

# How Technology can Improve Food Safety Management



**Market consolidation, changing consumer preferences and increasing government regulations are dramatically impacting manufacturing and business strategy in the food and beverage industry.** In this savagely competitive marketplace, companies must offer a greater variety of products to meet consumer demand. At the same time, they must consistently and cost-effectively produce high-quality and safe products.

**Quality and safety are two essential attributes for companies in the food and beverage sector.** And it seems that today, more than ever, the entire food and beverage production chain must constantly demonstrate its commitment to the quality and safety of the food and beverages it produces.





See some of the biggest pressures faced by F&B companies that directly or indirectly affect the quality and safety of products:

### **Competitive Scenario**

Producing quality products at the lowest possible cost is a major concern.

### **Multiple and Changing Products**

Be prepared to fulfill constantly evolving consumer demands.

### **Product Safety**

Consumer health injuries caused by unsafe products can result in significant harm to the company.

### **Customer Satisfaction**

Ensure the highest quality and service possible.

### **Supply Chain Integration**

Manage operations to ensure that production orders are scheduled and executed on time.

### **Compliance with Food Standards**

There are ever-increasing standards, initiatives and good practices that regulate management and activities in this sector.

# Food Safety and Management Systems

**Concern about food safety is the reason why there are Food Safety Management Systems (FSMS).** The FSMS provides a preventative approach to identifying, preventing and reducing food hazards. This minimizes the risk of food poisoning and makes food safe for consumption.

**A well-designed FSMS with appropriate control measures can help food companies comply with food regulations and ensure that food prepared for sale is hygienic and safe for consumers.**

There are several entities and initiatives with FSMS regulations for the market. Though they may have some differences, their core elements are the same. For now, it is just worth mentioning the biggest ones, divided into two groups:

- ISO 22000, containing HACCP (Hazard Analysis and Critical Control Points), GMP, Good Manufacturing Practices and PRP (Pre-Requisite Program)
- GFSI and its acknowledged standards: FSSC 22000, IFS, SQF, BRC and GRMS.



# Technology in service of food safety

Automating the food safety management system makes it easier to execute processes and procedures related to safety and quality standards and regulations.

**Now you will see how technology can contribute by supporting and automating the main steps in a food safety management system and the main business processes of an F&B industry, adding value to the final product and reinforcing the organization's commitment to health and consumer satisfaction.**

# Quality

Quality Management is a rigorous set of processes and techniques to measure, improve, and control product quality based on what is important to the customer. The goal of this approach is to bring procedures to defect-free levels by trying to eliminate variations in processes.

Companies can use software solutions to implement quality programs through process mapping, document control, risk assessment, performance metrics, employee training and ongoing auditing, as well as by recording and reporting issues and nonconformance incidents, performing cause analysis and assessing the resulting corrective actions.

A software solution lowers the cost of regulatory compliance by improving operational efficiencies in quality systems, creating a transparent environment for proactively identifying, tracking and resolving quality issues.

The screenshot displays a software interface for quality management, specifically focusing on a Non-Conformance Report (NCR) and a Fishbone analysis.

