Balanced control of orthopedic and dental implant solutions

Reduce time-to-market and ensure compliance
Making better, more informed decisions

It takes a lot of decisions to create great products. Not just the big milestone decisions, but all the small decisions that lead up to them. Anyone in your extended enterprise can make a decision at any time that makes a difference in a product’s success or failure.

Add to this the complexity of your products. You must factor in best practices and formulas. You must also consider regulatory requirements, environmental impact, cost and quality as you take a new product to market. Product lifecycle management (PLM) software from Siemens PLM Software can help you bring together all the product information and processes you need in one centralized system. You can take a systems-driven approach to product development and unify your product lifecycle.

Siemens PLM Software can help you bring together all the product information and processes you need in one centralized system.
Stay in control

Control is crucial for orthopedic and dental implant companies. Competition, regulations, costs and organizational complexity increase your risks and require you to be prepared for a variety of complications. Despite these complications, you can stay in control by making better, smarter and more informed decisions, including:

- **Global access to information** – Integrating all cross-domain information together in a single, logical location accessible by all authorized individuals – no matter where they are in the world or in the organization – and making this knowledge available to every person making a decision anywhere, anytime

- **Collaborative decision-making** – Giving decision-makers the ability to make more collaborative decisions while understanding how the decisions they make impact others whether it is a design impacting compliance, patient-matched products impacting machine tool simulations, or the ripple effect of a change throughout the entire system

- **More than just information: knowledge** – Enabling cross-functional knowledge sharing and giving individuals what they need to make the right decisions as quickly as possible

The best way to stay in control and make better decisions for your development, manufacturing and quality process is a strong PLM solution. Learn why the world’s best orthopedic and dental implant companies rely on Siemens PLM Software solutions to achieve balanced control.
Meeting orthopedic and dental implant industry challenges

Increasing costs of doing business are impacting all orthopedic and dental implant manufacturers.

Orthopedic and dental implant companies must manage increasingly complex product development processes with the highest efficiency.
Developing an orthopedic or dental product has always been a complex process, or rather a network of complex and inter-related processes. Today’s orthopedic and dental implant companies must manage increasingly complex product development processes with the highest efficiency. Meanwhile, the pressure mounts to meet such challenges as:

Regulatory requirements – including traceability, quality standards and materials compliance – require you to stay in complete control of product development and all documents created in R&D, manufacturing and the supply chain.

Systems engineering and risk management requires you to manage the risks of many different processes simultaneously while products become a more complex array of functions, including mechanical design and patient-matched product development.

Globalization helps you meet the needs of consumers from emerging markets for different feature sets and price points, even while new competitors enter the market. This includes personalized medical devices and orthopedics, a process that can be automated with Siemens PLM Software’s image to implant process (see page 15).

Competition is everywhere. New products are introduced every day, and growing your market share is difficult. You must use your resources efficiently, employing powerful design and data management tools to increase productivity and introducing best-in-class products to market. This includes automating the development of personalized medical devices and orthopedics, with Siemens PLM Software’s image to implant process (see page 15).

Increasing costs of doing business are impacting all orthopedic and dental implant manufacturers. New taxes, scarce resources and the rising cost of healthcare require you to take the right steps to be profitable. An organization with a clear picture of their projects and processes can remain nimble and stay ahead of rising costs.
Developing better products through high-definition PLM

HD-PLM helps provide an integrated definition of the product and closes the loop between product and production.

Just as HD-TV delivers a much higher definition viewing experience, Siemens PLM Software's collaborative decision support platform, HD-PLM, brings high definition to the product development experience because it is built on an architecture that continuously adapts and grows.

HD-PLM comprises three core concepts:
1. Intelligently-integrated information
2. Future-proof architecture
3. High-definition user experience

To create an intelligently-integrated information environment, your PLM system must provide a consistent process framework across all domains. By intelligently organizing and integrating systems engineering, HD-PLM helps provide an integrated definition of the product and closes the loop between product and production. HD-PLM drives real step changes in orthopedic and dental implant product development and production, improving productivity, time-to-market and first-time quality.
To effectively support decision-making, the Siemens PLM Software HD-PLM architecture never becomes obsolete. It remains upgradeable and expandable to permit the introduction of new technologies and innovations, to easily integrate with other business systems and adapt to changes in your business. This environment provides a future-proof architecture to ensure your IT investment continues to evolve in concert with ours.

Siemens PLM Software is “open for business,” which means we subscribe to open standards and provide a set of application programming interfaces (APIs) that allow other companies to integrate with our solutions. Our solutions are scalable to serve the needs of users in any company, from a single-person business to multi-thousand-person enterprises. You have the flexibility to configure the solutions to your business needs without building custom in-house solutions.

The HD user experience is all about personalizing the interface to the roles and tasks at hand – clarifying rich product information so you can understand the data more easily and make smarter decisions.
Enabling balanced control of your development process
Orthopedic and dental implant companies need a product development process that fosters innovation, quality and productivity. At the same time, they need to reduce risks and stay in control of complex requirements.

