



# DEVELOPING BETTER PRODUCTS IN THE CLOUD

Accelerate collaboration, innovation and time to market with  
the 3DEXPERIENCE platform on the Cloud

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# INTRODUCTION

Creating innovative, successful products more efficiently requires greater levels of collaboration among design teams, engineering teams, and associated product development professionals.

Building a collaborative product development team tapping talent and generating ideas from throughout the organization— is cost-effective and efficient because team members can collaborate from anywhere, at any time, and on any device.

To support greater collaboration in pursuit of innovation, manufacturers increasingly need an effective strategy and efficient means for collaboratively developing products without having to jettison investments already made in existing design and engineering solutions or incur additional hardware and IT administration costs.

In this e-book, we'll explore how designers and engineers can leverage the 3DEXPERIENCE platform on the cloud to connect product design teams and enable the collaborative development of more innovative products in the cloud.



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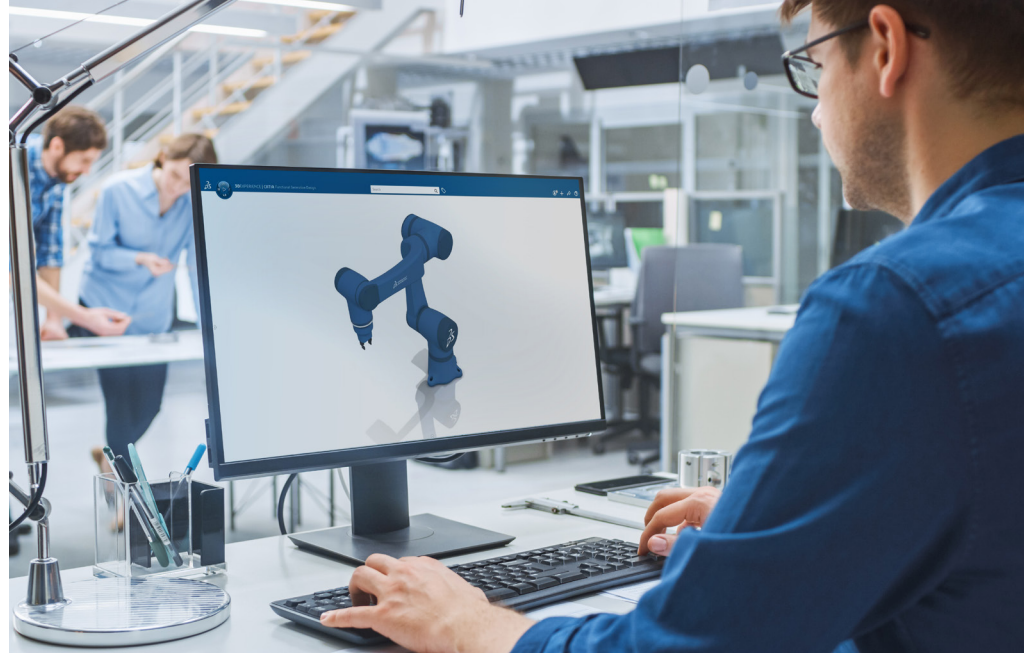
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## ADVANCING PRODUCT DEVELOPMENT IN THE CLOUD

Although there are many examples of individuals discovering, creating, or stumbling upon an innovation, the process of innovation does not happen in a vacuum. No designer is an island. Even in cases where one person is credited with an invention or innovation, they likely successfully collaborated with others, synthesizing the knowledge, ideas, views, suggestions, and recommendations of friends, colleagues, and stakeholders to refine their inspiration, guide their creativity, and focus their vision towards a practical application and successful outcome.

Creating innovative products today is no different, except that the time available for completing this synthesis is undoubtedly much shorter. Great ideas can come from many places, and manufacturers face the challenge of how to bring their best people together to effectively collaborate as part of a product development team without incurring the cost of bringing them all to a single location, or purchasing additional software or hardware.

