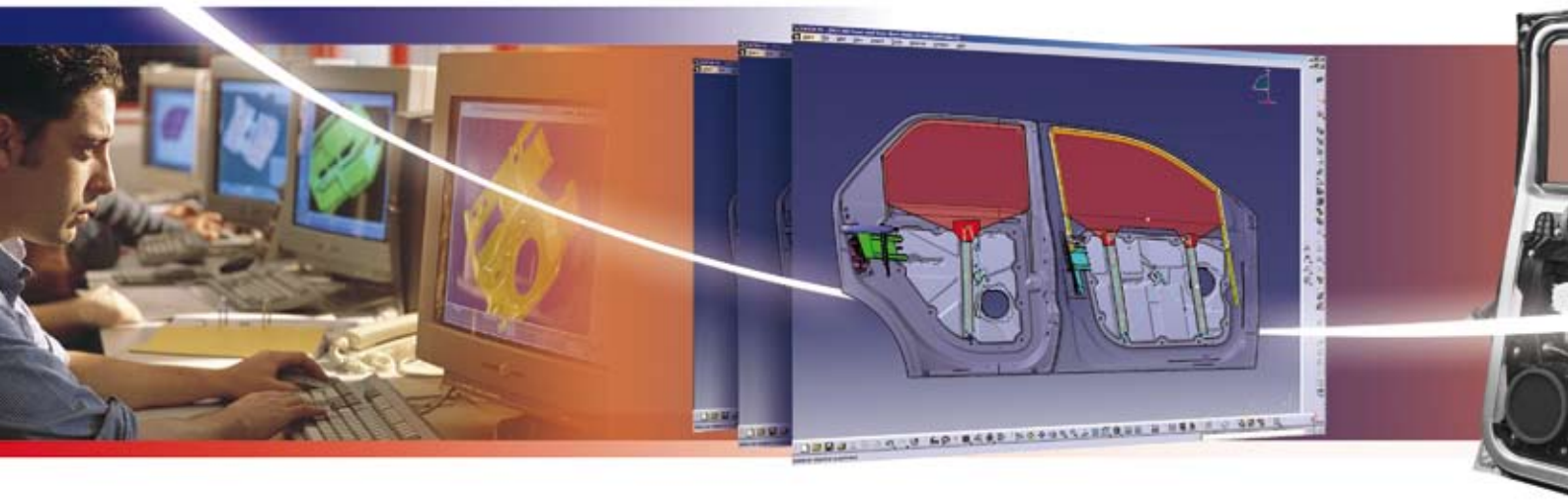
V5 PLM SUCCESS STORY

Faurecia

Mastering product complexity with Dassault Systèmes PLM Solutions

DASSAULT SYSTEMES



Faurecia Objectives

- ***Meet demands of fragmented market with more product variations***
- ***Translate automotive OEMs' brand value into distinctive designs***
- ***Proactively pursue innovation and quality improvements***
- ***Optimize processes for competitive pricing and superior value-add***

"DS PLM allows our diverse organization to operate as one, with the efficiency and visibility needed to deliver maximum value to our customers."

Jim Orchard, President, Faurecia North America

Company Overview

Faurecia is the world's eighth-largest automotive equipment supplier, with 60,000 employees at 190 sites in 28 countries. Faurecia works with all of the world's major automakers, and ranks first or second throughout Europe in all six of the major modules it produces: front ends, cockpits, door panels, acoustic packages, seating, and exhaust systems. To meet the automakers' requirements for design, perceived quality, safety, comfort and environmental sustainability, the company has implemented a proactive approach to innovation and excellence, in terms of both product design and production processes.

Business Challenges

Faurecia has had to adapt to its very rapid growth. The company's annual revenue grew from €2 to roughly €12 billion in just eight years. Its market focus has made similar strides, taking the company from "parts to partner" as it has assumed more design responsibility for larger, more complex modules from its original equipment manufacturer (OEM) customers.

As the requirements for modules it designs and manufactures grew more complex, time to market shrank, regional programs globalized, and product variations expanded. "We needed a way to go from having three or four years to develop a product to two, when that product is becoming more complex and the market more fragmented, requiring many more versions and variations," says Philippe Martin, Deputy CIO for Faurecia.

