

EXECUTIVE PLAYBOOK

DELIVERING SUSTAINABLE PACKAGING SUCCESS

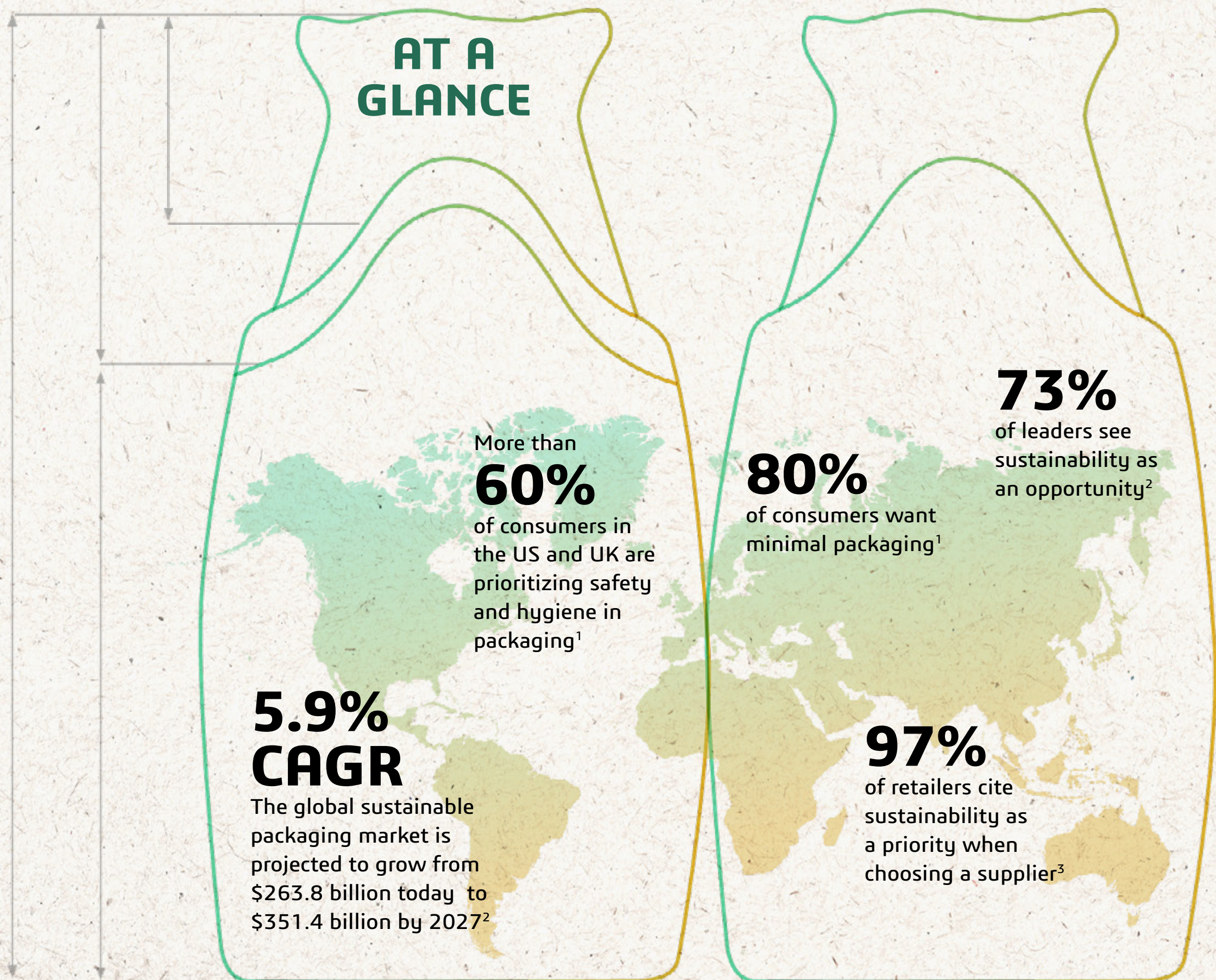
Fresh profit-driven strategies.
Open immediately.



Six to seven seconds. That's how long consumers take to find and choose a product. Is your packaging driving — or hindering — product sales?

Consumers and regulators are pressuring leaders to pivot and **transform fast**. If you're reading this, then you're on the right path to pick up the pace towards sustainable packaging.

This executive playbook is designed to help you deploy the right **end-to-end strategy**, powered by the **3DEXPERIENCE®** platform, that will turn sustainable packaging into a growth driver for your business.



¹"How Product Packaging Affects Sales" by Retail Minded (February 2020)

²"Global Sustainable Packaging Market to Reach \$351B by 2027" by Environment+Energy Leader (May 2022)

³ Positive Packaging: Towards a Low Carbon Future (2020)

