

GE Capital



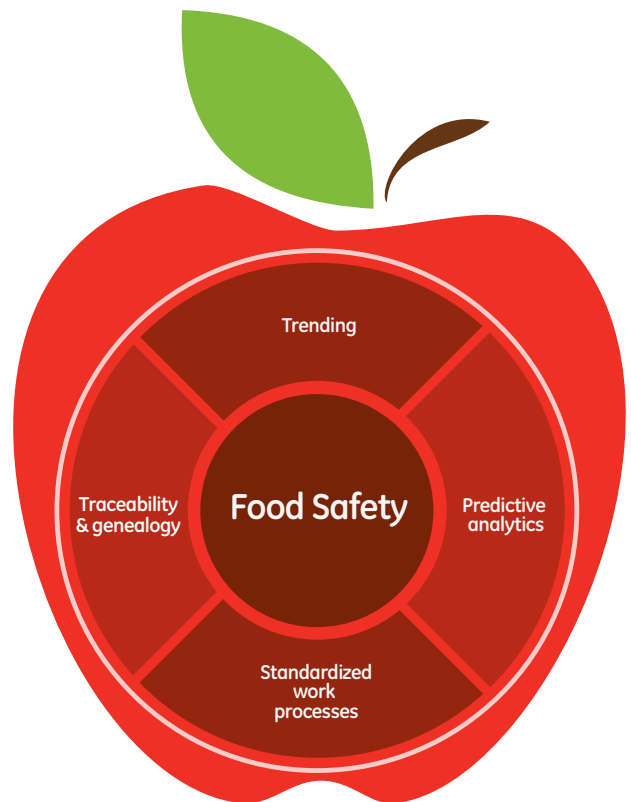
Industry Research Monitor

Food, Beverage & Agribusiness

Food safety is a top concern for industry executives as cited in GE Capital's recent CFO Survey. In this edition of the monitor, we will explore how technology is utilized to ensure product safety while improving operational efficiencies.

CONTENTS

Advanced Technologies	2
Q&A with Sean Robinson, GE Intelligent Platforms Global Food and Beverage Leader.....	3
Customer Experience.....	5
Example Application	6
Resources.....	8



Advanced Technologies for Improved Food Safety

Everaging advanced technologies can be critical for food and beverage manufacturers to ensure food safety while improving operational efficiencies.

CFOs cite food safety as a top concern

According to the latest GE Capital CFO Survey, 56% of food and beverage CFOs cited product safety as a top concern, second only to commodity pricing (73%). 54% are considering employee training, and 34% are contemplating using traceability software to improve and monitor food and beverage safety.

Industry executives are keenly aware that consumers demand a safe food supply, and seek brands they can trust. Recent industry headlines are a reminder that food safety is critical to protect consumers as well as the reputation of a company. The Center for Disease Control estimates that each year in the U.S., approximately 48 million get sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases. Taking necessary precautions can help food and beverage companies mitigate this risk.

Utilizing technology to improve performance

Technology, primarily software, is available to assist food and beverage companies from both an operational perspective and a quality/safety perspective. Not only will the company have improved safety procedures, it may also benefit from improved product quality, reduced costs, and increased productivity.

When building a food safety program, it is important to design out the risks and implement strong procedural controls for potential food safety issues that cannot be addressed by engineered solutions. A fully integrated solution allows a company to use their manufacturing data to address safety and operational efficiency together, rather than addressing each of these needs separately. Three key areas for food safety are prevention, intervention and recalls.

There are several key areas where software will help you prevent a food safety incident. In raw materials receiving, quality ingredients are critical. Perishable materials need to be monitored so they are used within their usable time frame. Real time operator guidance, including trending and alarming, provides for consistent recipe execution. With batch reporting, a manufacturer can review batches side by side as they are being made, or against prior batches, enabling real-time reviews. For example, this process would detect any foreign objects.

If a food safety incident does occur, intervention is critical so that the unacceptable product is rejected and does not reach the consumer. Software can guide equipment operators through equipment cleaning or inspections. This makes it easier to follow proper procedures and also captures information from the process. Software also analyzes food during processing and delivers real-time information, so that issues can be addressed immediately. Batches that may have a quality problem can be isolated, and then tested and assessed for conformance.

