

Realize the Future of Making Things with a product innovation platform

Like all manufacturers, you compete in the marketplace for customers. You can compete based on any number of factors, including price. But the most sustainable, and profitable, advantage comes when you establish competitive separation based on unique core competences—which enables you to offer highly differentiated, innovative products and processes that no competitor can match.

So how do you achieve competitive separation? You structure product development to prevent your products from becoming commodities. You price based on materials and manufacturing costs plus your margin. But sticking to traditional product development processes keeps you mired in fixed product value. The old way is driven by linear processes and tools designed to support linear modes of working; you research, design, mass produce, and repeat, hoping to stay ahead of competitors (who rely on similar static processes).

But true competitive separation takes you a step further—by transforming product development to deliver smart products that can learn, evolve, and generate ongoing revenue. People want such products now, and they will demand them in the future.

To transform product development, you need to shift to processes that respond dynamically to a fragmented and volatile business environment. With these processes as your foundation, you become remarkably nimble—a full participant in the Future of Making Things. The other requirement is a completely new platform for product development. As the research firm Gartner explains: “With digital business, the nature of products is changing. This requires manufacturers to adopt new thinking and new IT, called ‘product innovation platforms,’ to define and design products and to manage product life cycles.”

Autodesk® Fusion is just such a platform. It replaces linear product development with fluid, flexible, closed-loop processes, making product design infinitely more dynamic and supporting ongoing revenue momentum. You can even incorporate services from multiple vendors. Fusion is unconstrained by traditional tools working in isolation, or by limited file translation as the primary form of integration. Instead, it takes you beyond traditional linear processes, in which data flows in only one direction.

This paper explores how a traditional product development process can hold you back, and how a product innovation platform like Fusion can help you embrace flexible, closed-loop product development to transform your business.

Cut through—or get tangled in traditional product development

Traditional product development is linear, advancing from stage to stage to produce a marketable product. The more effective such a process, the greater the rewards, in the form of higher fixed product value. Companies can streamline development, cut materials costs, and enhance margins with a strong brand—but the process still leaves them with a fixed product value. To see why, let’s look more closely at the stages and limits of a linear process:

- **Concept:** You start with a concept that's intended to meet a market need. Though your idea may be innovative, it most likely targets one set of potential customers. It's not supported by a flexible process that can generate multiple concepts that meet the needs of all potential customers.
- **Design:** In the design stage, your team works to turn the concept into something that can be efficiently mass produced. Multiple disciplines within your organization contribute to the design; when they need outside expertise, they tap specialists in other organizations. Lack of connectivity among organizations and tools hinders true, simultaneous collaboration; nimble, integrated design and simulation are virtually impossible. This can lead to version control issues and inefficiencies—but, more crucially, the innovative core intent is watered down by “efficient” design choices that push it in mundane directions.
- **Produce:** When it comes time to make the product, traditional manufacturing methods prevent you from easily addressing diverse customer needs with a single, flexible process. You configure manufacturing processes to mass-produce one, or perhaps a few, versions of each product. Few manufacturers have the ability to mass-customize products to suit the needs of a wide range of customers.
- **Sell:** After production, you take the product to market. People either become customers or don't, based on how well your product suits their needs. Neither the product nor the sales process adapts to deliver a personalized experience—an experience that can inspire customers to pay a premium.
- **Operate and retire:** The customer uses the product and eventually retires it. You maintain no ongoing connection to the customer, adding value and building an ongoing relationship, except through disconnected means such as service contracts or warranties. You hope the customer will explore your current offerings after retiring the product but, without an ongoing relationship, you get no information on when to market to the customer again.

The steps above are built to deliver fixed product value. Linear processes put you on a treadmill, one where profitability means recouping development costs plus margins through one-time purchases of mass-produced items. But in a world of rapidly evolving customer needs and expectations, that's not good enough—and, most crucially, it's not going to win the highly profitable customers who are willing to invest in products and ongoing services that truly meet their needs.

The Future of Making Things: Going beyond fixed product value

There is a new way of working. The Future of Making Things transforms linear product development into an iterative and closed-loop workflow, with the entire process building continually higher customer lifetime value. It eliminates the version control and interoperability issues that come from reliance on email and exchanging files across organizations. The elements of product development remain the same, but each aspect is transformed.

