LEADERSHIP SERIES

# TECHNOLOGIES ENABLING INNOVATION FOR MANUFACTURERS

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Make anything.

# Introduction

Enabling greater innovation helps manufacturing companies drive sustainable, profitable growth, and is a key strategy to win in the future of making things. Getting great ideas to market faster than competitors establishes a clear competitive advantage. And many studies have shown that companies that innovate more effectively enjoy much greater success relative to lesser performing competitors.

In our eBook **The Innovation Challenge for Manufacturers** we identified a number of challenges facing companies that want to innovate more efficiently and effectively. These challenges include:

- Lack of collaboration
- Limited data reuse
- Limited insight with limited, ad-hoc simulation
- Reliance on traditional manufacturing
- Don't have adequate tools
- Difficult to become proficient with new software

In the following pages we address these challenges with implementation of the right technology solutions that will enable manufacturers to:

- Create the right balance between incremental and transformative innovation
- Increase collaboration internally and externally
- Identify market opportunities and understand the willingness of the customer to pay for innovative products
- Rapidly select and verify new innovations with smart product development improving manufacturing workflows
- Facilitate continuous improvement to products and their business

# Technologies enabling innovation

## Affordable, intuitive cloud-based design software

The product design and development process is the crucial first step in innovation. Replacing outdated and inefficient legacy software is a great start in getting better results. Key is investing in CAD software that connects your entire product development process on a single platform that is compatible with both Mac and PC. Design, testing and fabrication is all done with a single tool ensuring efficiency.

And a cloud-based system brings together geographically dispersed teams, different departments within companies and key third party vendors to provide effective collaboration and communication.

# Technologies enabling innovation

## Professional-grade engineering design tools

Introducing leading edge design software into a manufacturing business can completely transform the entire engineering process. Comprehensive solutions can improve the engineering process in the following ways:

### Design
More options can be considered in a shorter timeframe, and generative design can deliver infinite, unimagined possibilities using artificial intelligence and infinite computing power.

### Collaboration
Centralized engineering information provides streamlined access to required information and existing workflows by connecting departments, customers and vendors.

### Simulation
This reduces the need for expensive prototypes and ensures the many more design options that are being generated can be properly evaluated in terms of performance and ability to be built.

### Visualization
Seeing what you are designing in 3 dimensions on screen provides confidence and context for new products as part of the design process.

# Technologies enabling innovation

## Streamlined collaboration

Innovation is facilitated when teams work together to imagine and design new products. Bringing together teams based in different departments, offices and countries, as well as customers and key vendors, ensures better innovation outcomes.

Cloud-based collaboration tools bring engineers and designers together in a centralized workspace to collaborate, mark-up and comment on 2D and 3D designs. CAD-CAM tools that connect your entire product development process in a single, cloud-based tool enable greater innovation.

And cloud-based PLM solutions are affordable and easy-to-use and bring the benefits of product lifecycle management to anyone, anywhere, anytime.

## Central data storage and reuse

Timely access to up-to-date data and information, as well as access to previous design work, is important in the design process to facilitate effective and efficient innovation. Creating a single, up-to-date repository for projects, engineering data, documentation and standards will standardize workflow and improve compliance.

In addition, professional grade data management systems allow teams to efficiently reuse existing designs, access non-engineering documents and communicate across groups. New designs can leverage legacy data and rework can be reduced.

# Technologies enabling innovation

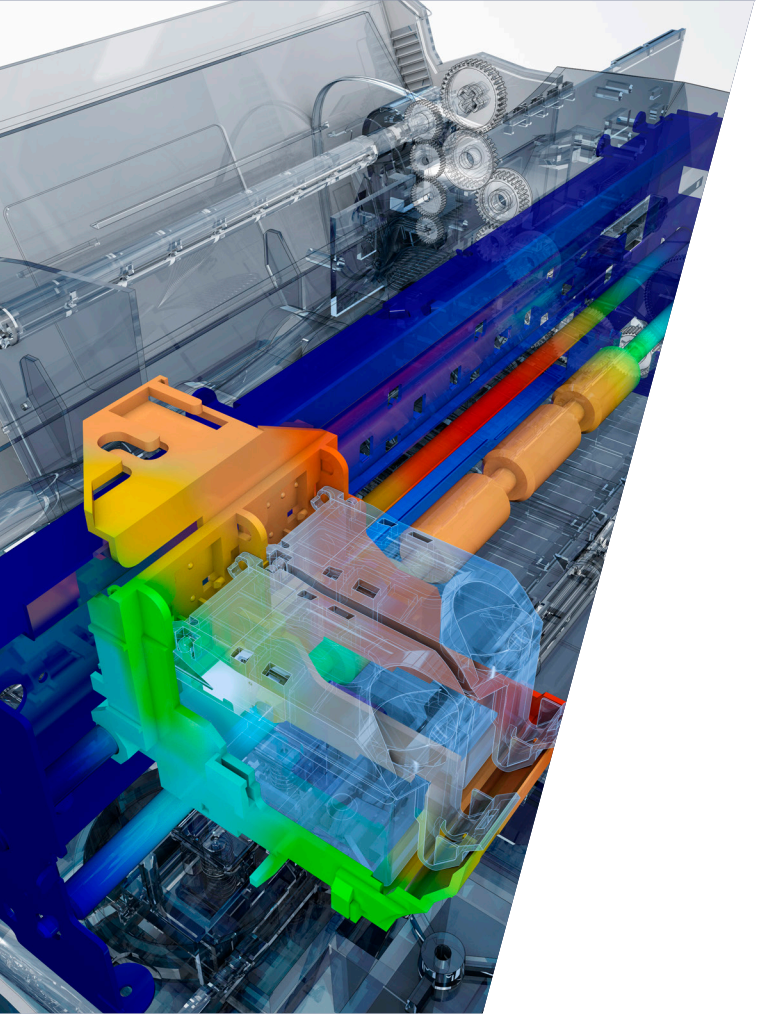
## New manufacturing techniques and technologies

