

CONSUMER PACKAGED GOODS & RETAIL

THE AGILE ADVANTAGE FOR A SUSTAINABLE FOOD AND BEVERAGE INDUSTRY

**Ripe for Change:
Capitalize on New
Opportunities With Speed**



**Innovate for
Success**



**Strengthen Supply
Chain Resilience**



**Accelerate Eco-
Efficient Packaging**

**Agility Is the
Key to Survival**

MEET OUR EXPERTS



DALE PIXLEY

BIOVIA Industry Process
Consultant Expert

Dale has a 39-year history of working in the computer software and formulated products industries. He has led the development of the Dassault Systèmes formulation software since 2002, leveraging his 18 years experience as a formulations chemist bringing over 300 consumer products to market. He holds a Bachelor of Science degree in Biology.



GEOFF LOCKET

DELMIA Senior Industry
Process Consultant

Geoff has 25 years of experience in advanced planning solution design, development and deployment across multiple global F&B industries that include fresh produce, dairy and packaged ingredients. In his current role, he manages the DELMIA advanced planning product portfolio to address critical planning challenges for customers and prospects.

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RIPE FOR CHANGE: CAPITALIZE ON NEW OPPORTUNITIES WITH SPEED

The food and beverage (F&B) industry is in the midst of a critical transformation as companies face new waves of change faster than ever before.

Consumers have become more health-conscious. Because people have different dietary requirements, F&B companies are now moving away from a one-size-fits-all approach and focusing on **reformulation at scale**. This includes creating a multisensory experience and lowering or removing sugar, salt and other ingredients from recipes, resulting in tremendous pressure and workload on scientists and formulators.

Apart from the surging demand for healthier options and **alternative proteins**, the industry's need for digital transformation is being driven by a shift to **sustainable supply chains**, responsible sourcing and coping with the seismic impact of the pandemic.

Faced with challenges on all fronts, companies must step up their digitalization efforts to quickly — and accurately — pivot and adapt to demand-driven shifts in the industry.

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In this age of experience, forward-thinking players in the F&B industry are looking at consumer behavior patterns to determine the next big trends in the market. Having real-time insights will help market leaders stay competitive and better prepare for the large-scale production of new products.

An **end-to-end digital transformation** solution delivers value by providing visibility into the lab, packaging design process, production and supply chain, allowing companies to collaborate between departments and address potential bottlenecks earlier.

Dassault Systèmes is committed to helping companies innovate faster, smarter and more sustainably through the **3DEXPERIENCE®** platform.

In this ebook, learn the digitalized and agile strategy for:

				
Next-generation food science	Innovative reformulation and recipe management	Sustainable ingredient sourcing	Eco-efficient packaging designs	End-to-end supply chain visibility

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FROM HUNGER TO HEALTH: ADAPTING TO MARKET TRENDS

The industry is aware that the animal/agriculture approach is no longer sustainable to feed the planet. At the same time, the explosive growth of alternative proteins from culinary fad to must-have superfood has presented a lucrative market opportunity.

With the **3DEXPERIENCE** integrated platform, companies are uniquely primed to **capitalize on market trends** such as plant-based food and alternative proteins.

The platform allows them to tap into **real-time intelligence** to innovate better and smarter. Imagine having the ability to explore new combinations of ingredients and understand their performance

at a molecular level to better manufacture the next generation of plant-based meat. Companies can expand the role of enzymes to get more out of less. As an example, using food science to develop new ingredients with a **low environmental footprint**, so consumer goods become more sustainable.

The increasing pace of research and growing competition in the industry compelled leading food science company, Chr. Hansen, to use Dassault Systèmes' BIOVIA Notebook in maximizing the value of its historically strong R&D team — **speeding up innovation efficiency** and streamlining the data management workflow.

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“The integration of BIOVIA Notebook with our Hadoop Big Data setup has provided a strong scientific data platform – a digital laboratory where we can explore data and share insights.”

– Dr. Morten Meldgaard
Innovation Data
Architect, Chr. Hansen

Adapting to the rising demand for healthier food calls for faster innovation. The **3DEXPERIENCE** platform empowers companies to push the frontiers of food science and safeguard product margins. By leveraging **artificial intelligence** and **machine learning**, companies can gain critical insights including market analysis, **sensory modeling** and predictive yields of raw materials. As a result, companies can quickly identify new flavors, solve challenges in plant-based food's taste and texture, and deliver more functional products with new, **active ingredients**.



