



EBOOK

How to build a platform for product data and processes that is tailored to your business goals

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TRANSFORMING PRODUCT CREATION

Do you know the benchmarks for a product development strategy that is designed for sustainability while enabling management to successfully respond to trends like smartification and customization? Do you know how market leaders analyze, control and regulate their business processes from an end-to-end perspective and achieve resilience in a global economy?

Let us give you a blueprint for the transformation that will make you part of the digital leaders. Our CENIT consultants looked into the challenges for your product creation processes.



TRENDS IMPACTING YOUR BUSINESS MODEL

Smart new world of connectivity

The Internet of Things (IoT) and the Industrial Internet of Things (IIoT) involve connectivity with fast-moving consumer goods (FMCG) and high-end luxury articles, as well as medical technology, control devices for smart homes, vehicle engines and tooling machines. To become part of this smart new world, businesses have to embed ever more microprocessors and transmission-enabled sensors in their products. A quick glance at the recent assembly line downtimes in the car factories will show you how far smartification has progressed in our modern economy.

The consequence is that product creation must find ways to efficiently manage the complexity of mechatronic systems. In other words, it must govern the development and interplay of mechanical, electronic and electrical engineering and software.

In a similar way, customizing has become pervasive across industries, from construction machinery with extensive configuration options to sneakers with custom color composition. For businesses, this individualization trend means they urgently have to find effective solutions for variant management and lot size 1 manufacturing.

Sustainability needs value-driven globalization

Our social obligation to pursue sustainability goals means that the opportunities of globalization can no longer be seen just as a way to obtain cheap mass-produced items. Instead, businesses are creating global value-adding networks and collaborative supply chains with partners compelled by similar values and visions (Youtube: [Key Takeaways from Gartner Supply Chain Symposium/XPO 2021 | EMEA](#)).

To manage such a “co-creative ecosystem“, product development must be driven by [digitalized collaboration, both internally and externally](#). How all these puzzle pieces will come together one day cannot be predicted with any degree of certainty. But in any event, businesses will have to have a stable, high-yield innovation process at their disposal – if “only” to manage decarbonization and survive disruptive competition which may arise next door or at the opposite end of the globe.

BENCHMARK

Five Key Competencies for a value-adding role of engineering

So, what's the best-practice product development model that can make your business succeed in this new environment? CENIT's consultants focus on five key digital capabilities that are crucial to a successful value-adding role of engineering.



Master Data Management

- Automated end-to-end availability of product master data
- Support of cross-functional business processes



Product Release and Change Management

- Cross-platform version and change management (ERP and PLM)
- A seamless product audit trail (control and documentation of changes)
- Impact analysis and bidirectional replicability



Variant Management, Configuration Management

- Management of product variants and product configurations
- Cross-functional visibility of engineering, manufacturing and sales variants
- Support of end-to-end release and change processes



Handover to Manufacturing (Production Planning and Work Scheduling)

- Seamless transition to technical production processes (manufacturing engineering)
- Deployment of 3D software solutions to coordinate and optimize assembly and production processes



Target Costing

- Cross-platform orchestration of product cost calculation processes (PLM, ERP)
- Continuous product cost control, also for product variants
- Availability of target costing concepts from the early phases of product development



Digital Twin

The goal is to represent and guide the products and services of a business by way of virtual twins. As a virtual counterpart, a digital twin undergoes a product lifecycle, meaning that it accurately mirrors all changes during the concept, product, simulation, quality, planning and production phases. This requires a virtual product platform and a digital process platform as an IT foundation.



BEST-PRACTICE BENCHMARKS AND THEIR BENEFITS

How exactly is product creation changing and what does this change offer?

Outlined below are a number of scenarios for the respective best-practice benchmarks and their benefits. For this e-book format the details and interrelationships of these scenarios have been simplified. If you would rather gain an impression of workflows in an operative, real-world environment, we recommend our webinar on this topic.

[Watch Webinar](#)

Digital Consistency in Requirements Management

What are typical effects?

- The project manager examines the product requirements and defines the relevant specifications
- The specifications are digitally documented and matched to the associated requirements
- Based on the specifications, the engineering team develops the relevant components/assemblies. The associated CAD data are linked to the relevant specifications.