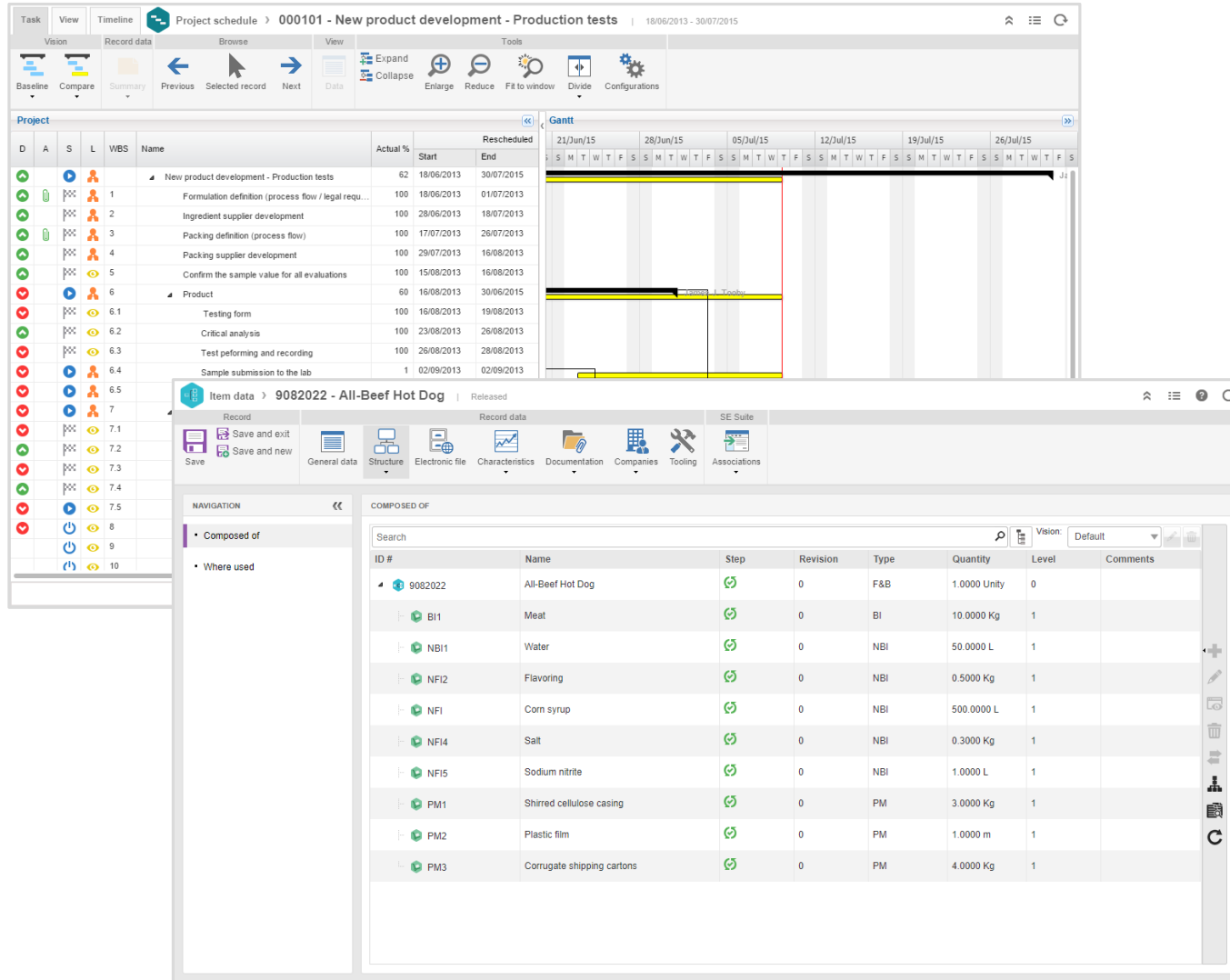
**Top Window: Non-Conformance Report**

- Header:** Activity execution > 000255 - Material out of specification | Execution
- Navigation:** Save, Notify caller, Analysis, Identification, Report, Form report.
- Incident Recording:** STARTER Tetsuo Kendo, DEADLINE OF THIS ACTIVITY 10/27/2017 08:00.
- Form:** Non Conformance Report. Includes fields for Date of NCR (10/17/2017), Control # (11553FR2), and checkboxes for Quality, Environment, Health and Safety, Process deviation, Performance, and Audit.
- Description:** Material out of specification. The component should contain gas exchange valve, however, the model submitted does not present the valve.

