

# Value Traceability

A Solutions Unleashed Whitepaper

Nervous consumers, the proliferation of the media and complexity of supply chains, driven by accelerating globalisation of markets and the requirement on manufacturers to compete on the international stage to maintain their brand equity and market share is resulting in ever tougher government legislation to ensure food safety.

As recent as July 2007 the International Standards Organisation issued a new standard for Food and Drink traceability. ISO 22005 sets out the general principles and basic requirements for designing and implementing a traceability system along a processor's supply chain. Processors can aim to get certified by independent audit companies in a bid to demonstrate to regulators and consumers that they have taken the necessary steps to protect the safety of their products. The selection of the correct tools for this task will determine whether this is an effective business decision and to what degree regulatory compliance can be converted into 'value traceability' yielding production and operational benefits.

The background to this has featured in the TV News many times over the last few years. Cases of food poisoning and outbreaks have pushed countries, including EU members, to require that processors have a traceability system in place to protect public health. The EU issued Regulation 178-2002 which lays down guiding principles, but lacks any definitions as to how to go about achieving such a system.

The regulations generally require that each company know who their immediate supplier is and to whom the product is being sent. A traceability system can also help a company withdraw or recall products faster and more efficiently.

To achieve certification under the new ISO standard processors will be required to have systems in place to trace the flow of feed, food, ingredients and packaging into and out of their plants. Having ISO accreditation will surely differentiate a supplier from one that does not have such; especially when retailers decide that there is something in this that will be good for them. Such benefits are business risk reduction and brand projection.

In addition to "simply" having a system, processors must also be able to identify the necessary documentation and tracking for each stage of production, ensure the adequate coordination between the different actions involved, and require at the very least that each party be informed of their direct suppliers and clients.

Since food safety hazards can enter the food chain at any stage, adequate control and communication throughout the process is essential, ISO stated: "One weak link in the supply chain can result in unsafe food, which can present a serious danger to consumers and have costly repercussions for suppliers,". "Food safety is therefore the joint responsibility of all involved."

But does compliance have to be just another cost of sale or is there 'value' to be gained from adhering to regulatory compliance?

ISO also promotes the standard as a cost saving measure, doing away with the need for multiple and sometimes conflicting schemes used by different players along a supply chain. "ISO 22005 offers a unique solution for good practice on a worldwide basis and thus contributes to lowering trade barriers."

ISO 22005 is the second in a series of food safety standards launched by the organisation. The standard uses the same definition of traceability as the Codex Alimentarius Commission and provides a complement for organisations implementing the ISO 22000 standard, released in 2005. ISO 22000 sets out the basic requirements for a food safety management system to ensure safe food supply chains. ISO 22000 also incorporates the principles of the Hazard Analysis and Critical Control Point (HACCP) system for food hygiene.

Under EU law (178-2002), "traceability" means the ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all stages of production, processing and distribution. The controls were made mandatory after past food crises, such as dioxin contamination and BSE, showed that the EU needed a system to respond quickly to such events.

In releasing ISO 22005 the ISO stated, "Moreover, a traceability system can improve the appropriate use and reliability of information, effectiveness and productivity of the organisation". This statement confirms the position that SolutionsPT developed at the time of the issue of regulation 178-2002, and the later US Bio-terrorism Response Act.

#### Credibility

The problem with all such regulation and accreditation is that the often hard-pressed food processor knows that this is all going to cost money and that 'someone will have to pay'. The benefit is unclear other than to be 'seen to do the right things'. Also pressure to dilute regulations has been lobbied by industry, no doubt being a reaction to the likely cost, but at the same time ignoring potential benefits. The appearance of ISO 22005 may have a different effect for it will take only one or two processors to become accredited for the others to have to follow.

The problem in all of this, is that this to a degree is new ground and the acceptable solutions to produce valid schemes are untested – or is that really the case?

### Where Traceability is 'the norm'

In the aerospace and the "closer to food" pharmaceutical industries, traceability and regulatory schemes have been in existence for many years. The manufacturing tools, operational processes and methodologies have been developed to meet stringent requirements. Aerospace systems have been adapted to meet the requirements of manufacturing domestic gas boilers, many pharmaceutical Good Manufacturing Practices are immediately applicable to animal feed, food, and drink manufacture.

### So, what are the differences?

The food industry has probably more to go wrong, and as we all know, if it can go wrong, it will. Raw materials (ingredients) are procured globally and may or may not have accreditation (it will take time). The very activity of food and drink processing is risky, despite the work of food hygiene bodies – think back to the recent Cadbury's salmonella problem. Also the "farm end" is periodically at the mercy of animal diseases that can be transmitted to humans or could be of serious risk to the national herd.

### Two birds with one stone?

There is however (and for the first time endorsed by a non-vendor) a direct benefit to be had. Earlier in this paper it was said...