In the event of a product recall, genealogy capabilities help to identify the raw material, equipment, production lots and sub lots that were involved, which is important for understanding the impact on a company's products and supply chain.

FOODBORNE ILLNESS TRENDS

Incidences of laboratory-confirmed bacterial infections in 2010 as compared to 1996-1998

E. COLI O157	↓	44%
LISTERIA	↓	38%
CAMPYLOBACTER	↓	27%
SALMONELLA	↑	3%
VIBRIO	↑	115%

Source: Center for Disease Control

Q&A With GE Intelligent Platforms

Q. Can implementing food safety measures lead to increased profitability?

A. Properly integrating quality management, food safety and operations systems together provides additional opportunity to spot process or ingredient issues that lead to material losses and waste of production capacity. Lab and Critical Control Point measurements can be leading indicators of process instability or inconsistent execution. And the reverse is true — excessive downtime or faults in a key process or packaging machine can be the harbinger of a food safety risk. Making support for food safety a natural part of their automation and operations management strategy provides benefits for many stakeholders.

Brand strength is not just a function of satisfying the consumer's need or taste — it's also a matter of trust. Retailers, food-service providers and even consumers reward producers that can bolster that trust. We see retailers using food safety practices as a differentiator when they select brands to stock and sell. We also see consumers flocking to products that provide transparency into ingredients and even quality data as an extra benefit. A robust, auditable food safety system is already key to securing and holding access to some retail channels and even whole countries.

Q. What impact will new food safety regulations have on food and beverage processors?

A. It's actually worth noting that for years, the need to share detailed quality (and food safety data) with trading partners has already existed. Wal-mart and other retailers require compliance with stringent, standards-based food safety regimens. Additionally, many processors require very detailed data about the ingredients and the packaging materials that they source from suppliers.

There are incremental costs, but often much of the data that customers need for a very robust food safety system already exists in the equipment, automation and systems that produce the food. Our approach (and software) accesses that existing data, and makes use of it "again".

Q. What are some examples of software capabilities that are critical for a robust food safety system?

A. There are several elements including:

1. Data collection, trending and alarming

This is the foundation for making food safety a natural part of operations. Following Hazard Analysis and Critical Control Point (HACCP) programs has equipped many processors with a detailed list of very specific data points that they need to monitor (Critical Control Points). These data points cover a variety of things: temperatures (both ambient and process/cooking temperatures), lab results, line inspection results, and so on. In many cases, paper-based logs can be eliminated when producers turn to existing production or lab equipment and use data that is created there. This has the benefit of making it easy to present not only current values for a Critical Control Point, but also trends and comparisons to other periods, locations or products. A "live" system will also allow the producer to automate certain types of alarm and escalation procedures: software can automatically send notifications to line supervisors, quality managers and operators; pens and paper can't!

THE FOOD SAFETY MODERNIZATION ACT

This act, signed into law by President Obama in January 2011, directs the Food and Drug Administration to build a new system for food safety oversight, focusing on the prevention of food contamination.

INTERVIEW WITH



Sean Robinson
Global Industry Manager — Food & Beverage
GE Intelligent Platforms

Sean works with brand owners, material suppliers and contract producers in defining automation and information systems programs that support critical strategies such as sustainable manufacturing and food safety/brand protection. Sean brings over 20 years' experience in a variety of client management, technology consulting, and technology implementation roles.

Sean joined GE in 2006. He began his IT career in 1990, as one of the principals of a small software business. After that firm developed and licensed innovative new technologies in the area of finite scheduling, Sean held a series of roles in consulting, marketing and sales for other manufacturing-focused services and consulting firms.

2. Genealogy or Track and Trace

This is at the heart of risk management — being able to establish boundaries around known or suspected problems. To provide value beyond containing risk, though, GE's solutions solve tracking and tracing with enhanced capabilities. First, we “follow” materials along the “routes” they move through — from material receiving through storage to machine to machine — in a way that makes it possible to link the conditions and events that occurred at each step in the route. So the power of data collection, trending and alarming noted above is something that is brought to bear during production. Conditions or events that would indicate risk (a low cooking temperature, for example) are caught in real-time, and don't require a post-production test to be noted. Second, we follow “sub-lots” through some complex maneuvers! When a bulk lot of ingredients is broken down into multiple batches for multiple customers, traditional inventory tracking systems can “lose the trail”. And if the processor is able to recover from some issues by re-working partly produced goods, the tracking issue can be even more challenging. Solutions like GE Proficy® software resolve this difficulty, making it possible for the ingredients contained in complex products to be known with confidence.