**Bottom Window: Analysis tools > 001 - Fishbone**

- Navigation:** Record, Edit, Organize, View, Tools, Selection mode, Bring to front, Send to back, Save, Delete, Data, Show vertically, Show horizontally, Save as image.
- Items:** General, Cause, Connectors.
- Fishbone Diagram:** A central horizontal line with arrows pointing to the right, leading to a box labeled "Grinding is not producing regular shapes of meat burgers". Causes are listed in boxes on the left and right, connected by arrows. Causes include: Lack of procedure, Procedure not updated, Inappropriate use, Equipment broken, Equipment calibration, Manpower (Employees not trained, High employee turnover), Unsuitable materials, and Poor quality ingredients.
- Details Panel:** Cause: Poor quality ingredients, Percentage: 65, Department responsibility, Description: Poor quality ingredients.

# Product Lifecycle



To provide multiple and changing products at an acceptable speed companies must have robust product lifecycle management. It is only by better managing their product lifecycles holistically that F&B companies can react with sufficient speed to market changes so as to preserve or increase revenues and profit margins.

An integrated Product Lifecycle Management (PLM) solution can simplify and improve the core processes that impact the development, launch, and ongoing management of products. It enables companies to accelerate innovation, leverage product launches, drive down product costs, and enhance product performance.

A software solution helps organizations to execute and improve the main processes in product lifecycle management, which include: **project and portfolio management**, to improve the effectiveness of their innovation efforts; **specification management**, to maintain full traceability of precise and complete product data across the entire product structure; **supplier management**, to preserve the visibility of supply chain entities and sourcing approvals; and **formulation and bill of materials management**, to ensure product integrity by better managing product formulations and reformulations.

# Supplier control

Food safety needs to be thought of as a chain and not as separate pieces. F&B companies must ensure the visibility and traceability of supplier processes, integrate suppliers in the quality and safety management process, and mitigate supplier risks.

A software solution must be oriented towards measuring supplier quality, delivery and service performance, as well as incoming/outgoing goods across operational and business processes. Software streamlines all inspection tasks: creation of forms and checklists, inspection scheduling, recording of results and tracking of corrective actions to completion.

The solution evolves the process of receiving materials from suppliers and prepares inspection schedules based on skip lot profiles driven by supplier rating performance. It also tracks and evaluates the quality of supplier goods in real-time, reducing defects in finished products related to poor supplier quality.

The screenshot displays a software interface for managing inspection data. The top navigation bar shows the current record: "000017 - Corrugate shipping cartons". Below this, there are tabs for "Record" and "Actions", with sub-tabs for "Save", "Undo last step", and "Send to next step". The main content area is divided into a "NAVIGATION" sidebar on the left and a "INSPECTION" main panel on the right. The "INSPECTION" panel features a green header with a checkmark and the word "Approved". Below this, there is a table with columns for "Characteristic", "Service center", and "Responsible". The first row shows "ES01 - Thickness" with a service center of "002 - Internal Laboratory". A "Specification" section below the table provides details: "Nominal value: 1.3 (USL: 1.5 / LSL: 1.2)" and "Measurement unit: Centimeters (cm)". A "Cycle 1" section shows a sample size of 11, with a bar chart indicating "Total accepted items: 9" and "Total rejected items: 2". The bar chart shows a green bar for accepted items and a red bar for rejected items. Below the bar chart, there is a table of 11 data points, each with a number and a value. The values are: 1.2, 1.3, 1.2, 1.2, 1.3, 1.6, 1.3, 1.7, 1.2, 1.2, 1.3. The value 1.6 is marked with a red 'X', indicating a rejection. The bottom of the interface shows a summary of the inspection: "ES02 - Color" with a service center of "002 - Internal Laboratory".

Characteristic	Service center	Responsible
ES01 - Thickness	002 - Internal Laboratory	

Specification:

Nominal value: 1.3 (USL: 1.5 / LSL: 1.2)  
Measurement unit: Centimeters (cm)

Cycle 1 Sample size = 11

Total accepted items: 9 | Total rejected items: 2

PPM 181,818.18

Item	Value
1	1.2
2	1.3
3	1.2
4	1.2
5	1.3
6	1.6
7	1.3
8	1.7
9	1.2
10	1.2
11	1.3

ES02 - Color

002 - Internal Laboratory



# Compliance management

The screenshot displays a software interface for managing audit criterion requirements. The top navigation bar shows the current context: 'Audit criterion requirements > 000021 - Welllys food management system | ISO 22000 - Food safety management systems | Execution'. Below this is a toolbar with icons for Record, Edit, Browse, View, and Tools, each with sub-functions like Save, Add, Delete, Previous, Next, Requirement basis, Import, Export, Expand, and Collapse.