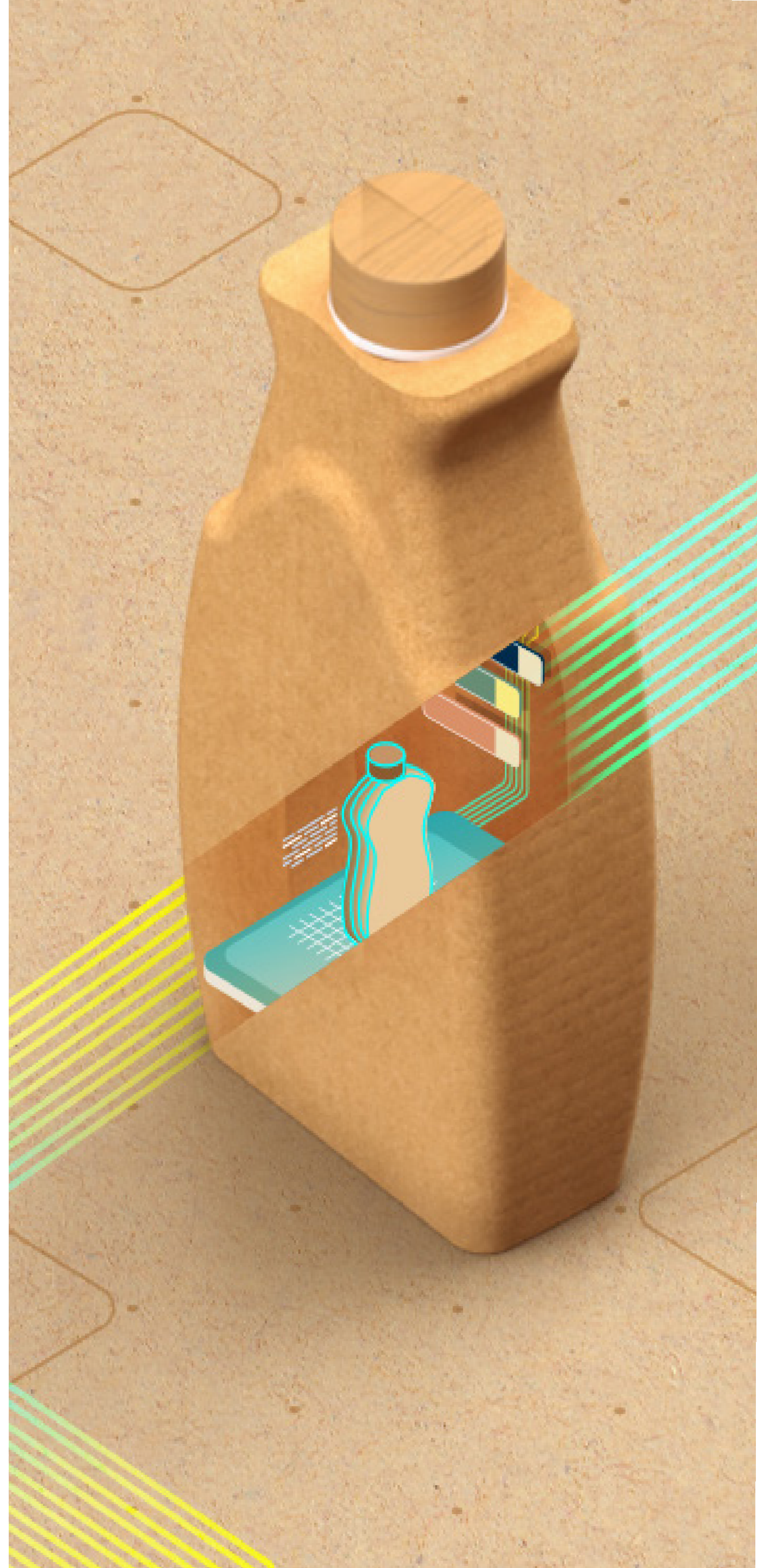
Consumer packaged goods (CPG) companies and retailers are stepping up to the plate through **digitalization initiatives** that drive speed to market. This playbook draws on their examples, as well as the insights of industry experts, to provide practical and inspirational guidance.

Strict regulations and market disruptions don't discriminate — you're not alone in making tough decisions and changes to your **packaging strategy**.

The silver lining? Sustainability can be economically feasible. With this playbook, you'll be better equipped to **make trade-offs between:**



Turn the page and discover what's inside a profitable, sustainable packaging value chain.



In this executive playbook, learn how to unbox profitability in all stages of your sustainable packaging journey.

Explore more below:



① PROJECT COLLABORATION AND PLANNING



Inefficiencies cost time and money.
In a report by Accenture⁴, the lack of cross-functional collaboration significantly impacts return on investment and revenue growth for businesses.

Isolated decisions, work duplication and reduced speed to market are just some of the limitations of traditional top-down silos apparent in the world of packaging today.

In a siloed environment, different functional teams may not be aware of what others are doing. As such, a small change can ripple across the packaging value chain and impact **time, cost and quality**.

The reality for packaging teams is that changes occur all the time, like revisions to product storage instructions on a packaging label or a deviation in the cost of materials, right before a launch deadline. Without any control over the change requests and reviews, the teams stand little chance of managing the project effectively. This needs to be addressed.

With **effective project collaboration and planning**, companies can achieve greater customer loyalty and higher profit margins⁵.

FOCUS AREAS



Product development visibility

Can't keep up with the email and paper trail? A bird's eye view of product development activities is essential to keep track of changes, and speed up decisions and approvals.



Project efficiency

Inefficiencies in projects can significantly impact your time to market. Closer collaboration is the key to strengthening agility and delivering more sustainable products faster



Consumer engagement

Keen to get inside the minds of consumers? By unlocking insights into their needs and expectations, you can give your teams the leverage they need to balance consumer pressure for sustainability while driving product sales.

⁴"Together Makes Better" by Accenture (May 2020)

⁵"The Collaboration Blind Spot" by Harvard Business Review (March 2019)

KEY ACTIONS

1. Collaborate on a single platform

At the heart of the **3DEXPERIENCE** platform is virtual twin technology – the backbone that connects all stakeholders in the value chain and keeps information centralized. Virtual twin technology allows these stakeholders to work on a single, dynamic and accurate model of the packaging from beginning to end.

The extended visibility provided by the platform eliminates the cost of trial and error, especially when reviewing 3D models, validating lab test results and approving new labels.

By leveraging the **3DEXPERIENCE** platform for project management, your teams are able to:



Eliminate costly project inefficiencies



Spend more time innovating



Streamline approvals and reviews



Deliver more sustainable products to market faster

2. Analyze consumer insights

Want to deliver innovative packaging experiences that inspire brand loyalty? Through virtual twin technology and the **3DEXPERIENCE** platform, your teams can analyze and transform raw consumer data into actionable insights. Stimulate innovative ideas by sharing consumer insights with team members on the collaborative platform.

By understanding the needs of consumers, you can make more data-driven decisions to elevate product design and quality, and become more competitive. Through realistic 3D modeling on the platform, your teams are able to better evaluate the packaging through the eyes of the consumer.