- **Concept:** You begin with a concept—one that quickly becomes many concepts that can meet the needs of more customers, more exactly. In the Future of Making Things, you distill a single core concept into components, each of which can be readily personalized and customized. From this initial seed, you conceive of multiple products without a new linear development process.
- **Design:** Collaboration takes center stage. Your design process must still turn the concept into a product that can be affordably manufactured. But now the entire multidisciplinary team collaborates via cloud-based tools that link far-flung contributors to a unified design model. Version control is no longer a problem; cloud-based simulation increases understanding of performance earlier in the process. Far better visibility into the evolving design helps keep output aligned with original intent.

Want a waiting list for your products?

When you buy a new Tesla Model S, you get more than a car off the showroom floor. You configure your car to match your driving range, appearance, and performance preferences. A fee-based service program keeps your car maintained and updated with the latest software. And it's just what consumers want—that's why there's a waiting list to buy one.

- **Produce:** To support the rapid-fire innovation enabled by customizable concepts and connected design, manufacturing becomes dynamic. Configurable factories and additive manufacturing help deliver the personalized products that customers want. The rise of additive manufacturing is already transforming many markets, and 3D printers that can handle metal are likely to prove even more revolutionary. Adopting iterative product development process can help you prepare to move from mass production to mass customization.
- **Sell:** You'll sell by engaging customers in experiences personalized to suit their preferences and needs. Customizable products will attract more customers. And you'll connect with customers in new ways—including social media and configuration tools, supported by data that gives insight into individual customers—enhancing your ability to deliver value. Customers will no longer decide whether or not a static product meets their needs; instead, you'll work with them to deliver products that fit their preferences.
- **Operate and retire:** After the sale, your product becomes part of the Internet of Things. Product usage data gives you unprecedented insight into performance, helping you continuously enhance your offering. Connectivity also enables you to bundle your product with services that add ongoing value, boosting your bottom line with new revenue streams. Gartner predicts that by 2018 half of all durable goods, with the exception of primary metals and fabricated metal parts, will be configurable through connectivity to the Internet of Things.²

Instead of building toward a one-time sale, the new product development process enables ongoing, more profitable customer relationships, whose flow of revenue moves your business away from fixed product value. But traditional product lifecycle management tools can't take you into the Future of Making Things. To get there you need a product innovation platform.

The Autodesk Fusion Product Innovation Platform

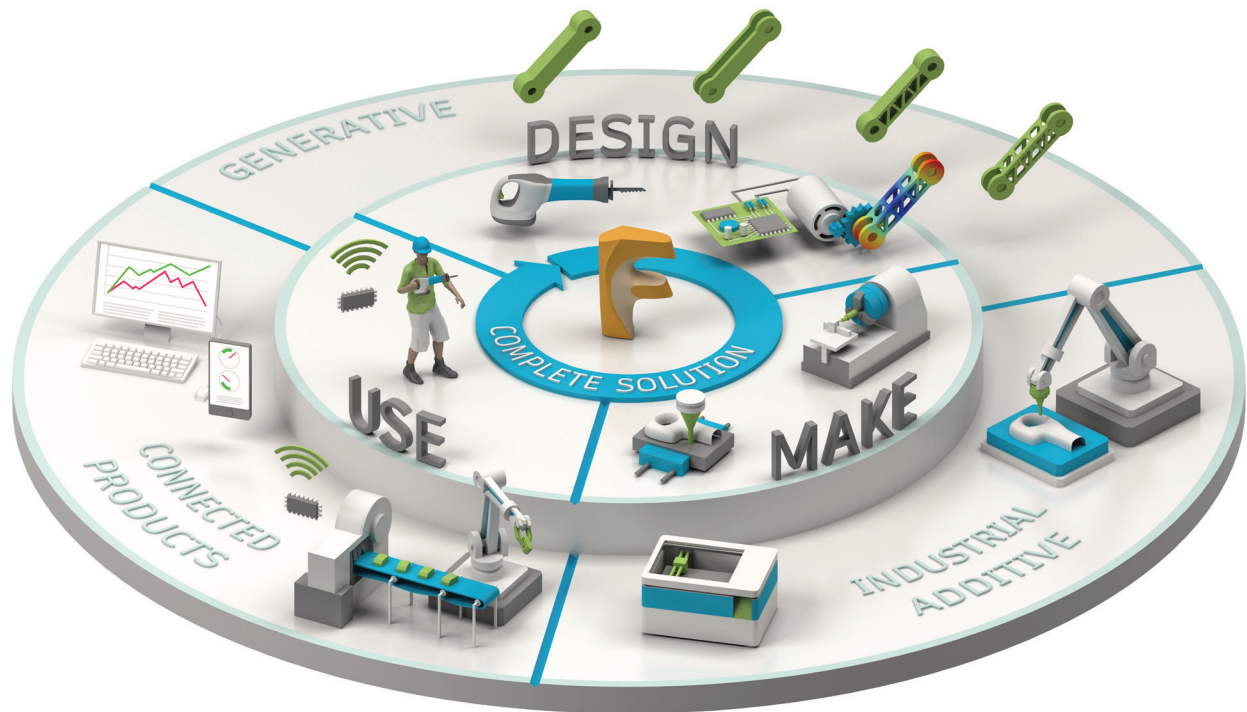
Autodesk Fusion, the Autodesk product innovation platform, brings together the capabilities you need to put your product development process on the path to the Future of Making Things. Fusion lets you design, simulate, explore, and manage product lifecycle data using connected cloud-based processes. The flexible cloud infrastructure makes it easy to connect your organization, supply chain, and customers for ongoing collaboration. Unlike with traditional product lifecycle management tools, you can get up and running with Fusion quickly, then drive product development at your own pace.