Today, Faurecia's major business challenge is also what sets it apart in the marketplace – addressing increasing complexity on tight deadlines and tight budgets.

Solution

ENOVIA MatrixOne streamlines business processes

Faurecia chose ENOVIA MatrixOne for collaborative business process management across its six divisions, making it the trusted source of product data for all users. Today, the company has more than 5,000 MatrixOne users, 70 percent of whom are outside engineering in roles such as program management, purchasing, and quality. Since MatrixOne offers a web-based solution, it is easy to deploy and use and requires no special hardware.

"All of the users need to access the component database or the CAD model, notably for engineering change request and order (ECR and ECO) purposes," Martin says. "ECRs and ECOs are a cost that must be documented, and we use ECRs and ECOs at Faurecia as an education tool to demonstrate the link between making a change and driving up costs."

By making engineering data widely available throughout the company, MatrixOne also supports Faurecia's quality initiatives. "Quality, most of all, requires a firm and formal process and a guarantee that the process is followed," Martin says. "MatrixOne is a big help in this because we can document everything and prove to the customer that we follow our processes."

ENOVIA VPLM for work-in-process data management

Faurecia uses ENOVIA VPLM to manage in-process 3D design data before it is released to ENOVIA MatrixOne, maintaining the versions and variations while 3D designs are in flux. ENOVIA VPLM manages the relationships between 3D designs to ensure, for example, that when a design is changed all related designs are updated as well.

Since ENOVIA VPLM enables designers to collaborate using a single source of in-process data, it is a vital tool in performing interference checking between parts. It automatically alerts designers to any detected interferences and flags them for resolution. Engineers using VPLM also have access to the MatrixOne platform for change requests and other standard business process suggestions.

Integrating ENOVIA VPLM with ENOVIA MatrixOne benefits both engineering and business users. Designers benefit from managing complex product information, while business managers and other downstream users have detailed engineering information much earlier in the process and better communication of design work completion.

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Philippe Martin, Deputy CIO, Faurecia

"With DS PLM we have fewer engineering changes than before and fewer quality issues."

Alfredo Gimenez, CAD and PDM Manager, Faurecia Interior Systems

CATIA V5 supports parametric design

Faurecia adopted CATIA V5 for 3D product development in 2005 and now has more than 500 users. CATIA V5's solid modeling capabilities were vital as Faurecia assumed design responsibility from its OEM customers and began managing complete module programs rather than individual parts. "CATIA V5's solid modeling approach supports the way we work today," says Eric Borgard, Development System Efficiency Director for Faurecia's Interiors Systems Division.