INDUSTRY SPOTLIGHT

Spanish wine producer **Familia Torres** leverages the **3DEXPERIENCE** platform to improve:



Digital approval processes

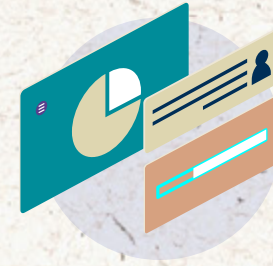


Project management



Document management

Highlights:



Halved the time for project approval through the implementation of proper workflows and project management tools



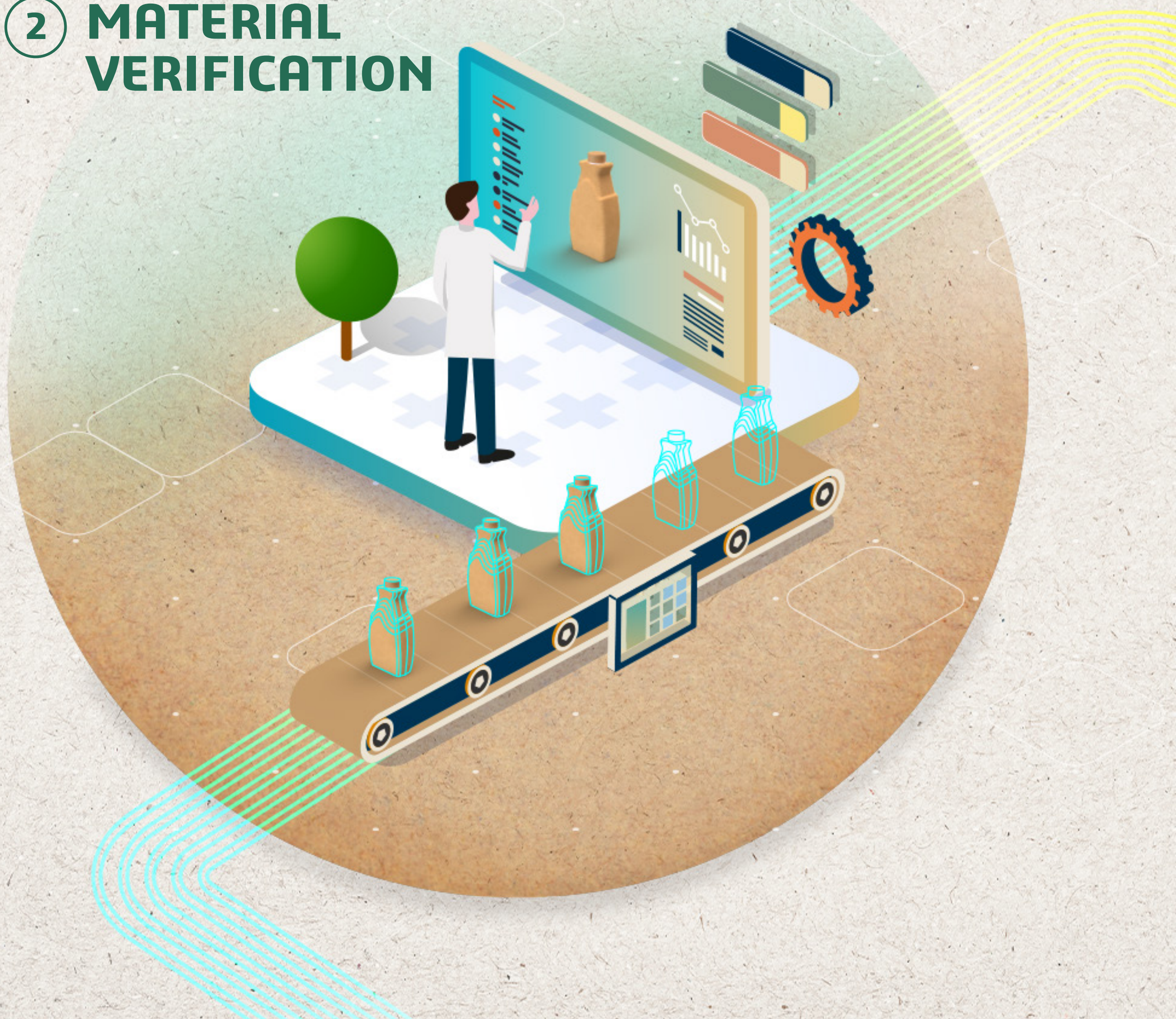
Improved communication with seamless information sharing and complete visibility of every step of the product development process



Reduced rework and late-stage changes, and increased time to market

With the ability for its team to manage project approvals on the go, Familia Torres has been able to significantly speed up the time it takes to launch new products.

② MATERIAL VERIFICATION



“Years of research have gone into optimizing today’s plastic packaging for **quality, performance and durability**. As the industry turns to more sustainable materials, there’s a renewed sense of urgency because we simply don’t have 15 years to test and innovate anymore.”

Hrishikesh Mohan, the CPG and Retail Industry Solution Technical Director at Dassault Systèmes echoes the industry’s biggest challenge with material verification.

Mohan adds, “While there’s a priority for more sustainable packaging materials, the consumer experience is still vital. Even with new materials, if the consumer struggles to open the package or the packaging easily tears or creases, then it’s not a good experience — and **brand loyalty** could suffer.”

A bad consumer experience is not good for business. Therefore, it’s critical to ensure that the packaging is durable and easy for the consumer to take apart.

Virtual modeling and simulation is the key to making sure your teams don’t have to start from scratch when verifying and validating new materials.

FOCUS AREAS



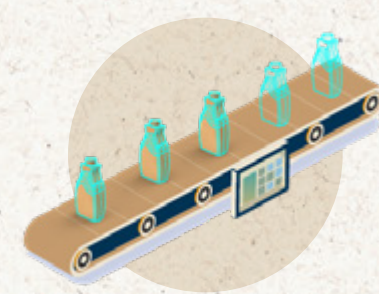
New material testing

How well can your packaging withstand heavy loads during transportation? Does the recycled plastic material impact the product’s shelf life? Scientific testing is crucial to understand how new materials perform — from testing in the lab to pilot runs in the manufacturing facility.



Recyclability and biodegradability

If the consumer is unable to recycle or refill your package because the materials could not be taken apart easily, then it’s no longer sustainable. Minute details matter and need to be thoroughly verified in the lab.



Manufacturing efficiencies

Production lines may need to be customized based on the characteristics and behavior of new materials. For example, injection molding of plastic may result in different outcomes when using recycled plastic. With accurate testing of new materials, you can reduce costly bottlenecks in manufacturing.

