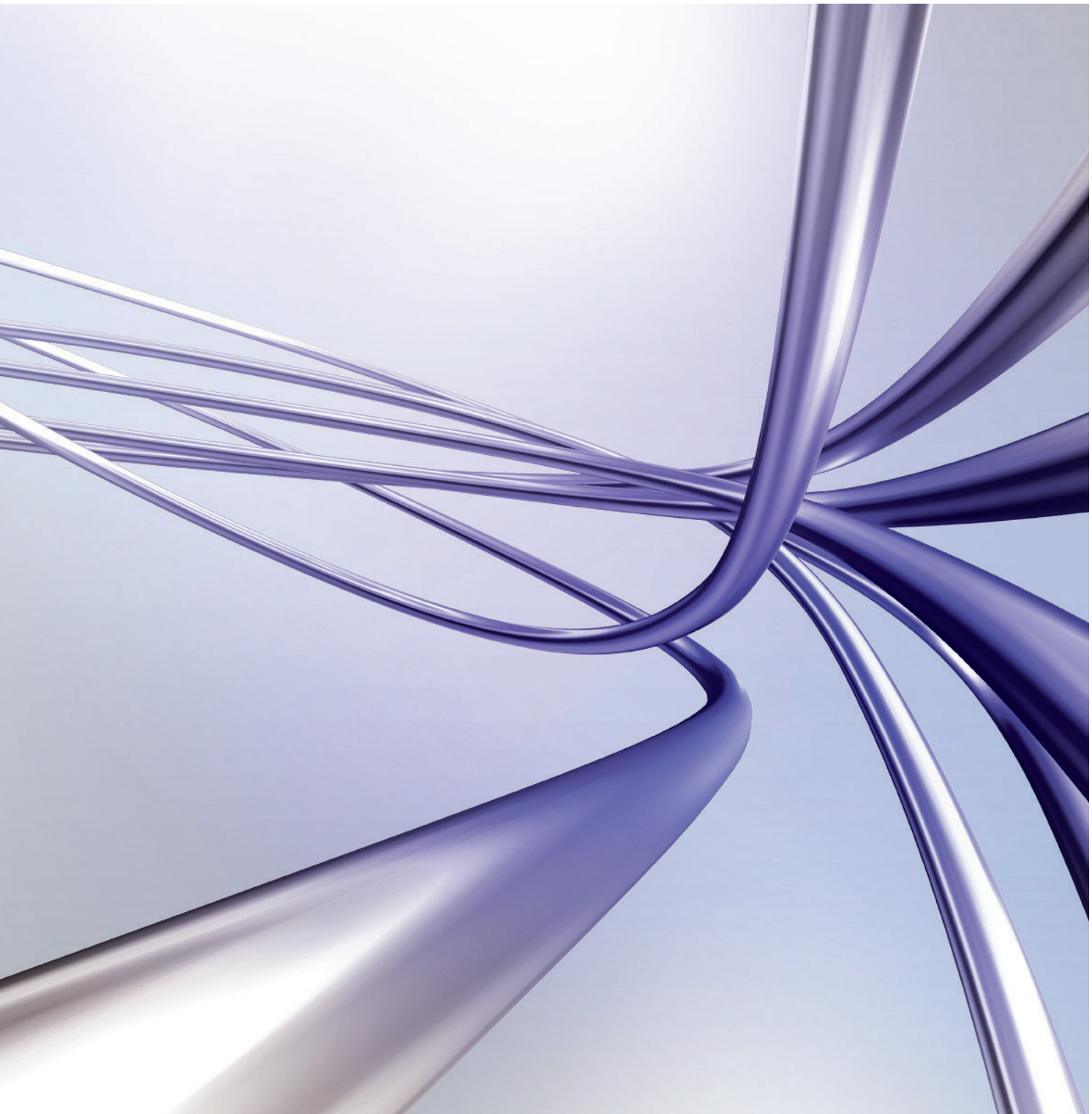
DASSAULT SYSTEMES

CATIA

OPTIMIZE YOUR ELECTRICAL WIRE HARNESS DESIGN

WITH CATIA ELECTRICAL SOLUTIONS



WWW.3DS.COM/ELECTRICAL

CATIA IS DASSAULT SYSTÈMES PIONEER BRAND AND THE WORLD'S LEADING SOLUTION FOR PRODUCT DESIGN AND INNOVATION.

Several thousands of companies in multiple industries worldwide have already chosen the Virtual Design capabilities of CATIA to ensure their products Real Success. CATIA delivers solutions for the enterprise from large OEMs through their supply chains to Small and Medium Businesses.

