

Siemens PLM Software for food and beverage

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White Paper

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Challenges in the food and beverage industry

Mastering the innovation process, from ideation through delivery to retail shelf, is more important than ever. The world population, currently at close to 7 billion, is projected to reach just over 9.3 billion by the middle of this century, and 10 billion by 2100. Experts predict that much of this increase will come from such regions as Africa, Asia Pacific and Latin America. This growth poses new opportunities and great challenges for food and beverage (F&B) manufacturers expanding their brands across the globe.

F&B companies must find ways to deliver innovative products amid moving targets of constantly changing consumer preferences and trends. This includes global consumers seeking relevant value, unique selling requirements of emerging markets, global compliance regulations and sustainability demands – all of this amidst fierce competition. These products must be concurrently managed against rising, unpredictable commodity costs. Disconnected silos of information and processes, operating in expansive global value chains only add to these complexities.

F&B manufacturers are trying to grow their brands to meet the needs of emerging markets. In light of this enormous population growth, an overall challenge is how to develop and provide safe, consistent, quality food with relevant and compelling packaging. Brands struggle with the coordination of global teams that must manage ever-expanding supply chains. They must find ways to contain costs amid an environment of rising commodity and transportation costs. With stricter government regulations that are constantly changing, as well as customer and internal business requirements, F&B companies must also find ways to ensure transparency and compliance across their products without costly delays. They must also continually innovate, particularly in the face of private label retail competition. In the race to gain market share, increase their share of shelf space, move into emerging markets, and meet changing consumer preferences, the F&B industry must increase their product variations, adding new complexities to product development.

Managing products to rapidly changing regulatory environments is also adding complexity. Adding regulatory complexity means assuming more risk. A new regulatory requirement often demands rapid, companywide action. One such example is the recently enacted Food Safety Modernization Act

(FSMA) in the United States, which mandates that the entire food supply chain work together to mitigate the risks of food borne illness. Food processors will now be required to evaluate the hazards in their operations, implement and monitor effective measures to prevent contamination, and have a plan in place to take any corrective actions that are necessary. Coordination across disparate groups, both inside and outside the company, however, can be costly, difficult and time consuming. Product recalls mean lost revenue, loss of consumer loyalty and brand value erosion. In addition, global sourcing of materials, health regulations and legislation require better documentation control and accuracy.

One other important area of focus for F&B companies is sustainability. Manufacturers are increasingly looking for ways to create more environmentally friendly products and production methods. Retailers and manufacturers are searching for ways to reduce the amount of packaging, offer more sustainable formulations, balance the health and wellness of the consumer and bring products to market with a smaller carbon footprint.

All of these challenges drive the need for a unified set of information that the global development team can access, including new product ideas, product portfolio, packaging and recipe specifications, as well as manufacturing planning and supply chain information.

New realities

The brand is at the heart of every food and beverage company. Every stakeholder – from creative to technical – plays a part in delivering that brand. It has been said it takes a village to build a brand. Yet many F&B companies today find themselves in a maze of disconnected data and systems. These silos of information make it difficult to manage a strategic portfolio, respond quickly to market demands and changing regulations and control costs. Mistakes and errors caused by this fragmented approach can destroy brand equity.

Adding to the challenge is the rapidly growing world population, which increases pressure on F&B manufacturers to produce relevant customized or configured products for these emerging markets. The United Nations estimates that global food production

must increase by 70 percent to meet the expected global population of nine billion people by 2050. Obviously this presents great opportunity for F&B manufacturers, as well as great challenges.



While a product such as beer needs to be consistent and have the same taste worldwide, certain other beverages and food products need to be reformulated or repackaged to appeal to local consumers. This drives the need for not only a single source of information but also a flexible product development system that enables rapid, nimble and intuitive decision making throughout the new product development and launch process.

To these points, a Boston Consulting Group (BCG) article provides an apt headline to reflect the new retail landscape that exists, post recession: “New Realities for Consumer Goods & Retail in 2011.” Here are some of the points that are most relevant to product lifecycle management (PLM):

Rapid innovation continues to provide a competitive advantage This is especially important for national brands to combat the insurgence of private labels into their market share, as well as eroding brand loyalty. Consumers now rely on recommendations from their friends via social media, and are

focused on buying locally sourced, healthy food and beverage – not necessarily a big name brand. Health, as BCG says, is increasingly a reason for consumers to trade up – perhaps, for example, to a locally sourced, organic food item.

The opportunity for PLM A product lifecycle management core value proposition equalizes the efficiency and speed of virtual networks with the innovation process.