3. Work Process Management

One of the big challenges processors face is ensuring consistent execution of production activities and surrounding tasks. Automated equipment is part of the solution, but many production (and food safety management) procedures depend on “people processes”. Proficy's Workflow software enables producers to define end-to-end work processes that mix automated and manual steps — and then to drive specific sequences of action (with operator acknowledgement!) against those processes. It also provides a framework to “push” instructions, reference material and other guidance to operators and supervisors. This not only ensures consistent execution, it makes it possible to capture the expertise of experienced workers in a way that systematically makes the next new employee as effective as the seasoned veteran.

Q. Can you provide an example of a company whose profitability increased as the result of a food safety project?

A. There is one story that I think illustrates the link between food safety and profitability very well: We have a dairy customer in China who implemented our quality management solution strictly as a matter of complying with China's new food safety laws. That installation of our software links raw milk information with both lab results and detailed data about how well production processes are running. After gathering data the customer found that the parameters they monitored to be sure of proper processing were also indicating issues with equipment where failures had not yet occurred, but were likely. This allowed them to perform maintenance and process tuning proactively, rather than after a breakdown. The net result: A 13% gain in throughput.

Q. With increasing globalization in the food industry, many companies are expanding into new countries. What are the key factors to consider for ensuring food safety compliance as a company moves into new regions?

A. The good news is that many jurisdictions and retailers have rallied around very commonly structured food safety regulations — so a producer who has embedded HACCP-style procedures will find it easier to sell into many regions. However, there are burdens of proof-of-quality/safety that come with each new export market. Systematizing HACCP with solutions like Proficy can reduce the administrative costs

PROJECT EXAMPLES — GE INTELLIGENT PLATFORMS

- A large, diversified dairy product manufacturer in Europe recovered capacity, improved yields, virtually eliminated costing errors and reduced utility costs while improving food safety.
- A major North American brewer found significant opportunities to reduce cost without disruptive capital investment — recipe and equipment analysis, based on a rich process and event record, yielded many areas to tighten execution and control of energy-intensive batching operations.
- A global food manufacturer has been able to reduce run-to-run quality variations and turn out consistent, repeatable products around the globe. Results include:
 - 10% reduced quarantine holds
 - 20% faster new product introductions
 - 2% increased productivity

and disruptions associated with satisfying growing numbers of regulators and retailers – an advantage that also helps secure market and channel access.

Customer Experience

Bolletje, a Dutch baked goods manufacturer, needed to solve a production issue: variation in the quality of its dough from batch to batch due to inconsistent process execution. The company turned to long-time partner, GE Intelligent Platforms, for a solution that would help them to not only improve quality, but also achieve better line of sight into inventory and have a way of tracing its products from the bakery to the store.

The selection and implementation of the Proficy® solution was initially driven by the company's Information Technology group who were looking for an integrated implementation with one interface and easy and actionable access to information. As the potential gains became clearer, Production took on overall project management, and engaged additional stakeholders. Management's goal was to make sure that they could bring new operators on board quickly and efficiently without a loss in productivity or quality. Shift leaders wanted less waste and more throughput.