CATIA V6 leverages the capacity of innovation for companies of all sizes in all industries by delivering breakthrough productivity design solutions powered by a highly collaborative platform. CATIA V6 enables the full spectrum of next generation collaborative virtual design including systems engineering, shape design, mechanical, equipment engineering and company knowledge reuse.

Through a multidisciplinary approach, CATIA offers a full spectrum of design capabilities and enables efficient collaboration through the design community to encourage innovation across the extended enterprise. Integrating all disciplines (mechanical, shape, equipment and systems) is crucial to design and produce products. Aerospace, automotive, industrial equipment, high tech and shipbuilding manufacturers are requested to transform their development processes to concurrent design and systems engineering methods that support collaboration among diverse disciplines. Collaboration between electrical, mechanical and systems designers is essential to delivering innovative, high-quality products on time and reducing costs.

FROM AIRCRAFTS TO CARS, BOATS AND WHITE GOODS, THE NUMBER AND THE LENGTH OF WIRES AND CABLES ARE CONTINUOUSLY INCREASING.

THE TOTAL LENGTH OF WIRES CAN BE AS MUCH AS 3 TO 4 KM IN A CAR, 600 KM IN AN AIRCRAFT, WHILE THE TOTAL CABLE LENGTH IN A CRUISE SHIP CAN REACH UP TO 2500 KM.

Growing complexity

The number of Electrical systems in a car (i.e.: electric opening door, satellite navigation, intelligent routing systems, lane departure systems and safety systems) and their complexity are growing. In addition, the weight of the components and harnesses needs to be tracked and optimized in order to keep the cost of harnesses under control.

Globalization

Multiple markets, new business models and global collaborative innovation are key factors that manufacturers should consider in the development of their products. 3D helps these evolutions by delivering a common language to share rapidly products information.

Compliancy

Taking into account standards and regulations such as RoHS, WEEE and EUP are essential when designing and manufacturing electrical components. Full traceability of used materials and compliancy with these standards are critical for successful product development.

Sustainable environment

CATIA Electrical solutions offer tremendous opportunities to meet today's increasingly cost-driven market requirements and environmental challenges.

- Increasing number of hybrid and full electric cars require the appropriate design tools
- Reducing mass by optimizing design layout/routing and efficient use of new materials (ie: thin PVC wires, aluminum wires ...)

CATIA ELECTRICAL PROVIDES AN INTEGRATED ENVIRONMENT THAT ENABLES THE COLLABORATIVE DETAILED DESIGN OF ELECTRICAL SYSTEMS IN CONTEXT OF A VIRTUAL PRODUCT.

While design is driven by the system logical definition to ensure conformity with product specifications, full traceability and configuration management, knowledge rules are integrated to enable the automatic compliance to standards throughout the design process, all the way to the production of associative documentation for manufacturing. Such an integrated environment improves design quality, drastically reduces time needed for modifications and minimizes errors, leading to optimizing the costs.

A unified multidisciplinary V6 PLM infrastructure improves the whole process from the requirements management with ENOVIA, functional analysis, 2D and 3D Systems architecture to the 3D physical design. CATIA Electrical also delivers manufacturing documentation, drawings and formboard layout to produce harnesses.

Key benefits include

- Extended capabilities, from requirements to electrical physical design
- Unique integrated solution to support mechatronics design
- Rapid propagation of design changes at any time to optimize the electrical design process
- Powerful real-time analysis tools
- Intuitive environment enabling easy harness design and modifications
- Realistic shape of the harnesses by taking into account the material characteristics
- Efficient concurrent design through tight collaboration between mechanical and electrical engineers, between systems architects and electrical harness designers
- Powerful design review environment to provide high-end quality products
- Configuration management of electrical harness
- Full electrical component management, BOM management
- Life like experience to optimize the layout of the flattened harness
- Concurrent engineering on a the same harness

THE COLLABORATIVE V6 PLM ELECTRICAL DATA MODEL PROVIDES FULL TRACEABILITY THROUGHOUT THE PROCESS, FROM REQUIREMENTS TO THE FUNCTIONAL, LOGICAL, AND PHYSICAL VIEWS.

Electrical process and RFLP integration

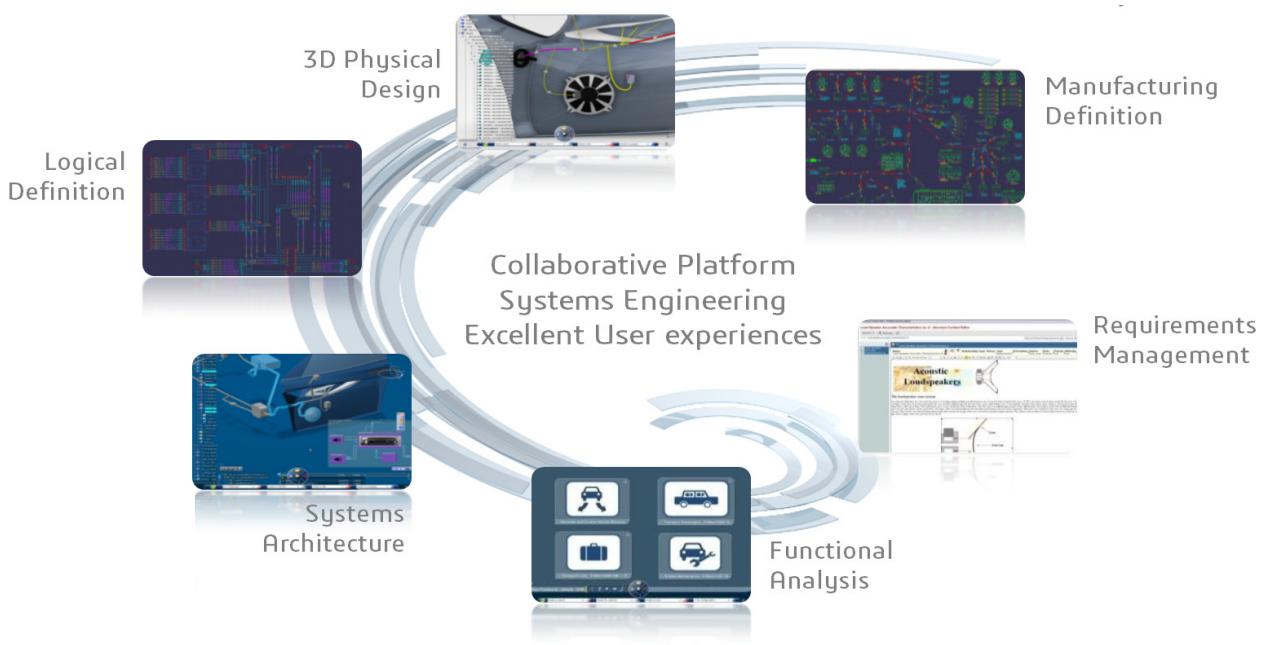
CATIA Electrical ensures collaborative traceable requirement and test definition across project phases. This solution also guarantees efficient functional architecture definition and validation through simulation and business rules checking.

Requirements specification enables to:

- Capture customer needs and transform them into technical/system requirements
- Import requirements directly from Excel
- Analyze requirements
- Produce traceability reports
- Generate requirement documents

Functional analysis allows to:

- Edit the functional structure, interfaces, and data control flows during the system design phase
- Validate choices through behavioral model reuse, simulation, and knowledge integration



CATIA 3D WIRE HARNESS DESIGN

Unique design of large scale electrical systems within the virtual product

The complexity of large-scale electrical systems requires a process-specific solution in order to design faster and ensure quality. In addition, the use of physical prototypes creates certain drawbacks such as high costs, inflexible modifications, and the late recognition of design errors.

CATIA 3D Wire Harness Design delivers a process-specific solution for designing physical wire harnesses. This solution is driven by logical specifications and is integrated with CATIA Wire Harness Documentation and Formboard. By delivering a realistic simulation for 3D wire harness packaging in an integrated environment, this powerful solution reduces design time and increases the overall quality of large-scale electrical systems.

It also enriches the design through realistic deformation of flexible harnesses by taking into account environmental conditions like gravity as well as the physical non-linear behavior of the harness and its protections.

CATIA SYSTEMS LOGICAL

Complete integrated workflow from Systems Architecture up to 3D Wire Harness Design & Manufacturing.

Today, most of the 3D Wire harness Design and Electrical Systems Design tools (ECAD) are not integrated. The inherent lack of continuity in the electrical process causes various difficulties. Firstly, the use of many different interfaces between tools requires time and energy, which puts pressure on the data transfers of manual operations. Secondly, the management of the different IT infrastructures involves costs for maintenance and administration. In the end, you compromise efficient collaboration for product global design.

By providing electrical semantic to CATIA Systems, CATIA Systems Logical Electrical Design allows a complete integrated workflow from Systems Architecture up to 3D Wire Harness Design. Electrical system designers can capture functional and logical architecture and connectivity with extensions of the logical model such as harness, net, wire, connector, pin, etc. Thanks to the V6 single IP reference, design change traceability is supported throughout the full electrical process and a global efficient collaboration on the product electrical definition can be implemented. In the end, CATIA Systems Logical Electrical Design contributes to optimize the electrical design through an efficient user interface and automation based on knowledgeware.

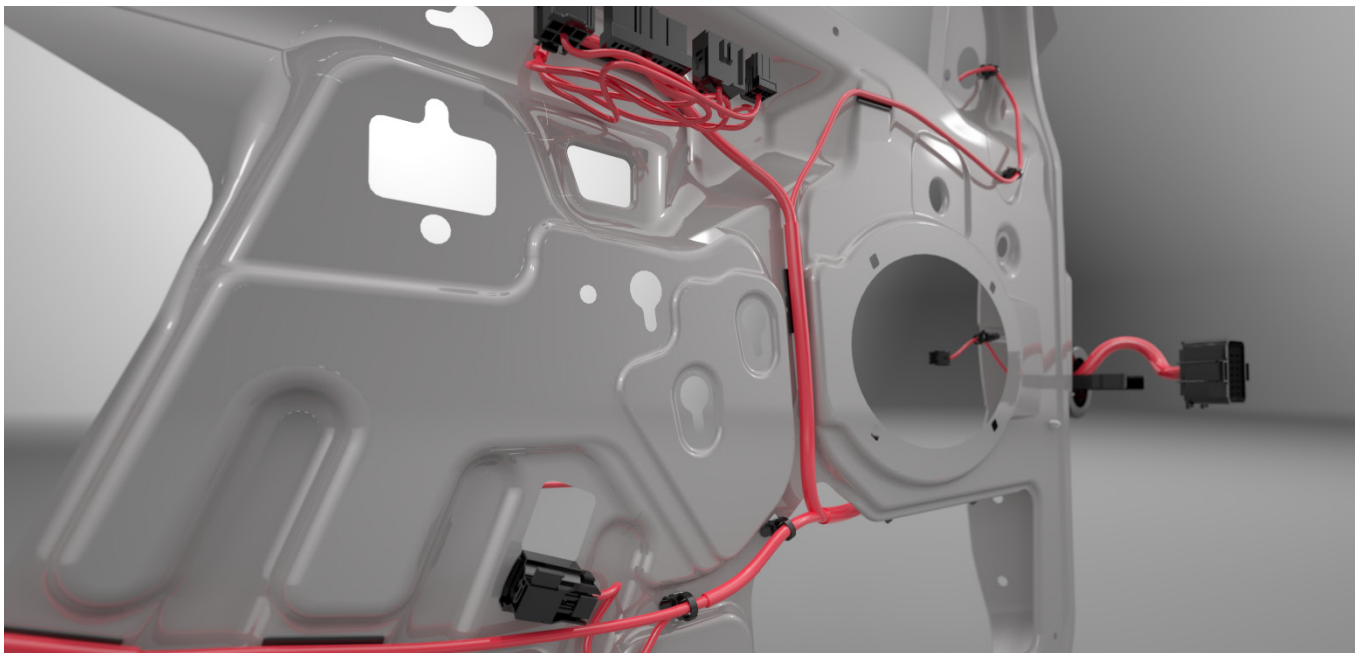
CATIA WIRE HARNESS DOCUMENTATION AND FORMBOARD

Flattening of Electrical Harnesses for 3D manufacturing Formboard design.

Once a product is ready for manufacturing, its design must be thoroughly accurate or the mistakes can be costly and the delays can be long. Good collaboration will spare you mistakes while ensuring quality documentation creation and successful design between harness designers and manufacturing.

CATIA Wire Harness Documentation & Formboard generates a 3D flattened definition of wire harness designs to define a 3D manufacturing harness formboard. In addition, it provides a set of functions to manipulate the flattened harness as easily as in a 2D view as well as to define its layout in 3D.

Thanks to a total integration with the CATIA Harness design data model, any harness design change can be automatically transferred to the manufacturing 3D.



DASSAULT SYSTEMES

Delivering Best-in-Class Products

CATIA
Virtual Product Design

GEOVIA
Model and Simulate our Planet

SOLIDWORKS
3D for Professionals

EXALEAD
Information Intelligence

SIMULIA
Realistic Simulation

NETVIBES
Dashboard Intelligence

DELMIA
Virtual Production

3DSWYM
Social Innovation

ENOVIA
Global Collaborative Lifecycle Management

3DVIA
Online 3D Lifelike Experiences

Dassault Systèmes, the **3D**EXPERIENCE Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 150,000 customers of all sizes in all industries in more than 80 countries. For more information, visit 3DS.COM.

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

Asia-Pacific
Dassault Systèmes
Pier City Shibaura Bldg 10F
3-18-1 Kaigan, Minato-Ku
Tokyo 108-002
Japan

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

Visit us at
3DS.COM/ELECTRICAL
