decades to speed products to its shelves, the use of common standards for codification, identification and communications is not widely used by the agricultural sector. Instead, many proprietary systems and methods compete for dominance. As far as agriculture is concerned, the first theoretical scenario is far closer to the truth than the second, successful, one.

The case for adoption of GS1 standards is strong: there are simply no other supply chain standards that can match their global level of daily use or implemented user base.

Livestock, meat and other agricultural commodities that have unique DNA fingerprints can be identified with even more precision than manufactured goods. With the correct application of the GS1 standards along the supply chain, we can determine the batches, groups, mobs and even specific cartons, carcases or individual animals that may be of interest or concern for the purpose of track forward and trace back. The adoption of sample collection at various operational stages in the supply chain would allow DNA finger printing methods to provide precise determination of specific traceability - a means of audit and validation of information-based track forward and trace back systems.

The key to cost-effective traceability
Discussions about traceability often contrast the unrealistic cost of trying to track and trace everything all the time with very low cost systems that do not allow track and trace. In effect, this means a debate between the "pay now and save later" and the "save now and pay later" approaches.

It is realistic, however, to strike a balance between the two using the GS1 System. With its widespread adoption, agriculture would find itself with a traceability system that works and stands up to the scrutiny of international markets but that is also justifiable in terms of business savings.

The GS1 System, after all, is designed to streamline supply chains, reducing errors and automating transactions between trading partners. It has proven itself in industries as diverse as grocery, pharmaceuticals, automotive, hardware, white goods, wine and fashion.

The use of the GS1 standards would be a major step forward for agriculture – both as a commercial efficiency imperative and the basis for operational track forward and trace back along the whole supply chain.