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## *THE FUTURE OF* **PRODUCT DEVELOPMENT** **IS MODEL-BASED**

As more and more companies move from being end-to-end to being model-based, the silos of legacy environments will no longer be viable. These companies should take the example of industry disruptors, who tend not to think in functions, but in capabilities that can cut across their organizations and thus create a seamless flow of information, achieve faster cycle times, and develop complex products very quickly.

These capabilities are poised to drive significant savings. In a 2020 benchmark study conducted by Deloitte's Product Engineering & Development practice, we found that companies making the switch to Digital Twins are saving 20-30%, even within their silos. However, once companies move to become Model-Based Enterprises (MBE), they see an additional 20-40% savings, resulting in total savings between 70 and 80%.

# LET'S TALK DIGITAL TWINS

Digital Twins are virtual models of the physical product or system they represent. They're the building blocks for MBE that no longer rely on drawings and static data.

In the post-pandemic world, companies have had to shift focus very quickly. While the idea of the Digital Twin has always been powerful, not all Digital Twins are equal. Companies may talk about a Digital Twin, but they're likely talking about it in a silo. Therefore, it's critical to talk about a comprehensive Digital Twin. This requires a multifunctional scope, but also the idea of a Product Digital Twin that can consider process, production, and service. Only then can a company truly do interrogation on, and understand the impacts to, their business. Having a comprehensive Digital Twin and coupling it with verification and validation capability allows organizations to interrogate any type of scenario that comes up.

There are three types of Digital Twins: **Product, Smart Factory and Supply Chain, and Service**. When a company or organization successfully and efficiently utilizes all these capabilities, they have achieved an MBE.

## PRODUCT DIGITAL TWINS

are digital models of a product and each of its parts, as designed by engineering. Many companies have already invested heavily in Product Digital Twins, in part because they're most familiar with this type of Digital Twin. It defines features and requirements, develops concepts and detailed design, and simulates and validates a product. A model-based definition—of creating a 3D model of the product—and model-based systems engineering are needed to simulate all aspects of a product. These features are important for looking at the cross-functional requirements you need early in the design, eliminating the downstream churn, and driving the most impact.

## SMART FACTORY AND SUPPLY CHAIN DIGITAL TWINS

are digital models of manufacturing equipment, processes, and related operations personnel that aid in the planning, building, and sourcing of a product. Organizations use Smart Factory and Supply Chain Digital Twins to simulate the launch of their new product. However, as a product is launched, they often wonder how else they can utilize this software. Only up to 5% of companies are able to create Digital Twins on the shop floor. Of that percentage, few start to think beyond it to combine their manufacturing and ERP data with supply and demand to make predictions about their product or potential issues.

## SERVICE DIGITAL TWINS

are used to operate and maintain a product; however, they don't apply to all industries. A Service Digital Twin deals with serializing a product, testing physical product performance and configuration, and accrual service records for maintenance, repair, and overhaul.

# THE MBES OF 2040

in generative design for complex assemblies, automated design simulation, advanced manufacturing of complex assemblies, supply chain towers and data assets, information flow, and real-time insights.

So how do you get there? Deloitte's market-leading digital transformation experience, deep industry knowledge, and full breadth of services, combined with Siemens' preeminent digital product development and digital thread capabilities, can help your organization achieve better results and see improvements in development efficiency, faster time to market, reduction of product cost, and a decrease of cost of quality. We help our clients reimagine the product lifecycle so that everyone in the organization has insight into the process and can take advantage of the benefits of physical-to-digital-to-physical technology convergence. This way, you can fully realize the value brought by Digital Twins and the Model-Based Enterprise.

## Ready to get started?

*Get in touch today to discuss your transformation to a Model-Based Enterprise.*

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