KEY ACTIONS

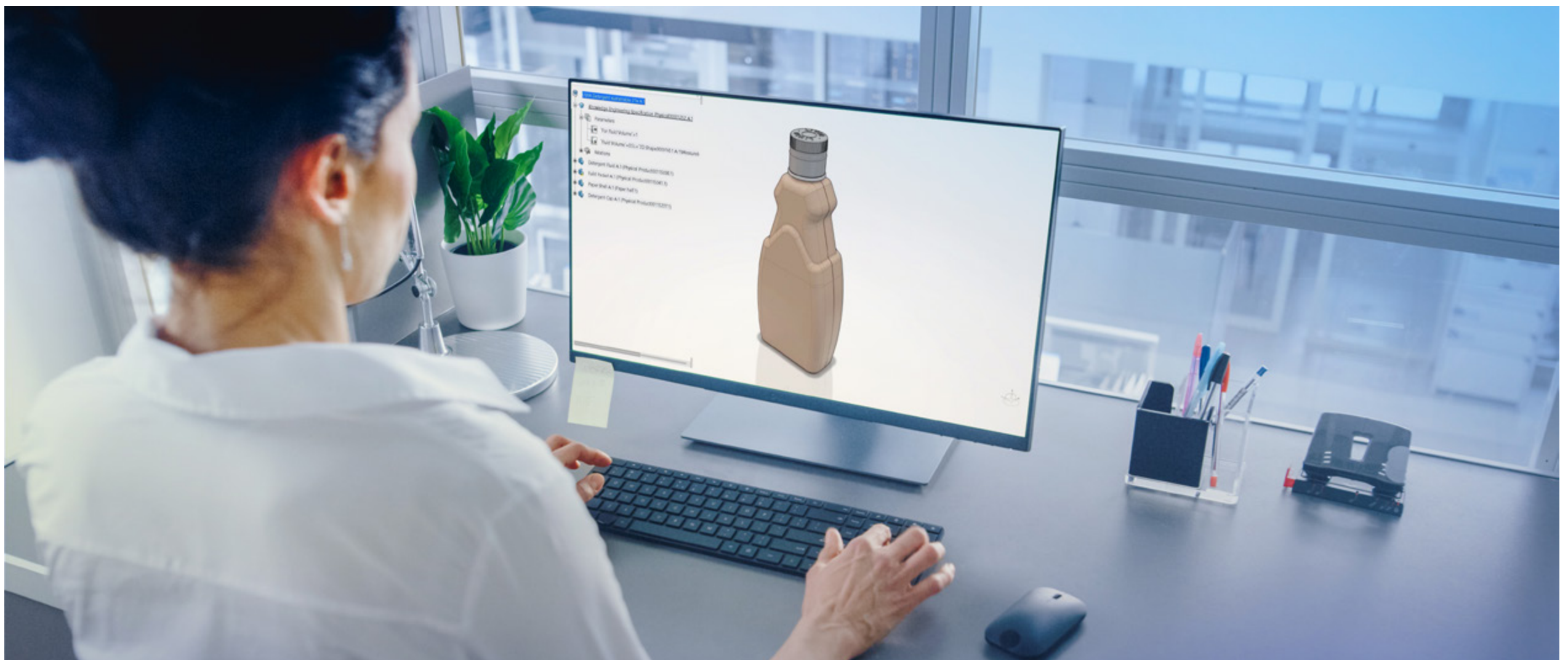
1. Accelerate innovation through virtual testing

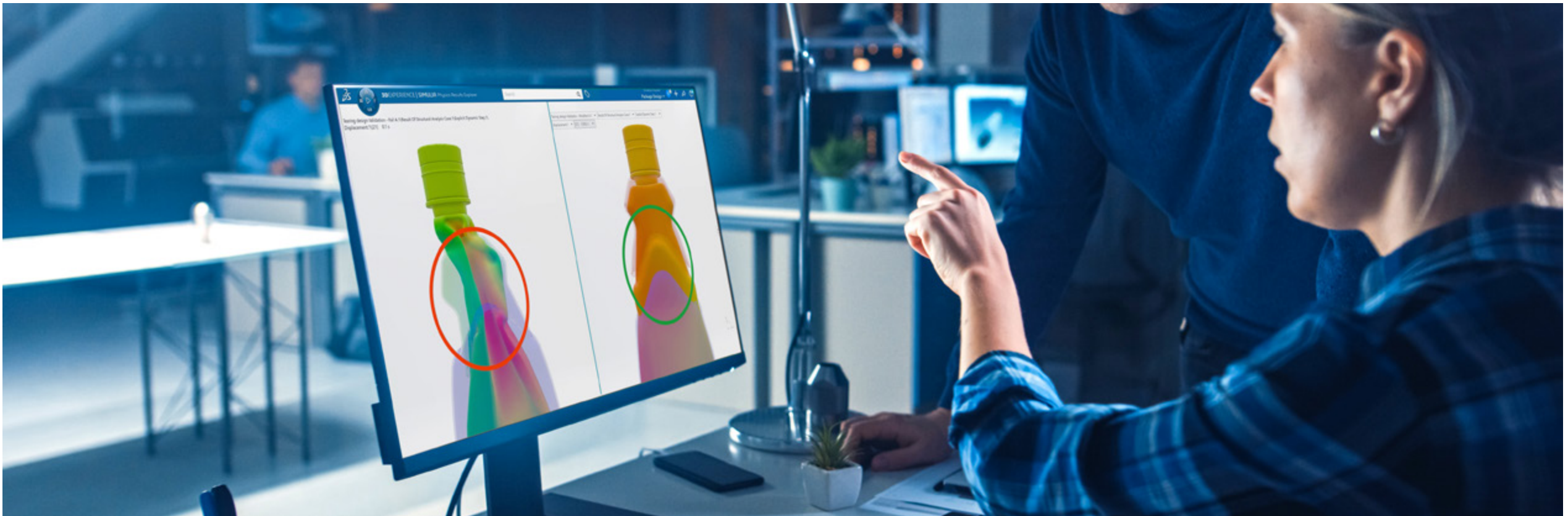
Rigorous standards can be a challenge when testing new materials. Through scientific, virtual lab testing — powered by the **3DEXPERIENCE** platform — your teams can better assess the composition of new materials, right down to the molecular level, and evaluate their effectiveness on primary, secondary and tertiary packaging.

In many cases, the inclusion of new packaging materials may have an impact on product taste, smell or performance. It's critical to determine the optimal combination of materials to protect brand equity while giving consumers the product experience they expect.

Virtual testing limits the need for physical testing, thus saving materials, time and costs. With fewer iterations, your teams get to innovate faster and exceed your sustainability targets.

Efficient digital tools in the laboratory, like Dassault Systèmes' BIOVIA Scientific Notebook, improve productivity by making your data searchable and shareable, which reduces the need for costly physical testing.





2. Boost sustainability claims with modeling and simulation

Say, for example, your packaging consists of two different materials and the consumer needs to be able to take them apart for recycling. However, if the materials don't separate cleanly, the consumer can no longer recycle the packaging and it's now deemed unsustainable. This can be avoided with modeling and simulation on the **3DEXPERIENCE** platform.

