Handling Quality and Traceability Data
for strategic and competitive success

By Eamonn O'Mahony, President, SoftTrace

To achieve full end-to-end traceability it is crucial to create the physical and operational conditions necessary for enforcing validation and quality rules and maintaining the traceability data chain. It means using available technology to seamlessly integrate traceability data, make it error proof and ensure that it can be effortlessly accessed in real-time.This paper outlines the ways in which food industry players can effectively meet the emerging mandate and have traceability information literally at their fingertips

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About the Author

Eamonn O'Mahony is President of SoftTrace and Director of Product Development. He has 25 years' experience in the design and development of software solutions for the Food, Dairy and Pharmaceutical industries. Eamonn's expertise lies in the areas of quality management and traceability and he is directly responsible for the on-going design and enhancement of the SoftTrace suite of software modules to meet current and emerging customer needs.

Introduction

The effective management of quality and traceability information has become critical to the strategic and competitive success of food manufacturers. The food industry is experiencing ever increasing customer and legislative emphasis on both quality and safety. EC (EFSA) and US (FDA) regulations, and the mandate for end-to-end traceability, are multiplying the pressure exponentially. Recent food scares demonstrate just how quickly public opinion can turn against food companies who cannot quickly prove their produce is safe.

Retailers are laying down stringent protocols to protect their brands. They submit their suppliers to rigorous food safety audits and mock recalls. They demand demonstrable evidence of a food manufacturer's ability to trace all raw materials by lot or batch number and achieve effective traceability from supplier to customer. A single failed mock recall can result in contract termination.

In the current environment, an individual company's success in meeting the traceability challenge depends on its ability to demonstrate real control over product safety to regulators, customers and consumers. For those companies burdened with inadequate systems it is a difficult time during which operational adjustments will be a prerequisite to the effective exploitation of available technology.

Traceability gaps - in areas such as raw materials / ingredients receiving, quality control, process manufacturing, packing and the supply chain - limit a manufacturer's crisis management and product recall capabilities. Areas of weakness may well include: the collection, storage and interpretation of traceability data; real-time response levels to potential hazards; and overall responsiveness and flexibility in the light of current legislative and commercial demands.

Today, achieving full end-to-end traceability means creating the physical and operational conditions necessary for enforcing validation and quality rules and maintaining the traceability data chain. It means using available technology to seamlessly integrate traceability data, make it error proof and ensure that it can be effortlessly accessed in real-time.

This paper outlines the ways in which food industry players can effectively meet the emerging mandate and have traceability information literally at their fingertips by:

– Reassessing their handling of quality and traceability data for strategic and competitive success.
– Focusing on areas such as quality, materials, process and inventory management to achieve optimal data integration in a single, central database.
– Fully integrating quality and supply chain systems.
– Eliminating "data islands" and closing the traceability gap between process automation and business systems.
– Using readily available technology to meet legislative and consumer demands, enhance product quality, guarantee customer satisfaction and increase operational efficiency and profits.

Defining Traceability

What does end-to-end traceability really mean?

Backward traceability means being able to:

- Receive external notification of a quality breakdown with a product.
- Easily trace the affected product / batch backwards through the process and rapidly identify all relevant data from each stage in the manufacturing process – start to finish.

Forward traceability means being able to:

- Immediately identify all finished product batches containing an identified risk such as a contaminated ingredient, foreign matter etc.
- Quickly establish their in-store or dispatched location.
- Rapidly initiate a product recall.

Full end-to-end traceability means:

- Integrating quality and supply chain systems to guarantee the highest possible standards of product safety.
- Closing the information gap between process automation and business systems.
- Using real-time validation to ensure compliance with quality procedures.
- Maintaining the integrity of the traceability chain.

The key to traceability, rapid response and crisis management is speedy access to all relevant data. The implementation of a fully integrated traceability software solution is becoming a necessity for any company in the food industry.

What is the Traceability Gap?

In many of today's food manufacturing facilities, the degree of data integration and lot specific information necessary for end-to-end traceability does not exist. Standalone IT systems address individual aspects of the traceability challenge and cumbersome paper systems, with the potential for error, are used to bridge the data gap. Anyone who has tried to bring together information held in disparate IT systems and paper-based records – especially within a restricted timeframe - will be aware of the significant problems caused by the traceability gap.

> Traceability gaps in raw materials / ingredients receiving, quality control, process manufacturing, packing and the supply chain limit rapid response and product recall capabilities with potentially catastrophic consequences.

Typical areas of weakness include:

- A negligible degree of data integration and predominantly paper-driven systems with little flexibility.
- Lacking a comprehensive, real-time yield and quality profile on all raw materials and ingredients. This critically undermines a company's crisis management and rapid response capabilities.

- A lack of integration between the intake measurement system, and the ERP's stock records, plant automation data, quality management and traceability system. The end result of this is a lack of real-time validation and control impacting on a company's ability to achieve full traceability from raw material receiving into the manufacturing process.
- Key process manufacturing and packing data held in disparate IT systems and manual records resulting in a broken data chain unsuited to the task of extending traceability from raw material intake and the in-process batches to the bulk finished product and packing line data.
- No central quality management system capable of handling data to sub-batch level, tracking all product movements by quantity and batch code and holding a profile of all data held on each batch down to operator level. The end result is a deficient data link between the bulk finished products and their physical packing.
- No real-time quality validation to ensure that the traceability chain remains intact and cannot be compromised.