As the economy becomes increasingly global and technology continues to advance rapidly, product development organizations recognize the need to compress product development cycles. By using a comprehensive, robust portfolio such as the **3DEXPERIENCE** on a cloud-based platform, manufacturers can connect team members from any location, providing the collaboration and communication platform that designers and engineers need to engage in outside-the-box thinking, bounce ideas around, and participate in the give-and-take interaction that can result in innovation. The ability to easily collaborate in real-time - with data transparently managed in the background - can help organizations fast-track product development and increase productivity.



While the trend toward cloud-based applications of all kinds continues to accelerate, the first step toward making that transition is for product development teams to seek flexibility in moving product development into the cloud. Regardless of the function, design teams can connect their models and tools with the cloud-based platform to conduct industrial design, mechanical design, data management, and a range of downstream functions and deliverables, including simulation and validation, documentation, product imagery creation, and tooling preparation.

An important ancillary benefit of a cloud-based environment such as the **3DEXPERIENCE** platform is the substantial reduction in IT costs. Because the tools and data reside in the cloud, you won't need to install them, upgrade hardware, or conduct updates and fixes. With the data residing in the cloud instead of on an individual user's computer, all updates are conducted automatically and users need only a current web browser to view and review data, and, depending on the solution set, access and use these tools, and collaborate with colleagues, partners, suppliers, consultants, and anyone else in the product development network.

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## ACCELERATING DEVELOPMENT OF ALFRED, THE ROBOTIC SOUS-CHEF, WITH THE 3DEXPERIENCE® PLATFORM

Dexai Robotics is revolutionizing the food industry with Alfred, a robotic sous-chef that can fully assemble meals by working with any ingredient and utensil, in any existing commercial kitchen.

According to Co-founder and CEO Dave Johnson, the idea for a robotic sous-chef arose from a chef friend who lamented that only a few minutes of his day were focused on hospitality and the majority was unfulfilling, repetitive work.

This sleek, hygienic robot operates using unique computer vision algorithms to provide seamless and efficient automated food preparation. Alfred empowers kitchen staff to manage orders and robot activity, leveraging proprietary machine learning algorithms to reduce waste through accurate and consistent portion control, as well as provide restaurants with invaluable business analytics for better menu decision-making. Moreover, the robotic sous-chef helps short-staffed restaurants meet new health and safety guidelines as well as deal with longstanding hiring challenges.



*"When we started the company, it was just four of us working out of the Greentown Labs technology incubator," Johnson recalls.*

*"But as we grew and continued to advance the technology, we realized that we would need product data management and product lifecycle management tools to continue to support growth."*

Hardware Engineering Team Lead Justin Rooney began researching potential PDM/PLM solutions when he found out about the cloud-based 3DEXPERIENCE®.

*"As we started growing the hardware team, we needed reliable CAD storage, and the traditional data management solutions are built around expensive IT paradigms with server rooms and yearly software updates," Rooney recalls.*

*"After thoroughly researching potential solutions, I discovered the 3DEXPERIENCE platform. I was specifically attracted to the 3DEXPERIENCE platform because it does not require servers or IT staff."*

