

TOP 5 SOFTWARE CAPABILITIES FOR ENSURING FOOD SAFETY

How can manufacturers minimize food safety risks?



WE'VE ALL SEEN THE HEADLINES:

Dairy products recalled due to Salmonella.
Beverages recalled for potential contamination with cleaning solutions.
Plus, ongoing lettuce issues due to possible adulteration with Listeria monocytogenes.
And so on...

Food safety concerns continue to be at the forefront of public attention, due to high-profile product recalls. In today's age of transparency and globalization, ever-increasing consumer awareness, and evolving government regulations, manufacturers continue to take increased ownership for food safety to protect their consumers and their brands.

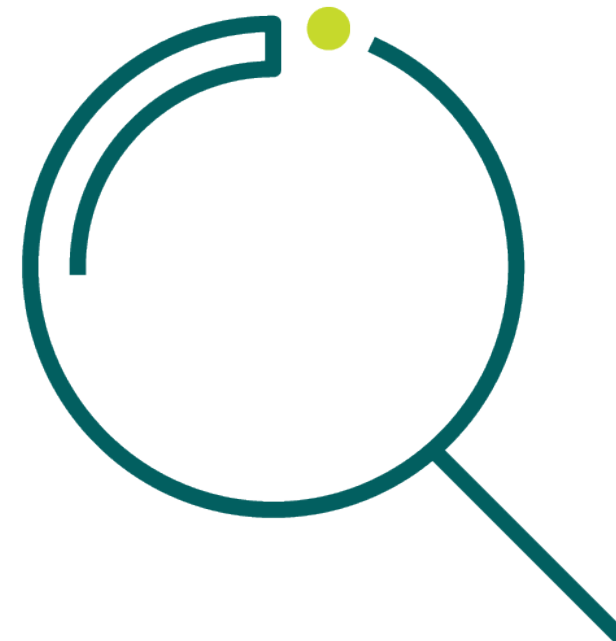
Let's explore the fully integrated, Internet of Things (IIOT)-enabled, end-to-end software capabilities that are fundamental to a manufacturer's food safety approach to optimize quality and minimize risk. Forward-looking manufacturers that develop and implement solid, integrated strategies with the right technologies can consistently deliver high product quality, which in turn, drive productivity savings.



#1 PREVENTION IS THE CORE GOAL

In the past, food manufacturers focused their efforts on minimizing the impact of a recall if it occurred through swift response and communications. Identifying and isolating tainted products through traceability and managing damage control were the key goals to avoid any further potential harm to consumers and to minimize the impact of lost profitability and negative publicity.

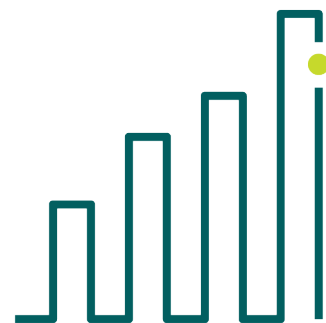
Today's leading food manufacturers have made the shift to recall prevention by building safety upfront before products reach consumers. These technology-savvy manufacturers improve food safety during production with critical software capabilities that leverage real-time, actionable knowledge and provide insight and analytics for enhanced control and consistency.



#2 A COMPREHENSIVE, INTEGRATED APPROACH

Regulatory agencies and retailers around the world are increasing their focus and requirements for preventative strategies, and food safety and quality programs are placing greater emphasis on better processing practices, escalating initiatives surrounding quality. A holistic, integrated plan allows for more control across production and closer collaboration between other key stakeholders in the food industry—including suppliers, producers, customers, regulators, and consumers.

A comprehensive approach that targets risks and ensures food safety through real-time operational intelligence, trending capabilities, rich analytics, electronic standard work practices, and powerful traceability helps you gain the deep operational insight needed across production.



Improving quality and food safety leads to higher productivity, reduces waste, and reduces cost.



Integrating these capabilities allows you to predict when issues are likely to occur and proactively take real-time corrective action when the process

digresses from specifications—ensuring consistent high quality and food safety, which in turn, tie into productivity savings.



#3 CRITICAL SOFTWARE CAPABILITIES

Real-time, mobile intelligence enables anywhere, anytime decision-making

In today’s mobile environment, it’s imperative to deliver relevant information to operators and other key decision-makers wherever they are.