With advanced modeling and simulation at their fingertips, your teams can accelerate material verification especially by taking **recyclability and biodegradability** into account, and determine how to optimize the separation of materials, either by the consumer or as part of the recycling process.

By understanding new materials faster, your teams can substantiate sustainability claims while managing costs, quality and performance.

3. Verify manufacturing processes for the right fit

To make smart material decisions, it's important to understand how these materials behave from the lab to the manufacturing facility. For example, you'll want to know if the material will wrinkle, crease or tear during the manufacturing process.

By assessing material recyclability and biodegradability, your teams will better understand how the packaging holds up during manufacturing — and **avoid costly delays** in getting the product to market.

For instance, your supplier provides a new biomaterial. You'll then have to make sure the material can go through the machinery without any problems. This is where modeling and simulations add further value.

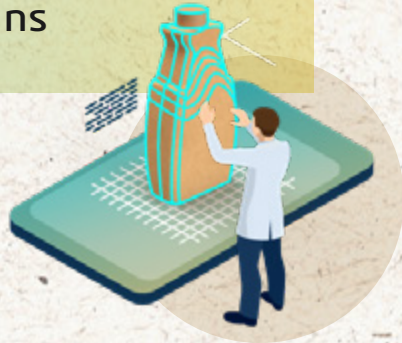
"It's not just about simulating the product, but also the manufacturing processes and associated processes along with it. This can inform companies of the risk factors during manufacturing that might delay their product line," says **Prabu Gokulanandam**, Modeling and Simulation Senior Solution Architect at Dassault Systèmes.

INDUSTRY SPOTLIGHT

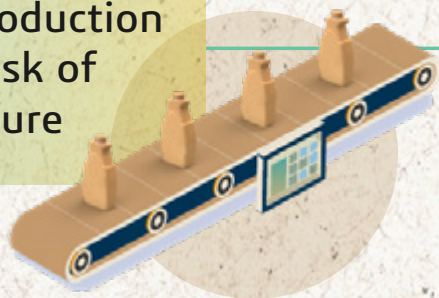
A leading [global packaging manufacturer](#) uses Dassault Systèmes' SIMULIA in the simulation of containers throughout its design process.

Highlights:

✓ Helped engineers identify potential failure points, which lead to lightweighted, optimized designs



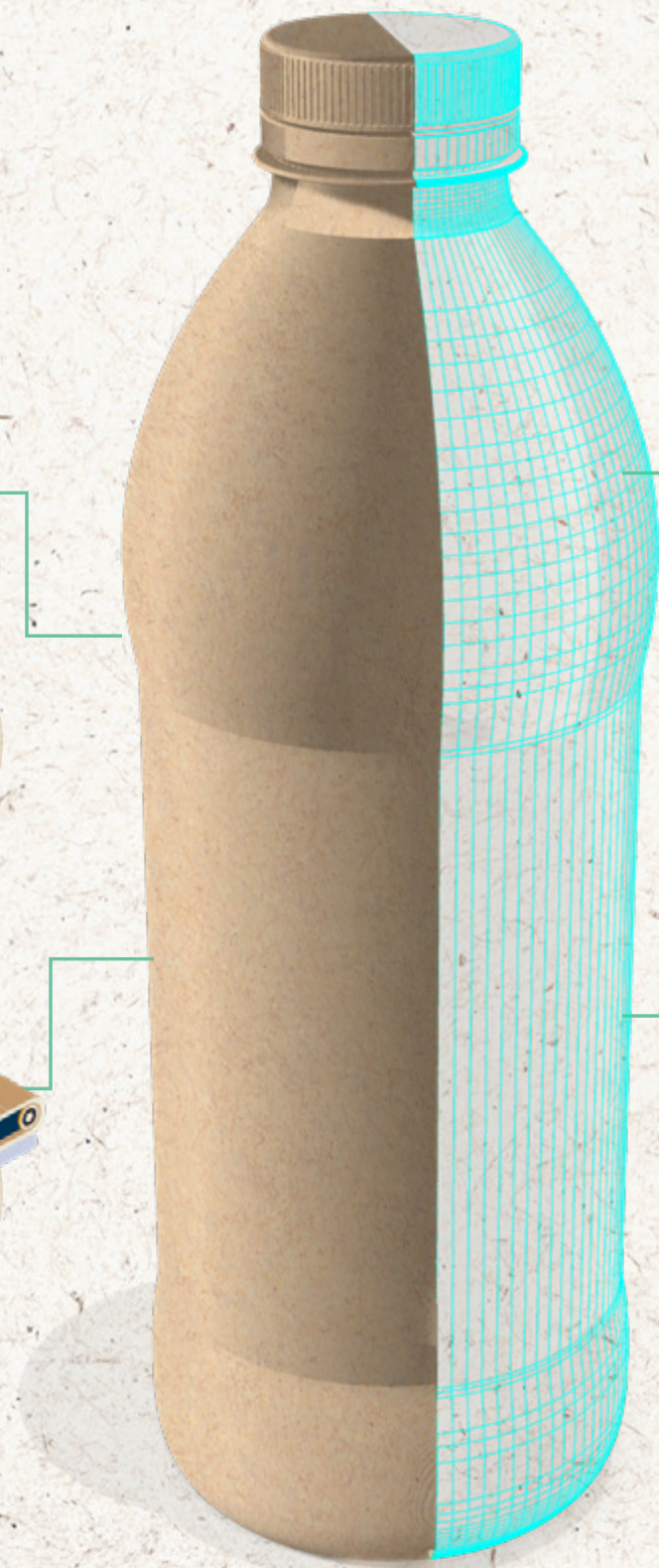
✓ Reduced production costs and risk of product failure



✓ Improved the effectiveness of the R&D team with faster innovation



✓ Accurately identify potential problems early to create better products



3 PACKAGING DESIGN AND QUALIFICATION



Imagine being able to see how your sustainable packaging design performs against real-world conditions. All before a single product is physically produced.



Consider how your products are loaded into a delivery truck. If stacked on top of one another, what happens to the products right at the bottom – the units that are taking on the weight of all the others? Will your packaging hold up?

Real-world modeling and simulation provides insight into the performance of your packaging designs, before it's rolled off the conveyer belt.