Integration of new design technology with new manufacturing techniques provides a powerful platform for innovation.

Generative design leverages technology in the design process to provide thousands of design options based on input parameters to produce lightweight, latticed designs that are functionally optimized and accurate. Utilizing simulation, the preferred designs can be properly evaluated before moving to manufacturing.

Once designed, additive manufacturing is used for rapid prototyping allowing for accelerated product development. And it can be implemented when there are limitations for traditional manufacturing methods. Finally, there are a range advanced machining techniques and tools that can improve production outcomes in terms of quality and time.

Used separately or together, these new techniques and technologies will enable much greater innovation.

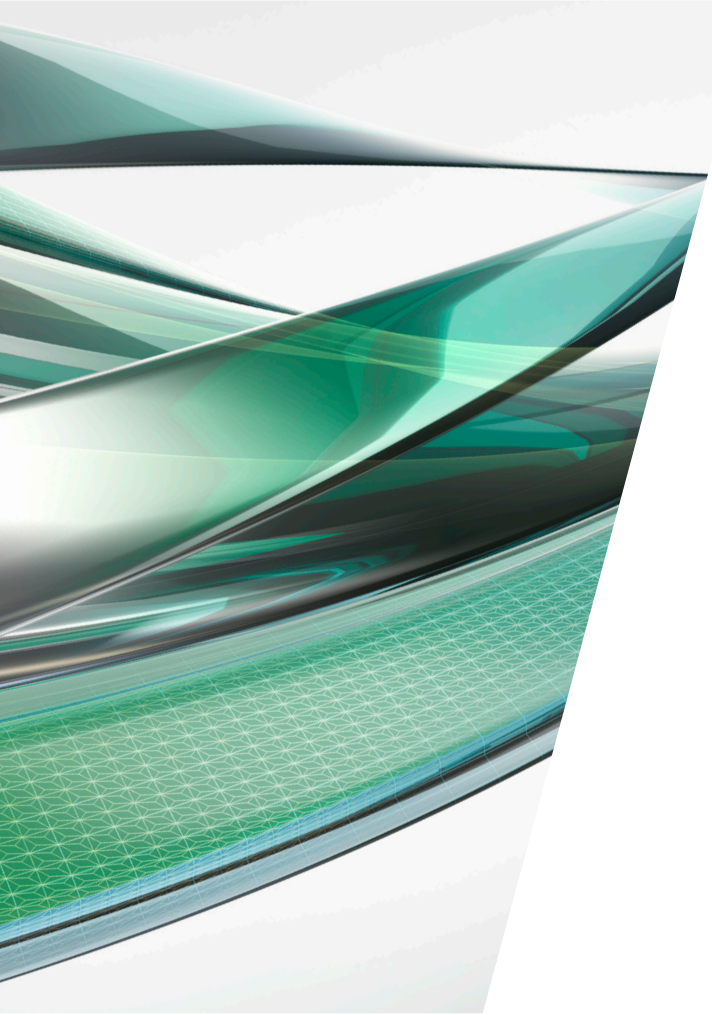


# Technologies enabling innovation

## New simulation tools

With a more robust design process that provides many more options than previously possible, the need to effectively evaluate the performance and build potential of these options is crucial. The integration of simulation software into the design process simulates real-world behavior and performance. This is effective in reducing the need for physical prototypes, and ensuring that what is designed can actually be built.

Simulation predicts build difficulties, reduces manufacturing defects and allows for the evaluation of many more optimized design possibilities. It is possible to simulate a wide range of analysis types throughout the design process before commencing manufacturing.



# About Autodesk

Autodesk has been helping people imagine, design and create a better world for more than 30 years. Today, we are on the brink of the biggest change in how we make things since the industrial revolution.

Advances in accessible 3D design and fabrication technology are disrupting engineering and manufacturing as we know them. As a result we are building on our design roots and applying our industry insights to usher in the new era of making things.

Our robust and growing portfolio of tools are designed to be accessible, easy to use and powerful.

For more information visit **Autodesk.com** or follow **@autodesk**

For more resources, visit **www.autodesk.com/leadershipresources** or if you're ready to learn more about how you can enable greater innovation, then let's have a conversation.