ptc®

REAL-WORLD DIGITAL TRANSFORMATION SUCCESS STORIES

How Industrial Leaders Are Improving Operational Efficiency with **Digital Transformation Software**

INTRODUCTION:

Unlocking the Benefits of Transformation

Industrial manufacturers are navigating a rapidly evolving landscape, marked by increasing product complexity, supply chain disruptions, labor shortages, and aggressive competition. These pressures are squeezing margins and making operational efficiency a critical priority. While the idea of modernizing to address these challenges may seem overwhelming, the cost of inaction is far greater. Failing to evolve risks falling behind competitors, losing market share, and stalling business growth.

Digital transformation is not just an investment in technology—it's an investment in staying competitive, growing your business, and securing your future. By adopting a connected digital foundation with Product Lifecycle Management (PLM) as the backbone—integrating Application Lifecycle Management (ALM) and Computer-Aided Design (CAD) for a comprehensive view—manufacturers can achieve unprecedented levels of efficiency and innovation. The journey may require significant effort, but the rewards—accelerated time-to-market, reduced costs, and sustained competitiveness—make it a necessity, not an option.

MANAGING COMPLEXITY AT SCALE

BOSCH

Success Story: Bosch Group

As a leading global supplier of technology and services, Bosch Group operates across four major sectors: Mobility, Industrial Technology, Energy and Building Technology, and Consumer Goods. With over 400,000 employees and 73,000 R&D associates worldwide, Bosch faced the immense challenge of managing variations within product families across its vast portfolio. These variations—driven by regional differences, configurations, and other factors—created significant challenges in ensuring that changes were effectively communicated and implemented across manufacturing and suppliers.

THE CHALLENGE: Taming Data in a Diversified Portfolio

- Bosch's primary challenge was not the breadth of its product portfolio but the depth of variations within individual product families. This complexity led to disconnected data where variations were managed in silos, making it difficult to track changes and ensure consistency. They also had to contend with communication gaps as changes made to one variation were not always effectively communicated, leading to errors in manufacturing and supply chain processes. The lack of a unified system increased the likelihood of misaligned updates, causing delays and quality issues.

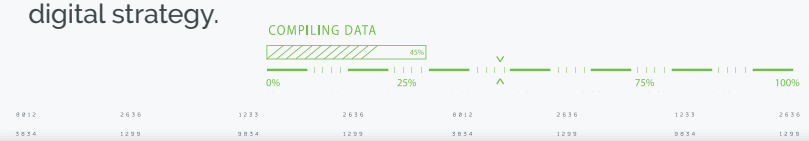
THE SOLUTION: A Model-Based Approach

To address these challenges, Bosch initiated a shift from a document-centric system to a model-based enterprise strategy. This involved implementing a single, shared source of truth for product information. Instead of relying on static documents, Bosch began creating flexible, digital product definitions. This model-based approach allows teams to share information seamlessly and develop modular product architectures for specific business needs. The company delivered these capabilities not as a single, rigid solution, but as a series of "building blocks" and guidelines that business units could use to create their own scalable PLM strategies.

THE WIN: Visibility, Collaboration, and Operational Efficiency

By implementing a holistic PLM program and a robust digital thread, Bosch achieved significant gains in operational efficiency. The model-based strategy provided enhanced visibility across the entire product lifecycle, from initial concept to manufacturing and service. This pragmatic approach broke down information silos and fostered improved collaboration between software, hardware, and electrical engineering disciplines. It also strengthened governance and control, reducing the risk of costly errors.

Sharing the right product information at the right time accelerated Bosch's development and enabled concurrent engineering. Improving collaboration before the handoff to manufacturing led to fewer errors, reduced rework, and stronger connections among design, production, and supply chain teams. Bosch's transformation demonstrates that even the most complex product portfolios can be managed effectively through an incremental, value-driven digital strategy.