FOCUS AREAS



Real-world virtual prototypes

How can your designers optimize the packaging by reducing the amount of materials? The answer lies in 3D simulation. Through virtual prototypes, your designers can develop robust packaging in the shortest time possible with the least material, cost and carbon footprint. All this without compromising product quality and brand equity.



Measurable sustainability progress

Did you know that 80% of a product's environmental impact is determined during the design phase? Lifecycle assessment helps your designers understand the environmental impact of packaging design and material choices so the best decisions can be made earlier.

KEY ACTIONS

1. Transition from physical to virtual prototypes

With virtual prototypes, your designers can run hundreds of simulations in parallel, based on real-world conditions, to design the optimal packaging.

Simulation on the **3DEXPERIENCE** platform makes the lives of your teams easier because it helps them optimize the design of the preform — sometimes, within just a few days. This saves material, reduces costs and leaves more time to innovate.

Looking to fit more packages into one delivery truck to reduce overall CO₂ emissions? Say no more.

By optimizing lightweighting through simulation, your teams can reduce the packaging size by several millimeters and this can possibly fit 10 to 20% more packages into the delivery truck. As a result, you can reduce the CO₂ and transportation costs per product.

Move away from costly physical prototypes to:



Achieve 20 to 30% weight reduction



Fast track design analysis by 85% through virtual prototypes



Reduce physical testing by 50% with simulation



Leverage virtual mold and tooling to speed up a more accurate mold creation

2. Simulate innovative and functional designs

“A company developed a sustainable packaging design that uses cardboard instead of plastic. The innovative design won awards,” says Eran Reinshmidt, the CPG and Retail Industry Solution Experience Director at Dassault Systèmes.

He adds, “However, the company was unable to scale up the design for manufacturing. This is where simulation played a big role. It helped the company create a package from the original design that can be manufactured at scale.”



3. Track and measure sustainability progress with lifecycle assessment (LCA)

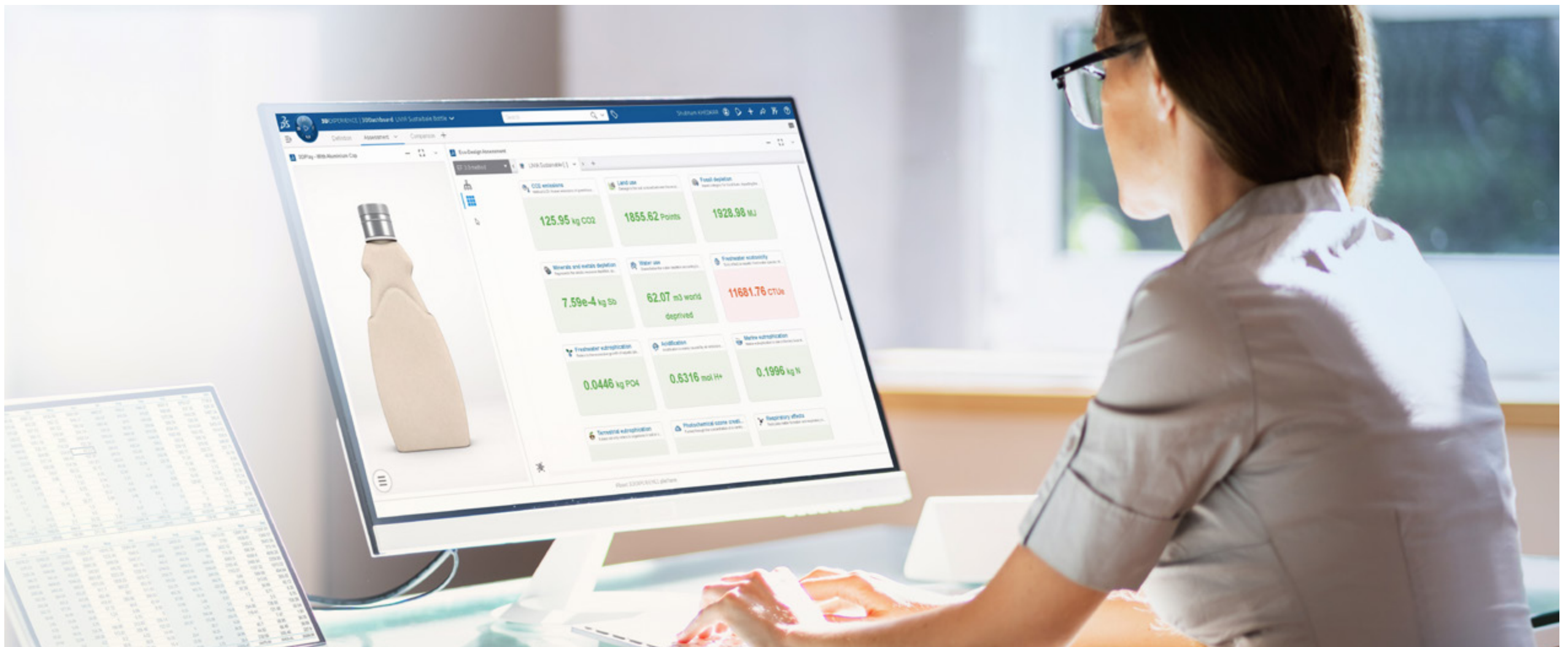
Integrated into the **3DEXPERIENCE** platform, LCA gives your teams the ability to assess the sustainability of different decisions at the design phase.

By **quantifying the environmental** impact of the entire packaging value chain, LCA can help your teams answer critical questions like:

- What are the most sustainable packaging designs and material selections?
- Which processes have the lowest consumption of energy and water?
- How much CO₂ emissions are generated from a material or process?
- How will regenerative sourcing practices impact the carbon footprint of the packaging?

For example, 97% of retailers across the UK and Ireland are prioritizing sustainability when choosing a supplier⁶. Using LCA, you can decide which manufacturer and supplier strategy may give you the best carbon footprint.

“Knowledge gives us power to make a positive impact. With LCA at the heart of product design and development, designers and engineers are better informed to make **sustainability-driven decisions** and embrace circularity,” advocates **Jonathan Dutton**, the Sustainability Marketing Director at Dassault Systèmes.



⁶Positive Packaging: Towards a Low Carbon Future (2020)

INDUSTRY SPOTLIGHT

Packaging solutions manufacturer **RETAL** uses the **3DEXPERIENCE** platform, including its integrated applications CATIA for design and SIMULIA for analysis and digital simulation.