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This would indicate that deploying a traceability system can have beneficial effects upon a business. One can perhaps argue the case both ways, "in deploying traceability for ISO 22005 we will obtain production and operation benefits", or the same thing in reverse! Surely it is more attractive to look at investing in production and operational benefits, in the knowledge that ISO 22005 can be obtained within the same investment?

### How?

For many years SolutionsPT and its specialist EmsPT division has said, "It's all about the data". Experience confirms that this is always true, remarkably simple to see, but a little more complex to pick up and run with. At the heart of all modern manufacturing is SCADA, PLC's and other controllers (including manual operations). In achieving their functional role they both act upon data (e.g. which recipe or set-point?) and generate data. The generated data is history; which is a fundamental requirement for traceability. The same data, filtered and viewed in different ways, is the source of operational and efficiency improvements. It would seem that a good data "pool" is therefore needed.

### Data sources

If a manager seeks to be in control of production, operations and therefore the business of manufacturing then the realisation that data is everywhere will be welcome. The three largest areas where useful data can be found are the enterprise area, the automation area and in manual activities. What is needed is efficient acquisition, and understanding of the true meaning of the data and some way to turn it into operational insight, and a resource for traceability accreditation.

### Data becomes information

ERP systems can readily be accessed for events that relate to traceability, what was bought from where and what was shipped to where being the most obvious. But a Bill Of Materials may not identify actual ingredients, simply generic stock. Real time manufacturing systems (MES) can access real-time events such as detailed batch information with ingredients and process values (and also operator details). The capture of operator details also applies to manual systems as frequently the manual operation is undertaken according to a computerised operation system.

### But it's all hard work

One can thus obtain information from data that will be useful to continuous improvement, but how does one write a specification for the IT project that will produce both this and traceability? Starting with bare bones requirements is good, but does not auger well for prompt roll out and benefit payback. It is now that the search for a well thought out solution should be commenced.

### The magic bullet for business benefits and traceability?

There was a sea change in the IT solution delivery business a few years ago. This was the introduction of Microsoft's .net framework. This allowed everything to become more connectable and allowed an object oriented approach. Software became more efficient to write and faster to deliver, it also allowed new and improved functionality to be considered.

In the manufacturing sector Wonderware® grasped this opportunity and produced its ArchastrA products that take all the Microsoft .net advantages and apply them to industrial process and information requirements.

Traceability however is a complex demand to place on a manufacturing system. It is possible to produce reports from databases of accrued information but this will be a long time in development. What is needed is a product that has anticipated this functional requirement.

#### Enter Wonderware® and Equipment Operations Module

Building upon .net based Arcestra Wonderware® developed higher level functionality into a product that would make Traceability achievable without long project development cycles and at the same time deliver operational efficiencies. Equipment Operations Module (EOM) is an extension to Wonderware® System Platform (WSP). WSP provides all the powerful components that are needed for efficient manufacturing, EOM adds to this a functionality that delivers Traceability accreditation and business risk reduction.

The Wonderware Equipment Operations Module is a software module that helps manufacturers improve their operational performance, brand integrity and manufacturing responsiveness. This module provides consistent execution of unit/line operations, improved reliability and repeatability of equipment setup. It also captures complete “as-built” records for rapid response to unforeseen production events such as product recalls leveraging the ISA-95 standard.

In addition, Wonderware®’s Equipment Operations Module enables more effective and consistent execution of each production work order assigned to a production asset or piece of equipment. For example, a process unit or production line manages formulas, parameters and downloads of set points to process equipment. It also enforces operating procedures pertaining to specific equipment.

The module records actual values for information related to the consumption and genealogy of materials, equipment usage, personnel, and information from other production events -- natively related to lot, batch or serial number.

The Equipment Operations Module is a natural extension of the Wonderware® System Platform, reusing the powerful plant model so that the information is inherently related to the relevant physical equipment represented in the plant model. The result is valuable contextual information, which provides a production context on top of process data for complete “as-built” documentation, including traceability across multiple production processes and areas.

#### Grappling with the complexities of Traceability

Even the most powerful and ease-of-use product has to be understood thoroughly for effective deployment. EmsPT the consultative division of SolutionsPT Ltd has consultants with product traceability experience that can work with you to produce a functional specification. This will provide information that will deliver business benefit and reduce business risk, maybe to the extent of even protecting a company’s brand value.

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SolutionsPT Ltd is a leading supplier of manufacturing solutions to major companies across the UK and Ireland. Using world class industry expertise, quality training and support facilities and a proven range of software and hardware technology products, SolutionsPT specialises in delivering manufacturing management solutions that can increase productivity and supply corporate management with the real-time information they need to make sound business decisions.

SolutionsPT, Unit 1, Oakfield Road, Cheadle Royal Business Park. Cheadle SK8 3GX  
Telephone: +44 (0) 161 495 4600 Fax: +44 (0) 161 495 4690  
Email: info@solutionspt.com Web: www.solutionspt.com