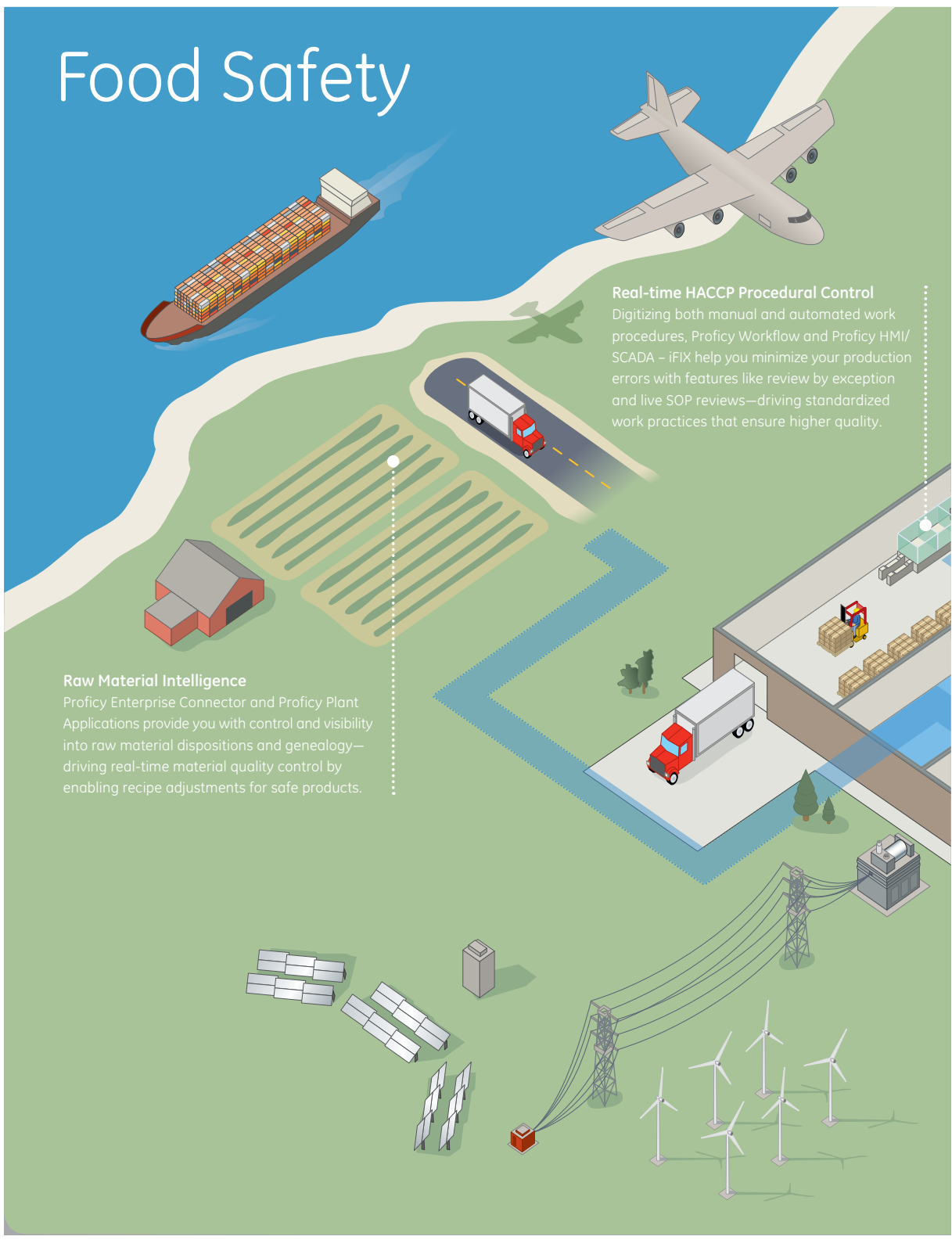
In 2010, the company introduced the Proficy solution as it installed new production lines used for baking crispbreads, or crackers, and rusks, or biscuits. Proficy made data collection much easier enabling capitalization of the information that was available via the lines.

Bolletje's plans also include improving inventory accuracy. The current system is based on an accounting practice called backflushing, where the company accounts for material usages based on counts of finished product. This approach can drive incorrect scheduling and production decisions. The company plans to use more visibility into the actual use of raw materials to improve materials planning, and get a more accurate understanding of material costs for each product line. Thanks to Proficy's integrated solution, inventory accuracy can be achieved while also enabling end-to-end traceability of ingredients, processing conditions and quality data – all linked to each production lot.

"We are still implementing elements of the solution, so the full results are a bit down the road. But already, shift leaders are very enthusiastic about the solution," said B-J Hudepohl, Production Manager for Bolletje. "They see less waste and new workers are being trained faster ensuring the expertise of seasoned operators is captured."