The main area is divided into two panels. The left panel, titled 'Requirement', shows a hierarchical tree of requirements. The right panel, titled '7.2 - Prerequisite programmes (PRPs)', provides a detailed view of the selected requirement.

Requirement	Weight	CL	AO
ISO 22000 - Food safety management systems			
4 - Food Safety Management System	1		
4.1 - General requirements	1	😊	
4.2 - Documentation requirements	1	😊	
5 - Management responsibility	1		
5.1 - Management commitment	1	😊	
5.2 - Food safety policy	1	😊	
5.3 - Food safety management system planning	1	😊	1
5.4 - Responsibility and authority	1	😊	
5.5 - Food safety team leader	1	😊	
5.6 - Communication	1	😊	
5.7 - Emergency preparedness and response	1	😊	
5.8 - Management review	1	😊	
6 - Resource management	1		
6.1 - Provision of resources	1	😊	
6.2 - Human resources	1	😊	
6.3 - Infrastructure	1	😊	
6.4 - Work environment	1	😊	
7 - Planning and realization of safe products	1		
7.1 - General	2	😊	
7.2 - Prerequisite programmes (PRPs)	2	😊	1
7.3 - Preliminary steps to enable hazard analysis	2	😊	
7.4 - Hazard analysis	2	😊	
7.5 - Establishing the operational PRPs	2	😊	
7.6 - Establishing the HACCP plan	2	😊	
7.7 - Updating of preliminary information and documents specifying the PRPs and the HACCP Plan	2	😊	
7.8 - Verification planning	2	😊	

The right panel shows the details for '7.2 - Prerequisite programmes (PRPs)'. It includes a table with columns: Requirement, Evaluation, Occurrence, and Attachment. The 'Requirement' column contains 'Audit evidence' and 'Some required PRPs to meat production were not identified'. The 'Evaluation' column contains 'Conformity level' and 'Nonconformity - Nonconformity'. The 'Occurrence' column is empty. The 'Attachment' column is empty. Below the table is a 'Comment' field. At the bottom of the panel are two buttons: 'Confirm' and 'Confirm & next'.

There are dozens of federal, state, and industry agencies that oversee regulations and standards compliance for each sub-sector of the industry. Many companies in this sector are at risk of failing to comply with these various regulations, with a variety of companies cited every month for misconduct and fined for compliance failures. They risk massive product recalls and corporate losses in market value as a result of their negligence.

Compliance management must be taken seriously and a technology solution must support standardized processes and controls, training programs, enhanced traceability handling, comprehensive recordkeeping, enhanced labeling, document management, and internal audits.

# Risk and safety

Risk management for food and beverage companies basically focuses on food safety which, in turn, is supported by countless regulations sharing a similar baseline.

A software solution helps organizations to execute and improve processes and effectively communicate risks in real time across the company.

