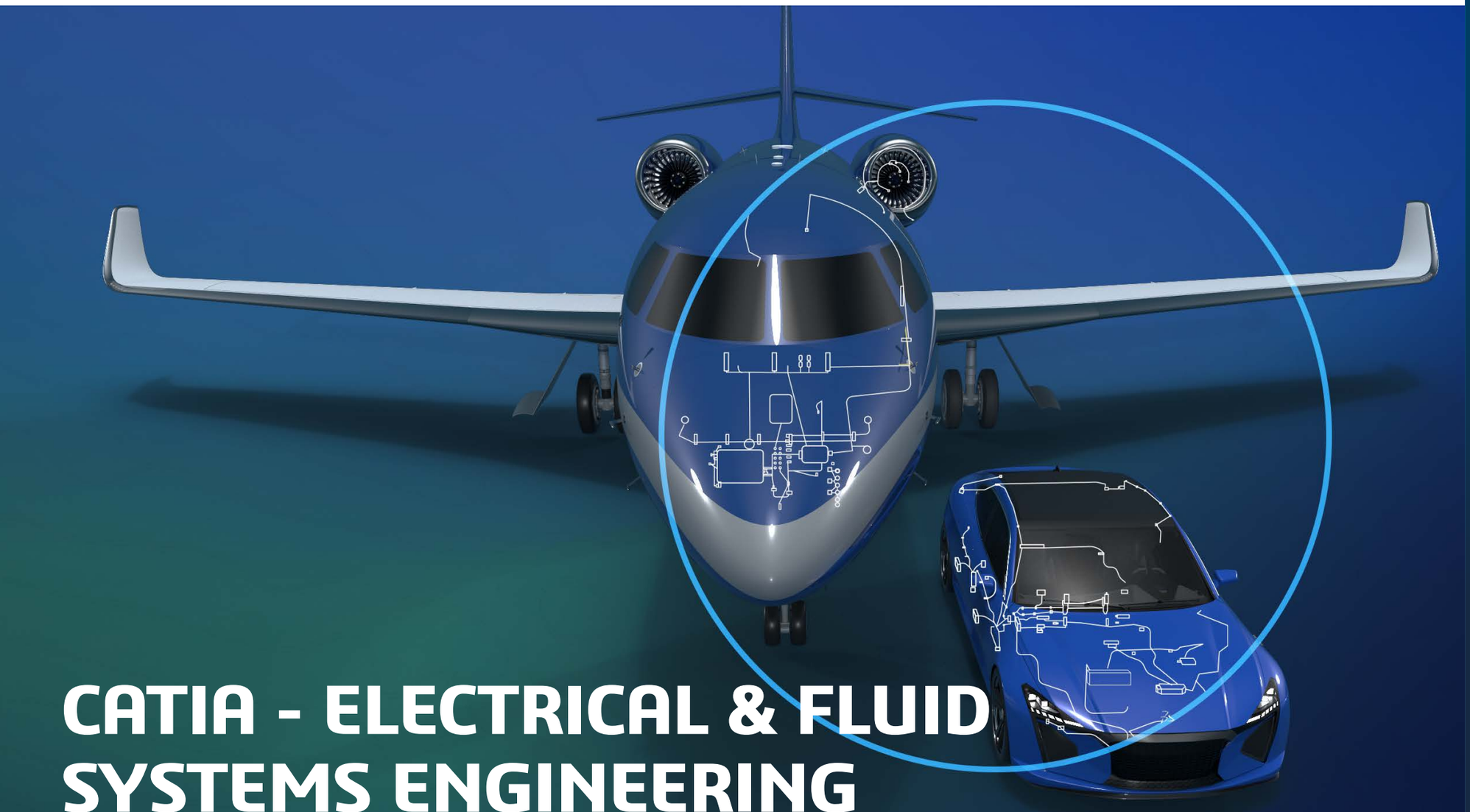


CATIA - ELECTRICAL & FLUID SYSTEMS ENGINEERING

HARNESS THE POWER OF ELECTRIC AND FLUID SYSTEMS

INTRODUCTION

CATIA – ELECTRICAL & FLUID SYSTEMS ENGINEERING

Industries today face a growing number of challenges. The market demands smarter products and innovative solutions, driving a significant increase in product complexity. As products and services become more connected and autonomous, they must meet new requirements and adhere to stringent regulatory standards. In parallel, production methods are evolving, heightening the need for collaboration and innovation.