The two speed world Developed markets are saturated with retail stores, so retailers need to intimately understand their customer to consistently deliver the right product with the right value in the path to purchase as well as at the first moment of truth. If they cannot, retail options are plentiful, and customers may drift to other stores. Conversely, in emerging markets, accelerated retail growth is amplifying challenges to winning the hearts and minds of consumers who may be new to your brand.

The opportunity for PLM It is imperative that F&B companies understand needs quickly, and accurately connect that information with the front end of innovation in any market. Increasingly, product portfolio management (PPM) tools within the PLM tool suite enable this capturing of new ideas, customer preferences, or product improvements, and transitioning them into actionable and balanced portfolios resulting in meaningful pipelines of products.

Addressing the multi-channel challenge Consumers are able to quickly compare prices via mobile phones, and can do most of their shopping online with many sites offering free delivery. So, what’s the motivation to go to a physical store? Retailers today are challenged with this. One way to stay ahead of the curve is analytics about the performance of your stores, your suppliers, and most importantly, your products so you can constantly provide compelling promotions, displays and prices in stores.

The opportunity for PLM product analytics has been a gap in PLM for years, but is increasingly being addressed. As retailers compete for customer mindshare, and try to respond nimbly to new product and pricing demands, they will look to systems that provide the reporting and analytics that enable ongoing decision support throughout the product lifecycle. They will also look to store/merchandising modeling systems so they can virtually simulate their products and promotions, before going “live” with them.

Advocacy marketing Consumers are more likely to buy products that friends and families have tried and liked. And today, the ability to quickly recommend, or not recommend, a product, store, hotel, restaurant, leads ultimately to a better experience for the end customer.

The opportunity for PLM PLM provides the ability for manufacturers to thread customer insight through their development process for future product improvement.

Why PLM for food and beverage?

PLM systems for the F&B market must be able to support the gamut of iterative innovation. This can range from incremental innovation such as brand extensions to disruptive innovation resulting in new to the world products. The system must therefore support entire finished products, and all of their unique components whether they might be a reformulation of a recipe, or the introduction of new packaging. So, finding innovative ways to managing customer needs and product portfolios, is critically important. To stay competitive, food and beverage manufacturers must be able to manage the influx of new product ideas against the churn of changing requests and requirements and filter those ideas into a portfolio of products that are profitable for the company.



To achieve not only speed, but speed with accuracy, F&B manufacturers need to be able to model manufacturing processes and simulate manufacturing lines to ensure that these new food and beverage products, or new packaging, can actually be made on the existing lines through existing capacity and equipment. And there is a constant right brain/left brain collaboration between creative (brand and product management) and technical (manufacturing) that needs to occur to ensure what is imagined and designed, can actually be made and delivered to market on time. ERP or MES systems do not enable this iterative collaboration. Only PLM, as many F&B manufacturers have come to realize, provides the bridge for solid decision making between the virtual (ideas, images, designs) and the physical (manufacturing process, plant, equipment).

There are three primary benefits that PLM provides F&B manufacturers:

- Smarter brand planning and consistency
- Better brand innovation and execution
- Consistent brand compliance and sustainability

These are really the three areas F&B manufacturers must focus on in developing new products from innovation, to management, to delivering the brand in a compliant and sustainable way.

Siemens PLM software vision for food and beverage

Siemens PLM's vision for PLM, across all industries including food and beverage, is founded on the mantra of smarter decisions, better products. When the global team has access to intelligently integrated information, they can react quickly and have the right answers to changes that may arise in customer demand, supply chain or product development processes. This is because the entire team, from design to brand management to supply chain and manufacturing has access to the same set of information at the same time. With this approach, there

are fewer interruptions in the new product development and launch process. Only issues, action items and deadlines need to be addressed. Essentially, the planning, innovation, execution and compliance gates in new product development and launch (NPDL) are unified. Here are the reasons why we at Siemens believe this is critical to any food and beverage manufacturers' success:

Smarter brand planning and consistency

For food and beverage companies, every stakeholder plays a role in delivering the brand profitability, from portfolio owners who must choose programs that will deliver the most value to trade partners that require the correct logos. Siemens PLM Software helps you manage the complexity of your business with a single source of specification data. Every person across your value chain has access to the most current and complete information, ensuring consistency and enabling delivery of the right product to the right customer at the right time.

With Siemens PLM Software portfolio management capabilities, you can establish a repeatable process for methodically evaluating ideas, and use tools to help you establish the right mix of projects. In addition, you have full visibility of your products, both current and historical. You can quickly understand their performance, and make the best decisions moving forward.