What are typical benefits?

- The digital platform manages the relationship between requirement, specification and CAD data. This enables productive collaboration between all stakeholders.
- The transparency achieved makes it easier to optimize the cost-benefit ratio of components
- In each instance, the project manager can determine which requirements have already been fulfilled and where what additional work is needed
- The process generates an audit trail for product requirement fulfillment; this can be used seamlessly in product approval and compliance processes

Implementing Systems Engineering

What are typical effects?

- Let's assume that the client's order includes "smart" components. That means that the specifications will involve multi-CAD tasks.
- M-CAD, E-CAD data and software are correlated with one another and in relation to requirements management, and organized as a task
- The digital twin is represented by the integrated multi-CAD data and the associated software programs.

What are typical benefits?

- The V Model of systems engineering is managed on a digital platform. It offers a complete project overview that reduces the effort needed to fulfill on time, on budget and on value requirements.
- The engineers tasked with mechanical design, electrics/electronics and software can effectively coordinate their sub-tasks and view each other's work progress where required/desired. This prevents planning errors and promotes overall optimization. Timely, collaborative work is digitally supported.
- Using simulation applications, the integrated, digital product model can be continuously analyzed and evaluated, making inconsistencies transparent at an early stage
- Early recognition of system errors saves costs
- Eliminating error sources avoids costly product recalls
- Significantly shorter development cycles for new products and product changes

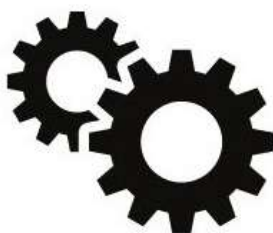
Front Loading: Simulation Driven Design

What are typical effects?

- In an intuitive simulation environment, developers can test their design ideas and implement initial optimization tasks for individual system components or entire systems
- Additionally, the development unit can rely on automated process workflows with predefined process parameters (simulation templates)
- Standard simulation tasks are pulled forward to the early phases of product development

What are typical benefits?

- Added innovation and creativity during the design phase
- Simulation applications become more democratic due to easier operation and reliance on templates; there is greater added value thanks to improved work connectivity (development engineers) and work focus (simulation specialists)
- Improved quality of product drafts due to continuous, integrated evaluation
- Early recognition of conceptual, functional and design errors
- Cost efficiency and greater productivity thanks to a significant reduction in the number of prototypes and less need for physical product testing
- Significantly shorter development cycles for new products and product changes



Configuration Management in the 3D Design Process

What are typical effects?

- Via a variant methodology, the design process integrates the development of configuration variants and their formal descriptions
- The engineers are able to verify module feasibility (variant functionalities)
- The variants are added to the digital twin.

What are typical benefits?

- Consistent digital representation of all product variants across all business processes
- Synergy effects during development and optimization of product families (=product configurations) reduce engineering costs and simultaneously boost product quality; all configurations of a product family can be optimized at the same time
- Improved planning and optimization capability because all variants are available as data for production engineering and production planning

Production Planning and Work Scheduling (Handover-to-Manufacturing)

What are typical effects?

- Production planning and preparation are based on a digital twin that combines all previously generated information: the multi-CAD data, the simulation data (tolerance management), and the data of the component variants

What are typical benefits?

- The 3D digital twin model ensures an optimal user experience and thereby boosts efficient planning, optimization and validation
- Digital consistency: true end-to-end processes
- Early digital validation of assembly and manufacturing processes shortens the time between engineering and the start of production
- Systematic re-use of the digital product model eliminates time-consuming, redundant model definition during production preparation
- Early, rapid verification of production planning and preparation thanks to graphical 3D representation and simulation, shortening the design-to-production cycle





3DEXPERIENCE® PLATFORM: BEST IN CLASS FOR NEW IDEAS

360-degree control of innovation as a competitive advantage

CENIT recommends the 3DEXPERIENCE® platform as the ideal tool for future-proof organization of your product development, because it lets you overcome all the above challenges and exploit the market opportunities of your business. Leverage best-in-class IT for managing your business-critical processes and a digital platform that offers you a major competitive benefit: 360-degree innovation control.