Often incoming raw materials and batch control is undertaken on an inventory only basis. There is no real-time integration between the raw material receiving and quality (laboratory) data and no electronic link from raw material intake to the in-process batches and onwards to the bulk finished product. In some cases, the degree of integration between in-process and packing is minimal with heavy reliance on manual recording and validation procedures that are cumbersome and error prone. Similarly, a lack of real-time integration between dispatch and in-process data makes it difficult to quickly trace a product from the customer back to the raw material sources.

Eliminating Traceability Gaps

Eliminating traceability gaps requires the seamless integration of quality management and traceability data with process automation and ERP into a single enterprise-wide solution.

Meeting today's quality, traceability and food safety challenges demands a previously unprecedented level of information management throughout all operational areas and an optimal level of system-to-system integration to create an unbroken data chain. It means finding an IT solution to integrate quality and supply chain systems, close the information gap between process automation and business systems, eliminate data islands within the manufacturing facility and support complex grade allocation and audit challenges.

Increasing emphasis on integration has led to the emergence of scalable, traceability software solutions and the concept of using a central layer between ERP and process automation systems. To be effective this central layer needs to be capable of interpreting the business rules and logic across multiple systems and operational areas and simultaneously integrating with legacy and standalone systems such as intake measurement, process automation, bar-coding, and laboratory systems. It needs to be capable of tracking and integrating all relevant data - on raw material and ingredient receiving, process manufacturing, packing, finished goods, dispatch and market place information - with quality and yields data. It needs to be food-specific, capable of being quickly implemented to meet current needs and of being easily adapted to respond to emerging needs.

Many of today's food processing facilities have LIMS (quality systems) that are isolated from raw materials / ingredients receiving, raw materials release into the plant, production monitoring and packing. The most critical component of an effective traceability system is the seamless integration of LIMS with the tracking of material and equipment and the full integration of laboratory data with all operational areas. The traceability mandate has made it crucial to deploy a laboratory system in the context of the entire manufacturing process, eliminate the risk of human error and seamlessly integrate quality data in real-time with each of the individual processes.

The key to traceability, rapid response and crisis management is speedy access to all relevant data. The implementation of a fully integrated traceability software solution is becoming a necessity for any company in the food industry.

More than Traceability

Mitigating risk and meeting compliance challenges are two reasons for implementing a traceability software solution, but there are other benefits that extend beyond simply meeting regulatory and customer requirements. These benefits include operational efficiency, better inventory replenishment and higher quality products.

The financial benefits of an integrated traceability system can be quickly realised through the availability of real-time data throughout the manufacturing process and the software's ability to facilitate a reduction in overhead costs, product yield management, optimising product values and supporting superior plant management.

Full integration of ERP, Traceability and Quality Management software and plant automation affords accurate information on stock availability, a comprehensive quality profile of all products manufactured, enhanced planning data and immediate access to information for plant performance analysis.

Real-time reporting provides the key manufacturing information needed to minimise waste, reduce downtime, maximise yields, control inventory and improve plant performance. Key areas for potential return include laboratory costs, waste product disposal costs, production costs, labour costs, and so on.

That's the subject of the SoftTrace White Paper "Traceability: The Carrot and the Stick!"
Why not request a copy at www.soft-trace.com

Traceability and Quality Management Software for the Food Industry

The SoftTrace suite of Quality Management and Traceability software modules has been designed specifically to meet the unique needs of the Food industry and manage quality throughout the entire manufacturing process. SoftTrace supports best practice to insure that quality and validation rules are adhered to and that the data chain from a traceability and quality point-of-view is always maintained:

– Full integration of all quality, manufacturing and business data in a single Quality Management and Traceability system.
– Full traceability from raw material receiving to finished product dispatch and the customer.
– Enhanced rapid response, product recall, crisis management and brand protection capabilities.
– Demonstrable compliance with national and international regulations.
– Increased customer confidence and satisfaction.
– A competitive edge in a commodity market.
– A comprehensive quality platform for process optimisation, product value optimisation, waste and cost reduction.
– Increased operational efficiency and profits.
– Lot specific inventory management and increased inventory management efficiencies.
– Elimination of paper based records.

The SoftTrace modules add up to a plant-wide data collection and management system that provides full product traceability and effortless, instant access to all data – forward and backward – from any point in the traceability data chain.

– Integration between SoftTrace Raw Materials and LIMS creates an unbroken traceability chain from the farm and active ingredient sources to quality control and release into the manufacturing process.
– SoftTrace In-Process extends the traceability chain from raw material receiving and active ingredient inventory to the in-process batches, bulk finished product and finished goods inventory. It captures in-process quality control data live on the plant floor. It integrates bulk finished goods and packing line data to provide a vital link between the bulk finished goods, their packing and manufacture. It provides instant access to detailed quality information on the batches of bulk finished product and packed finished product units.
– Full integration of SoftTrace In-Process and Inventory Management secures the production traceability chain by linking the process control sheets, packing, quality and inventory records. It provides a profile of the quality and grade of all finished goods to individual pack level. Traceability to the customer is maintained to unit level within the batch – completing the traceability chain from source to customer.