

Transportation & Mobility



# GAINING A COMPETITIVE EDGE

with Intelligent Product Configurations

# INTRODUCTION



Today, customer expectations for unique, personalized products poses both a challenge and an opportunity for forward thinking manufacturers. In the Automotive and Mobility industry, the need to tailor products-to-order has been a necessity for some time, adding both complexity and cost to their process. The need to address this challenge is now emerging across many other industries.

Industry OEMs and their immediate suppliers, which have traditionally built their business models and plants around mass production, are experiencing the shift toward more varied configurations. According to independent research firm Tech-Clarity President Jim Brown, "About 70% of manufacturers in the automotive industry expect the amount of configuration and customization in their products to grow over the next several years. Around 40% expect it will increase significantly. That anticipated growth of customization in the automotive industry is greater than the average percentage growth for manufacturing industries as a whole."

The trend toward greater vehicle customization started with specialized equipment for agricultural and heavy transportation, but is rapidly moving to mainstream vehicles. OEMs now need to design in options and variability to meet this market demand at scale. This is increasingly important as non-traditional competitors continue to penetrate the market

and disrupt the status quo by offering this variability as part of their core business — as they are doing in the electric, autonomous vehicle (ELV) market. Companies, including Google and Apple, are leveraging digital agility and exceptional consumer choice to penetrate markets with traditionally very high barriers to entry.





# GAIN A COMPETITIVE ADVANTAGE

Most manufacturers have already invested heavily in flexibility and agility on the plant floor. They've driven high levels of productivity through Lean Production and Six Sigma programs, and have improved quality and kept production costs steady even as vehicle complexity has risen. They cannot sacrifice these quality and productivity gains made on the manufacturing side to accommodate increasing design variability and configurability on the engineering side, nor afford to implement poor, immature or complex processes.

Yet manufacturers must act quickly. Customization is rapidly moving from a differentiating strategy to a competitive necessity. Instead of hoping to drive a price premium by increasing demand through customization, companies must recognize that customers expect this capability by default and at no additional cost. For example, in the traditional automotive industry, customers want to tailor a vehicle to their needs – but they don't want to pay extra for the privilege. If customers cannot get what they want with a reasonable wait, they go to a competitor. An approach that not only offers more options to customers, but also does not significantly affect complexity, cost, quality, or lead times, delivers manufacturers a sustainable competitive edge.

# MANAGE THE CHALLENGE OF MASS CUSTOMIZATION

How can manufacturers cost-effectively manage the complexity that is inherent with mass customization processes? It's no secret that managing bills of material (BOMs) is already a challenging, complicated process when there is one department producing goods. Today's smart products, like ELV, require a multi-discipline approach that must synchronize information from multiple engineering departments across a variety of converging design disciplines. Factoring in multiple variants and configurations across these disciplines, further affects the entire product lifecycle and significantly increases complexity.

In addition to inefficiency, the way most manufacturers typically manage variants creates redundant information, jeopardizes quality, and leads to model proliferation. Increasing personalization makes these issues even worse. Why? Today's processes were not built to accommodate mass customization in an agile, cost-effective, simplified way. Traditional approaches copy and modify product data to create new variants, generating an explosion of data to manage and maintain for each of these new "products." This method creates inefficiency throughout the product lifecycle and creates the need for labor intensive, error-prone, and time-consuming engineering change processes. In short, they are neither simple nor agile, and not optimized to handle the increased demands for personalization.





## STRATEGICALLY LEVERAGE COMPLEXITY

Complex configurations do not *have* to cause inefficiency and errors. In fact, manufacturers can benefit by strategically increasing product diversity and complex variant configurations! Now is the time for manufacturers to adopt a new approach. *Intelligent* product configurations allows manufacturers to seize the customization opportunity, without introducing additional cost and complexity.

# PURSUE BETTER PROCESSES

It's time to act. Automotive & Mobility manufacturing industries are already struggling with competition from smaller, more agile competitors who have embraced state-of-the-art digital processes. Digitalization has leveled the playing field, dropped barriers to entry and allowed small upstart companies to compete with industry giants.