A direct consequence of this evolution is the expanding role of software, electronics, and electrical engineering in product development. For electrical engineering disciplines, this brings challenges related to cost, quality, and time-to-market. Furthermore, it highlights the need for seamless integration with other disciplines, such as mechanical, fluidic, and software engineering.

CHALLENGES

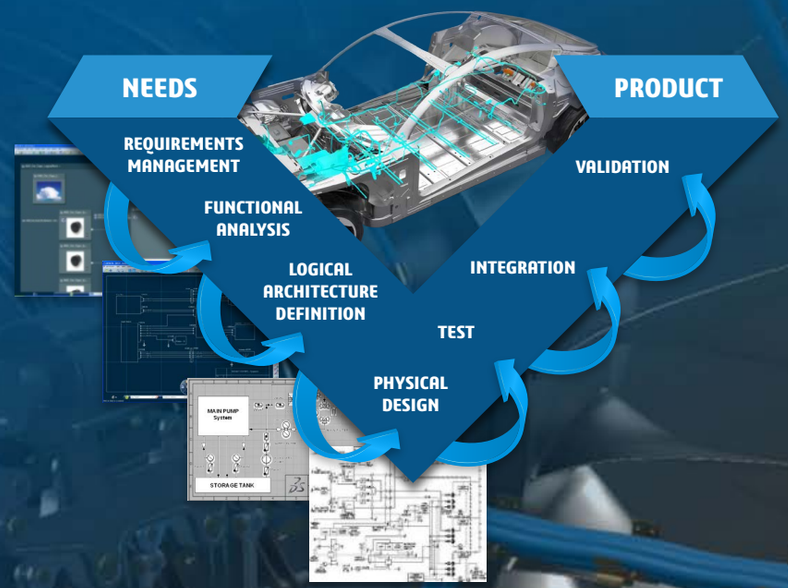
Many traditional engineering firms rely on a wide assortment of specialized, disconnected software applications to create and manage their fluid and electrical systems. Each application often uses its own database schema or file-based information storage, leading to inefficient, manual data exchanges between essential process steps.

This fragmented approach creates several critical issues:

Weak links between disciplines: There is often a disconnect between schematic design, 3D design, and manufacturing.

Sequential workflows: Electrical and fluidic teams are frequently the last to receive engineering change requests, causing significant delays and rework.

To remedy these common challenges, the first step is to establish a comprehensive and integrated design workflow. This workflow must access a single source of truth, making information available to all stakeholders simultaneously and ensuring data consistency across all platorms.