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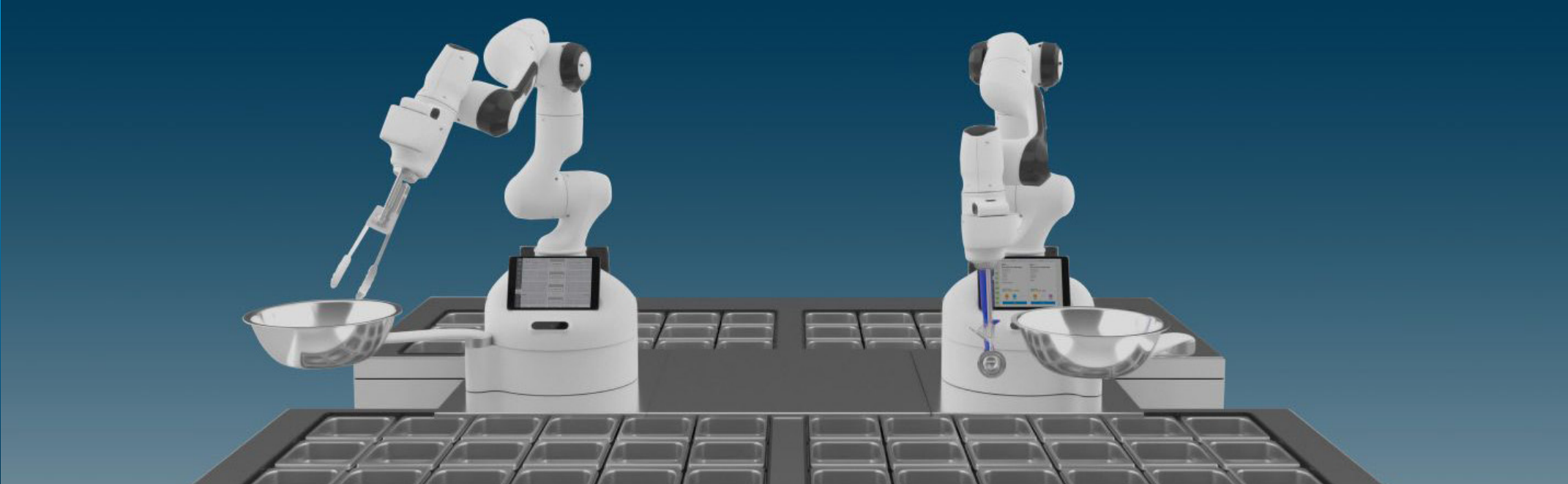
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The platform also integrated well with software the company was already using, and didn't require additional training investment.

Since adding the **3DEXPERIENCE** platform, Dexai has continued to grow—more than doubling its staff from 10 to 22 and moving from R&D into many restaurant placements. The company utilizes the platform not only for product data and lifecycle management, but also to collaborate more efficiently and effectively. Because the solutions work over the cloud, designers can work concurrently rather than sequentially on different aspects of a design, saving design time in the process.

In addition to using the **3DEXPERIENCE** platform on the cloud, Dexai leveraged a complete CAD model of the robot—referred to as Alfred's virtual twin—to teach the robot about itself to advance machine learning and nurture artificial intelligence.

Unlike most industrial robotics firms, Dexai faced additional engineering challenges while developing Alfred, since the robot operates in busy

kitchens where many other people already work and needs to adhere to strict foodservice regulations. As Dexai move onto new challenges, the **3DEXPERIENCE** platform is equipping them with the necessary tools to quickly roll out novel capabilities.



*"I was specifically attracted to the **3DEXPERIENCE** platform because it does not require servers or IT staff."*



Justin Rooney, Hardware Engineering Team Lead,  
Dexai Robotics

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# BOOST INNOVATION, PRODUCTIVITY VIA CLOUD-BASED COLLABORATION

While innovation in product development has become the lifeblood of many of today's leading manufacturers, it must be balanced with other objectives, such as faster times to market and holding the line on product development costs.

For a product innovation to make a splash in the market, it must be brought to market first without bankrupting the company in the process. In other words, manufacturers need a cloud-based platform to collaborate efficiently, fast-track product development, and control product development costs while introducing innovative products and features to market at the same time. With a cloud-based platform, manufacturers can more easily balance these sometimes-conflicting objectives.

## INNOVATION DEMANDS COLLABORATION

In order to innovate consistently, efficiently, and effectively, product design teams must collaborate. It's the only way that the team can distill all of the pertinent information — such as the voice of the customer, input from suppliers and partners, design ideas and concepts into an innovative design. In addition to synthesizing information on the front end of development, designers and engineers need to collaborate so they can incorporate valuable input, feedback, and insights into design iterations in real time. Using the **3DEXPERIENCE** platform, product design teams can more tightly focus the development path, leverage the knowledge that is widely distributed across the organization, and even uncover hidden talent. In order for collaboration to generate innovation efficiently, it must be seamless and operate in real time, while eliminating geographic, device access, and time barriers from the collaborative process.