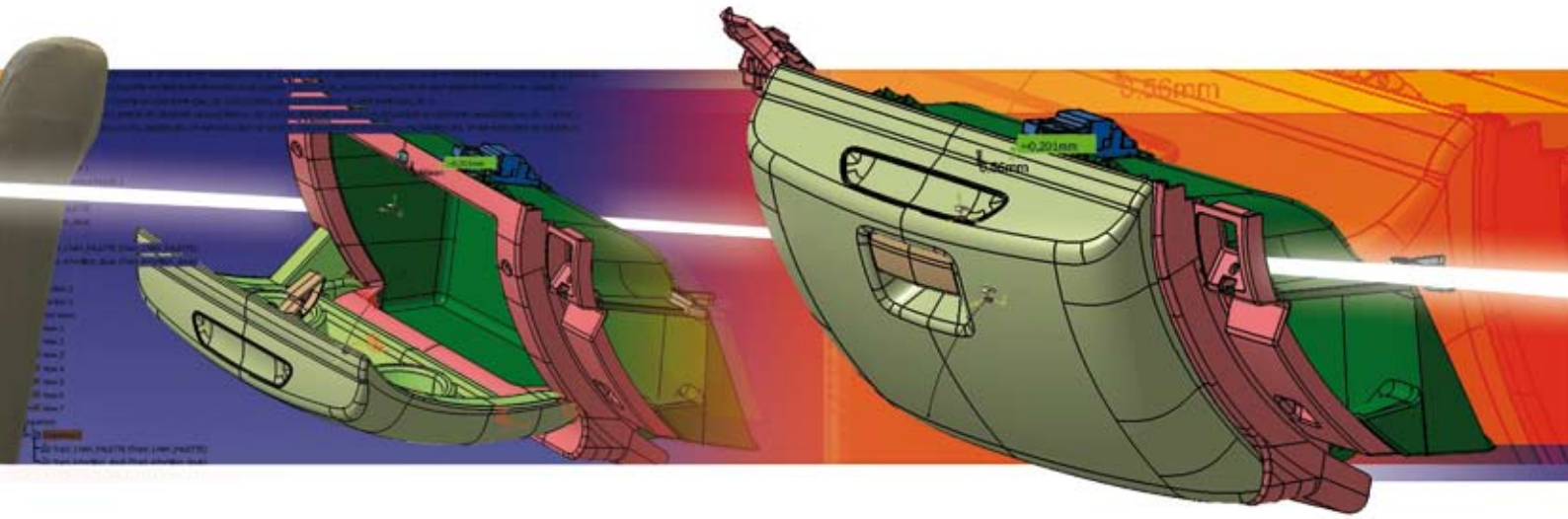
The Automotive Seating R&D department, for example, has adopted an increasingly model-based approach for its products, integrating both structures, such as seat frames, and mechanisms, such as motors, into a comprehensive assembly. Because both can be modeled in CATIA V5, says Christophe Aufrere, Structure and Mechanisms R&D Vice President, Faurecia can synthesize the various components into a total system that delivers maximum performance.

Faurecia calls this its "system and synthesis" approach, which is supported by CATIA V5's native ability to automatically create intelligent templates from existing feature, part, or assembly designs. These templates embed not only the geometry but also any associated parameters and relationships, such as design rules, design tables and checks, so that they can be reused with maximum security. In addition, Faurecia has developed specific templates internally to capture methodology and encapsulate corporate standards. The templates help the engineers balance multiple performance targets simultaneously while reusing the best product/process templates for each segment of the seat enhances the generic design.

"Knowledge-based modeling in CATIA V5 saves us time by allowing us to modify a standard part rather than designing from scratch," says Matthias Weber, Engineering Manager, Seating Division. Specific templates also perform regulation, safety, comfort and ergonomics checks, quickly and securely. Faurecia plans for CATIA V5 to eventually contain all the corporate knowledge relating to the geometry, as well as transversal design knowledge.

V5 DIGITAL MOCKUP (DMU)

Faurecia's Interiors Division uses the virtual assembly capabilities of V5 Digital Mock Up (DMU) in CATIA and ENOVIA VPLM to test whether its cockpit units can be assembled in the tight spaces inside a car. "Will it fit through the windscreen or the door?" says Alfredo Gimenez, CAD and PDM



Manager for Interior Systems. “It helps us to assure that the design can actually be assembled in real-life conditions.” In this way, DMU helps save on rework and costly engineering changes.

“Faurecia also uses DMU for product reviews,” says Matthias Weber, Engineering Manager for the Seating Division. “It is invaluable for all our technical review sessions between the different development sites and with the customer.”

SIMULIA provides detailed CAE analysis

Faurecia uses Abaqus finite element models to simulate the dynamics of interior systems. “SIMULIA’s design analysis capabilities allow us to bring analysis to the designer much earlier in the process, says Jamie Steele, CAx Supervisor, Faurecia Interior Systems. “This allows us to create a better product with fewer design iterations.”

Results

“One truth” for one company

ENOVIA MatrixOne is the repository for all released engineering data, making it Faurecia’s “single version of the truth.” Part design content from multiple engineering systems and tools has been consolidated by a single definition of the Engineering Bill of Material (EBOM). ENOVIA MatrixOne has allowed Faurecia move from 30 percent common development processes to 80 percent standard processes, and enabled its globally dispersed design teams to work on a single unified platform.

More competitive in the marketplace

“DS PLM allows us to take on business that some worldwide competitors simply cannot do,” Weber says. “The OEMs need to standardize anywhere they can, even though the product will be sold into multiple markets. Particularly with seats, you can take the same frame and cover it in different ways. But if you can do that and still give the OEM just one part number to manage, that is a competitive advantage. You need a system like DS PLM to be able to even attempt such business.”