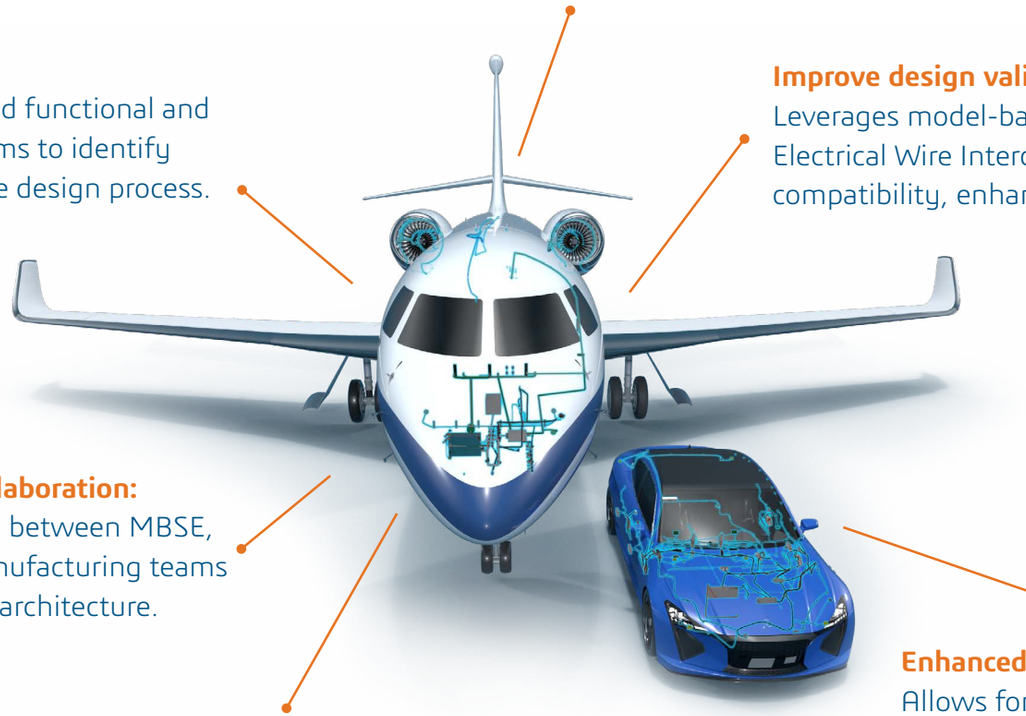
VALUE PROPOSITION

CATIA Electrical Systems Engineering solution provides a unified framework that empowers engineering teams to overcome common industry challenges. By integrating processes and fostering collaboration, CATIA delivers significant value across the product development lifecycle.

Early validation:
Improve time-to-market by early validation of systems installation requirements

Early design optimization:
Enables the use of an integrated functional and physical mockup, allowing teams to identify and resolve issues sooner in the design process.

Improve design validation:
Leverages model-based validation and ensures Electrical Wire Interconnect System (EWIS) compatibility, enhancing product quality and safety.



Increased Cross-Discipline Collaboration:
Facilitates seamless interaction between MBSE, Electrical Engineering, and manufacturing teams around a shared 3D functional architecture.
installation requirements

A Complete Digital Thread:
Ensures data continuity from systems architecture through 2D schematics and into 3D harness design, eliminating manual data transfer and reducing errors.

Enhanced Manufacturing Engineering:
Allows for early optimization of manufacturing processes by integrating the functional and physical digital mockup.

