

ROBORISEN CO., LTD. IMPROVING EDUCATIONAL ROBOT DEVELOPMENT WITH 3DEXPERIENCE WORKS SOLUTIONS

Case Study



RoboRisen moved to SOLIDWORKS Premium design software and 3DEXPERIENCE Works collaboration and data management solutions on the cloud-based 3DEXPERIENCE platform to improve product development and manufacturing efficiencies, resulting in shorter design cycles, reduced prototype costs, and improved quality.

Challenge:

Improve collaboration and increase product development throughput while improving quality by eliminating communication errors with outsourced manufacturing partners and resolving product release delays associated with manufacturing defects and internal revision errors.

Solution:

Implement **3DEXPERIENCE SOLIDWORKS Premium** design software in concert with **3DEXPERIENCE Works** solutions on the cloud-based **3DEXPERIENCE** platform, including Collaborative Industry Innovator and Collaborative Business Innovator.

Results:

- Shortened product development cycles by 20 percent
- Reduced prototyping costs by 30 percent
- Decreased defects related to revision errors by 20 percent
- Improved collaboration and communication dramatically

Founded in 2017, RoboRisen is a research-oriented company that develops the educationally-focused PingPong robotic system, which is an open platform robot that 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 (science, technology, engineering, and math) instruction, enabling students to learn by designing, building, and controlling literally hundreds of robot models as single devices. In order to maximize the PingPong robot’s various movements and reach, artist Eun Woo Cho and designer Hyun Kyung Cho intentionally combined the black and yellow colors to emphasize the dynamism and diversity of the PingPong’s brand design.

Until October 2021, RoboRisen used Autodesk® Fusion 360® design software to develop robotic components, links, and mechanisms. However, as the company’s robot models and number of parts continued to increase exponentially, RoboRisen began having issues managing the increasing volume of product design data, leading to design errors and delivery delays. “In particular, communication errors with outsourced manufacturers occurred frequently due to

poor revision control and data management,” Yim explains. “Because of this, the product release date established during the initial planning stage was frequently delayed. It became clear that we needed solutions for both managing data and collaborating internally and with manufacturing partners. We found our solution by implementing **SOLIDWORKS® Premium** software in conjunction with **3DEXPERIENCE® Works** collaboration and data management solutions on the cloud-based **3DEXPERIENCE** platform.”

RoboRisen chose **3DEXPERIENCE SOLIDWORKS Premium** and **3DEXPERIENCE Works** solutions for product development because they allow RoboRisen designers to collaborate and manage product design data efficiently and effectively without requiring the large investments of traditional approaches. “Startups like us have a difficult time investing in IT [information technology] and computing hardware, so cloud-based solutions are more affordable,” Yim notes. “We chose **3DEXPERIENCE Works** solutions because we can use cloud data management solutions in addition to the functions of **SOLIDWORKS**, which has helped us to resolve many of our quality and data management challenges.”



“Using **SOLIDWORKS and **3DEXPERIENCE Works** solutions, collaboration has become very simple and convenient. 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

SHORTER DESIGN CYCLES

Since implementing **3DEXPERIENCE Works** solutions, RoboRisen has leveraged its collaboration and data management capabilities to shorten product development cycles by 20 percent. “Our product development process begins with consultations on what products to make at the planning stage,” Yim explains. “Then, an industrial designer conducts concept design and a mechanical designer uses the concept design to create a detailed design in **SOLIDWORKS**. After that, 3D printers are used to create prototypes and check the actual operation. Next, we use outsourced manufacturing partners to produce products by molding and assembling them.

“Using **SOLIDWORKS** and **3DEXPERIENCE Works** solutions, collaboration has become very simple and convenient,” Yim continues. “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.”

FEWER ERRORS AND FEWER PROTOTYPES

The move to SOLIDWORKS and 3DEXPERIENCE Works solutions has also helped RoboRisen eliminate its revision control issues through transparent, automated data management capabilities in the cloud. With improved data management and revision control, RoboRisen has seen fewer design errors and fewer 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."

MEETING NEEDS OF EDUCATIONAL MARKET

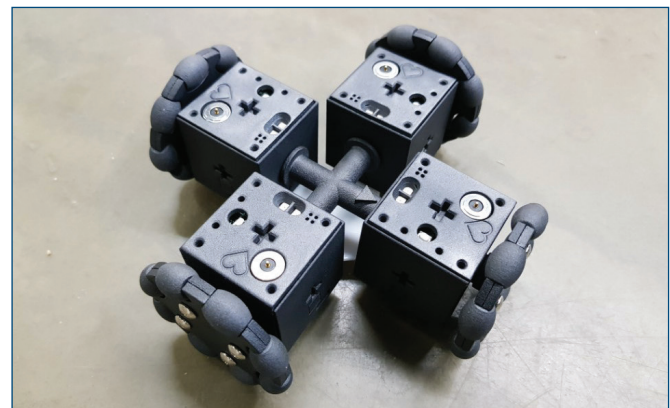
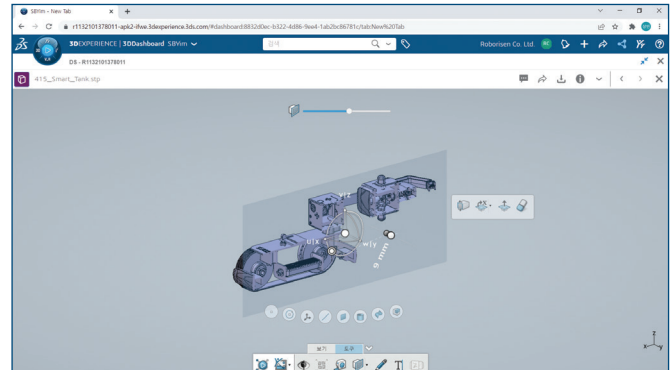
The productivity gains that RoboRisen has realized since moving to SOLIDWORKS and 3DEXPERIENCE Works solutions are contributing to the increased product development throughput, which is critically important for helping the company meet its goals in serving the global education market. "The most important thing in the educational robot market is that the robot has to be easy to teach," Yim stresses.

"In that respect, our product consists of a single module, so it can be assembled and operated by connecting it to a smartphone or computer very quickly," Yim adds. "Our product is a very easy product for teachers to teach students, and as they learn, they want more and more capabilities and products from us, which is why we need to release new products as fast as we can. All of our new products need to be released quickly, and the combination of SOLIDWORKS and 3DEXPERIENCE Works solutions is helping us to speed up the release of new products."

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Using SOLIDWORKS design software in conjunction with 3DEXPERIENCE Works data management and collaboration tools, RoboRisen has eliminated errors related to working on incorrect design revisions, realizing prototyping and manufacturing cost savings while simultaneously improving quality and collaboration effectiveness.

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

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