Software that delivers real-time operational intelligence puts the right information in the right hands—providing key decision-makers with contextualized information based on their role and job location for better, faster decision-making. It helps address the challenge of making sense of the myriad of data available in today’s operations and significantly improves the way industrial operations work on the plant floor.



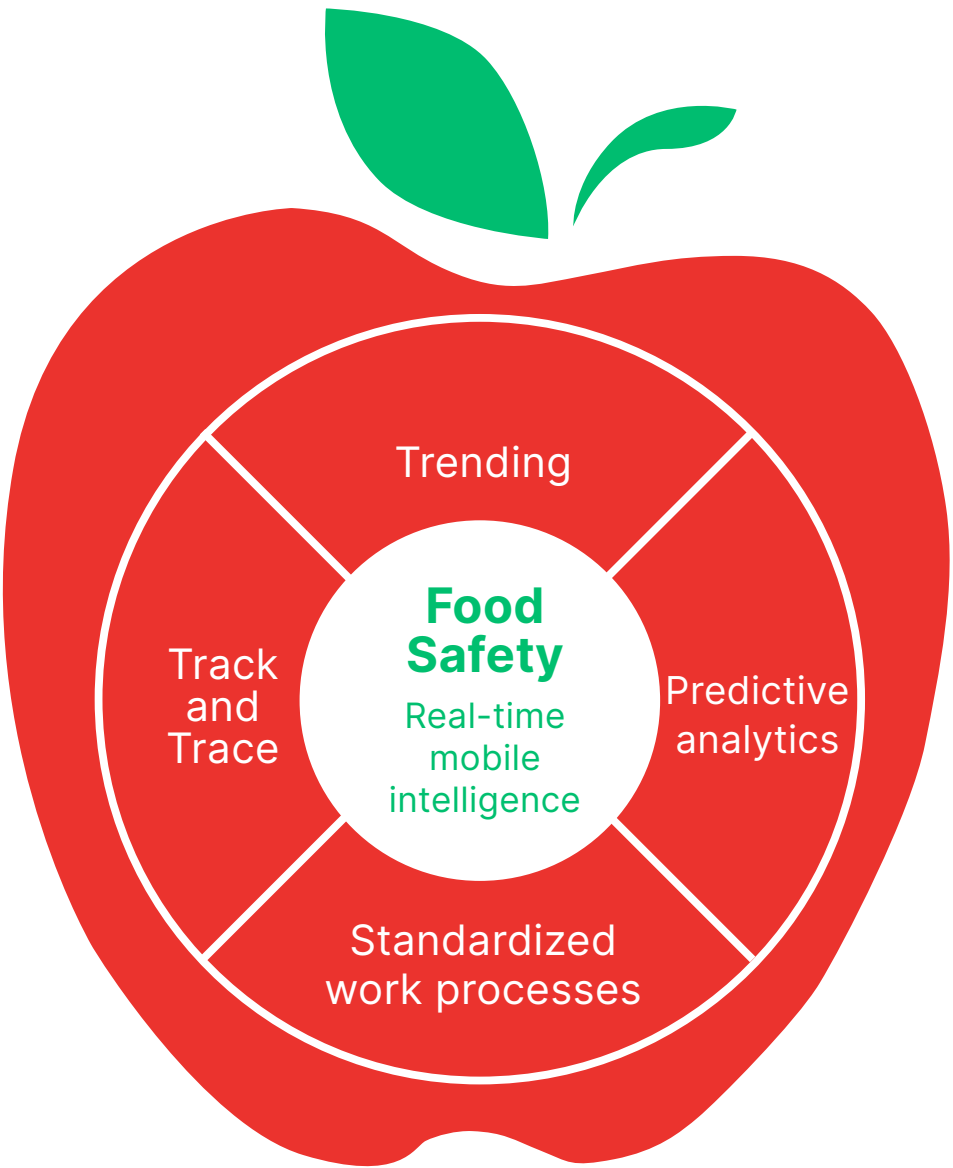
Access to real-time and geo-intelligent information and data enables operators to make better, faster decisions across the manufacturing plant as problems arise.

Trending and analytics help eliminate the root cause of product risk

The system assures “right the first time or first pass quality.” This is a metric that most consumer goods factories measure daily.

For example, temperature trending led one food manufacturer to discover that its oven temperatures were not consistently being met for its product, increasing product safety risk and requiring corrective action.

Trending data provided the critical intelligence needed during the process before it reached the failure limit, enabling operators to adjust the ovens “on the fly” to compensate for the temperature drifts and ensure product safety.