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**COLLABORATION FAST-TRACKS DEVELOPMENT**

With a collaborative, cloud-connected set of product development solutions such as the 3DEXPERIENCE platform, design and engineering teams can collaborate more efficiently in parallel in a unified development environment, helping to increase productivity and fast-track product development.

Productivity gains emanate not only from the improved communication, transparent data management, and enhanced data security of a cloud-based collaborative platform, but also from all of the downstream functions that can now take place concurrently instead of sequentially.

Because the cloud-based platform enables product developers to access the design from anywhere at any time, colleagues can conduct simulations and share results, produce documentation, create

renderings, and develop tooling as the design advances. Instead of waiting until the design is released, team members can complete and update these deliverables so they are ready to go at the same time that a design is released for production.

By implementing additional project management and collaboration tools, manufacturers can extend the productivity gains of the collaborative platform further, fast tracking product development at an even more rapid pace.



## REDUCING PRODUCT DEVELOPMENT COSTS

Just as using 3D CAD tools has helped manufacturers develop products more quickly than implementing product development cycles that used 2D design or manual approaches, linking a 3D CAD system to a browser-based set of collaborative development tools in the cloud, like the **3DEXPERIENCE** platform, can enable manufacturers to shorten time to market even further. In addition to its product marketing and sales benefits, its ability to shorten time to market lowers product development costs. Time is money, and the faster that an organization can develop an innovative product, the better the product's profit margins and the company's financial health will be. Yet, shortening time to market is not the only way that a browser-based collaborative development platform in the cloud can

help manufacturers reduce product development costs. Manufacturers can also slash IT overhead— by eliminating software administration via automatic updates to cloud-based applications and forgoing hardware purchases to meet increasing computing requirements for conventional software—with a collaborative, browser-based solution in the cloud.

On other way that companies can optimize their product design and reduce costs is by limiting the number of physical prototypes that are produced. The opportunity to design a product right the first time is invaluable. Not only does this save on the direct costs of prototyping, but it also allows for a more efficient product development process overall. By being able to design a product correctly the first time, companies can avoid the need for multiple rounds of prototypes and the associated costs and delays. In addition to its impact on costs, limiting the number of physical prototypes also has a positive environmental impact by reducing waste and resource consumption.

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## IMPROVING EDUCATIONAL ROBOT DEVELOPMENT WITH THE 3DEXPERIENCE® PLATFORM

Founded in 2017, RoboRisen is a research-oriented company that develops the educationally-focused PingPong robotic system. This open platform robot allows anyone to easily create, assemble, and build their own robots. CEO Dr. Sangbin Yim developed the single-module PingPong robot platform, which is based on a single module called a “cube.” Each cube has its own controller, accelerometer, gyroscope, proximity sensor, origin sensor, stepper motor, servo motor interface, and battery. Students can use PingPong cubes to design and build all types of robots, using various types of links that connect cubes to other cubes to mimic the motions of humans and animals.

Using RoboRisen cubes and links and associated curriculum materials, schools and educators can support an effective yet fun approach to STEM instruction, enabling students to learn by designing, building, and controlling hundreds of robot models as single devices.

As the company’s robot models and number of parts increased exponentially, RoboRisen began having issues managing the volume of product design data, leading to design errors and delivery delays. They needed solutions to manage data and collaborate internally as well as with manufacturing partners.

RoboRisen chose the **3DEXPERIENCE** platform on the cloud for product development. The 3DEXPERIENCE platform allows RoboRisen designers to collaborate and manage product design data efficiently and effectively without requiring the large investments of traditional approaches. In addition, the **3DEXPERIENCE**’s cloud data management solutions have helped the company resolve many of their quality and data management challenges.

Since implementing the **3DEXPERIENCE** platform on the cloud, RoboRisen has leveraged its collaboration and data management capabilities to shorten product development cycles by 20 percent. RoboRisen has also been able to eliminate its revision control issues through transparent, automated data management capabilities in the cloud. The company has seen fewer design errors and rounds of prototyping, resulting in cost and time savings, as well as quality improvements.



