

Enterprise traceability system for food & beverage

The future of traceability: interoperable, modular, integrated, glocal

Tracking ingredients through production and distribution is complex due to the many steps from raw material to finished product. Ensuring **end-to-end traceability** and **high quality**, while meeting regulations and customer expectations, requires rethinking each value chain step with **digitization, interoperability, automation, system integration, and real-time** data acquisition.

The large amount of data collected not only allows for better management of information on how materials and semi-finished products move along the value chain, but also enables informed decisions aimed at continuous process improvement.

Key Trends

\$4,8BN

Expected growth for traceability solutions by 2029.

+4,3%

The projected growth of the food market in 2024.

+5,3%

The average growth expected for the food market by 2028.

SOURCE: STATISTA

A **Glocal Traceability system is therefore the first and most important step** for the supervision of the entire production and distribution process, through the automatic acquisition of all material movements in real time: from the processing of raw materials within the factory (Local level), to the serialisation of batches, to transport and delivery to distribution nodes (Global level).

The Value of Technology's Impact

Composable Business Models

A modular approach to the development of enterprise traceability systems allows supporting its evolution over time by, for instance, integrating different **enabling technologies** (IoT, Digital Twin, AI&Advanced Analytics) with the Manufacturing Execution System (MES) to meet specific vertical needs. A traceability system, based on **microservices architecture**, deployable on premises/hybrid, compatible with containerisation (Kubernetes), and compatible with containerization (Kubernetes) and messaging protocols (MQTT, AMQP), helps reduce the overall impact of future evolutions.

AI-Driven Value

The collection and analysis of data from the value chain provides insights to support **data-driven decision making**. **Interactive dashboards** allow the various stakeholders (quality, production, management) to navigate the data intuitively, observe current phenomena from different perspectives, create and distribute reports. Using virtual assistants based on **generative AI**, it is also possible to query datasets in natural language and obtain timely and relevant answers. **Machine Learning algorithms and AI solutions** allow to simulate future scenarios and identify corrective preventive actions, but also to increase the efficiency of routine processes and activities.

Responsible Productivity

Rationalising the supply chain through a collaborative and connected **supply change management** strategy that manages the entire production flow from raw materials to the final product reduces costs, waste and cycle times, increasing product visibility and quality levels. The **MES** tracks information from machinery and employees in real time, reporting defects and non-conformities and identifying their causes. **Serialisation and Track&Trace** technologies enable a holistic view of the supply process, supporting the evolution and competitiveness of the value chain.

Our Toolbox



Our Impact

