

## DBOX

AUTOMATING DRONES VIA AN AI-INTEGRATED HOME BASE AND MAINTENANCE STATION WITH 3DEXPERIENCE WORKS SOLUTIONS

### Case Study



DBOX relied on SOLIDWORKS and 3DEXPERIENCE Works product development solutions to develop its innovative Drone-in-a-Box invention, which is installed on rooftops across Europe to house, control, and automatically change drone batteries via a robotic arm, protecting drones from weather and enabling drone operations with little or no human interaction. The 3DEXPERIENCE platform supported DBOX during its fast, collaborative development process.

### Challenge:

Invent and quickly develop an automated, AI-driven home base and charging station for consumer-grade drones.

### Solution:

Implement the SOLIDWORKS for Startups program to gain access to SOLIDWORKS and 3DEXPERIENCE Works (the latter is on the cloud-based 3DEXPERIENCE platform), simulation, data management, collaboration, visualization, and communication solutions.

### Results:

- Invented and developed automated, AI-driven drone home base and maintenance station
- Completed development in just three months
- Shortened time to market
- Saved on prototyping costs using simulation

DBOX is a subsidiary of DRONETEAM, a leading drone company in Lithuania. DRONETEAM specializes in offering a range of drone-based solutions, including photogrammetry, drone light shows, and drone autonomy technology solutions provided by its DBOX subsidiary. DBOX specializes in providing innovative solutions for data collection, monitoring, and surveillance using Drone-in-a-Box technology. With a focus on cutting-edge technology and exceptional customer service, DBOX has established itself as a trusted provider of drone-based monitoring systems for both government and private sector customers through its network of automated, artificial intelligence-driven home base and maintenance stations across Europe. Whether it's protecting critical infrastructure, ensuring public safety, or enhancing overall security, DBOX is dedicated to delivering the most advanced and reliable drone solutions on the market.

Founded in May 2021, DBOX set out to develop its Drone-in-a-Box invention, which houses, controls, and automatically changes drone batteries via a robotic arm. Easily installed on building rooftops, the Drone-in-a-Box both protects the drone from

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— Dr. Linas Gelažanskas, CEO

weather and automatically switches out batteries, enabling drone operations with little or no human interaction other than programming or controlling flight paths from afar. While early concepts were developed using SOLIDWORKS® design software, which CEO Dr. Linas Gelažanskas had used for many years, company management realized they would need a broader set of collaborative tools to commercialize the DBOX.

"When we launched our startup project DBOX, SOLIDWORKS was the first choice for designing the concept and prototype of the DBOX," Dr. Gelažanskas recounts. "In September 2021, we opted to join the SOLIDWORKS for Startups program, which not only gave us the opportunity to use SOLIDWORKS for sketching the idea and developing the 3D models of first prototypes, but also gave us access to the whole range of SOLIDWORKS design, simulation, and visualization tools, as well as 3DEXPERIENCE® Works modeling, design, data management, collaboration, and communication solutions, providing us with a collaborative development environment on the cloud-based 3DEXPERIENCE platform."

DBOX chose SOLIDWORKS and 3DEXPERIENCE Works product development solutions because the 3DEXPERIENCE cloud-based collaborative development environment supports a fast, collaborative product development process. "With

**3DEXPERIENCE** Works solutions, we were able to connect the whole design team to a single location in the cloud, where they can access and store design data,” Dr. Gelažanskas explains. “This made it easy for team members to visualize, comment, and share the tasks for designing and detailing individual components of the box drawer dynamics, robotic arm shapes and approach, placement of electronic devices, and heating and ventilation components.”

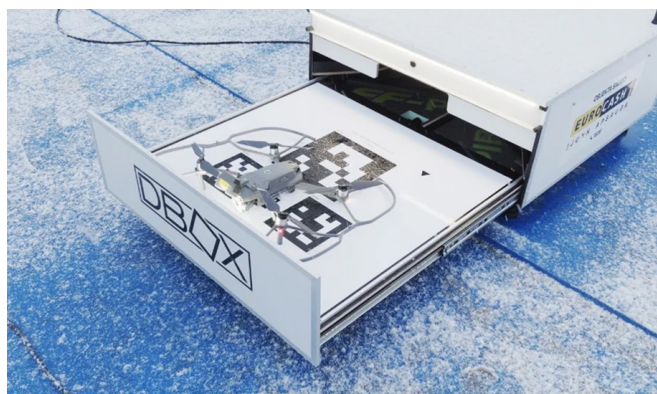
### ACCELERATING DEVELOPMENT VIA COLLABORATION

Using **SOLIDWORKS** and **3DEXPERIENCE** Works tools, DBOX was able to develop its innovative Drone-in-a-Box technology in just three months, accelerating time to market in the process. “We understood from the very beginning that we needed 3D models with motion control and parametric features,” Dr. Gelažanskas stresses. “Using **SOLIDWORKS** and **3DEXPERIENCE** Works companion products, we succeeded in moving from 2D drawings to a 3D model concept and then to the working prototype in record time.

“From our very first steps, we made the decision to embrace the digital virtual twin approach of the **3DEXPERIENCE** platform,” Dr. Gelažanskas adds. “The fact that we were able to get from hand-drawn sketches of the idea to the first working prototype in less than three months, skipping multiple iterations, shows just how effective the collaborative virtual twin approach is, helping us save money and shorten time to market.”

### SIMULATING CRITICAL COMPONENTS TO SAVE ON PROTOTYPING COSTS

With **SOLIDWORKS** Simulation Premium analysis software, DBOX was able to validate designs for critical components without experiencing the delays and costs associated with physical prototyping. “We used



In addition to accelerating development via improved collaboration, DBOX leveraged **3DEXPERIENCE** Works simulation solutions, which reduced prototyping costs while improving performance, and transparent data management solutions to keep development on track.

**SOLIDWORKS** Simulation Premium to simulate the forces on the robotic arm during battery swapping,” Dr. Gelažanskas notes. “The robotic arm had to apply sufficient pressure and tension to hold the battery and press it into place, but it also had to be lightweight yet strong because the robotic arm is 3D printed.

“We also used **SOLIDWORKS** Flow Simulation software to validate the heating, cooling, and ventilation system within the DBOX,” Dr. Gelažanskas continues. “These flow simulations gave us the confidence that the heating, cooling, and ventilation system will effectively distribute airflow within the box to keep internal environmental conditions within requirements.”

## EFFECTIVE DATA MANAGEMENT KEEPS DEVELOPMENT ON TRACK

Also contributing to the short development time for the DBOX were the transparent data management capabilities in the cloud provided by **3DEXPERIENCE** Works solutions. "We didn't have any issues with controlling revisions, losing or overwriting the files, or any other problems with data management, probably because we used the **3DEXPERIENCE** platform for the whole development life cycle: from prototype development through all the design changes and decision-making, and all worked smoothly," Dr. Gelažanskas points out.

"During development, the **3DEXPERIENCE** platform became our single source of truth from day one, and we grew more confident working collaboratively without having to worry about the condition or validity of our data," Dr. Gelažanskas says.

### Products:

- SOLIDWORKS for Startups program
- SOLIDWORKS Standard
- SOLIDWORKS Simulation Premium
- SOLIDWORKS Flow Simulation
- **3DEXPERIENCE** SOLIDWORKS Premium
- Collaborative Industry Innovator
- 3DSwymer

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