*“By improving communication internally and with outsourced manufacturers, and by maintaining effective data revision management in the cloud, we have reduced our manufacturing defect costs by about 20 percent,” Yim says.*

*“With fewer errors, we have also seen our prototyping costs reduced by 30 percent. I think that the most important aspect of working in the cloud is the establishment of a collaborative environment, which makes it easy to collaborate with internal/ external partners while further reducing IT/hardware investment costs.”*

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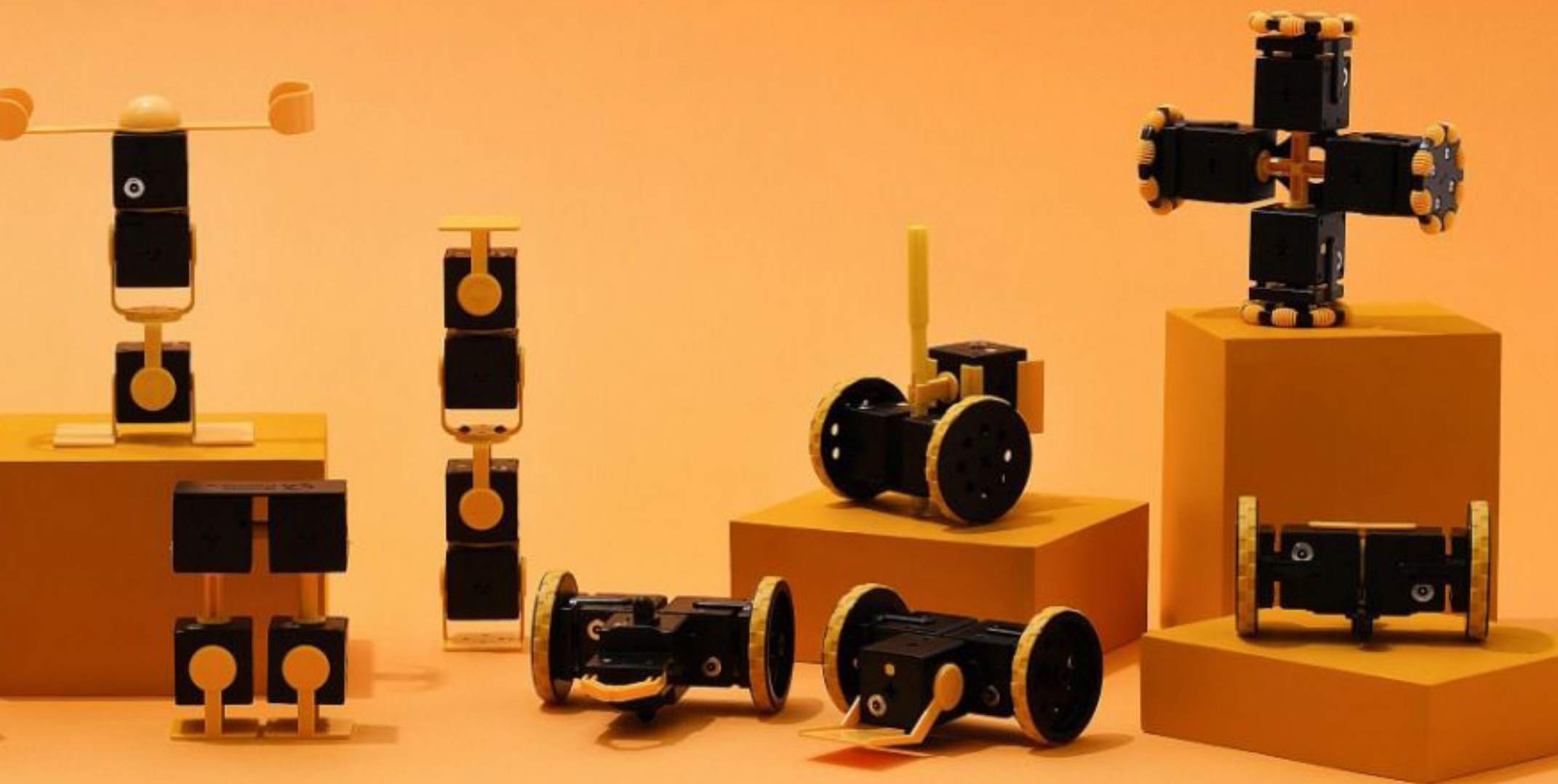
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*“Data can be checked at any time, from anywhere, in the cloud. With these improvements, our product development period has been shortened by about 20 percent.”*



