

TRANSPORTATION AND MOBILITY CASE STUDY
BVB INNOVATE



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Challenge:

BVB Innovate needed to design an entirely new concept in e-mobility and establish its reputation from energy startup to global provider of electric mobility solutions.

Solution:

The company chose Dassault Systèmes' 3DEXPERIENCE platform and the *Electro-Mobility Accelerator* industry solution experience on the cloud to design the Mobat, the world's first mobile battery on wheels.

Benefits:

BVB Innovate can more easily exchange design information with its peers and partners and reuse its intellectual property in future projects to accelerate product development.

UP-AND-COMING PROVIDER OF ELECTRIC MOBILITY SOLUTIONS

Dr. Manfred Baumgärtner, founder and CEO of Germany's BVB Innovate, wants everyone to experience the joy of driving an electric car, without the stress of getting stranded on the highway with no charging station in sight. "At BVB Innovate, we love free mobility," he said. "We believe people who drive electric cars should be free to go anywhere just like with a normal gasoline-powered engine and to recharge their cars wherever they are."

The idea for a mobile battery that is fast and easy to recharge came to him over a decade ago. "Our mobile battery, or Mobat, is mounted on a trailer and can either be stationed wherever you're parked or hooked to a car to recharge the battery while driving to extend its range," Baumgärtner explained. "Some electric cars can travel 200 to 300 km but are expensive and require supercharging stations to recharge their batteries. With our Mobat, you can recharge your car anywhere in only 15 minutes to an hour, depending on the make of the car, and do not need an expensive charging infrastructure."

STYLISH, STURDY AND SAFE

The small startup's major business challenge was developing an entirely new concept in e-mobility that would catch on with consumers. BVB Innovate believed that with a stylish, sturdy and secure product, they could achieve that goal.

To design its revolutionary product, BVB Innovate chose Dassault Systèmes' 3DEXPERIENCE® platform and its *Electro-Mobility Accelerator* industry solution experience on the cloud. "The design technologies of this solution are used by many of our peers in the automotive industry, which makes it easier to exchange information and to collaborate with them," Baumgärtner said.

"While rapid recharging was an obvious requirement, good looks were also important. We contracted with an Italian freelance designer from the Milano Design School who imagined and conceived the Mobat's unique curvy design.

The mobile battery, which will be marketed starting in 2018, is actually on pre-order on our website and the feedback we're getting from customers is very positive; they love the aesthetics and the idea."

"Safety is another major focus," Baumgärtner continued, "because you have a high-voltage object being pulled by a car at 120 km/h that is subject to vibrations, extreme weather conditions and prone to accidents. While we use a standard lithium-ion battery like the one used in the Tesla or BMW i3 cars, we designed it in a completely new way so that it charges fast and can withstand temperature extremes from Saudi Arabia to Norway. Our product is also very compact, every millimeter has been optimized."

The Mobat's hardware must comply with regulatory requirements and be thoroughly tested before going to market. "Having a comprehensive and integrated platform with all our information enables us to show inspectors the different stages of the design process and our compliance with safety requirements."

LIMITED IT-RELATED INVESTMENTS

BVB Innovate chose *Electro-Mobility Accelerator* on the cloud because it needed to facilitate access for its network of distributed partners to its product data. "We wanted to make sure that the different stakeholders working on this project were able to seamlessly work together and the cloud is ideal for that," Baumgärtner said. "Moreover, we don't have to worry about setting up a dedicated IT infrastructure that is time-consuming and costly to manage. With the cloud, there are no surprises in terms of costs. We pay an annual rental fee so everything is clear up front. Moreover, software upgrades are automatic and our data is secure and backed up by Dassault Systèmes. I definitely recommend this type of configuration to other start-ups. They can adopt a full-fledged industry platform from the beginning, start small and grow as their business evolves because the platform is flexible."



"From ideation to manufacture-ready product, we find that having design and production technologies on one platform on the cloud improves collaboration and requires very little IT investment on our part. The 3DEXPERIENCE platform is an ideal solution for us."

— Dr. Manfred Baumgärtner
Founder and CEO of BVB Innovate

TechniaTranscat, a Dassault Systèmes business partner accompanied BVB Innovate throughout the selection process, meeting with Baumgärtner and his team on numerous occasions to help them define their working environment. “Since we were new to these technologies, TechniaTranscat took the time to walk us through the various design and simulation features and to share their ideas on how we can best use *Electro-Mobility Accelerator* to perfect our product,” Baumgärtner said. “Implementation was easy, and with just a few clicks we were on the cloud and up and running. We are very happy with the quality of TechniaTranscat’s support throughout this exciting journey.”