To gain insights on how the 3DEXPERIENCE platform performs in real-world scenarios, see our webinar on “Transforming Your Product Development: Hybrid 3DEXPERIENCE Integration for Innovation and Agility”.

Transforming Your Product Development: [Agile Innovation with hybrid 3DEXPERIENCE-SAP integration](#)

To the recording

3DEXPERIENCE AND SAP

Integrating processes and data gaining bi-directional control

Do you wish to achieve end-to-end organization, integration, automation and management of your business processes? Then you will face the task of interlinking several IT systems. (See our [know-how article on digital platforms](#) to learn more.) For purposes of product engineering, your focus will have to be on ERP, and this is a field where SAP defines the global industry standard.

CENIT provides a solution for 3DEXPERIENCE-SAP integration which has already been proven on the market for several years. Since we are continuously developing this integration tool, we are able to offer you a solution that covers all potential IT architectures. Whether cloud-based, on-premises or hybrid: 3DEXPERIENCE-SAP integration by CENIT combines the best of all worlds, letting your teams work with identical data on both platforms at the same time.

To make sure that you get exactly the central digital control and decision-making platform you need, 3DEXPERIENCE-SAP integration links processes and not just data. What’s more, we ensure that in the event of a scheduled release change on one of the platforms, the 3DEXPERIENCE-SAP integration seamlessly updates the other platform as well.

As the only global software provider that has maintained a strategic partnership with both Dassault Systèmes and SAP for decades, we are uniquely positioned to act as Trusted Advisor for the industry-specific transformation of your product engineering process (PEP).

Download Flyer

HOW CAN YOU MANAGE CHANGE EFFICIENTLY?

Centrally orchestrate and validate changes

To gain an idea of the benefits of this level of integration, let's have a look at change management.

How do you currently manage change? How do you transmit information, data, tasks and releases? How many emails and Excel spreadsheets are involved? How many production errors are caused by incomplete information or faulty planning? Can you be sure that your change management does not contain error sources that may result in product recalls?

3DEXPERIENCE-SAP integration and our process control solution lets you centrally orchestrate and validate all the steps involved in change management, conduct (sub-)tasks in SAP or 3DEXPERIENCE as needed, fully synchronize all data continuously and, in summary, implement changes with maximum efficiency and without any loss in added value.

An example scenario in change management

- The product manager launches the engineering change request in our process control solution.
- In the background, the software automates steps such as the generation of change masters in SAP and the associated change actions in 3DEXPERIENCE.
- Following validation, the change actions are forwarded to the 3DEXPERIENCE platform, which handles the specific allocation of the engineering tasks.
- For each task, the engineers have access to all necessary information on the component, the assembly and the associated product and/or change requirements.
- The approval of the design triggers handover of the data to SAP and sends an automatic report on successful engineering change implementation to the product manager.
- Subsequent production planning and preparation can be conducted in SAP or 3DEXPERIENCE or both.

HOW TO DEFINE YOUR MASTER PLAN

Enable transformation

How do you start the transformation process for your company? As a manager, you have two tasks. Keeping your business targets in mind, you have to define a product engineering process that optimally promotes them. Based on this yardstick, you can determine your relative degree of digital maturity, specific areas where you need to take action, as well as a basis for prioritization.

To be able to realize this master plan, you need precision-fit solutions for all your fields of activity, based on a sustainable technology standard. Together, these steps ensure a successful business transformation process – a process in which we would be pleased to act as your Trusted Advisor.

Set up the economic success of the transformation

In the course of a digital process assessment (DPA), we assist you in developing your master plan. Next, we conduct a customer methods assessment (CMA) to specify and validate individual solution components and the sequence in which they should be implemented.

Would you like to learn about projects in which CENIT has applied this approach to assist its clients?

[CENIT References](#)



LAUNCH YOUR TRANSFORMATION - NOW!

Ready to take off?

To give businesses the tools for efficiently transforming their product development, we have drawn on our decades of experience in engineering and IT solutions for product development to produce a series of preconfigured solution packages.

For each of the challenges described in this CENIT E-Book , we offer a specific “Ready-to” package like „[Ready to Collaborate](#)“. With our consulting services and our Ready-to packages, we are the Trusted Advisor for your digital transformation.

When do we start?

We would love to hear from you!

Contact