

The need for complete traceability in the Food & Beverage industry



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How technology is enabling the food and beverage industry to provide complete supply chain visibility.

**IFS White Paper by Mike Lorbiecki,
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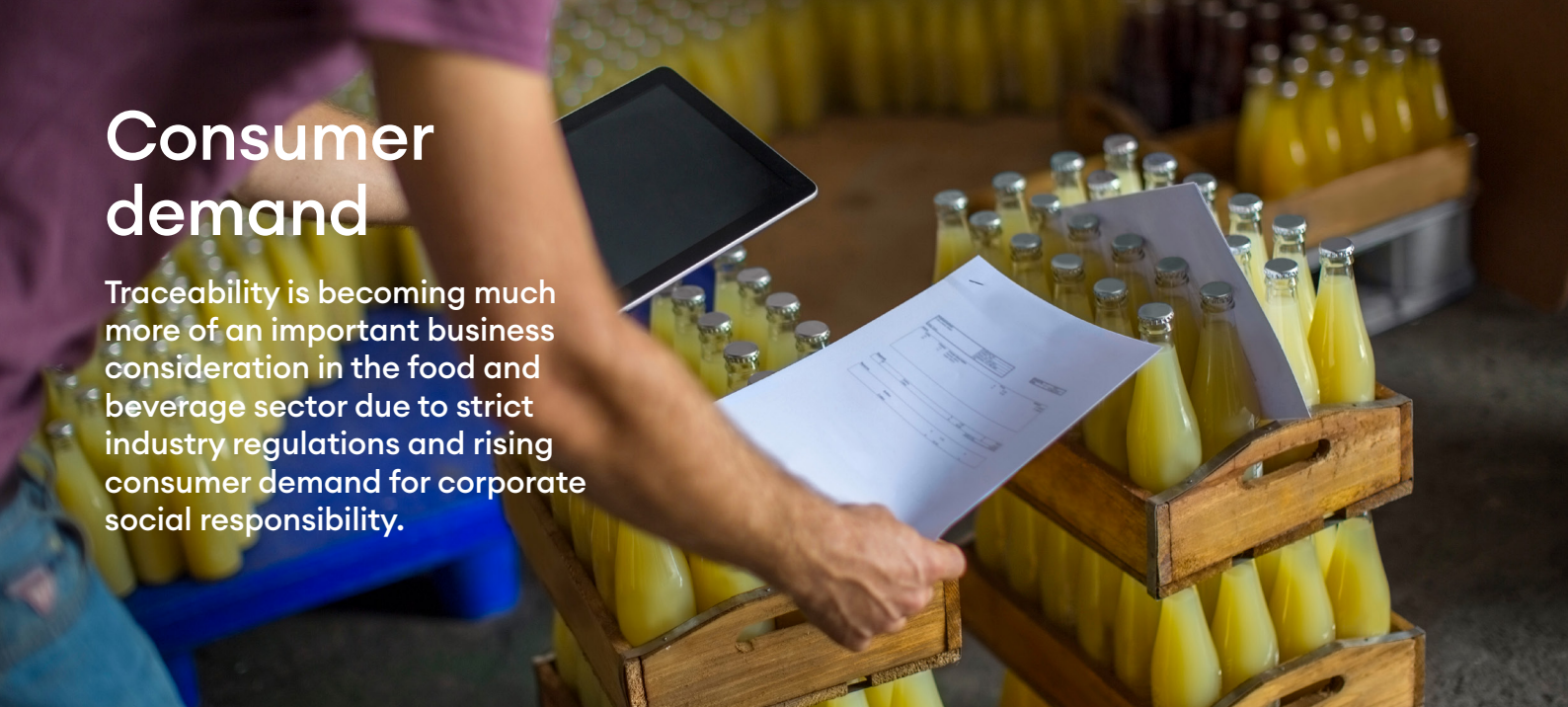


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Consumer demand

Traceability is becoming much more of an important business consideration in the food and beverage sector due to strict industry regulations and rising consumer demand for corporate social responsibility.