Siemens PLM Software’s solutions for orthopedics and dental implant makers enable you to achieve balanced control, leading to improved visibility to assess and manage risk. This enables you to reduce the time and cost associated with regulatory submissions and helps you ramp up to target production volumes more rapidly. Additionally, our end-to-end PLM solutions enable you to be sure your product features are aligned with your end customers’ needs, even for patient-matched products and surgical planning using our image to implant capabilities (see page 15).

The Siemens PLM Software solution is built on open standards to allow integration between our applications as well as with legacy data and systems and other third-party applications. This gives you the flexibility to implement the business process you require, even as you take advantage of “best-of-breed” applications as they become available and aggregate work from diverse authoring environments and authors. Throughout the entire process, everyone works with a single source of the truth.

Siemens PLM Software’s solutions for orthopedics and dental implant makers enable you to achieve balanced control.
End-to-end orthopedic and dental implant PLM

Siemens PLM Software’s full set of product lifecycle management solutions enables orthopedic and dental implant companies to achieve balanced control, predictable program schedules and costs while remaining competitive, including:

- **Document controls and lifecycle traceability**, connecting workflows and deliverables from R&D, manufacturing, quality and regulatory requirements, plus reducing risk and enabling re-use for future products
- **Integrated engineering applications** with world-class features and functions to enable efficient product and process development, even in multi-CAD environments
- **Predictable design control**, connecting schedules and deliverables with actual workflow execution and the confirmation of outputs through verification and validation
- **Purchasing controls** to leverage your supply chain and facilitate secure and easy collaboration anywhere around the world

- **Production and process controls** with manufacturing, engineering and quality management applications that are integrated with existing systems to ensure efficiency and quality in development and production
- **Automated end-to-end process** for planning, developing and manufacturing patient-matched products with our image to implant process (see page 15), saving time and money over manual processes and increasing product quality as well as surgeon collaboration and input

Achieve balance control, predictable program schedules and costs while remaining competitive.
Customer success stories

- Enable efficient product and process development
- Control document and design knowledge
- Facilitate collaboration
- Optimize production and service

Improve innovation, productivity and flexibility with greater control of the product development process.
Siemens PLM Software solutions enable orthopedic and dental implant companies to improve innovation, productivity and flexibility with greater control of the product development process. Here is a sampling of the successes that our customers experience:

• **Enable efficient product and process development** – brought new products to market in record time, realized product development return on investment (ROI) within one month, decreased product development lead time by 40 percent, reduced the number of prototypes needed for analysis by 20 percent and improved design productivity by approximately 30 percent

• **Control document and design knowledge** – achieved 80 percent information re-use, made secure design history files (DHF) visible to team members, generated regulatory information in minutes rather than months, lowered compliance submission fees, required a smaller design/regulatory staff and significantly improved the use of existing product knowledge for new applications

• **Facilitate collaboration** – built a single source of the truth for all global groups, implemented an open file format for easy transfer of multi-CAD data from suppliers to save time and resources, dramatically enhanced collaboration with clients and reduced typical design approval time from days to hours

• **Optimize production and service** – reduced manual plant design, now makes decisions based on analysis rather than gut-feel, created a spare parts catalog with bills of materials (BOM) for easier serviceability and gained complete control of complex manufacturing processes
Why many orthopedic and dental implant companies use Siemens PLM Software

- **Customer retention** – Siemens PLM Software’s top 25 orthopedic and dental implant customers have chosen our solutions for more than 13 years
- **Industry coverage** – 9 of the top 10 orthopedic device companies in the world use Siemens PLM solutions
- **End-to-end PLM supplier** – We are the only PLM provider with a full set of solutions – digital product development (DPD), digital lifecycle management (DLM), digital manufacturing (DM) and manufacturing execution systems (MES)
- **Open, flexible, stable** – Our solutions are built on an open platform with interoperability with existing products and other platforms. We are strong in multi-CAD management and authoring. And, we’re backed by industry conglomerate Siemens AG
Personalized medical devices can be planned, designed and manufactured efficiently and accurately with Siemens’ image to implant process. This is a highly automated engineer-to-order process, beginning with an MRI or CT image of patient anatomy and ending with personalized products and therapies. Siemens’ integrated product lifecycle management platform and applications can help you achieve speed and accuracy requirements along the entire process chain.

Using Siemens’ NX™ software surgical planning and modeling application, you can create computer-aided design (CAD) models of the surgical plan and associated matched implants.

After physician approval, the personalized CAD models trigger updates to NX manufacturing templates for 3D printing, computerized numerical control (CNC) matching and coordinate measuring machine (CMM) quality assurance checks.

Production orders to manufacture personalized implants are executed efficiently using a distributed NC system and Siemens’ Sinumerik controllers.

Quality checks are performed using Siemens’ Tecnomatix® CMM inspection applications.

The entire process is managed using Siemens’ Teamcenter® PLM system to ensure that the entire engineer-to-order process is securely managed and controlled, facilitating collaboration and delivering information to all participants involved in the sales, planning, design, manufacture and quality organizations.
About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a world-leading provider of product lifecycle management (PLM) software, systems and services with nine million licensed seats and 77,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software helps thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support. Our HD-PLM vision is to give everyone involved in making a product the information they need, when they need it, to make the smartest decisions. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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