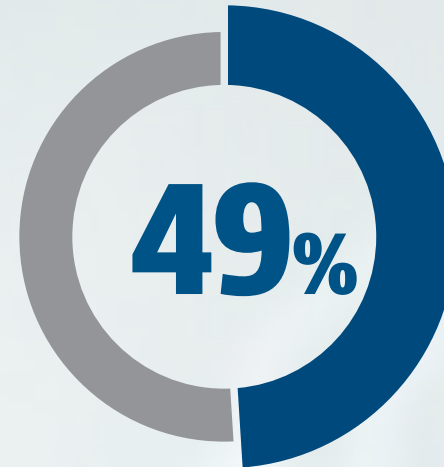


Manufacturers have to respond to stay competitive. Relying on the brute force method of duplicating and modifying BOMs and CAD files is a flawed strategy. It's time for a new approach that enables greater product diversity, without increasing the burden on those designing and developing them. It's time to transform and adopt cohesive digital continuity designed to accommodate customization from the portfolio planning process and configured design to production.

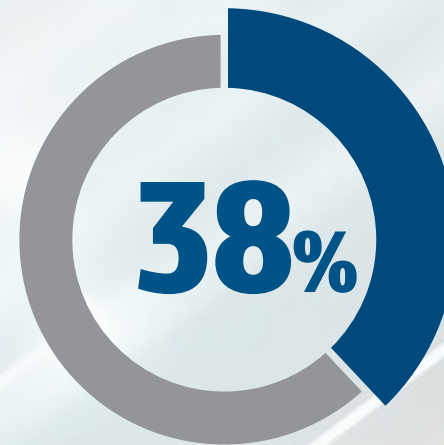
Manufacturers can take advantage of ENOVIA and the **3DEXPERIENCE** platform capabilities to implement intelligent product configurations, making mass customization sustainable at the scale of mass production. This systematic approach offers selection and choice to customers, while reducing the complexity associated with traditional engineered-to-order customization.

Incorporating predefined variability using modular design and platform design techniques is the scalable way to deliver customization. It offers customization at the cost of mass production, without compromising quality.