#4 PREDICTIVE ANALYSIS STOPS PROBLEMS BEFORE THEY STOP PRODUCTION

Understanding patterns and relationships between various sets of data such as temperatures, speeds, pH levels, and humidity—rather than compartmentalizing potentially at-risk products using post-production testing—can help eliminate the true root cause of product risk. orci.



Predictive analytics can prevent quality issues before they occur

Real-time predictive analytics are vital to help you understand what could happen based on trends, or if there are parameter changes, provide critical decision support to foresee issues before an event occurs. Advanced software with predictive analytics may leverage robust modeling engines and multivariate analysis to preempt alarm and failure events based on historical models—enabling “active avoidance.”

In a real-case scenario, a U.S. dairy company used predictive analytics software to reduce spoilage in its dry product. By looking at content moisture, dry time, and several other process parameters, it was able to predict the product’s final moisture content. The dairy was able to reduce average drying times while assuring product safety.

The centerpiece of any robust food safety program is standard operating procedures (SOPs), which help ensure that operators consistently adhere to recipes and comply with Hazard Analysis and Critical Control Points (HACCP). Industrial workflow or work process management software enables manufacturers to digitize manual and automated work processes, instead of relying on static paper trails or a binder at an operator station. Addressing the need for better operator guidance, digitization helps employees follow SOPs and work instructions with greater precision and fewer errors.

For example, one food manufacturer implemented an eSOP solution and gave the data to its process improvement team. The team discovered that the same tasks were taking different amounts of time to perform depending on the operator shift, which pointed to the need for better training. The team also discovered that moving through the production mix worked better in one direction than others; for example, reducing bottle size was faster and easier than increasing bottle size during changeover.

Electronic work instructions help manufacturers gain the agility and speed needed to efficiently produce many different products on the same line without changeover delays—enabling the recovery of valuable manufacturing time, consistent product quality, and reduced product waste excess inventory, all of which are critical to a better bottom line.

With today’s challenges of recruiting and retaining qualified labor, food and beverage processors must find ways to optimize how plant floor workers use their time.

Software can aid ongoing plant staffing challenges with the following benefits:

- Recruiting and retaining staff: Young employees expect technology that makes their jobs easier and improves their chances of success.
- Turnover rates: Factory floor software supports newer employee training and ensures staff members have information at their workstations to resolve line issues. Less dependence on tribal knowledge contributes to higher levels of employee safety, food safety, and productivity.
- Technology serves as a virtual “andon cord” or visual display that allows employees to highlight issues and escalate them to supervisors and managers.
- Employees expect the same or better technology at work as they had at school or home.

Workflow software is a powerful tool because it electronically guides operators through step-by-step instructions. You can ensure that production complies with defined processes—through validated entry—capturing data for analysis and historical records. It can help automate and manage HACCP monitoring, integrating production work processes with real-time HACCP testing, and enabling faster response to compliance issues.

Workflow software with mobile alarm response management helps you:

- Automatically and dynamically respond to production problems and events, while monitoring alarms and out-of-spec conditions from multiple systems
- Improve production processes for increased food safety
- Avoid the number of nuisance alarms that distract the team

Traceability enables tighter controls across the supply chain

Many variables can affect the availability and reliability of data on the plant floor and throughout the supply chain, which can be difficult to track and trace. While most solution vendors apply traceability solely for minimizing the impact of recalls after they occur and aiding customer complaint investigations, manufacturers that instead use traceability information to improve food safety can work to prevent recalls.



Software that offers rich traceability capabilities allows you to trace a product throughout every step of the manufacturing process and identify its exact materials and quality characteristics. It allows you to control the flow of product between equipment and manage in-process inventories in real time with greater transparency, and hence safety, between production orders.

You can leverage such software to integrate data and trace the complex batches, continuous processes, sub-processes, components, or by-products, so you know the origin and destination of all incoming materials and outgoing finished goods—improving food safety by leveraging raw material intelligence. By tracing raw materials to finished product, you can establish tighter controls to safeguard the supply chain.

Consumers and customers are increasingly concerned about the carbon footprint of the goods they purchase. A product traceability system that can track the whole farm-to-fork supply chain and assign carbon intensity to each step will be a future best practice.

Traceability speed as a competitive advantage

In product traceability, “one forward, one back” has become the minimum regulatory expectation. While most companies have capability in this area, the ability to conduct a faster trace can become a competitive advantage.