— Dr. Sangbin Yim, CEO, RoboRisen Co., Ltd.



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# DATA AND LIFE CYCLE MANAGEMENT

Every person in product development knows that changes will happen. The process of innovation is often about effectively managing the flow of changes that take place from the earliest stages of design through to delivery. At the beginning of a change, before any work is done, all stakeholders need to sign off. That same process applies to making changes that happen during the heat of design and development.

Products may change daily. These changes must be captured, recorded and stored for easy access and traceability in the future. Proposed changes also need to be reviewed by key stakeholders to assess the value and organizational benefits. Technology tools that make it easier to track, manage and capture product changes automatically are essential. Tools should provide a controlled, clearly defined process to manage products and production during the development process. Creating, assigning and managing change actions for all project stakeholders should be simple, including for remote employees, vendors and suppliers. Attaining peer validation and approval, updating changes of scope and tracking proposed or completed work should all be contained within a framework where everyone on the team has visibility into the change status and the actions assigned to them

The **3DEXPERIENCE** platform provides design engineering teams with essential capabilities for real-time, secure, and structured collaboration, as well as lifecycle management of product content. The browser-based solution helps design teams manage product development functions ranging from design and multiphysics simulation to manufacturing planning and documentation with maximum traceability and flexibility.



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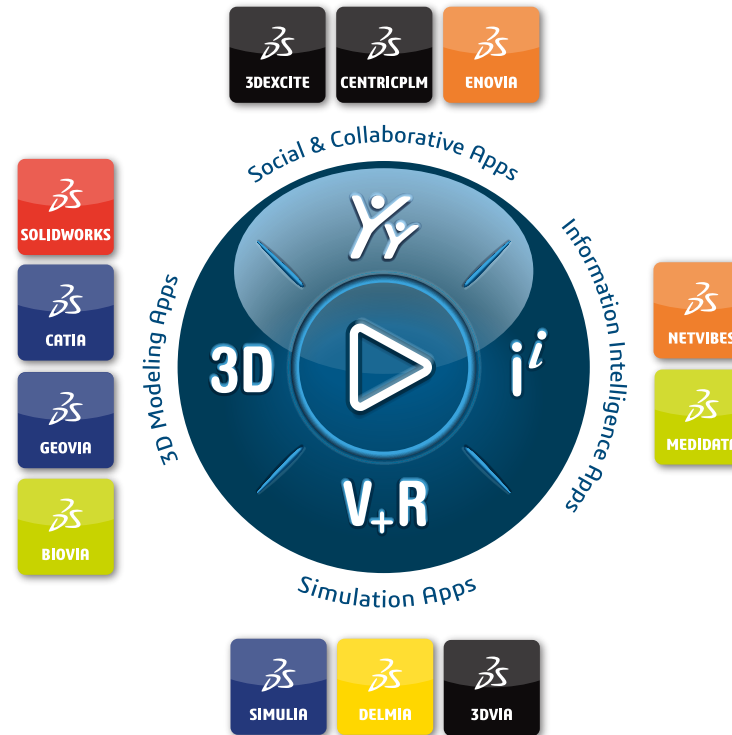
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[3ds.com/cloud](https://3ds.com/cloud)

Our **3DEXPERIENCE®** platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit [www.3ds.com](http://www.3ds.com).



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