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REFORMULATE WITH PRECISION

The effectiveness of a product formula is a key driver of consumer brand loyalty. But the reformulation process is more complex than ever as companies need to substitute ingredients while considering costs, regulations, safety and health. For example, scientists and formulators need to reduce gluten, butter, fat and other ingredients from recipes while faced with pressure to maintain product margins.

To deliver high-quality products while keeping costs low, companies need access to **data-driven insights** to drive **efficient reformulation** in the face of supply restrictions from global lockdowns, rising raw material costs and tight margins.

An integrated platform is the answer. With access to real-time intelligence, companies can test, simulate, validate and **reformulate recipes with local, healthy ingredients** that allow them to innovate in a shorter period — and **respond to market trends with greater speed.**



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A close-up photograph of a female scientist in a white lab coat, wearing safety goggles and a blue surgical mask. She is holding a white marker and writing on a tablet. A name tag on her lab coat reads "NO CARBON FOOT STAFF", "Energy Card-Testing", and "FULL ACCESS CARD".

“Reformulation can be a differentiator for companies in producing healthier and safer food that ultimately enhances the lives of consumers.”

– Dale Pixley

BIOVIA Industry Process Consultant
Expert, Dassault Systèmes

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With the Dassault Systèmes **Perfect Formulation** solution, a multinational F&B company gained visibility to all ingredient and sourcing information used in its broad portfolio of products, no matter where in the world they were manufactured. As a result, they **optimized materials substitutions** and drove efficient procurement — reducing total spend pools by up to 15 percent per year.

Perfect Formulation empowers R&D scientists to understand market data and consumer sentiment to identify weak signals and predict new trends. As a result, scientists can react quickly to consumer behavior changes and identify new opportunities to create innovative food that will win the hearts of consumers.

With **Perfect Formulation**, companies can:

- Design new formulas to achieve nutritional targets
- Use in-silico modeling to predict formulation behavior
- Enhance formula values and test for efficacy and manufacturability
- Optimize formula costs and ensure regulatory compliance

A leading global consumer packaged goods company with a broad portfolio of food brands wanted to improve the rate of new product innovation and R&D productivity but was hindered by manual experimentation and data recording processes. With the Dassault Systèmes **Perfect Lab** solution, the company embarked on a digital lab transformation that included electronic lab notebooks and in-silico simulation. As a result, the company **increased data reuse by 85 percent** and **lab productivity by 20 percent**.



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STRENGTHEN SUPPLY CHAIN RESILIENCE

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IDENTIFY AND MITIGATE DISRUPTIONS FASTER

The weakest link in the supply chain can ultimately break consumer trust and loyalty.

Gaining a holistic view of the entire supply chain can help companies adequately prevent or manage disruptions effectively and communicate any changes quickly and easily. This is made possible with the **supply chain virtual twin**.

The supply chain virtual twin’s most significant value lies in its ability to help companies proactively identify and mitigate food supply chain risks. This lets companies understand exactly how their decisions will impact **critical business KPIs**.

The virtual supply chain twin also allows companies to explore multiple scenarios and find the best response to a particular set of demands. The ability to **simulate what-if scenarios** is the key to arriving at the optimal plan based on crucial factors such as costs, time and demand.

Global clients have benefited from Dassault Systèmes’ DELMIA Quintiq solution, including leading food and beverage company Kraft Heinz.



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“We chose the DELMIA Quintiq solution based on our need to optimize our supply and formulation process within our Oscar Mayer product line. With multi-faceted planning challenges, we streamlined our recipe and material requirements into one planning system, allowing us to further improve on delivering the best quality products to our customers. The new system gives us deeper transparency into our plant operations, which is a wonderful, unforeseen benefit.”

– Jesse Moya
Senior Manager of Formulations,
Planning, and Analysis, Kraft Heinz

Powered by DELMIA Quintiq, Kraft Heinz can optimize operations with **KPI-centric planning and tracking**, allowing for disruptions to be quickly addressed. In addition, quantifiable tactical planning becomes more robust, unlocking greater analytical capabilities such as determining how to best utilize their vendor contracts and plant capacity along the supply chain.