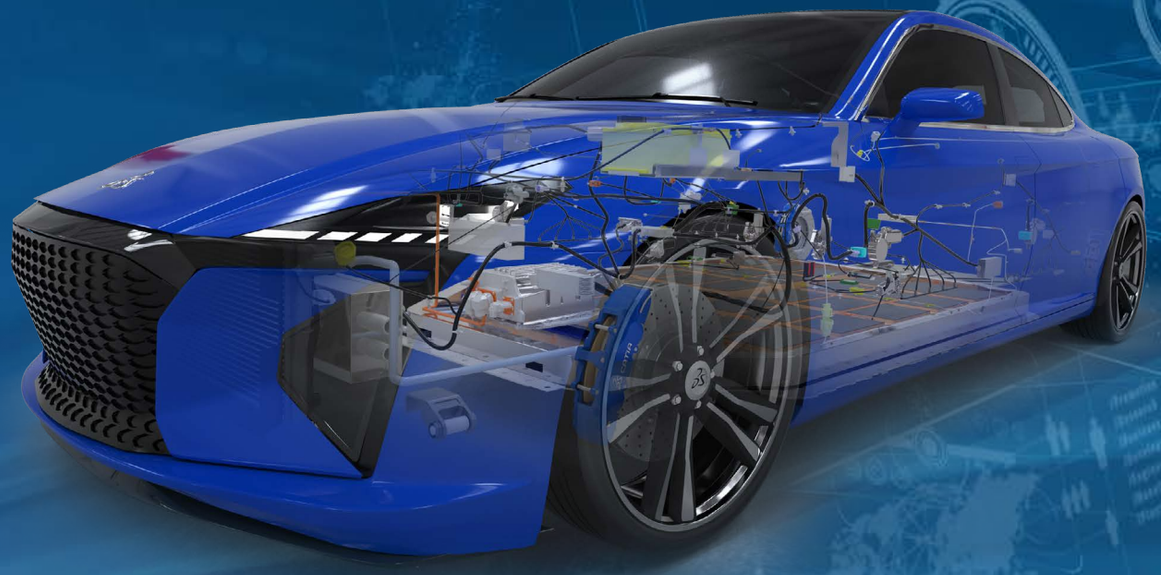
TRANSPORTATION & MOBILITY

CATIA Electrical and Fluidics solutions empower the Transportation and Mobility industry to streamline the design of smarter, connected vehicles.

By integrating electrical, fluidic, and mechanical systems into a single, unified workflow, our solution reduces inefficiencies and accelerates time-to-market. This holistic approach ensures compliance with evolving regulatory standards and enables manufacturers to meet the growing demand for innovative, sustainable, and high-quality vehicles.

This integrated environment provides the tools necessary to engineer the next generation of transportation.

Wire harness control and validation tools.

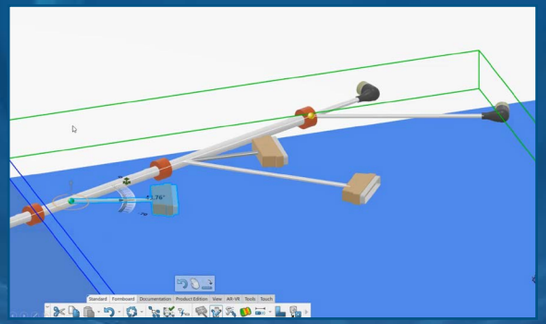


AEROSPACE & DEFENSE

In the Aerospace and Defense sector, CATIA enhances the development of complex electronics systems, avionics, electrical harnesses, and fluid networks.

The platform's advanced capabilities - such as early validation, complete digital continuity, and integrated simulation tools -are essential for ensuring high standards of safety, performance, and compliance with the industry's rigorous regulations.

By fostering seamless collaboration across all engineering disciplines, CATIA provides the foundation for creating cutting-edge, mission-critical technologies.