Better brand innovation and execution

Mastering your lifecycle, from ideation through delivery to retail shelf, is more important than ever. Siemens PLM Software delivers a decision support platform that enables rapid, smart innovation with intelligently integrated data and processes. You can tie your executive planning decisions to operational execution to ensure that every stakeholder is working according to your desired cost, time-frame and other goals. You can drive smarter decisions for every person involved in delivering higher performing products to increasing expectations.

This flexible, collaborative framework helps you manage the complexities of the food and beverage industry, including customer needs management and requirements gathering, global specification management, packaging and artwork management, plant design and optimization tools, supplier relationship

management and much more. In addition, Siemens PLM Software has an open application approach, enabling you to easily integrate your PLM solution with other enterprise systems for optimum execution of your projects.

Consistent brand compliance and sustainability

Regulatory environments are ever changing as are customer demands, to internal business goals and regulations. Siemens PLM Software solutions enable you to manage requirements and regulations as an integrated part of your decision processes, rather than an afterthought. You can facilitate coordination and standardization across your value chain, including your extended supply chain, to ensure compliance and food safety at every step.

Many F&B companies have engaged sustainability initiatives. They find sustainability is a holistic process that produces a continual drive for internal standards to describe what sustainability actually means. Siemens PLM Software delivers a solution that enables you to incorporate sustainability throughout your innovation processes, in loops of continuous improvement. This will happen internally as well as with your extended producers. From packaging reduction to manufacturing process modeling, you can enable sustainability initiatives across your lifecycle, validate your sustainability requirements and measure progress against your objectives.

Siemens PLM also believes that PLM in the food and beverage market will evolve in the coming years to support the following areas that are of great importance to retailer's success:

- *Integrated product portfolio management (PPM)* Product analytics and reporting has always been a part of many PLM systems, but F&B manufacturers want to take this to the next level. This includes connecting ideation, business and financial data to the product portfolio, which will enable retailers to make even smarter decisions as they go through their innovation and planning process.
- *NPDL intelligence* This goes hand in hand with integrating in with PPM, and also ERP, SCM and even POS data from the retail store. F&B manufacturers need to be as smart as possible at keeping up with customer needs, what products and promotion are selling and working and vendor performance. Rich analytics and on-demand reporting enable them to attain this goal.

- *Environmental compliance* Producing environmentally friendly products that are not only sustainably designed and manufactured, but also good for you, has been a focus of F&B manufacturers. Water conservation, energy efficiency, as well as waste management – both of actual product during production and packaging waste after consumption – have been a part of a F&B manufacturers' sustainability footprint for years. Siemens PLM Software enables product to production virtual modeling, redesign and specification management which helps F&B manufacturers make packaging more sustainable.
- *Mobility* F&B manufacturers using many PLM systems today can view their calendars, sign off on tasks and collaborate with the global product development team on their smart phones. The next step in mobility, as with many industries, is tablet integration, such as with the iPad. The recent announcement of the Teamcenter® software for mobility solution demonstrates our commitment to be at the forefront of technological innovation.

Siemens PLM software answers for food and beverage

Teamcenter provides a global decision making environment that accelerates innovation across your organization, from brand and category managers that make smarter planning decisions, to regulatory and quality controllers that ensure consistency and compliance, to every member of your value chain that executes better against your plan. As the organization leverages effective, collaborative decision support at every level, F&B companies will realize gains in speed, productivity, cost-efficiency, compliance and new product success.

Siemens PLM Software enables rapid innovation with intelligently integrated historical and current data and processes and an intuitive user interface. You can execute projects against your portfolio, ensuring every stakeholder has access to the most current and complete consumer, technical and brand information. This enables them to work against your desired cost, time-frame, sustainability objectives and other goals. In particular, Siemens PLM Software enables you to manage requirements and regulations as an integrated part of your decision processes which ensures compliance at every step.



Our vision of PLM in the food and beverage market is a platform that enables smarter decisions, better products during planning, innovation, compliance and execution that is made possible by the following capabilities:

Product portfolio management

- Establish the right mix of projects (new to the world, line extensions, etc.) in your portfolio
- Manage variants and customer needs serving various markets
- Quickly understand performance with brand dashboards and reporting
- Provide full visibility of products by category/region/SKU
- Enable program views of various product pipelines