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RECONFIGURE PLANS WITH AGILITY

In the digital age where things can change at a moment’s notice, companies must quickly reconfigure plans to cope with additional inventory costs, production delays and supply uncertainties amidst the pandemic and other global disruptions.

The key to agility is to have the right information at the right time and adjust plans with precision. Yet, many companies struggle to turn data into actionable insights because they still depend on siloed systems to retrieve data, which is then analyzed separately. As a result of fragmented data, companies may not fully understand the consequences of their decisions on the supply chain.

Creating plans based on insufficient or inaccurate information could result in costly consequences along the supply chain.

Smarter, integrated planning on a single platform is the answer. By bringing together critical data and accessing them in real time,

companies can **model and simulate planning scenario outcomes**. In turn, they can reconfigure plans quickly and accurately.

The DELMIA Quintiq solution allows companies to simulate what-if scenarios, **reconfigure plans in real time** and visualize the effects of planning decisions immediately to assess the impact on their business goals.

JBS USA, a leading meat manufacturer, uses the DELMIA Quintiq solution to gain a complete picture of how inputs interact with one another. This **improved visibility** lets JBS see its current reality and change outcomes efficiently, thus supporting end-to-end planning optimization. **Accurate product availability** provides the company with a clear, interactive approach to reducing waste and protecting margins by lowering the volume and frequency of volatile markdowns.



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SOURCE MATERIALS SUSTAINABLY AND ETHICALLY

In the age of experience, clean eating and good nutrition are priorities for sustainability-minded consumers. More consumers now expect the brand experience to include **clean label positioning** and **full transparency** of the ingredients used and their origin. Such information will empower them to make better-informed purchases.

Consumers and regulators hold brands to high standards in everything from material sourcing to packaging. As a result, business decisions are not just driven by economic factors but also **environmental impact**.

It's no longer enough to produce safe and healthy food and beverages. Companies today need to ensure that:

- Ingredients are sourced responsibly
- Suppliers' practices are regulatory compliant
- Products are produced with a low carbon footprint

With a data-driven integrated platform, companies can **compare the impact of alternative sourcing options** on the supply chain to respond best to changing conditions. This degree of insight can help expand a company's supplier base and makes sourcing for alternatives easier and more cost-effective.

Amy's Kitchen, a leading organic food company, prides itself in cooking by hand, making sauces from scratch and delivering 1,000,000 fresh meals daily across different time slots.

For example, 60 percent of its raw materials come from fresh produce through contracted growers. However, sourcing crucial ingredients can be difficult in times of uncertainty. Sudden weather changes can destroy as much as half of a contracted crop volume.


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“We required a supply chain planning and optimization platform that could accommodate our intricate scheduling requirements, which stems from our unique approach of assembling and cooking products simultaneously.”

– Andy Berliner
CEO, Amy's Kitchen

Yet, Amy's Kitchen handles ingredient sourcing with ease because it employs the right integrated planning solution. With DELMIA Quintiq, the company reduced its inventory by a quarter while maintaining customer service levels — despite experiencing labor shortages.

The **virtual supply chain twin** is helpful in both made-to-order and made-to-stock environments because it provides **total stock visibility** to maintain **healthy inventory levels**.

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“DELMIA Quintiq has an outstanding track record in the industry and its software platform will enable us to maintain the high quality and fulfillment standards our customers have come to expect.”

– Andy Berliner
CEO, Amy's Kitchen

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INCORPORATE SUSTAINABLE MATERIALS

Similar to sustainable sourcing, consumers are expecting transparency into the environmental footprint of the finished product.

In response to consumer demand and rising competition, companies need to move quickly and efficiently. They need to create and validate designs with materials that are **recyclable, biodegradable** and supportive of a **circular packaging economy**.

A data-driven digital solution provides companies the virtual tools they need to accelerate the testing and validation of new packaging designs. **Virtual simulation** allows them to find the perfect balance between the required material amount and the package durability. Reducing just a fraction of material for reduced product weight can translate to massive cost savings, lower shipping costs and better sustainability metrics. As a result of virtual simulation, companies can move fast to explore innovative ways to **make packaging designs more eco-efficient**.

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The virtual twin of a product design brings together data from different product lifecycle stages. The platform, in turn, enables **collaborative decision-making** between internal and external stakeholders based on the aggregated data. Project management and reporting can also be efficiently executed without relying on any supplemental spreadsheets or other descriptive documents.