Concurrent engineering speeds design cycle

Since DS PLM gives Faurecia strong control of its data and business processes, projects that once were done sequentially – different but related

DS PLM Key Benefits

Design changes cut by more than 50%

Interior Systems projects using templates have seen design times slashed

Overall design costs reduced thanks to fewer ECOs

Reducing the number Engineering Change Orders (ECOs) should positively impact total costs

Overall design costs decreased thanks to concurrent engineering

By creating designs and tooling concurrently, and designing for machine capacity, Faurecia expects to save in total design costs

Projected savings due to improved information

Faurecia plans to add 50 additional types of information to MatrixOne, saving more on total design costs

Payback of less than one year

Savings from Faurecia’s investment in MatrixOne paid for the solution in less than a year

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Matthias Weber, Engineering Manager
Seating Division, Faurecia

parts in the same module, for example – can now move forward concurrently. "To be able to have several teams working on the same project at the same time with full visibility into what the others are doing is the only way to meet today's aggressive timelines," Martin says.

Increased part re-use: Design once, modify as needed

CATIA V5 allows Faurecia engineers to design a part once and reuse it many times, working from a consistent base and then modifying the design to accommodate each specific project. ENOVIA MatrixOne organizes the templates to make them easy to locate and reuse, and parametric design capabilities in CATIA V5 automatically adjust the templates to fit new parameters. "With CATIA V5 and ENOVIA MatrixOne, our designers have time to make the design better each time, rather than inventing it new," Martin says.

Fewer engineering changes equal lower costs

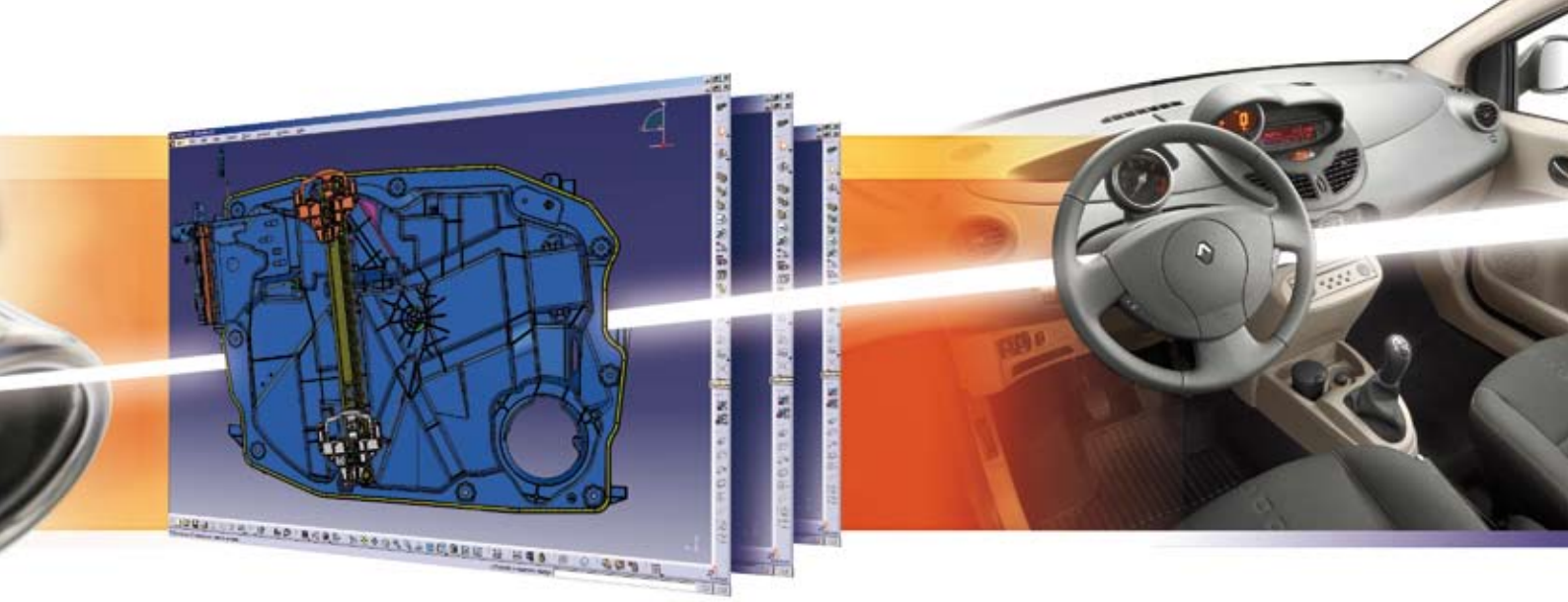
The data management power of ENOVIA VPLM, coupled with the visualization power of DMU, helps Faurecia teams spot and eliminate problems earlier. "With DS PLM, we have fewer engineering changes than before and fewer quality issues," says Gimenez. Approximately 15 percent of Faurecia's design costs are linked to changes. Eliminating changes helps to decrease these costs.

Streamlined management of engineering changes

When changes do occur, they affect everyone from purchasing to manufacturing. With its web-based business process management capabilities, ENOVIA MatrixOne ensures that everyone affected by a change is alerted. By making change information widely available, MatrixOne helps to ensure that only those changes that make sense are authorized, helping to maintain costs. Also, engineers using ENOVIA VPLM can understand the impact of an engineering change on other components.

Tooling efficiencies through leveraged synergies

"In the past, if we had five different instrument panels being manufactured, we had five different injection heads for the foaming process," says Eric Borgard, Interiors Division development system efficiency director. "Thanks to DMU, we are able to design one single head for the robot to foam all five instrument panels. This reduces the cost of tooling and also the time to change from one instrument panel line to another."



Improved manufacturing simulation

DMU allows Faurecia to simulate the movement of robots in advance to determine how they will perform on the manufacturing line. Robots also can be controlled directly from CATIA V5 data without reprogramming. “This has given us massive improvements in terms of time and flexibility,” says Borgard.

Future

Now that Faurecia’s DS PLM system is well established, the challenge is to broaden and deepen its implementation to manage and automate even more processes, including manufacturing. Key projects on the horizon include adding program management, material compliance management, color management, tool classification and CAE data management capabilities to Faurecia’s ENOVIA PLM business process system and integrating it with the company’s new Enterprise Resource Planning (ERP) system. Faurecia also hopes to establish closer links between its DS PLM system and its OEM customers’ PLM systems, and include automated data sharing with suppliers.

“I see it as good news that the users want more and more,” Martin says. “It means that they are using the PLM solutions and that they are working for them.”

V5 PLM for the Automotive Industry

Dassault Systèmes has worked with major automotive manufacturers and suppliers for more than 20 years to provide a complete range of leading PLM solutions.

Built from industry experience and addressing all key automotive development domains, Generative Car Solutions combine the best of Dassault Systèmes’ CATIA V5, DELMIA, ENOVIA and SIMULIA solutions with dedicated automotive best practices.

Fostering the capture, sharing and reuse of company knowledge while optimizing the end-to-end process from concept to maintenance, DS PLM Solutions help automotive manufacturers and suppliers to significantly reduce design cycle time and increase productivity, profitability, and rapid return on investment.

For information about DS Generative Car Solutions, visit www.3ds.com

The Dassault Systèmes home page can be found at www.3ds.com

Dassault Systèmes
9, quai Marcel Dassault
BP 310
92156 Suresnes Cedex
France

As a world leader in 3D and Product Lifecycle Management (PLM) solutions, the Dassault Systèmes group brings value to more than 90,000 customers in 80 countries. A pioneer in the 3D software market since 1981, Dassault Systèmes develops and markets PLM application software and services that support industrial processes and provide a 3D vision of the entire life cycle of products from conception to maintenance.

The Dassault Systèmes V5 PLM offering consists of CATIA V5 for designing the virtual product, DELMIA for virtual production, ENOVIA for global collaborative lifecycle management (including ENOVIA VPLM, ENOVIA SmarTeam, and ENOVIA MatrixOne), and SIMULIA for virtual testing.

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