DRIVING OPERATIONAL EFFICIENCY BY REDUCING COMPLEXITY

Success Story: Volvo Construction Equipment (Volvo CE)

Volvo Construction Equipment (Volvo CE) set out to reduce complexity and drive operational efficiency across its global product development operations. Managing a diverse product portfolio and responding to rapidly changing market demands, Volvo CE faced significant challenges from legacy systems, disconnected processes, and redundant data. These factors not only increased operational costs but also slowed the pace of innovation and delayed product launches.

THE CHALLENGE: Managing Complexity in a Competitive Market

Growth through acquisitions and evolving customer requirements left Volvo CE with a fragmented landscape of systems and processes. This fragmentation led to repeated design work, inefficient manufacturing, and difficulty in coordinating teams across geographies. Inconsistent data and a lack of end-to-end visibility made it harder to control costs and deliver high-quality, innovative products on accelerated timelines.

THE SOLUTION: Establishing a PLM-Enabled Digital Thread

To address these obstacles, Volvo CE adopted Windchill as its central PLM platform. This move enabled the company to establish a unified digital thread—a single, authoritative source of product information spanning the entire lifecycle. By integrating people, processes, and data, Volvo CE streamlined workflows, eliminated unnecessary handovers, and improved collaboration across engineering, manufacturing, and service teams. The PLM-enabled digital thread also supported better governance and digital traceability, ensuring that all stakeholders operated with current and accurate information.

THE WIN: Accelerated Time-to-Market and Reduced Costs

With the PLM-enabled digital thread in place, Volvo CE significantly reduced design and manufacturing complexity. The unified data platform resulted in less redundant work and improved error detection early in the development process. Outcomes included up to a 50% reduction in late-stage design changes, a 30% decrease in the cost of poor quality, and efficiency gains of up to 70% in work instruction quality. By connecting systems and processes, Volvo CE has been able to bring products to market faster and control costs—even as product complexity continues to grow.

ACHIEVING AGILITY AND EFFICIENCY IN THE CLOUD

TRUMPF

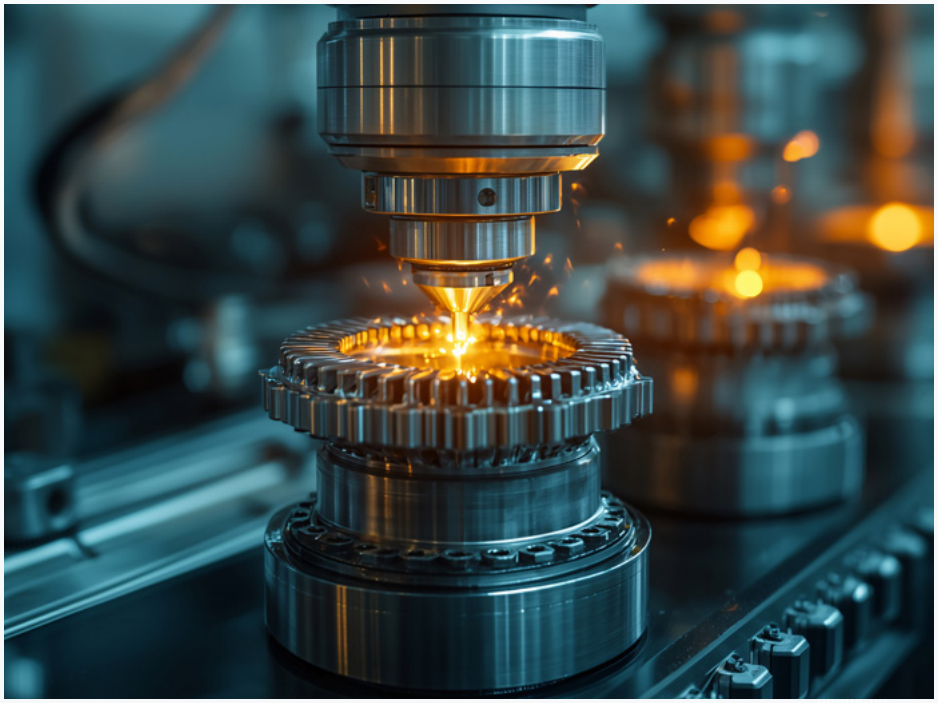
Success Story: Trumpf

Trumpf, a global leader in industrial machine tools, faced mounting pressure from global competition, particularly from low-cost manufacturers in regions like China, and the increasing complexity of integrating advanced technologies into their products and operations.