The key drivers of traceability in process manufacturing

The European horse meat scandal and the 2014 expired meat incident in China have highlighted the immediate importance of being able to trace, with certainty and in detail, products as they pass through the supply chain. In the US alone, food recalls and foodborne illnesses bear an annual price tag of \$77 billion, including discarded products, loss of revenue and healthcare costs. In the pharmaceuticals industry, the Drug Supply Chain Security Act introduced new regulations for manufacturers in 2014, making traceability even more important. On top of this, the damage caused by a product recall to a company's reputation can be even more devastating and much harder to recover.

Consumers are also becoming key drivers for change in the process manufacturing industry. Demand for socially responsible and ethical business operations is requiring brands to provide greater visibility into the origins of their products. Consumers are increasingly looking to where a product has been produced and if the product has been produced in an ethical or sustainable way.

Added to this pressure are international safety regulations that need to be complied with, as supply chains become more global.

In response to this, food and beverage companies in particular, need to show they recognize both consumer demand and regulatory restrictions by providing full transparency into every stage of the supply chain.

But is it possible to do this in a cost-efficient way while maintaining high quality operations?

Defining traceability

One of the biggest fears for process manufacturing companies is a product or ingredient being contaminated by an unknown source. The process manufacturing supply chain is long and complex. It includes international and domestically sourced processors, distributors, shippers and consumers. With all this complexity, companies still have to maintain proper regulatory standards while keeping high quality services, in what is an increasingly competitive market.

Enter traceability

Traceability verifies the history and location of a product by means of documented recorded identification.

The ability to capture data to enable traceability has been around for a long time—the 2002 Bioterrorism Act included a requirement for traceability systems to be used for all businesses involved in the food supply chain. However, manually entering data leaves the possibility for inaccuracy, and the technology needed to be able to automatically track a product in a cost-efficient way has not been available. Some traceability systems for small and medium-sized businesses simply track a few key ingredients back to a single point in the manufacturing process. Traceability across enterprises or entire supply chains has turned out to be a real challenge.

Requirements vs the three challenges

The **first challenge** is the technology used to label and trace products. Labels need to be durable and reliable enough to survive every step in the distribution process. They also need to be cost-efficient; these labeling technologies need to be affordable for small and medium-sized businesses to offer the same visibility as the larger chains. The collection of data via sensors is not new in the process manufacturing industry—the technology has been used by companies for decades. The problem is that, in the past, data collection on a multinational scale has come with a price tag with no way of tracking every product at a reasonable cost.

The **second challenge** for process manufacturing organizations is consumer awareness. There is a rising demand from consumers toward corporate social responsibility—42 percent of North American consumers say they are willing to pay more for products and services from companies committed to positive social and environmental practices. Consumers want to know where their food came from, how it was produced and be able to check a product's journey from farm to fork. It is now much more important to buy from a brand they trust.

A **third challenge** is meeting the legislation and laws that surround the process manufacturing industry. The 2011 Food Safety Modernization Act (FSMA) and the European (EC) 178/2002 Act have become a primary driver for improved traceability in the food industry, while in the pharmaceutical industry, businesses have to pass stringent health and safety tests from organizations such as the FDA before their products are even allowed onto the market.

All this puts process manufacturing companies under more pressure than ever to shorten response times in the event of an outbreak, streamline their business processes, and keep consumer confidence in the safety of their products. To achieve this, organizations need internal software support to not only track, but be able to constantly review their traceability processes—and to be able to provide the necessary transparency that will enable them to access, analyze and share their data externally to consumers and industry officials.



Transparency challenge

Traceability across enterprises or entire supply chains has turned out to be a real challenge.