Some current systems can be cumbersome and require staff with deep operational knowledge of the company’s data management systems to successfully complete a product trace. Working across multiple systems can add hours to a product trace and potentially reduce the accuracy of the trace, which can then increase the scope of any product recall.

A best practice is to be able to trace a product (one forward, one back) in two hours or less. Many food companies struggle to do this.

In addition to one forward, one back traceability, consumers and customers are focused on the farm-to-fork supply chain. While it is not a regulatory requirement to identify supplies from specific farms, consumers are looking for more transparency as to where their food is coming from and possibly reward the companies that can provide more information on their food production practices.



#5 THE POWER OF INTEGRATED CAPABILITIES

With prevention as the core goal, each of the five critical software capabilities discussed plays a distinct role in minimizing food safety risk. Leveraging all five capabilities—as opposed to one or a select few—provides the most advantage as the insight gained from each becomes exponentially more powerful as it builds on the intelligence provided by the other critical capabilities.

Each component enables you to gain a more holistic view into the factors that impact food safety and to take a proactive approach that targets specific risks—ensuring the highest level of quality throughout production, even prior to when materials reach the production facility.

Minimize food safety risks

- Put the right information in the right hands at the right time with real-time, mobile operational intelligence
- Proactively recognize data trends and understand patterns and relationships
- Leverage real-time notifications of process upsets for immediate corrective action and Identify process deviations and predict issues before they occur to enable “active avoidance”

Enhance process control and consistency

- Digitize automated and manual work processes
- Enable faster, more accurate responses to compliance issues, control product flow with greater transparency, and trace raw materials back to their origins.

One global pet food manufacturer realized savings of more than \$200,000 annually on a single SKU in one plant by leveraging the latest software capabilities. Addressing its need for better visibility into its operations to drive quality and efficiency, the manufacturer implemented GE Vernova’s Proficy software, which provided productivity and quality data by SKU on the lines from all shifts.

As a result, operators could make decisions such as formula adjustments based on real-time operational intelligence and input information at the point of production—ensuring consistent high quality and food safety.

Key benefits:

- Increased uptime, reliability, and productivity with an overall equipment effectiveness (OEE)
- Cost savings of \$0.01 per case on one SKU, and reduction of \$200K+ per year on one SKU



ARE YOU READY TO TAKE THE NEXT STEP?

With increasing awareness of food safety issues and globalization of the food chain, consumers, retailers, and regulatory agencies are demanding ways to ensure safer food. The focus for manufacturers is prevention, and the need to optimize product quality and minimize food-borne hazards across production and the supply chain is greater than ever before.

Only by establishing a holistic, integrated strategy with the right set of software capabilities can you leverage the critical insight, consistency, and transparency needed to identify and address potential food safety issues while products are still within the factory walls. Technology is a critical enabler for tighter real-time controls to help safeguard processes and prevent quality issues—increasing consumer confidence and protecting your product brand.



Set the right food safety strategy that focuses on prevention. Let GE Vernova help you build a safer, more profitable food production environment.

Proficy Smart Factory (MES) is a suite of on-premise and cloud solutions that transform your manufacturing business through insights and intelligence powered by data integration, IIoT, machine learning, and predictive analytics.

By bringing together the digital world with the physical world of manufacturing, Proficy Smart Factory can deliver holistic performance management for today's connected enterprise. It allows you to:

Key benefits:

- Achieve centralized, remote, and mobile operations with real-time KPI visibility and dashboards
- Improve OEE and quality with analytics
- Improve production scheduling to increase productivity and customer satisfaction
- Consolidate and transform manufacturing data to the cloud for increased visibility and value
- Optimize at enterprise scale with cloud-based predictive analytics
- Leverage the talent needed to support successful operation



ABOUT GE VERNOVA'S PROFICY® SOFTWARE & SERVICES

GE Vernova's Proficy® Software & Services empowers teams, illuminating the path to a greener, more profitable future. Our proven industrial software accelerates innovation, enables connected workers, and operationalizes sustainability. We're driving measurable progress for over 20,000 diverse customers around the world.

The Proficy portfolio includes cloud-based and on-prem HMI/SCADA, MES, industrial data management, and analytics. Our software solves the toughest industrial challenges and is used in applications such as discrete, hybrid, and continuous manufacturing; utilities automation; metro transit; and much more. Proficy offers architecture flexibility including single machines, remote substations, and complex, distributed networks that span multiple factories and geographies.

[Explore Proficy Software & Services](#)