Further accelerating the transition towards a circular packaging economy, the virtual twin allows companies to consider local and regional recycling processes at the design stage. As a result, companies can create packaging with the right design features to enhance the consumer experience, **improving recycling rates** and material yields.

One of the world's largest F&B companies uses Dassault Systèmes' SIMULIA solution to design **sustainable packaging for circularity**, resulting in lower costs, shortened time to market and a smaller carbon footprint.

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LOWER ENVIRONMENTAL IMPACT

Today, the industry is witnessing a dramatic increase in e-commerce, hastening the need for packaging that can withstand more high-touch warehouse and delivery environments.

With the need for **frustration-free packaging** coupled with logistical constraints and delivery time and costs, companies must optimize their operations to deliver products that help minimize environmental impact while protecting margins.

“As manufacturers move towards a circular economy, we need a plan for getting our packaging or reusable containers back because they’re going to drive our production capacity.”

– Geoff Locket
DELMIA Senior Industry Process
Consultant, Dassault Systèmes

Virtual simulation capabilities available on the **3DEXPERIENCE** platform enable companies to develop sustainable packaging with more functionality and less material. By accessing real-time data across the supply chain, companies can generate **accurate eco-labels with CO₂ emissions**, giving consumers transparency into their carbon footprint.

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AGILITY IS THE KEY TO SURVIVAL

The stakes are high. Under pressure to adapt to demand-driven shifts and cope with the impact of the pandemic, the F&B industry will continue to evolve rapidly. **Only the most agile will survive** — will you be one of them?

Agility is the key to unlocking competitive advantage, enabling companies to not only survive but innovate faster and more efficiently in line with circular economy principles.

By partnering with Dassault Systèmes, companies can thrive in this ever-changing business landscape. An experienced industry leader with global F&B clients, Dassault Systèmes is uniquely positioned to help companies transition towards an agile approach and achieve their business goals.

The **3DEXPERIENCE** platform is the critical differentiator that can help companies rapidly achieve **digitalized, sustainable and agile operations** with its robust, end-to-end digital capabilities. The integrated platform also allows team members to collaborate more effectively and reconfigure plans quickly and accurately in the face of disruptions.

With our platform, companies can experience **enterprise-wide visibility** and **access to real-time data** at every step — from innovation and reformulation to sourcing, packaging, production and logistics.

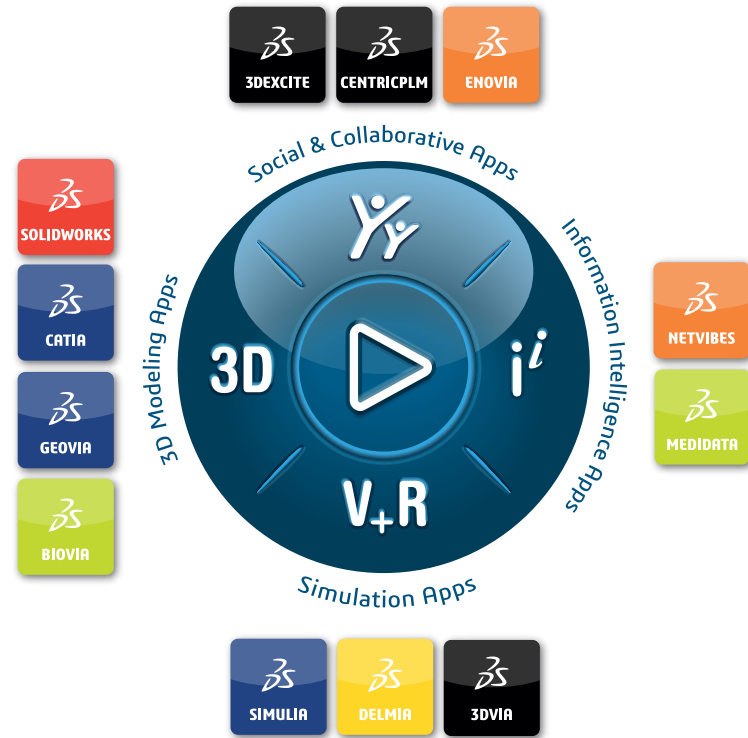
Transform your operations in the age of experience today. Explore more insights [here](#).

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Our **3DEXPERIENCE®** platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit www.3ds.com.



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