Food Safety



Real-time HACCP Procedural Control

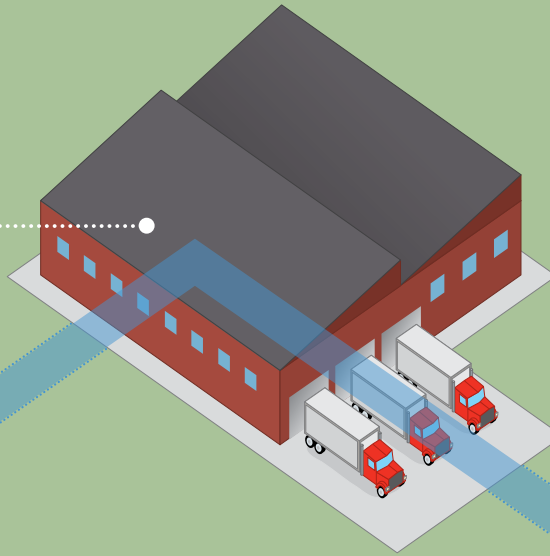
Digitizing both manual and automated work procedures, Proficy Workflow and Proficy HMI/SCADA - iFIX help you minimize your production errors with features like review by exception and live SOP reviews—driving standardized work practices that ensure higher quality.

Raw Material Intelligence

Proficy Enterprise Connector and Proficy Plant Applications provide you with control and visibility into raw material dispositions and genealogy—driving real-time material quality control by enabling recipe adjustments for safe products.

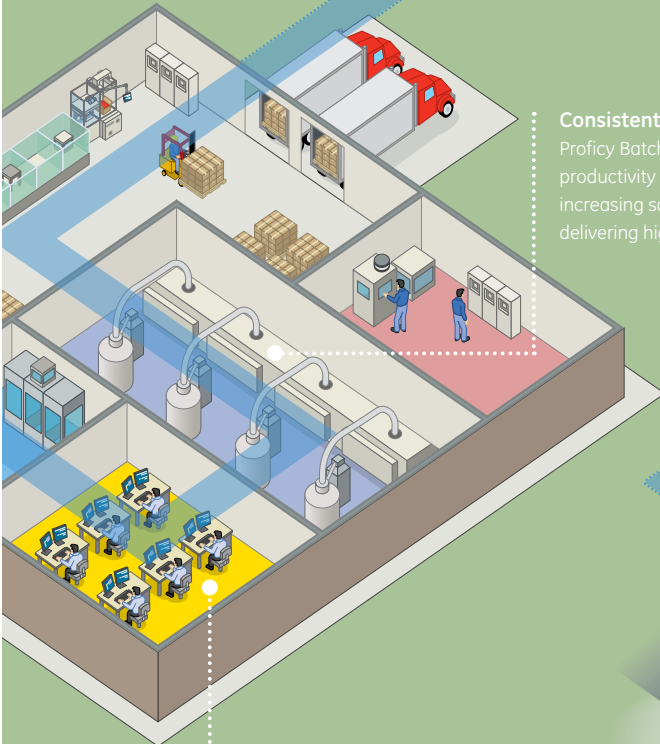
Track and Trace Delivered

Proficy Plant Applications' genealogy capability helps you track and trace all your products—reducing product recalls and enabling brand protection by minimizing costs and liabilities should a recall occur.



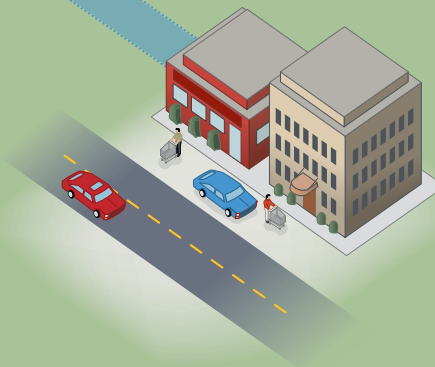
Consistent Quality by Design

Proficy Batch helps improve batch consistency and productivity of your key processing steps while increasing safety—improving production yields and delivering higher quality and safer products.



