Tech-Clarity

Issue in Focus:

Integrating Product Design and Development Environments

Battling Complexity, Improving Productivity, and Compressing Time

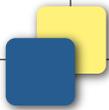## Table of Contents

*This summary is an abbreviated version of the report and does not contain the full content. A link to download the full report is available on the Tech-Clarity website, www.tech-clarity.com.

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Introducing the Issue

The status quo for product development is no longer acceptable. Manufacturers have to continuously improve their ability to design, develop, and introduce products around the world or lose relevance to stiff global competition. Today, leading manufacturers compete on speed and innovation. At the same time, they can't afford escalating complexity to impact their productivity or quality.

Product designers and developers are rising to the challenge. Manufacturers have made significant progress in battling complexity and improving time to market over the last decade. They have adopted platform and modular design techniques. They have learned to connect engineers from around the world to streamline product development. Engineering and enterprise software have played a critical role in these improvements. CAD and CAE have allowed engineers to design products they could only dream about in the past. PLM and digital manufacturing have enabled them to coordinate global design and manufacturing networks to improve productivity, increase speed, and reduce errors. But that is not enough for the future.

> *The product development benchmark for the next decade will be*
> *the ability to simultaneously introduce localized products around the globe*
> *with increased personalization.*

The bar is now raised and requires companies to strive toward a new plateau of performance. The product development benchmark for the next decade will be the ability to simultaneously introduce localized products around the globe with increased personalization. To accomplish this, manufacturers will need to compress the time it takes to design global product variants without compromising quality or cost. As if this isn't enough, they have to do this at the same time they adapt to the complexity of developing smarter, mechatronic products.

> *Most current engineering software implementations will not support*
> *the real-time, concurrent, design-in-context environment required.*

Manufacturers are once again looking to their enabling technologies to take them to the next level. Most current engineering software implementations, however, will not support the real-time, concurrent, design-in-context environment required. The current best in class technology offers seamless integration between authoring, analysis, and enterprise tools and allows engineers and product developers to work together in a real-time environment. This paper explores the possibilities available from the latest generation of integrated design and development environments.

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Conclusion

The integrated design and development environment is the latest evolution of product innovation and engineering software. It offers the advantages of integrated design tools combined with product data and lifecycle management. These advanced solutions help manufacturers meet the challenges of compressing time, improving productivity, and battling complexity by allowing engineers to design concurrently, in context, in real-time. Tomorrow's manufacturers will not be able to compete without updating their design and product development solutions to these capabilities.

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Enhanced integration of engineering software suites allows engineers to stay immersed in designs and their design tools so they can focus on innovation instead of navigating multiple interfaces and moving files. Increased integration also allows engineers to develop more complete product models to visualize products, optimize their designs, validate their manufacturing processes, and simulate the experience they will provide their customers so they can design them right the first time.

Design solutions have improved to allow much stronger capabilities for designing global variants based on a modular 3D platform. This enables a wider variety of variants, reduced part counts, and greater innovation because engineers can consider all possible variants during design. It also increases efficiency and quality because changes can be automatically propagated to all relevant variants.

Team-based collaboration allows concurrency so designers can jointly work on the same elements of a design but view it in their own context that respects access rights.

Collaboration capabilities have advanced to allow designers to work in the context of their designs and see changes from others in real-time. Designers are now be able to set up an appropriate context in which to design so they can understand the impact of their changes on related designs and vice versa. Team-based collaboration allows concurrency so designers can jointly work on the same elements of a design but view it in their own context that respects access rights. This allows globally dispersed teams to collaborate on designs in real-time.

Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Implement today's best practices for PDM and PLM
- Expand PLM beyond technical design to incorporate a richer view of products
- Understand the limitations of the PLM architecture most manufacturers have in place today
- Explore the possibilities available from the latest generation of integrated product design and development environments
- Expand beyond today's PLM to improve the business of product development, incorporating unstructured information, big data, and social knowledge

About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries. He has a broad background including roles in industry, management consulting, the software industry, and research. His experience spans enterprise applications including PLM, ERP, quality management, service lifecycle management, manufacturing, supply chain management, and more. Jim is passionate about improving product innovation, product development, and engineering performance through the use of software technology.

Jim is an experienced researcher, author, and public speaker and enjoys the opportunity to speak at conferences or anywhere he can engage with people with a passion to improve business performance through software technology.

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