THE CHALLENGE: Overcoming the Barriers of Traditional Deployment

Trumpf operates in a highly competitive and rapidly evolving market. While their legacy ERP systems were once the backbone of their IT landscape, the growing complexity of their operations exposed significant limitations. The ERP system, which had historically managed most core business processes, struggled to keep up with the demands of modern product lifecycle management (PLM) and the need for seamless integration across systems. This lack of flexibility created inefficiencies, slowed innovation, and made it difficult to maintain a competitive edge.

Additionally, Trumpf's product portfolio has expanded to include not only machine tools but also smart factory solutions and advanced laser technologies. These innovations require a high degree of IT standardization and connectivity to manage the complexity of global operations and ensure consistent product quality. The challenge was clear: Trumpf needed to modernize its IT infrastructure to support its ambitious goals without disrupting ongoing operations.



THE SOLUTION: A Cloud-Centric Approach to IT Modernization

To address these challenges, Trumpf adopted a cloud-centric strategy, leveraging PTC's Windchill PLM platform to create a more agile and efficient IT environment.

By moving to the cloud, Trumpf was able to reduce customization efforts and enforce standardization across its global operations. This shift allowed the company to streamline processes and improve compatibility between different business units.

Trumpf redefined its IT architecture by decoupling PLM functionality from its legacy ERP system and establishing it as a standalone pillar. This integration enabled better management of product data across the entire lifecycle, from design to manufacturing and service.

The cloud-based approach facilitated seamless data exchange between systems, improving transparency and enabling real-time decision-making.

THE WIN: Staying Competitive in a Complex Market

Trumpf's cloud transformation has delivered significant benefits, positioning the company to thrive in a competitive and complex market. Key outcomes included improved agility—and enabled faster adaptation to market changes and customer demands, as well as reduced the time and effort required to implement IT updates and upgrades.

They streamlined operations by consolidating IT systems and reducing redundancies and improved data accuracy and accessibility, leading to better decision-making—all of which led to enhancing operational efficiency.

By embracing a cloud-centric approach and integrating ERP and PLM systems, Trumpf has not only improved operational efficiency but also positioned itself as a leader in innovation and competitiveness.

CONCLUSION: Turning Transformation into Tangible Value

Transformation is a critical and strategic imperative for remaining competitive in today's market. Companies such as Bosch, Volvo CE, and Trumpf are demonstrating that now is the moment to take action, reaping the rewards of embracing transformation. By addressing inefficiencies, leveraging advanced technologies, and aligning their teams around shared goals, they are securing their positions as industry leaders.

While the journey may seem daunting, there is a way to approach transformation that minimizes disruption and maximizes impact. Start by identifying the operational outcomes that matter most for your business, such as improving efficiency, reducing complexity, or accelerating innovation. Align your teams and processes around shared digital tools, and rely on accurate, up-to-date information to foster collaboration. By investing in technologies like PLM, ALM, and CAD, you can create a unified digital thread that connects your people, processes, and data, driving measurable results.

NOW IT'S YOUR TURN

READY TO TAKE THE FIRST STEP TOWARD SUSTAINABLE GROWTH AND OPERATIONAL EFFICIENCY?

Partner with PTC to create a tailored plan for your transformation journey. Schedule a Value Roadmap Workshop today to identify your specific inefficiencies and build a strategic plan for achieving operational excellence. Together, we'll help you turn transformation into tangible business value.