Three new and emerging technologies provide the solution

Technology advancements in traceability have allowed companies to log massive amounts of transactions and product information. Smart labels such as radio-frequency identification (RFID) and quick response (QR) codes are able to carry a lot more information than traditional barcode labels. But that poses another problem; where do you store this vast amount of data? And how can it be analyzed and used to achieve real business objectives?

Advancements in three key technologies—Internet of Things (IoT), big data and cloud computing—offer a solution.



Technology for Traceability

Three technological advancements are key to cost-efficient and reliable traceability measures—Big data, the Internet of Things and cloud solutions.

The Internet of Things—it can be a connected supply chain

The IoT revolution is reshaping modern process manufacturing supply chains with impressive business opportunities. Devices/objects can be connected anywhere at any time. Data can be collected and analyzed by anyone with access to the network. With IoT, simple labeling and identification technology now offers a viable, cost-efficient solution. Consumers are now able to scan a product label with an app on their smart phone and can immediately track its journey through the supply chain—giving companies the chance to show full transparency into their products.

IoT is heralding a new era, not just in the automated collection of data, but the analysis of it, too. Everything from the temperature of the transportation truck to the source of ingredients can now be recorded using IoT-capable devices. Product quality can be monitored as soon as the item leaves the field, factory or warehouse, giving companies real-time, automated and intelligent actions to ensure complete traceability.

IoT is being adopted by the process manufacturing industry as IP-enabled sensors, and the means of transmitting and distributing the collected data is become more available and affordable. It is no longer just large companies that are able to use device connectivity for traceability—smaller and medium-sized businesses can now demonstrate an increased level of traceability to gain a competitive edge in the market. Cost measurement and transaction quality can be efficiently managed with the use of IoT to provide an affordable automated traceability solution with a quality guarantee.

To profit from IoT, enterprise software must be able to capture actionable data, efficiently and in real time. IFS incorporates an IT infrastructure that collects data from devices and triggers actions in the system to automate processes and make smarter business decisions. IFS recently acquired Finnish company MainIoT to offer its low-cost, industry-focused solutions for businesses to take full advantage of IoT for traceability.



Big data means clear traceability – fast

Complete Visibility

Food contamination costs the global economy \$55 billion per year, and, in the past, it was difficult and time-consuming to find the source. By using big data, organizations in the process manufacturing industry can now see exactly where the problem came from and stop it from continuing further down the supply chain.

A connected supply chain means the collection of more and more data. Big data, as it is often called, is now seen as a strategic business tool, especially in the process manufacturing industry, where companies are seeing real benefits for traceability. Food contamination costs the global economy \$55 billion per year, and, in the past, it was difficult and time-consuming to find the source. By using big data, organizations in the process manufacturing industry can now see exactly where the problem came from and stop it from continuing further down the supply chain.

With the ability to access and analyze data collected from a ‘connected’ supply chain, businesses can react to unscheduled and unplanned events as soon as they happen. This means that if a contaminated part or product is identified during a stage in the supply chain, the offending material or ingredient can be identified, tracked and traced, which was impossible before the emergence of big data analytics.

IFS connects every step of the supply chain for real-time traceability and monitoring, ensuring efficient product delivery and quality, as well as compliance with food safety standards.

The R&D facility at IFS Labs is continually developing new technologies which help organizations manage data in a number of areas. One of its latest research projects is IFS Pulse, a developmental dashboard for IFS that provides real-time interaction of all the key business data streams. This offers granular detail on user activity at any given time. IFS Labs is adding the capability to go further than simply collecting data, allowing organizations to process and action data insights to drive business benefits.

But then comes another question, one particularly relevant to smaller and medium-sized companies in the food and beverage industry whose IT budgets are not large: Just how do you store and manage all of this important data?

This is where cloud solutions come in.

Cloud solutions



Supply Chain Visibility

An agile and responsive ERP system is needed to incorporate these three technologies to give manufacturers a 360-degree view of their supply chain.