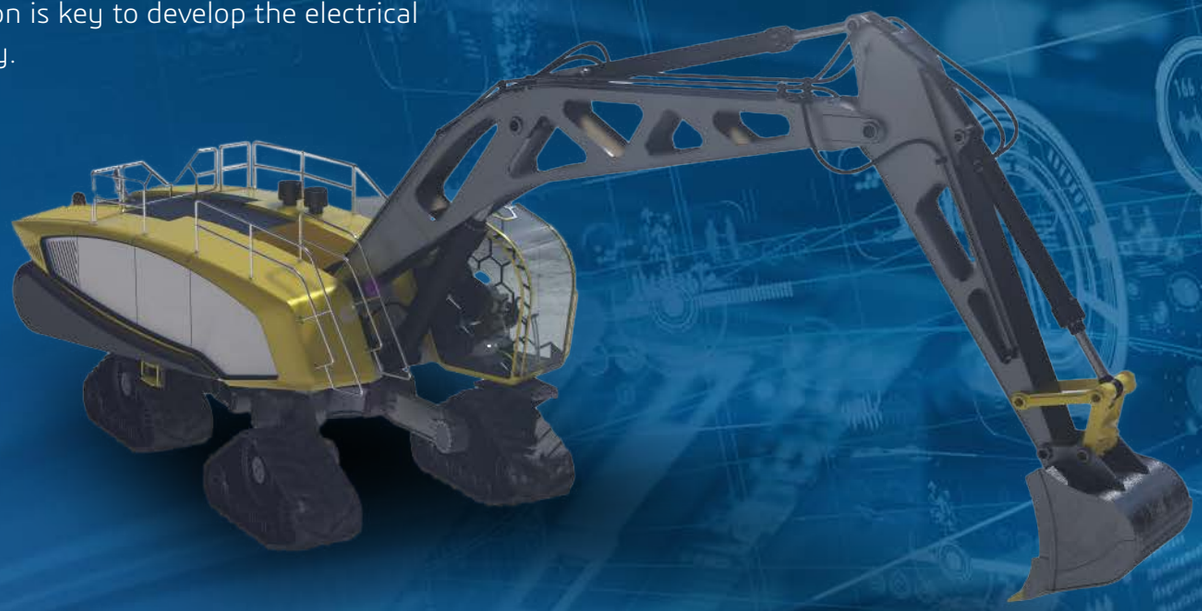


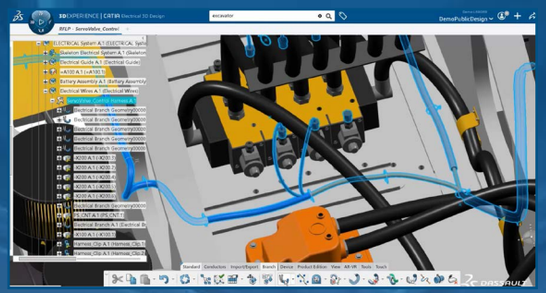
Automated harness flattening and formboard preparation

INDUSTRIAL EQUIPMENT

For the Industrial Equipment sector, CATIA simplifies the design and manufacturing of advanced machinery by integrating electrical and fluidic systems with mechanical designs.

This unified approach fosters innovation, improves product quality, and optimizes manufacturing process in the geometrical context. By enabling early design validation and cross-disciplinary collaboration, CATIA helps manufacturers deliver high-performance equipment with reduced costs and a faster time-to-market. This integration is key to develop the electrical systems of sophisticated reliable machinery.



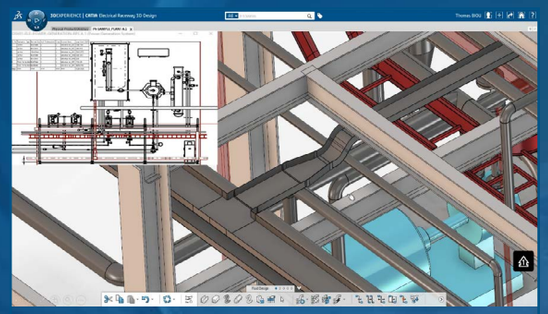


Cables routing in complex and tight spaces

FLUID SYSTEMS

CATIA provides a specialized, integrated solution for designing and managing complex fluid systems, including tubing, piping, and HVAC networks. By unifying schematic-driven design with 3D modeling, the platform ensures data consistency and accuracy from initial concept to final assembly.

This approach enables engineers to optimize system routing, validate performance, and ensure compliance with industry standards—all within a single, collaborative environment. The result is a streamlined development process, reduced physical prototyping, and higher quality fluid systems that integrate seamlessly with the overall product architecture.



Piping and tubing solutions for large-scale industrial installations

ADVANCED MANUFACTURING INTEGRATION

The CATIA Electrical Harness design process extends seamlessly into manufacturing, leveraging the data and decisions from all previous design steps. A full, bidirectional synchronization is maintained between the 3D design model, the flattened harness layout, and the manufacturing drawings.

Any modification made in the design is flagged by a dedicated assistant, which allows for the automatic update of both the flattening view and the associated drawings. This ensures complete digital continuity from the schematics to the final 3D detailed design, eliminating the need for manual export or import manipulations.

