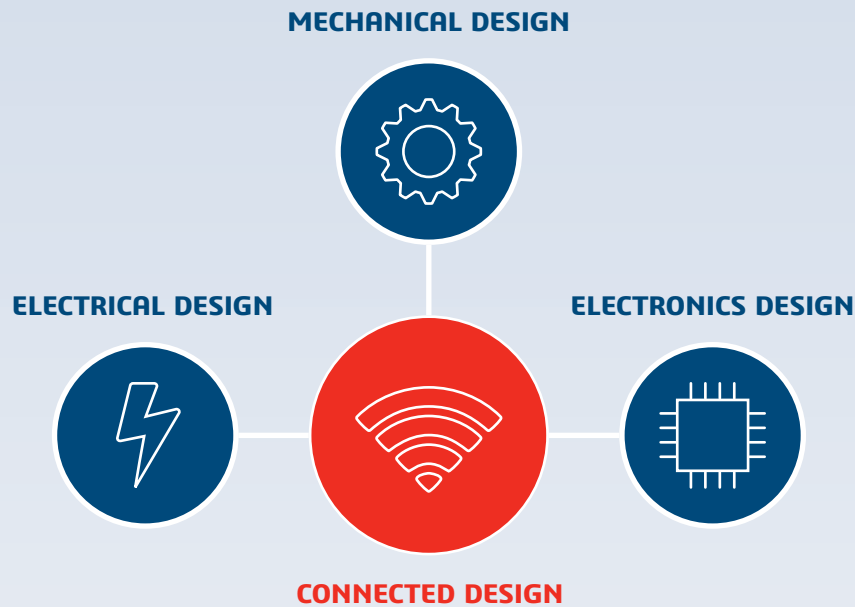**DASSAULT SYSTEMES**

3DEXPERIENCE

ECAD/CONNECTED PROCESS SOLUTIONS
WHEN INTELLIGENT DESIGN MATTERS

A CONNECTED WORLD

Every day, products are becoming more complex and features once the stuff of science fiction are now being offered in everything from cars to coffee makers. Smart products involve the marriage of many different systems, resulting in a variety of design and manufacturing challenges. Many SOLIDWORKS® customers are looking for capable solutions to solve these challenges in order to meet the desires of today's consumers and the needs of cutting-edge businesses.

MECHANICAL DESIGN

ELECTRICAL DESIGN

ELECTRONICS DESIGN

CONNECTED DESIGN

DESIGNING WITHIN A UNIFIED ECOSYSTEM

One of these challenges is the number of disciplines brought to bear on the process. Mechanical, electrical, electronic, and network design are all-too-often managed separately, and this siloed approach can hamper design and development from the outset. To streamline and simplify things, SOLIDWORKS offers a suite of software solutions that brings a greater level of connection and clarity to the process. Now teams can share data and ideas, quicker and easier than ever before.

INTEGRATED DEVELOPMENT PROVIDES A COMPETITIVE EDGE

Employing a set of integrated design tools to develop connected products and systems provides a variety of benefits. Users can leverage an integrated approach to shorten design cycles, improve quality, and facilitate manufacturing and assembly, while simultaneously encouraging a multi-disciplinary, collaborative approach. When electronic design, electrical schematics and wiring, motion control systems, and mechanical housing and component design are completed in an integrated manner, it enables new ways of thinking and sparks innovation.

REPRESENTATIVE CONNECTED DEVICES SOLUTION

SMART CITY	FACTORY AUTOMATION	CONSUMER PRODUCTS
Integrated infrastructure (BIM)	Mechatronics/plastronics	Home automation
Power grid technologies	Industrial IoT (IIoT)	Consumer electronics
Autonomous vehicles	Industry 4.0	Connected vehicles
	Smart farm	Every day objects get connected
	Factory of the future	
	Additive manufacturing (next generation)	

SOLIDWORKS ECAD SOLUTIONS

Dramatically improve your workflow and maximize results—no matter what the application—with SOLIDWORKS ECAD Solutions. The suite of electro-mechanical design tools enable faster design, improved information and data sharing, and increased accuracy in the development of smart devices and other products requiring embedded electronics.

SOLIDWORKS PCB

Printed Circuit Boards (PCBs) are at the heart of smart design and electrical engineering, so accuracy and quality in their design and manufacture is critical.

SOLIDWORKS PCB powered by Altium® is an electro-mechanical solution that combines SOLIDWORKS' 3D expertise with the scientific power and intuitive workflow the Altium Designer® software. The result is an integrated development environment ideal for collaboration and innovation.

SOLIDWORKS PCB allows users to seamlessly and intelligently keep their electronic and mechanical designs synchronized, ensuring more consistent and standardized designs, and helping facilitate quick, easy change orders. The system's proven electronic design technology and streamlined schematics editor provide better collaboration, while its native integration ensures easier migration, lower costs, fewer production delays, and a faster time-to-market.

REPRESENTATIVE ELECTRONIC SOLUTIONS (SMART PRODUCTS)

Factory automation
Connected devices
Toys
Consumer products
Industrial equipment
Robotics
Medical devices
Automotive
Electric vehicles
Aerospace & defense
Commercial vehicles
Aircraft interiors
Appliances
Trucks and buses
Trains
Heavy equipment
Spacecraft
Weapon systems

"With SOLIDWORKS and SOLIDWORKS PCB software, we've taken a board population process that was highly inaccurate—because of the rough nature of the components— and that took 15 minutes per conversion/import down to a 100 percent accurate process that takes three to five minutes in total."
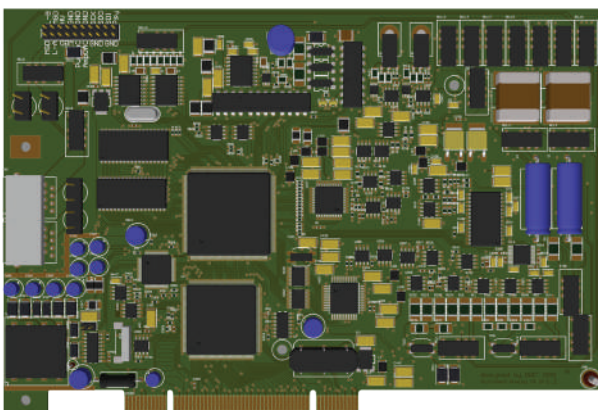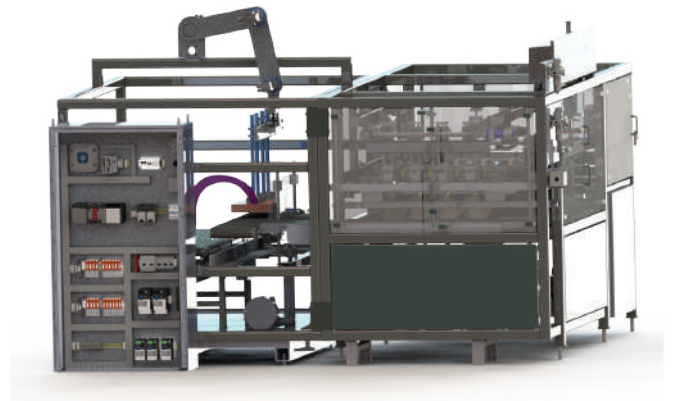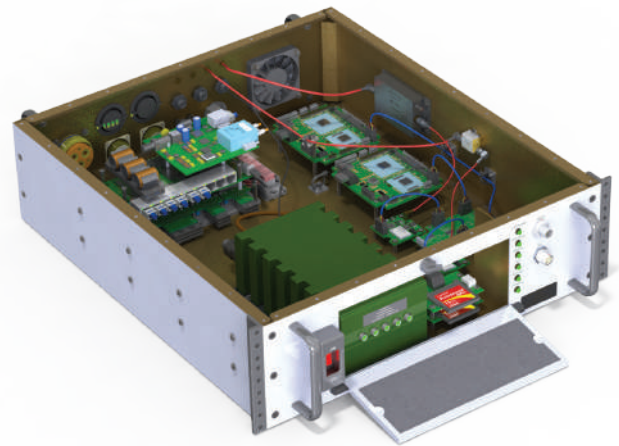
— Nate Calvin, CEO AeroLED

INTERGRATED ECAD TO MCAD TRANSLATOR

CIRCUITWORKS

Mechanical engineers (MCAD) and electrical engineers (ECAD) need to work closely in creating complex designs to help speed up the product development process, and save time and development costs. CircuitWorks™ is a powerful electronic CAD/ECAD translator that enables engineers to create accurate 3D models of circuit boards in SOLIDWORKS 3D design software. As part of the SOLIDWORKS Electrical 3D technologies, CircuitWorks enables you to share, compare, update, and track electrical design data to help you more quickly resolve electrical-mechanical integration problems.

ELECTRICAL CAD TO MECHANICAL CAD EXCHANGE

Efficiently collaborating on CAD data is one of the prevalent challenges for mechanical and electrical designers. When developing a consumer product such as a laptop, where reducing size and weight while preserving aesthetics are all important criteria, the electrical engineer designing the PCB and selecting components (such as fans and power supplies) must clearly communicate ECAD data to the mechanical engineer. In turn, the Mechanical Engineer needs to clearly communicate back mechanical design changes affecting the design of the PCB. CircuitWorks efficiently promotes bidirectional data exchange. Design teams can work together to resolve ECAD-MCAD integration problems and move faster to create innovative, higher quality products.

SOLIDWORKS FLOW SIMULATION AND ELECTRONIC COOLING MODULE

An equally important aspect of the electro-engineering process is the ability to maximize performance in the final product. Users can achieve this by using SOLIDWORKS Flow Simulation and its set of intelligent models to perform thermal analysis on PCBs and other electronics. The resulting data can be used to ensure the optimal performance of all components.

Similarly, the Electronic Cooling Module features its own set of intelligent models to enable a broad range of electronic cooling applications to be built quickly and accurately.

SOLIDWORKS ELECTRICAL

With SOLIDWORKS Electrical 3D and SOLIDWORKS Electrical Schematics software, users can create schematic driven electro-mechanical designs within the SOLIDWORKS design ecosystem. When coupled with SOLIDWORKS PCB, users will have a completely integrated mechatronics design suite.

SOLIDWORKS ELECTRICAL PDM CONNECTOR

Maintaining product design data is critical to ensure design integrity, and to provide the same high level of design data management for electrical and mechatronic designs that SOLIDWORKS users expect. SOLIDWORKS Electrical Professional products include the ability to tightly integrate into SOLIDWORKS PDM Professional with same capabilities as SOLIDWORKS, with a stress-free interface crafted specifically for electrical users.

SOLIDWORKS Electrical Schematic Professional

To achieve rapid development of embedded electrical systems for equipment and other products, users need a powerful easy-to-use suite of multi-user collaborative schematic design tools. SOLIDWORKS Electrical allows you to streamline and simplify the most complex design task with an array of easy-to-use features, from Programmable Logic Controller (PLC) and 3D terminal block, to contact cross-reference assignments, automated reporting and terminal drawing creation—all within a collaborative project management environment.

SOLIDWORKS Electrical Schematic Standard

A powerful, stress-free, easy-to-use single user schematic design tool helps rapid development of embedded electrical systems for equipment and other products. Built-in and web-enabled libraries of symbols and manufacturer part information provide common re-usable materials optimizing design reuse. You can streamline and simplify an array of tedious design tasks, from terminal block to contact cross-reference assignments, with SOLIDWORKS automated design and management tools.

SOLIDWORKS Electrical 3D

Integrate electrical schematic design data with the SOLIDWORKS 3D model of a machine or other product, bidirectionally and in real time. SOLIDWORKS Electrical 3D enables you to place electrical components and use advanced SOLIDWORKS routing technology to interconnect electrical design elements within the 3D model. Determine optimal lengths and routing paths for electrical interconnect, while maintaining design and Bill of Materials (BOM) synchronization between electrical and mechanical designs.

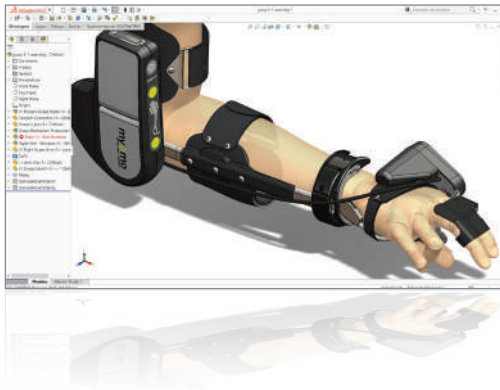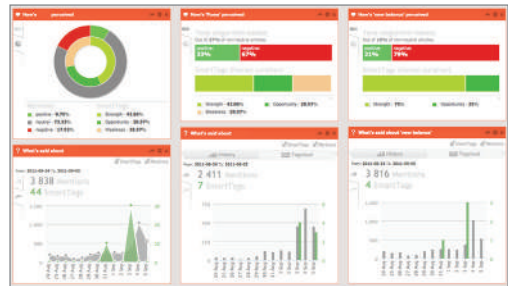| REPRESENTATIVE ELECTRICAL SOLUTIONS |
| --- |
| Factory automation |
| Industrial equipment |
| Robotics |
| Medical devices |
| Automotive |
| Electrical cabinets |
| Electrical wiring |
| Electric vehicles |
| Aerospace & defense |
| Switch gear |
| Commercial vehicles |
| Aircraft interiors |
| Appliances |
| Trucks and buses |
| Trains |
| Heavy equipment |
| Spacecraft |
| Weapon systems |

SUMMARY

At its core, SOLIDWORKS is simply a smarter approach. By unifying all electro-mechanical disciplines into one ecosystem, SOLIDWORKS ECAD offers a powerful advantage in the designing, engineering and deployment of smart products.

SOLIDWORKS IOT PARTNER SOLUTIONS

DESIGN THINGS

Hardware Product Planning
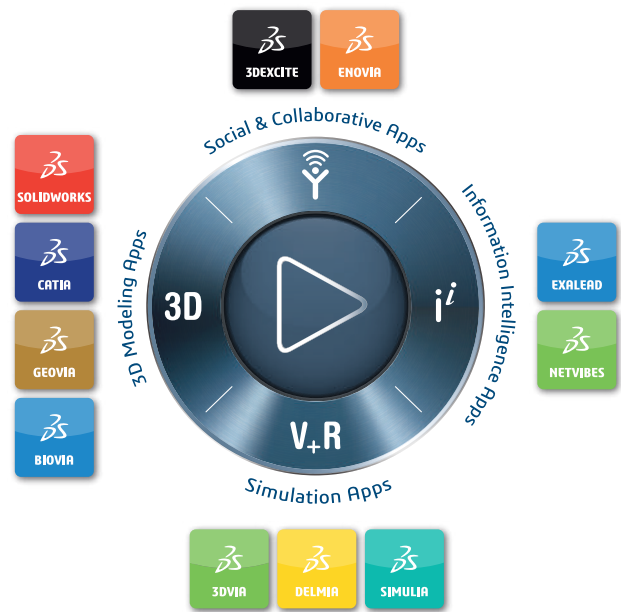
Embedded Software

Web Applications

Mobile Application

MANAGE THINGS

Cloud Service

Transport

Business Enablement

Application Enablement

Our **3D**EXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution 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 220,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **www.3ds.com**.