### Tech-Clarity Research Shows the Top-Performing Manufacturers are:



More likely to leverage Platform Design



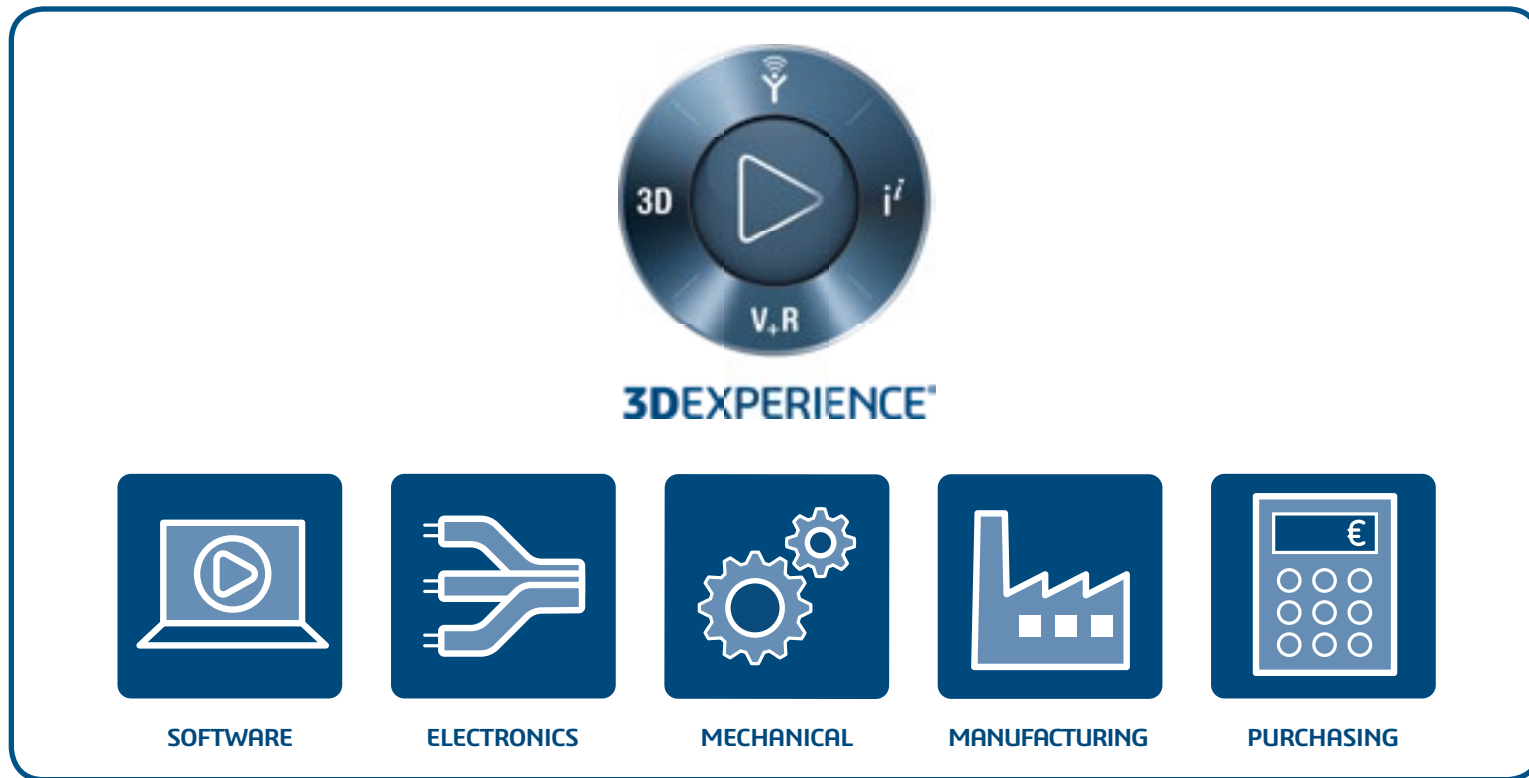
More likely to utilize Modular Design

# IMPLEMENT INTELLIGENT PRODUCT CONFIGURATIONS

Intelligent product configurations streamline processes and information across the enterprise to proliferate variability and consumer choice. Here's a glimpse of the roles performed by key players in the process:



An intelligent product configuration process supports digital continuity across these roles to drastically improve customer satisfaction without suffering from the unwanted impacts and complexity of traditional configuration management approaches.



## ENOVIA AND THE 3DEXPERIENCE PLATFORM

None of this is possible with a patchwork of different systems to support design, configuration and manufacturing. It requires an innovation platform that allows configurability to be defined at the portfolio level and maintained in digital continuity through production. ENOVIA and the **3DEXPERIENCE** platform enable manufacturers to plan, design, optimize and manufacture in configured context through an enterprise-level model that includes the engineering definition (including the BOM) and manufacturing BOP information in a holistic product definition, with integrated enterprise change management and release.

The solution is more accessible than ever. Intelligent product configuration is supported by the **3DEXPERIENCE** platform on the cloud, offering large and small manufacturers access to world-class capabilities.

## AUTOMOTIVE AND MOBILITY PERSPECTIVE: KREISEL ELECTRIC

Passion for electromobility technologies and fast cars were the driving forces behind Kreisel Electric's project to electrically-power a 1971 EVEX Porsche 910, baptized the Kreisel EVEX 910e. The company was founded by three brothers whose passion for electric propulsion has given birth to high performing battery packs and energy storage systems for the road and home.

Replacing this classic model's original combustion engine with its patented and award-winning long-range battery pack required careful planning, ingenious engineering and 3D technologies from Dassault Systèmes' **3DEXPERIENCE** platform.

With **3DEXPERIENCE**, Kreisel Electric engineers had a single source of trusted information that promoted real-time collaboration, state-of-the-art design and simulation applications to engineer, test and manufacture all required components and systems as well as planning tools to ensure the project stayed on budget and on schedule.



"Thanks to the **3DEXPERIENCE** platform, we have reduced our development cycle time by 50% leaving more time for innovation."

Philipp Kreisel - Founder & CEO, Kreisel Electric

Learn more from Dassault Systèmes about how ENOVIA and the **3DEXPERIENCE** platform support intelligent product configuration to enable vehicle manufacturers to gain a competitive edge by delivering configured variants in a sustainable way.

Discover how you can offer more personalized products and experiences, at competitive prices and with the level of quality today's demanding customers expect.

Explore your options at [3DS.com/transportation](https://3ds.com/transportation)



## Our **3DEXPERIENCE**® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE**® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit [www.3ds.com](https://www.3ds.com).



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