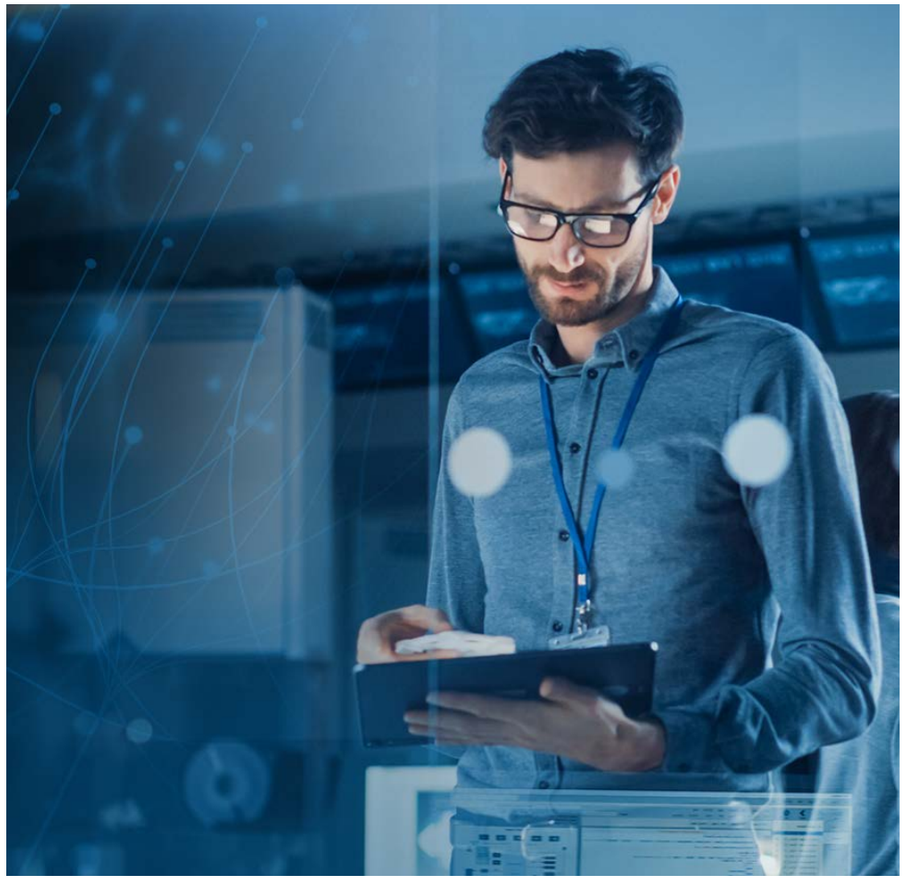
The manufacturing application also provides powerful features to configure automatic drawing generation, easily flatten complex electrical harnesses, and analyze torsion in flattened branches. This integration streamlines the transition from design to production, improving accuracy and efficiency.

HARNESS THE POWER OF DESIGN IN ELECTRICAL AND FLUID ENGINEERING

Modern product development exposes critical challenges in electrical and harness design, including late-stage changes, fragmented workflows, and a high risk of errors. These obstacles undermine efficiency and delay innovation.

CATIA Electrical and Fluid Systems Engineering delivers targeted capabilities that address the complexity of harness design and electrical integration. Through robust tools for schematic capture, 3D harness routing, and design validation, CATIA directly supports faster, more reliable execution of electrical systems. Embedded into **3D**EXPERIENCE unified environment, CATIA Electrical and Fluid Systems streamlines collaboration between engineers while maintaining rigorous data continuity, reducing manual rework and accelerating project timelines.

With CATIA, organizations can elevate the quality and reliability of their electrical and harness designs. This focused approach empowers teams to innovate confidently, efficiently address evolving requirements, and set new industry benchmarks for performance.



Our 3DEXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3D**EXPERIENCE platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit **www.3ds.com**.

3DEXPERIENCE®

DASSAULT SYSTEMES | The 3DEXPERIENCE® Company

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes
17F, Foxconn Building,
No. 1366, Lujiazui Ring Road
Pilot Free Trade Zone, Shanghai
200120
China

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA