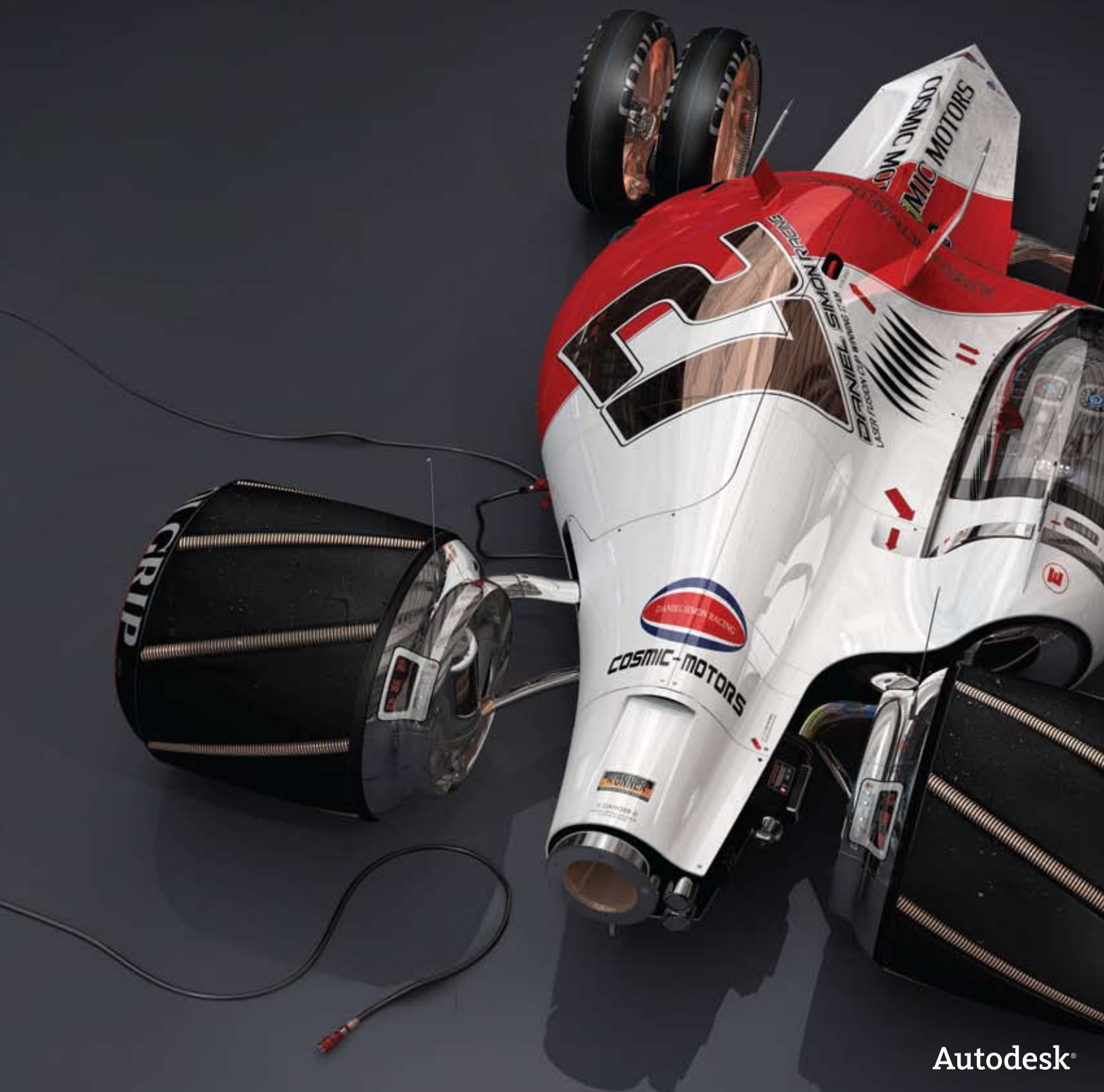


# Autodesk® Manufacturing **Digital Prototyping**

Design. Visualize. Simulate.



# Autodesk Inventor Takes You Beyond 3D Design to Digital Prototyping

Autodesk Inventor software creates a single digital model that gives engineers the ability to design, visualize, and simulate their products. Inventor software enables you to create a digital prototype, helping you to reduce reliance on costly physical prototypes and get more innovative designs to market faster. The Autodesk solution for Digital Prototyping brings together design data from all phases of the product development process into a single digital model created in Inventor.



## **Evolve the Way You Think About Your Design Process**

The Autodesk solution for Digital Prototyping enables your manufacturing workgroups to develop a single digital model, created in Inventor, that can be used in every stage of production—bridging the gaps that usually exist between conceptual design, engineering, and manufacturing teams. The Autodesk solution for Digital Prototyping is uniquely scalable, attainable, and cost-effective. It can be deployed and integrated with minimal disruption to existing workflows. And with Autodesk's record of providing powerful yet accessible desktop technology to mainstream manufacturers, an Inventor-based Digital Prototyping solution delivers the fastest path to ROI.

## **Best-In-Class Conceptual Design**

Optimize your design process and work digitally from project outset using best-in-class conceptual design tools from Autodesk. Capture ideas digitally—from initial sketches to 3D concept models using products in the Autodesk® Alias® product line—then share those designs with the engineering team using a common file format, allowing a product's industrial design data to be incorporated into the digital prototype created in Inventor software.

With Autodesk® Showcase® software, you can quickly evaluate multiple design variations by creating realistic, accurate, and compelling imagery from 3D CAD data—helping reduce the time, cost, and need for building physical prototypes. Then interactively view the digital prototype in realistic environments, making it faster, easier, and less expensive to review designs and make informed product design decisions.

### Integrated 2D and 3D Mechanical and Electrical

Move beyond 3D and develop complete digital prototypes of products with Autodesk® Inventor® software. The Inventor family of software provides the powerful, cost-effective, and easy-to-learn desktop technology engineers need to take advantage of Digital Prototyping.

Inventor software enables engineers to integrate AutoCAD® drawings and 3D data into a single digital model, creating a virtual representation of the final product. Using this single digital model, you can design, visualize, and simulate products digitally. The model serves as a digital prototype that is refined and used to validate design functions, helping to reduce reliance on physical prototypes and minimize manufacturing costs.

AutoCAD® Electrical software passes electrical design intent information for cables and conductors directly to Inventor, adding valuable electrical controls design data to the digital prototype. Inventor users can pass wire-connectivity information to AutoCAD Electrical and automatically create the corresponding 2D schematics. The smooth integration between Inventor and AutoCAD Electrical helps your electrical and mechanical teams work collaboratively and efficiently on 2D and 3D mechatronic product designs.

AutoCAD® Mechanical software is built to help mechanical designers and drafters simplify complex mechanical design work, enhancing productivity. Quickly detail production drawings using industry-specific manufacturing tools, reducing errors and saving hours of time. AutoCAD®, one of the world's leading design and professional drafting software, plays an important role in Digital Prototyping workflows. AutoCAD gives you the power and flexibility to explore, document, and communicate ideas. Both AutoCAD Mechanical and AutoCAD software enables engineers to accurately document digital prototypes created in Inventor, and communicate insights gained from Digital Prototyping with colleagues, partners, and suppliers that rely on AutoCAD software.

### Simulation

Inventor software delivers the best integrated simulation tools in the industry. Tightly integrated tools for calculations, stress, deflection and motion simulation make it possible for engineers to help optimize and validate a digital prototype before the product is built. Simulation is performed based on real-world constraints, so you can feel confident about the simulation results. The dynamic simulation tools in Inventor enable engineers to evaluate different potential solutions to a motion problem, making it possible to make the best design decisions and avoid costly mistakes.

To help validate and optimize designs before manufacturing, you can use the broad range of finite element analysis (FEA) and simulation tools in Algor® simulation software, which will enhance the Autodesk solution for Digital Prototyping.

Use Autodesk® Moldflow® injection molding simulation software to optimize plastic part and injection mold designs and ensure manufacturability—helping shorten development times, reduce costs, and avoid manufacturing defects.

### Profitable Manufacturing

Autodesk Digital Factory tools help drive profitability into customers' manufacturing processes. They extend Digital Prototyping into the factory by enabling companies to analyze the manufacturability of the products they design, deliver critical product documentation, and simulate factory operations. With Autodesk® Navisworks® software, manufacturers can visualize complete manufacturing facilities, industrial machinery, factory floor models, and production lines in a single environment. The software supports complete assembly visualization and optimization, and enables you to combine CAD data from various design systems regardless of file format or size.

### Marketing Communications

To produce accurate and highly realistic visualizations of digital prototypes created in Inventor, turn to industry-leading visualization software in the Autodesk solution for Digital Prototyping, including Autodesk Showcase and Autodesk® 3ds Max® software. Import Inventor software data into Autodesk 3ds Max software for advanced rendering and animated visualizations of digital prototypes. These stunningly realistic product visualizations can be used for sales and marketing long before building begins.

### Data Management

Autodesk Data Management tools allow design workgroups to manage and track all the design components for a digital prototype, helping you better reuse design data, manage the release and change process, and promote early collaboration with manufacturing teams and clients.

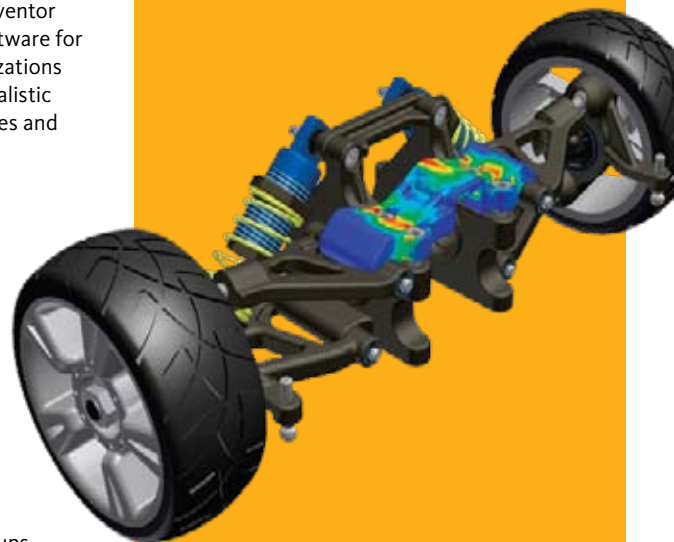
With the Autodesk® Vault family of data management applications, design, engineering, and manufacturing workgroups can manage the Digital Prototyping process by helping users reduce time organizing files, avoid costly mistakes, and more efficiently release and revise designs.

You can further facilitate Digital Prototyping workflows with Autodesk® Design Review software, the all-digital way to review, measure, mark-up, and track changes to designs—all without the original creation software.

Best-in-class manufacturers use Digital Prototyping to:

- Build half the number of physical prototypes
- Get to market 58 days faster
- Achieve 48 percent lower prototyping costs
- Drive greater innovation into their products\*

Learn more about how the Autodesk solution for Digital Prototyping helps mainstream manufacturers become best-in-class.



\*Source: Independent study performed by the Aberdeen Group.

# Digital Prototyping for the Manufacturing Market

Autodesk is a world-leading supplier of engineering software, providing companies with tools to experience their ideas before they are real. By putting powerful Digital Prototyping technology within the reach of mainstream manufacturers, Autodesk is changing the way manufacturers think about their design processes and is helping them create more productive workflows. The Autodesk approach to Digital Prototyping is unique in that it is scalable, attainable, and cost-effective, which allows a broader group of manufacturers to realize the benefits of Digital Prototyping with minimal disruption to existing workflows, and provides the most straightforward path to creating and maintaining a single digital model in a multidisciplinary engineering environment.

## **Learn More or Purchase**

Design, visualize, and simulate products from the conceptual design phase through the manufacturing process. For more information, visit [www.autodesk.com/digitalprototyping](http://www.autodesk.com/digitalprototyping). To purchase Digital Prototyping software, contact an Autodesk Premier Solutions Provider or Autodesk Authorized Reseller. Locate a reseller near you at [www.autodesk.com/reseller](http://www.autodesk.com/reseller).

## **Autodesk Learning and Education**

From instructor-led or self-paced classes to online training or education resources, Autodesk offers learning solutions to fit your needs. Get expert guidance at an Autodesk Authorized Training Center (ATC<sup>®</sup>) site, access learning tools online or at your local bookstore, and validate your experience with Autodesk certifications. Learn more at [www.autodesk.com/learning](http://www.autodesk.com/learning).

## **Autodesk Services and Support**

Accelerate return on investment and optimize productivity with innovative purchase methods, companion products, consulting services, and support from Autodesk and Autodesk authorized partners. Designed to get you up to speed and keep you ahead of the competition, these tools help you make the most of your software purchase—no matter what industry you are in. Learn more at [www.autodesk.com/servicesandsupport](http://www.autodesk.com/servicesandsupport).

## **Autodesk Subscription**

Get the benefits of increased productivity, predictable budgeting, and simplified license management with Autodesk<sup>®</sup> Subscription. You get any new upgrades of your Autodesk software and any incremental product enhancements, if these are released during your Subscription term. In addition, you get exclusive license terms available only to Subscription members. A range of community resources, including web support direct from Autodesk technical experts, self-paced training, and e-Learning, help extend your skills and make Autodesk Subscription the best way to optimize your investment. Learn more at [www.autodesk.com/subscription](http://www.autodesk.com/subscription).

Cover image courtesy of Daniel Simon

Autodesk, AutoCAD, Alias, Autodesk Inventor, Inventor, Navisworks, Moldflow, Showcase, and 3ds Max are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product offerings and specifications at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.  
© 2009 Autodesk, Inc. All rights reserved.