Highlights:

- Quickly iterated towards the optimum preform weight and strength ratio
- Proposed various alternatives to customers before physical units were manufactured
- Shortened cycle time by leveraging the extensive preform library
- Accelerated its customers' time to market for cost-effective, sturdy and lightweight packaging

4 GLOBAL PRODUCT DATA MANAGEMENT



Without accurate and accessible product data, companies run the risk of developing sub-optimal designs that may extend approval times.



When processes like claims, labeling and artwork are not centralized, precious time is wasted on gathering information from various sources and seeking validation and approval.

It's time to say no to paper samples and spend less time on manual work — and more time innovating.

FOCUS AREAS



Accessible product specifications

Spending too much time to call up the relevant departments for the latest product specifications? Accurate and accessible product data is needed to fast-track future designs without resulting in costly rework and delays.



Supply chain traceability

Claiming a product is using 40% recycled plastic is not as simple as it looks anymore. Sustainability claims will now undergo intense scrutiny through strict environmental regulations. End-to-end supply chain traceability is required to provide the necessary proof points that can substantiate those claims — and to avoid harsh penalties and costly packaging recalls.

KEY ACTIONS

1. Optimize labeling, artwork and claims management

With the collaborative **3DEXPERIENCE** platform, your teams can drive value in utilizing the correct product data for future packaging projects. Collaborate from idea generation to validation of the final package using a digital representation of the same label, artwork and claims.

By optimizing labeling, artwork and claims management, you get to:



Accelerate approval processes



Avoid costly rework and delays



Improve the accessibility of product data



Increase speed to market

2. Establish clear traceability

As global guidelines boost the industry's focus on sustainability, each claim needs to be validated thoroughly. This requires transparency from suppliers, and validation from testing and manufacturing processes to justify the product's eco-friendly status. For example, providing a document from the lab that shows that the material is 100% recyclable.

With LCA capabilities on the **3DEXPERIENCE** platform, your teams can connect the dots between each stage of the packaging lifecycle – and map out the entire supply chain of a product.

Looking to access simulation results from a design completed three years ago? The single platform keeps all information centralized and accessible at all times.



INDUSTRY SPOTLIGHT

To reduce packaging development times and costs, a global leader leveraged Dassault Systèmes' Perfect Package solution on the 3DEXPERIENCE platform to provide all its stakeholders with secure, digital access to all the elements of the packaging including copy, logos and designs.

Highlights:

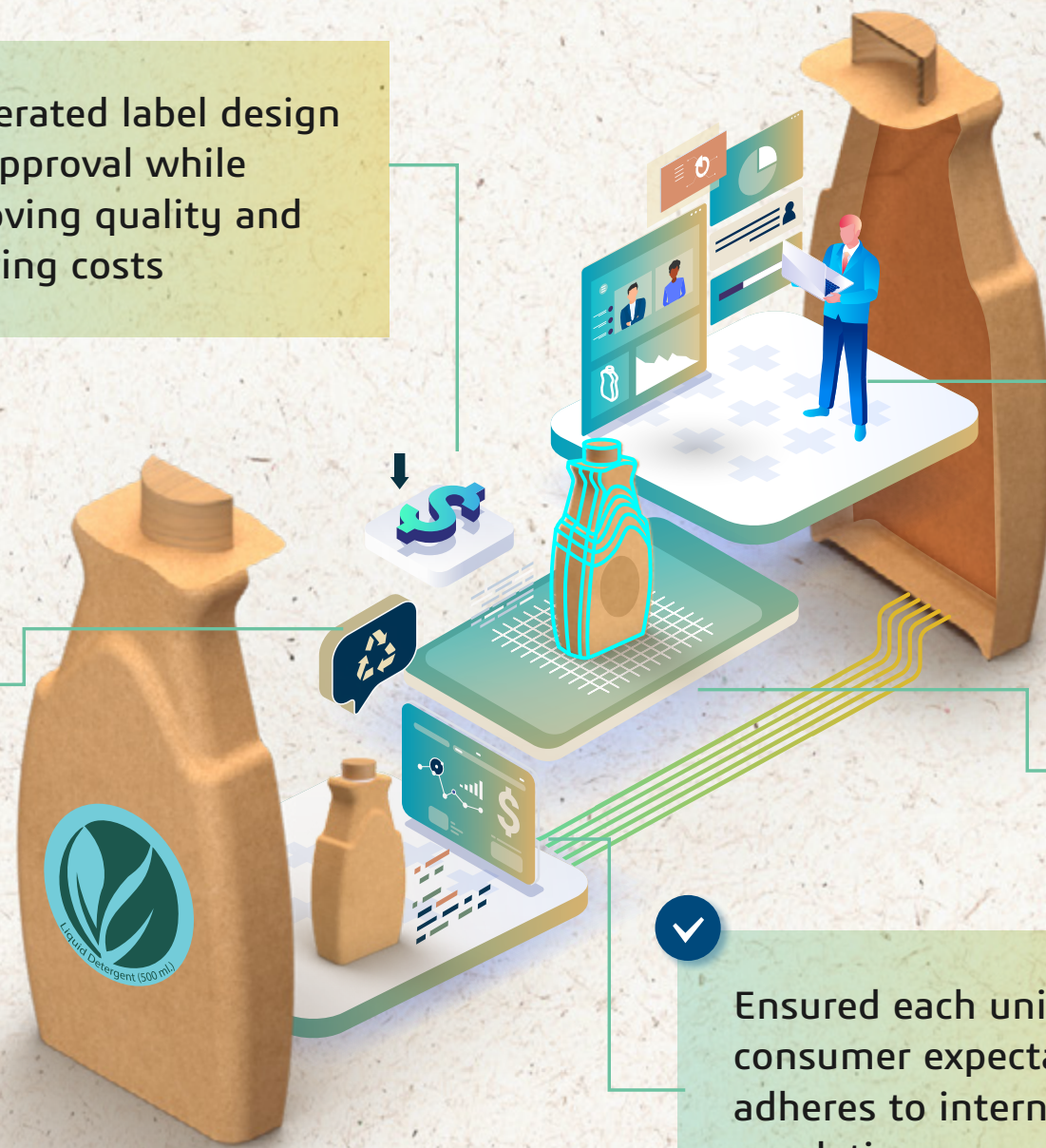
✓ Accelerated label design and approval while improving quality and lowering costs

✓ Ensured designs and intellectual property that previously resided at external agencies are brought back into the company

✓ Eliminated the need to exchange paper samples, thus reducing new labeling creation cycle time