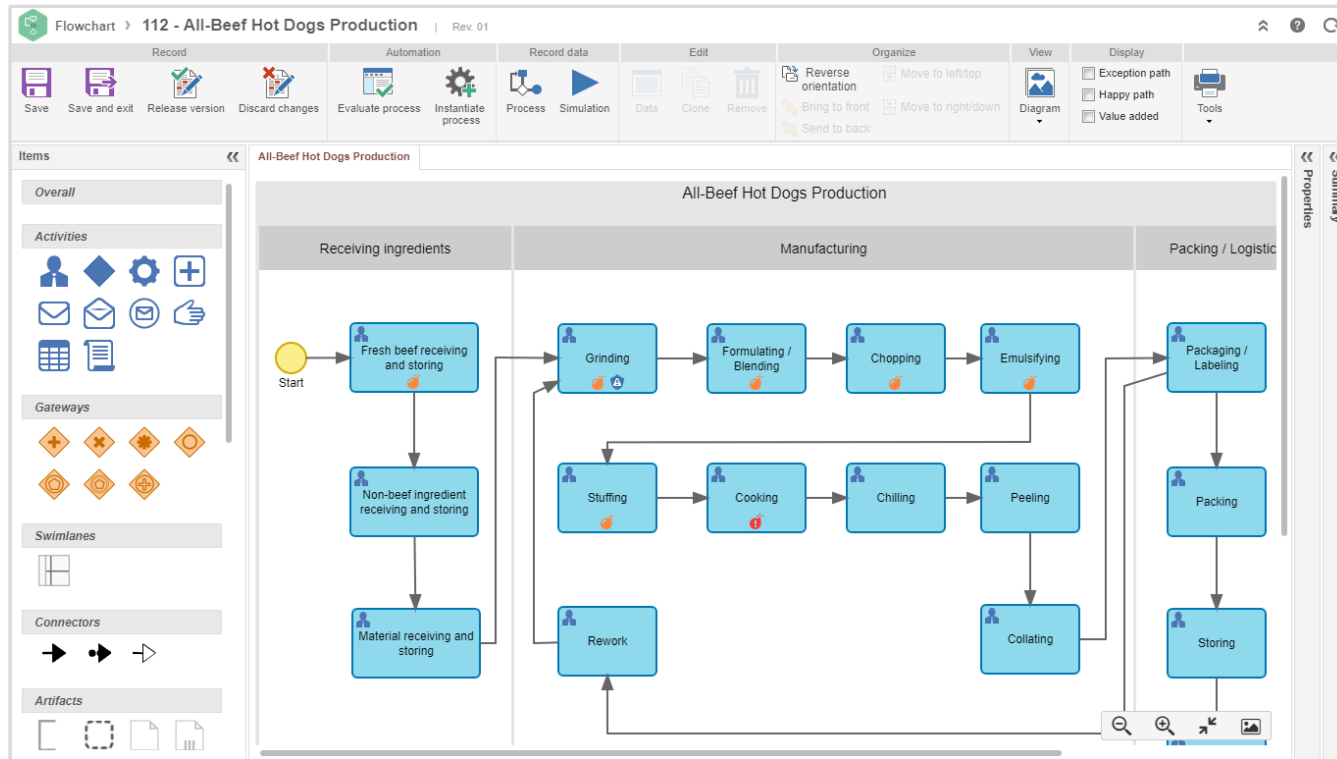
It should allow flexible methods to be configured for risk assessment and analysis, applying them to each process activity. It should also assist in defining the type of control for the analyzed risk, control revisions and generate reports on potential risks at each step.

A solution should facilitate the application of flexible decision trees, in order to determine whether or not a given step is a Critical Control Point (CCP). It should be able to document any CCPs identified, defining their critical limits, monitoring procedures, and related corrective actions.

The screenshot displays the Soft Expert software interface for risk management. The top navigation bar includes 'Soft Expert', 'Home', 'Portals', 'My tasks', 'Components', and 'Shortcuts'. The main content area is divided into several sections:

- Risk list (with charts):** A table showing risk levels (Low, Medium, High, Very High) and severity (Very High, High, Medium, Low). The table is color-coded: Low (green), Medium (yellow), High (orange), and Very High (red). A legend below the table lists risk items: #00167 - Listeria monocytogenes, #00162 - Allergen from species, #00163 - Sporeforming pathogen, and #00165 - Allergen from chicken.
- Risk and control plan:** A table showing the plan, actual, and actual score for various risk items. The table includes columns for Plan, Actual, and Actual score. The plan column lists items like '112 - All-Beef Hot Dogs Production', 'AB1 - Fresh beef receiving and storing', and 'AB2 - Grinding'. The actual column shows risk levels (Low, Moderate, High) and the actual score column shows numerical values (2.00, 3.00, 4.00, 2.00).
- Risk analysis #00167 - Listeria monocytogenes:** A detailed view of a specific risk analysis. It includes a 'GENERAL DATA' section with fields for 'Evaluation method', 'Evaluation frequency', 'Next evaluation', and 'Execution deadline'. Below this is a 'Decision tree' section with a 'Probability' table (Low, Medium, High, Very High) and a 'Severity' table (Very High, High, Medium, Low). The table is color-coded: Low (green), Medium (yellow), High (orange), and Very High (red). A 'Decision tree' dialog box is open, asking 'Could contamination with identified hazards occur in excess of acceptable level or could these increase to unacceptable levels?' with 'Yes' and 'No' buttons.

# Process management



A process in the food and beverage industry has an important role, considering a holistic scenario that encompasses quality, safety and compliance management. The set of regular processes, activities, tasks and methods used in corporate functions should not be underrated; however, the food production process is the main element in this sector and should receive special attention.

The food and beverage production process is one of the first steps in the HACCP model. Its modeling and approval is a prerequisite for all subsequent steps to ensure food safety. The process flow diagram must identify all of the steps used to prepare the product, from receiving through final shipment, including any rework or recycling of materials, as well as ingredients and raw material inputs in the process.

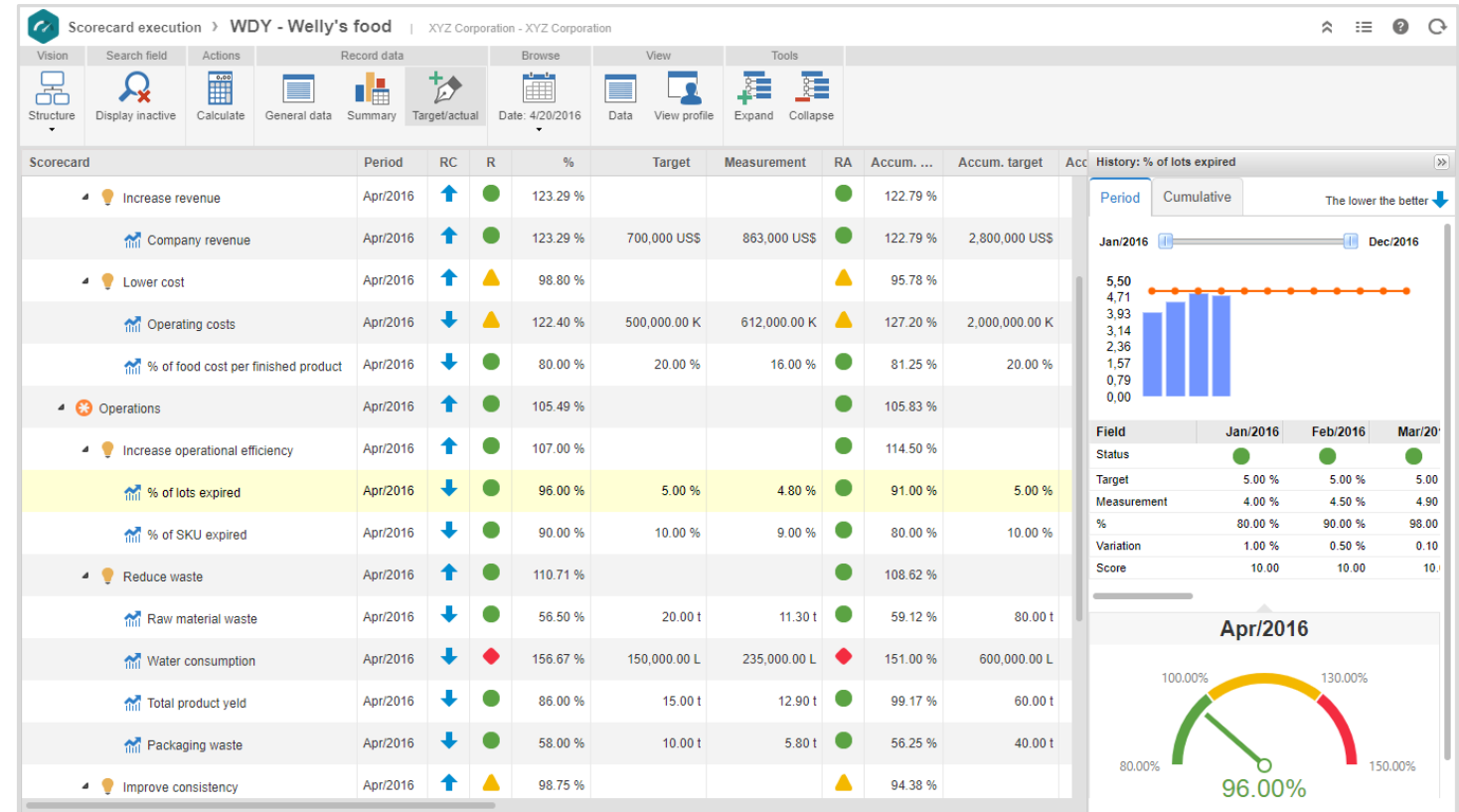
A software solution should provide the tools, technologies, and infrastructure to automate complex processes end-to-end, while also connecting with applications and existing systems across the enterprise. With an effective solution, food and beverage organizations can design flowcharts, simulate conditions and variations, establish performance baselines, visually identify risks and CCPs, automate process instances, conduct change management and revisions and continuously optimize their business and operational processes.