Global specification management

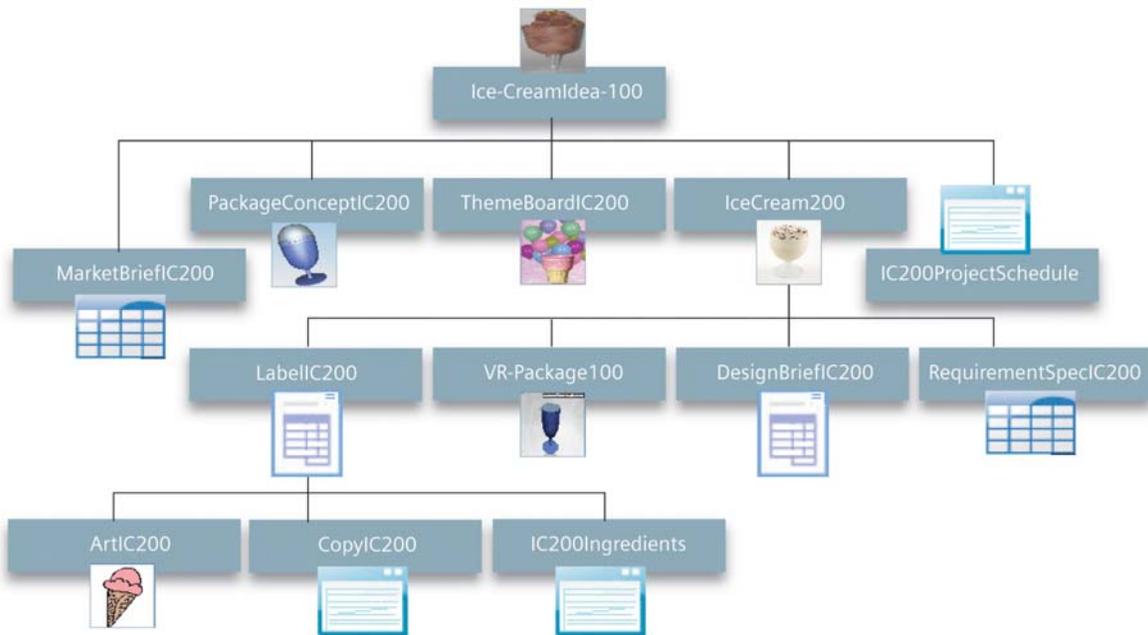
- Provides flexible collaborative framework for your entire value chain
- Supports dynamic and accurate specification output, managed as sets of relationships, rather than static documents
- Manages specification variations for global, regional and local product launches
- Enables flexible security and viewing capabilities that allow users, both internal and external, to view specification in a context that is meaningful

Product and production automation and execution

- Ties executive planning to operational execution and gets your entire value chain to execute against selected top ideas, on-time and on-budget
- Encompasses idea to shelf innovation process
- Supports open innovation/ideation (capture ideas from internal sources, external partners, educational sources, research firms, etc.)
- Automates and standardizes your processes
- Optimizes visual merchandising, including in-store planning/merchandising as well as primary, secondary and tertiary packaging
- Enables on demand in-context visualization of product, product packaging and the store shelf.
- Operates on an open architecture – to exchange information with ERP, SCM, CRM systems as well as office tools such as Microsoft Office and Lotus Notes

Our PLM platform, Teamcenter ultimately helps you ensure food safety, a trusted supply chain, and sustainably designed products. Requirements for products and packaging are effectively captured, while they are easily managed and shared with your teams. The system manages requirements that are traceable to the source, so you can confirm your food is of high quality, and ensure that packaging label and copy are consistently accurate and compliant. There is also a complete audit trail of requirements embedded throughout the product development and supply chain process to enable rapid responsiveness to product issues or regulatory agency audits. We also

realize how important it is to establish trust with your supply chain to enable extended producer responsibility (EPR) initiatives. Our supplier relationship management (SRM) module provides a bridge for supplier on-boarding, web collaboration, costing and supplier performance management. And finally, the combination of our CAD tool NX (providing preemptive, concurrent product and packaging optimization), and Teamcenter (managing valid and accurate design requirements) truly drives sustainability from recipe to packaging throughout the innovation process from idea to shelf.



Summary

Value chain excellence is achieved when product innovation is connected tightly to demand signals and the supply network. In the food and beverage market, this demand-driven supply network (or DDSN, to use Gartner's term) is critical because customer demand, targets and preferences change rapidly. From ideation, to portfolio management, to global specifications management, to value chain collaboration, PLM is the platform for product innovation, the

engine for this DDSN. PLM makes it possible for F&B manufacturers to achieve exceptional brand planning, brand execution, and brand compliance and sustainability.

For more information on our solution, please go to the written and video case study on Unilever.

About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Industry Automation Division, is a leading global provider of product lifecycle management (PLM) software and services with 6.7 million licensed seats and more than 69,500 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software works collaboratively with companies to deliver open solutions that help them turn more ideas into successful products. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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