MODULAR DESIGN

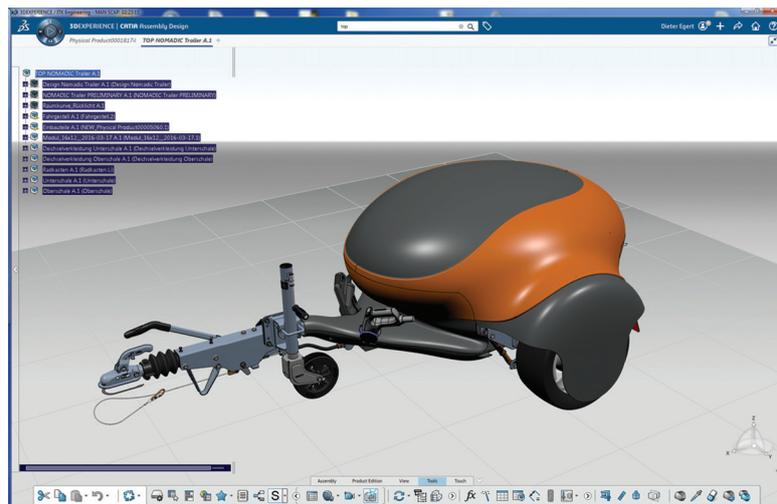
BVB Innovate uses CATIA to design the battery from A to Z. “We use CATIA’s class A surfacing features to create our curvy shape. We create the different modules of the battery separately and put them together like a ‘lego system’ depending on the battery’s features, such as battery power, fast or normal charging speed or whether the Mobat is required to charge a car while driving.”

BVB Innovate capitalizes its know-how on the platform for use in future projects. “We store our intellectual property on the **3DEXPERIENCE** platform and reuse it to accelerate the design of new battery components,” Baumgärtner said. “Once the battery is built, we test it using physical prototypes and correct the design through an iterative process until completion. Although we believe a physical prototype is useful in the initial phase to evaluate a product never-before developed, we will ultimately rely more on *Electro-Mobility Accelerator’s* virtual testing and simulation features for incremental optimization to reduce our costs and cycle time. One of the areas we are interested in is thermal management and the cooling process to assess whether the battery is sufficiently cooled while charging.”

“We are also interested in further exploring the lifecycle management of our products,” he said. “Our products go through a morphing process, starting out one way and evolving according to customer feedback and additional requirements. We need to closely track this process to have a history of all changes to understand why certain decisions were made and to be able to backtrack, if needed. The **3DEXPERIENCE** platform is perfectly suited for this,” Baumgärtner said.

DESIGN FOR MANUFACTURING

BVB Innovate sends its designs to a third-party that manufactures the battery’s components according to its specifications. “We currently exchange STEP files with this partner but see the **3DEXPERIENCE** platform as an



Top image: Mobat (mobile battery)

Bottom image: 3D design of Mobat within the **3DEXPERIENCE** platform

Focus on BVB Innovate

Technology developer of electric mobility solutions.

Products: Mobat (mobile battery)

Headquarters: Stuttgart, Germany

For more information

www.bvb-innovate.com

Focus on TechniaTranscat

TechniaTranscat is a leading global supplier of Product Lifecycle Management (PLM) solutions for creating and managing product information throughout the entire product lifecycle, from product planning, development and design to production, sales, training and support. With more than 520 employees including 210 ENOVIA experts and 220 CATIA, SIMULIA & DELMIA experts, TechniaTranscat possesses both the skills and knowledge needed to assist companies of all industries with their PLM initiatives.

For more information

www.techniatranscat.com

TECHNIA TRANSCAT

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opportunity to streamline information exchange by giving them role-based access to our data on the cloud so that they can begin production earlier. Moreover, if they can access our environment, they can participate in the design process by communicating manufacturing constraints to our designers so that their designs take these constraints into account from the beginning. The result would be a more fluid process and first-time-right production," Baumgärtner said.

Using the **3DEXPERIENCE** platform has opened up new horizons in product development, leading to new business opportunities for BVB Innovate. "We think that having design and production technologies all on one platform has taught us a lot about our development process, from ideation to the manufacture-ready product," Baumgärtner said. "This has given us new ideas for additional offerings to expand e-mobility even further. One of them is to install rapid-charging parks at strategic locations along highways and roads so that people can charge their cars along the way. Another is a no-money-down program for location owners where BVB Innovate owns, builds, and operates the charging infrastructure at the owners' location. This service requires no upfront investments or operating expenses on the owner's part. These are just a few examples that illustrate our love for free mobility," Baumgärtner concluded.

Our **3DEXPERIENCE**® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE**® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 220,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.



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