# Performance monitoring

Simply put, performance management includes activities to ensure that goals are consistently being met in an effective and efficient manner. Performance management can focus on the performance of the organization, departments, processes to support operations, employees, etc. Just making employees aware of the scorecard indicators influences their practices, which improves quality and safety.

A software solution lets food and beverage organizations balance business goals with operational outcomes, by integrating strategy, planning, and execution into a seamless process. It turns the raw data that comes from across the organization into valuable key performance indicators that can be used to effectively manage operational performance, resource utilization, cost-effectiveness, staffing and financial results with greater precision and certainty.

Software should offer a complete range of publishing, distribution, monitoring, reporting, and analysis capabilities within a scorecard and dashboard architecture that allows everyone to make better business decisions every day, while driving business performance goals.



# Document control

The screenshot displays the Soft Expert Document Control interface. The top navigation bar includes 'Soft Expert', 'Home', 'Portals', 'My tasks', 'Components', and 'Shortcuts'. A search bar and user profile icon are on the right. The main area shows a list of documents with columns for Category, ID #, Title, Revision, Date, and Hits. The document 'Controlling Time and Temperature During Preparation' is highlighted. Below the list, a preview of the document is shown, titled 'HACCP-Based SOPs' and 'Controlling Time and Temperature During Preparation'. The preview includes a 'PURPOSE' section stating: 'To prevent foodborne illness by limiting the amount of time that potentially hazardous foods are held in the temperature danger zone during preparation.' and a 'SCOPE' section stating: 'This procedure applies to foodservice employees who prepare food.'

Category	ID #	Title	Revision	Date	Hits
PRCW	001000001	Contract and Specification Review			15
PRCW	PRCW000001	Notification Policy and Procedure	00	4/20/2015	0
PRCW	PRCW000002	DISPENSING PZA	00	2/02/2015	0
SOP	SOP000002	Controlling Time and Temperature During Preparation	00	9/17/2013	0
SOP	SOP000003	Cleaning and Sanitizing Food Contact Surfaces	00		0

Total records: 25

Display: Preview File: 20080212040339.pdf

85% 1 / 2

### HACCP-Based SOPs

#### Controlling Time and Temperature During Preparation

**PURPOSE:** To prevent foodborne illness by limiting the amount of time that potentially hazardous foods are held in the temperature danger zone during preparation.