Food and beverage companies can now benefit from fully managed cloud solutions where the software provider will manage everything from the cloud infrastructure and operating system, to the database and applications used for traceability. This means organizations can focus on supporting business requirements and objectives rather than admin-heavy tasks, such as inputting and storing data, so more time can be spent on important operations.

IFS Managed Cloud is one such solution which introduces agility, improved security, and reliability at a level that would be expensive to achieve for any business in the food and beverage industry. Businesses can link product information to a range of internal company reports via the cloud and then synchronize with a central database, which can be easily accessed via smartphone, tablet or smart device from any location at any time. It is this cloud deployment that allows companies to implement a fully traceable and future-proof supply chain solution designed to reduce complexity, risk and cost.

With cloud solutions for traceability, companies can achieve multi-enterprise, 360-degree visibility into every step of the supply chain, from manufacturing to delivery, with different members of each stage exchanging traceability information.

Future Technology

In the future, we will see even more devices capable of enabling traceability.

Traceability—Process-driven ERP systems needed

To achieve this level of visibility across the entire supply chain, these three technologies need to be integrated into an agile and adaptive supply chain solution, capable of delivering all of these developments in your industry.

A properly aligned ERP system, designed with the process manufacturing industry in mind, will play a significant role in the effectiveness of traceability.

The ERP system has to be broad enough to log transactions along the entire supply chain, but also deep enough to offer industry-specific functionality that is able to log material movements, and analyze results and preventive actions. With a broad footprint of functionality for full visibility and quality management, the ERP system can make adhering to strict industry regulations a simple task.

IFS uses inter-connected ERP systems, capable of communicating with IoT-enabled devices to track and trace products through every step of the supply chain—a low cost solution which maintains quality assurance. IFS Managed Cloud with Microsoft Azure is able to upload automated information through IoT enabled devices—saving time, cost and risk of human error. By using IFS cloud solutions, businesses can react to issues and changes in the supply chain much faster than before, reducing the threat of recalls and health risks.



Unlike other, disparate ERP systems, which separate the different processes in the supply chain, IFS Supply Chain Management™ software gives companies a 360-degree view of their supply chain for full visibility into the origins and delivery of all products. IFS ERP used within the supply chain enables easier integration of emerging technology, such as big data analytics and IoT, for tracking information that is fed back to cloud-based services. This supply chain functionality includes a demand forecasting solution for better stock control and management, multi-site logistics and inventory lifecycle management for better overall visibility, as well as mobile apps for barcode scanning and inventory traceability.

IFS is witnessing rising interest in traceability systems from companies in the process manufacturing industry—around 25% of current IFS customers are collecting transactional data on a daily basis. This is predicted to increase to 80% in next five years because of increased availability of IoT technology and the subsequent decrease in cost.

Traceability going forward

In the future, we will see even more devices capable of enabling traceability. These devices won't just store the data, but analyze will it in order to help reduce operating costs, and adhere to strict industry regulations and consumer expectations. Technology advancements in cloud solutions, big data and IoT are still relatively new to process manufacturing, so things aren't going to happen overnight. The next few years will be the time for businesses to watch and learn—and be prepared.

Companies will need to spend this time putting a strategy in place for the deployment of this technology with an ERP system that can support them every step of the way.

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About IFS

IFS develops and delivers enterprise software for companies around the world who manufacture and distribute goods, build and maintain assets, and manage service-focused operations. Within our single platform, our industry specific products are innately connected to a single data model and use embedded digital innovation so that our customers can be their best when it really matters to their customers—at the Moment of Service™.

The industry expertise of our people and of our growing ecosystem, together with a commitment to deliver value at every single step, has made IFS a recognized leader and the most recommended supplier in our sector. Our team of 4,500 employees every day live our values of agility, trustworthiness and collaboration in how we support our 10,000+ customers.

Learn more about how our enterprise software solutions can help your business today at ifs.com.

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