Fusion helps transform the way you design, make, and enable customers to use your products. Concept development and design become seamlessly linked. You get access to interoperable data that supports more flexible manufacturing processes. And Fusion keeps you connected to products and customers, helping you create personalized customer experiences and transforming each stage of the product development process:

- **Design:** Fusion unifies the design process, allowing you to conceptualize, design, and test ideas in a single environment. Because it's cloud-based, you and your team can work anywhere and collaborate with anyone. But connected design and simulation are only the beginning. At Autodesk, we're working to rapidly expand Fusion to enable generative design, letting you tap the power of mass parallel computing to find the best solutions to design challenges.
- **Make:** With its milling and turning control capabilities, Fusion builds a bridge from design to manufacturing. Full CAM support and 3D printing integration set the stage for more flexible manufacturing processes. Looking ahead, Fusion will be able to drive industrial additive manufacturing, in which 3D metal printing enables customization and personalization of even more products.

Connected machines lead to fewer flight delays

Premier Deicers makes and supplies de-icing equipment to the aviation industry. Until recently, inadequate visibility into de-icing fluid supplies and equipment status led to de-icing issues and flight delays during storms. Premier Deicers turned to the Autodesk Fusion platform along with GPS and monitoring hardware to deliver real-time insight into de-icing readiness. The result is a 40% acceleration in the de-icing process—and new revenue streams for Premier Deicers.



The Autodesk Fusion Product Innovation Platform makes the way products are designed, made, and used more flexible and powerful.

- **Use:** As customers use your products, you'll stay connected through the Internet of Things, which allows you to offer enhanced services. Today, those services may take the form of preventive maintenance. In the future, Fusion will support what we're calling Industry 4.0, marked by a nearly seamless connection between products and customers. Going beyond the value of one-time sales and service contracts, you'll be able to offer products bundled with a variety of value-added services and insights.

Start making the future

Getting ahead in the coming manufacturing marketplace will require stepping off the treadmill of linear product development. The traditional process simply won't take your products far enough, fast enough to achieve true competitive separation. You'll keep chasing fixed product value—as you risk losing sales to competitors who embrace more flexible processes. Instead, you need to adopt iterative, dynamic ways of working that help you rapidly advance core competencies to higher levels.

A product innovation platform, like Autodesk Fusion, enables product development transformation, connecting your people, processes, and customers. It helps you turn to closed-loop processes that support the coming era of mass customization while building customer relationships that deliver ongoing revenue. Take the first step into the Future of Making Things by exploring Autodesk Fusion. **Learn more today.**

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