**SCOPE:** This procedure applies to foodservice employees who prepare food.

The substantial amount of laws and regulations to which food and beverage companies are subject results in a myriad of consequences for routines and processes. The biggest is definitely the additional recordkeeping each new regulation requires. Work instructions, standard operating procedures (SOP), internal policies, product descriptions and GMP/HACCP records are just a short list of what quality, safety and compliance managers have to deal with in their daily activities.

A software solution provides the technology to create, capture, manage, store, preserve and deliver all content, records and documents related to your organizational processes.

A comprehensive solution must be capable of managing content repositories, regardless of type, whether physical or digital. As content enters this repository, powerful content services improve information indexing and automate content classification, complying with enterprise taxonomy.

# Training and skills

Ultimately, F&B organization's core competencies help define and sustain their competitive advantage. Competency management is critical for assessing employee performance, identifying opportunities for training and development, and cultivating talent pools. Ongoing employee development and training are key to not only developing and maintaining a high performance workforce, but also to increasing employee satisfaction and retention. Ultimately, even consumer health and safety passes through the hands of professionals who may or may not be qualified.

A software solution provides managers with effective tools to evaluate employees' demonstration of technical and behavioral competencies, and to put development and training plans in place where needed. Software offers an effective way to automate time-consuming and paper-based appraisal processes. It moreover enables organizations to better assemble multidisciplinary teams as demanded by this highly regulated environment.

The screenshot displays a software interface for competency management. The top section shows the user's profile (James J. Tooby) and the appraisal period (5/24/2018). The main table lists competencies and their proficiency levels:

Competence	Proficiency level	Score	Weight
000011 - FSSC 22000 requirements	[03] - Meets expectations	6.00	1.00
BP - Biologic Pathologies	[03] - Meets expectations	6.00	1.00
CA - Chemical agents	[04] - Exceeds expectations	8.00	1.00
ER - Emergency Response and Preparation	[03] - Meets expectations	8.00	1.00
FSP - Food Safety Principles	[02] - Below expectations	3.00	1.00
GMP - Good Manufacturing Practices	[01] - Needs improvement	10.00	1.00
RA - Risk Analysis	[03] - Meets expectations	10.00	1.00
ABI - Ability	[04] - Exceeds expectations	10.00	1.00
SP - Integrated Management System Policy	[05] - Exceeds expectations	10.00	1.00

The right panel shows the 'COMPETENCE DETAILS' for 'FSP - Food Safety Principles', indicating a score of 3.00 and a progress bar. Below this, the 'Training calendar' is visible, showing a grid of dates with training events. A pop-up window for '87 - Advanced HACCP - Verification and Validation' provides details about the training, including the status (Planning), course (FS002 - Advanced HACCP - Verification and Validation), planned start date (5/07/2018), planned end date (5/11/2018), and instructor (James J. Tooby).



The background of the slide features a collage of business-related imagery. On the left, there is a bar chart with a line graph overlaid, showing an upward trend. In the center, a world map is visible, with various regions highlighted. On the right, there is a pie chart and a bar chart. The entire background is overlaid with a semi-transparent red rectangle that contains the text.

Now that you already know **How Technology Can Improve Food Safety Management**, learn more about the **SoftExpert Excellence Suite (SE Suite)**, the most complete and innovative solution on the market for process automation and improvement, regulatory compliance and excellence in performance management.

SE Suite allows Food and Beverage organizations to become compliant with multiple standards, regulations and initiatives, such as HACCP, ISO 22000 and GFSI schemes (FSSC 22000, SQF, BRC, IFS, and etc.). The software effectively and efficiently automates food safety programs to achieve better oversight, real-time information, better results, and better safety assurance, streamlining food safety management. It is an integrated management software system that addresses the specific needs of food quality management, providing a framework of modular resources that automates and streamlines food quality processes.

SoftExpert Excellence Suite provides all of the support needed to achieve the results you are looking for.



Learn more about the solution





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