✓ Collaborated from idea generation to validation of the final packaging using a digital representation of the same master label

✓ Ensured each unit sold meets consumer expectations and adheres to international regulations



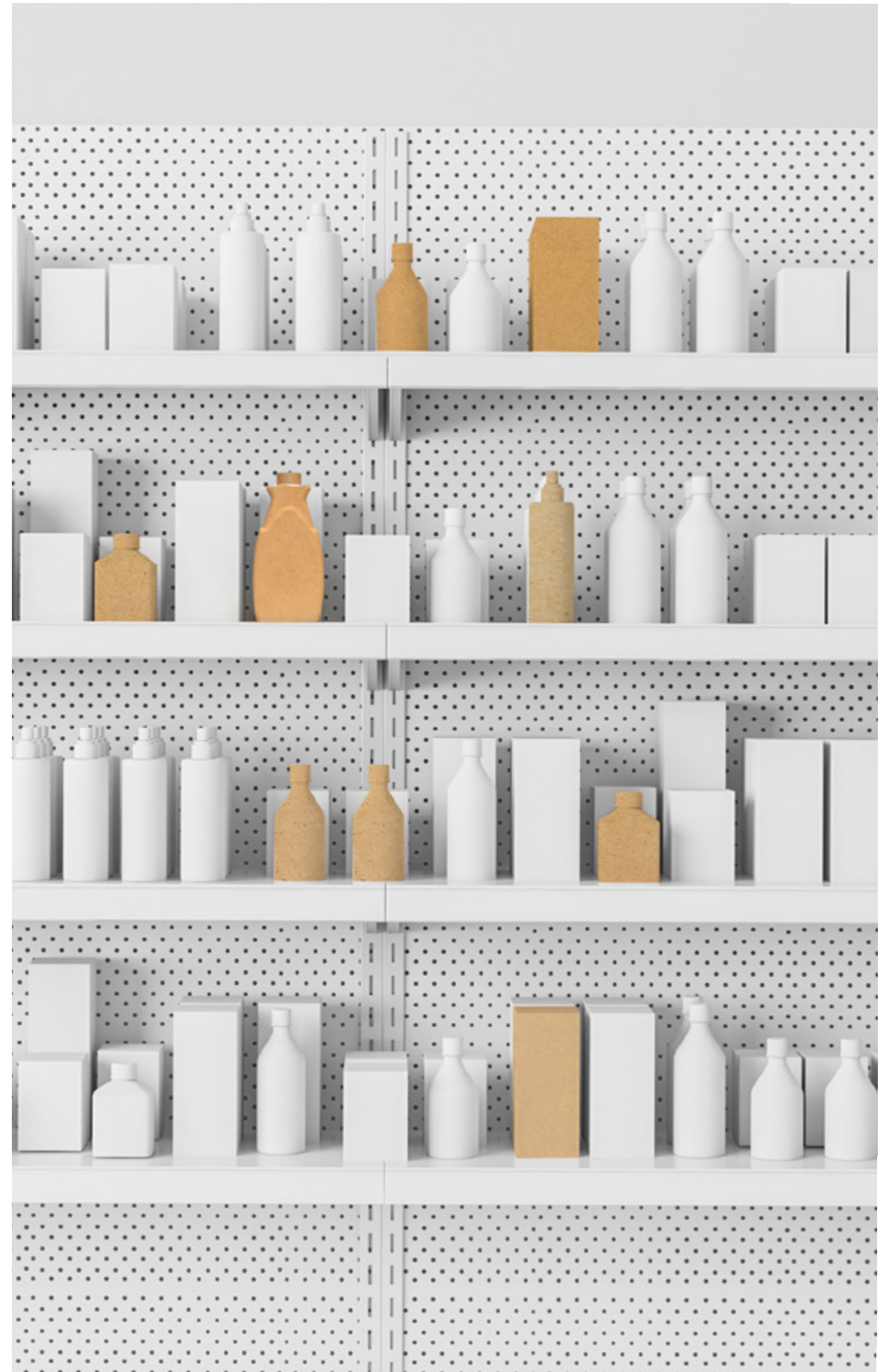
EXCEED SUSTAINABILITY AND GROWTH GOALS

Now that you've gone through this playbook, it's clear that sustainability can be economically feasible. But deploying the right sustainable packaging strategy is key.

The robust **3DEXPERIENCE** platform helps leaders deliver sustainable packaging that allows for the most efficient use of resources, thus minimizing costs and increasing profitability.

Backed by deep expertise, experience with today's industry leaders, and involvement as a member of the Ellen MacArthur Foundation, Dassault Systèmes is uniquely positioned to help you turn sustainability into a growth driver for your business. The challenges are real. But so are the opportunities.

Explore more insights [here](#).



EXPERT CONTRIBUTORS:



Hrishikesh Mohan

CPG & Retail Industry Solution Technical Director,
Dassault Systèmes

Hrishikesh is a business-oriented technical professional with 20 years of experience in delivering solutions for various industries. He's currently responsible for ensuring the execution of Dassault Systèmes' purpose: To provide business and people with **3DEXPERIENCE** universes to imagine sustainable innovation capable of harmonizing product, nature and life in the Consumer Packaged Goods and Home & Lifestyle Industries.



Jonathan Dutton

Sustainability Marketing Director,
Dassault Systèmes

Jonathan is passionate about helping industries transition to a sustainable economy. He's currently engaging with leaders to use virtual twin technology in solving today's challenges, including decarbonization, circular economy and business resilience. Jonathan joined Dassault Systèmes in December 1999 with his collective experience in the design and manufacturing of powertrains and chassis components for the automotive industry.



Eran Reinshmidt

CPG & Retail Industry Solution Experience Director,
Dassault Systèmes

Eran is a solution leader with broad experience in defining and delivering solutions for various industries. He's currently leading Dassault Systèmes' solutions for product and packaging end-to-end development processes in the Consumer Packaged Goods and Home & Lifestyle Industries.



Prabu Gokulanandam

Modeling and Simulation Senior Solution Architect,
Dassault Systèmes

Having been with Dassault Systèmes for 10 years, Prabu works in the North America MODSIM Technical Sales team. He's responsible for highlighting the value of **3DEXPERIENCE** MODSIM in customer engagements. Prabu has in-depth experience supporting customer initiatives, including simulation processes for packaging workflows spanning rigid and flexible packaging, and deploying these to the designer community.

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.