Proactive Brand Protection

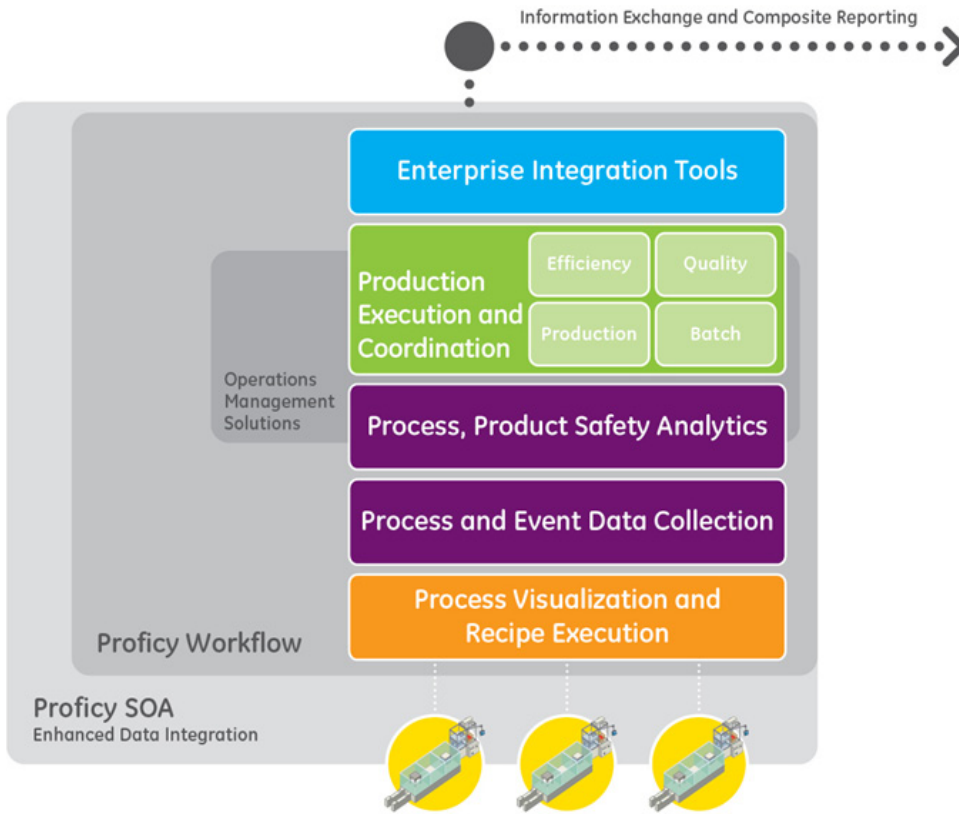
Proficy's analytical capabilities can help you protect your brand with production and quality data at your fingertips, enabling real-time proactive adjustments to improve food safety and minimize recalls.



Resources

About GE Intelligent Platforms

GE Intelligent Platforms is an experienced high-performance technology company and a global provider of software, hardware, services, and expertise in automation and embedded computing. We offer a unique foundation of agile and reliable technology providing customers a sustainable competitive advantage in the industries they serve, including energy, water, consumer packaged goods, oil & gas, government & defense, and telecommunications. GE Intelligent Platforms is headquartered in Charlottesville, VA. For more information, visit www.ge-ip.com.



Example of GE Intelligent Platforms Proficy Process System

GE CAPITAL — AMERICAS, STRATEGIC MARKETING, INDUSTRY RESEARCH TEAM

Loren Trotta 203-229-1877
loren.trotta@ge.com
 Food, Beverage & Agribusiness
 Financial Services

Richard Aldrich, CFA 646-428-7365
richard.aldrich@ge.com
 Chemicals & Plastics
 Metals & Mining
 Auto & Auto Parts

Scott Cohen 646-428-7242
scott.cohen@ge.com
 Consumer & Leisure Products
 Media & Telecom

Jeff Englander 646-428-7135
jeffrey.englender@ge.com
 Healthcare
 Industrial Products & Services

Kimberly Savilonis 480-565-6289
kimberly.savilonis@ge.com
 Franchise

Serena Tse 646-428-7249
serena.tse@ge.com
 Construction
 Transportation

Michael Zimm, CFA 646-428-7015
michael.zimm@ge.com
 Technology & Business Services
 Aerospace & Defense

Dennis Krause 203-229-1987
dennism.krause@ge.com
 Industry Leader
 Food, Beverage & Agribusiness

Disclaimer: Although General Electric Capital Corporation ("GE") believes that the information contained in this newsletter has been obtained from and is based upon sources GE believes to be reliable, we do not guarantee its accuracy and it may be incomplete or condensed. GE makes no representation or warranties of any kind whatsoever in respect of such information. GE accepts no liability of any kind for loss arising from the use of the material presented in this newsletter. This newsletter is not to be relied upon in substitution for the exercise of your independent judgment or legal advice.