DASSAULT SYSTÈMES

TRANSPORTATION AND MOBILITY CASE STUDY
AKKA TECHNOLOGIES

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Challenge:
AKKA Technologies and its internal R&D center AKKA Research wanted to showcase its expertise in new mobility solutions for car-makers. The design of their concept car required greater agility in concept development and reduction of cycle times while promoting creativity and innovation.

Solution:
AKKA Technologies and AKKA Research chose Dassault Systèmes' **3D**EXPERIENCE® platform on the cloud to further develop its autonomous Link & Go 2.0 electric vehicle.

Benefits:
The cloud facilitated cross-disciplinary and multi-site design collaboration enabling digital continuity throughout the development process and full data compatibility from ideation to vehicle assembly.

INVENTING THE FUTURE

Today's automobiles are packed with technologies that make driving easier: sensors that maintain a car at a safe distance from other vehicles, features that warn us when we change lanes without signaling, reminding us that we just might be falling asleep, and on-board sensors that detect an imminent crash. More and more cars go beyond simply taking us from point A to point B; they aim at getting us there safely. They are more sensitive and more aware of what's going on around them, helping to prevent accidents and maybe ultimately save lives. As technologies become more mature, automobiles are becoming smarter.

Yet these technologies are limited to the car itself and, in a connected world, consumers demand a more communicative and open approach to mobility. Vehicles need to connect with other technologies to receive and emit information that can change how a car behaves depending on the data it receives. "This age of smart and connected cars is upon us," said Philippe Obry, chief innovation officer at AKKA Technologies.

Leading edge companies like AKKA Technologies – international group of engineering and technology consulting – and its innovation center AKKA Research have made innovation their leitmotif. "We assist our clients with their industrial projects but we also use our engineering and digital technology expertise to develop our own cutting-edge projects that can benefit industry or society in general."

MY CAR LOOKS OUT FOR ME

One such groundbreaking project is the Link & Go concept car and its descendent, the Link & Go 2.0, a self-driving electric car packed with innovations that could interest automotive OEMs for their future vehicles. "The Link & Go 2.0 represents our vision for an area that is getting a lot of press lately: the autonomous vehicle. This project is a trailblazer for AKKA Research because we believe the best way to predict the future is to invent it," Obry said.

For AKKA Research, the car of the future is a connected, all electric autonomous vehicle that can communicate with smart infrastructures – technology enhanced traffic signals, signs, toll booths, roads – and with smartphone apps. This evolution will change the face of mobility in our future cities. The Link & Go 2.0 goes beyond the realm of the car itself and shows how a connected car can fit in with the future of urban transportation as a whole. "A self-driving electric car is part of a mobility infrastructure that includes other cars, public transportation, cyclists and pedestrians, and is coordinated through sophisticated sensors and apps running on the cloud. They all function in concert to bring people from point A to point B safely, at minimal cost and with the lowest possible carbon footprint. And, of course, the experience must be simple, fluid and convenient," Obry said. "The Link & Go 2.0 combines technologies and ideas used in the automotive, aerospace and railway sectors. This self-driving vehicle also provides conveniences enjoyed by public transportation users; not having to worry about a parking space, ridesharing or indulging a favorite pastime, such as reading a book, surfing the net or chatting with friends on the way."

> "We cannot meet tomorrow's challenges with today's solutions but we can certainly succeed with innovative ones."
>
> — Philippe Obry, Chief Innovation Officer
> AKKA Technologies

CHALLENGE OF THE MULTI-SITE PROJECT

AKKA Research's teams adopted the innovative technologies of the **3D**EXPERIENCE platform on the cloud from Dassault Systèmes to develop the Link & Go 2.0 because "we believe they respond to the needs of all the project's stakeholders, regardless of their discipline or location," Obry said. In fact, the Link & Go 2.0 was the collective achievement of 40 engineers working in AKKA's offices in France and Germany. "One of our biggest

challenges was to enable people with varying skills and expertise from diverse backgrounds, in different locations to work smoothly together," said Jérôme Julien, project manager, AKKA Research. "This was made possible thanks to the **3D**EXPERIENCE platform on the cloud. It enables project participants to access all the applications needed, when they need them. They no longer depend on the IT department for application or system administration. By sharing the same data and application environment, we are enjoying true digital continuity and full compatibility from ideation to vehicle assembly."

"Moreover," he continued, "all product and project data is on the cloud. We've eliminated the headache of searching for information stored in someone else's computer or lost because they forgot to perform a backup. The Dassault Systèmes cloud management team regularly backs up and encrypts our data to ensure full security. Finally, as everyone has real-time access to the vehicle's 3D digital mock-up, they can work on it and exchange ideas as if they were working in the same office," Julien said. "The cloud has definitely changed our approach to multi-site collaboration."

The **3D**EXPERIENCE platform on the cloud was easy to deploy and the design, simulation and data management applications are simple and intuitive. "In less than two days, we were fully operational at all eight sites," Julien said. "We have a long term partnership with Dassault Systèmes based on a common vision shared by people with the same values," Obry said. "The Dassault Systèmes' industry team provides AKKA Technologies with their full support on the Link & Go 2.0 project," Julien added. "Whether in deployment or day to day use of the platform, this partnership is not only efficient but also a real asset to the project."

A COMMUNITY APPROACH

For an international company like AKKA Technologies, working remotely with centralized access to the same data averts the pitfalls of transferring information back and forth, which can considerably slow things down and risk interception. "What really made a difference were the communities," Julien said. "They were extremely popular with our engineers who could share, review and capitalize vital project and product information in a fun and congenial way. It stimulated ideas and innovation. This social-oriented approach to design put an informal twist on expressing ideas and providing feedback on someone else's. Suggestions could be posted, debated and then retained or not for use in vehicle design."
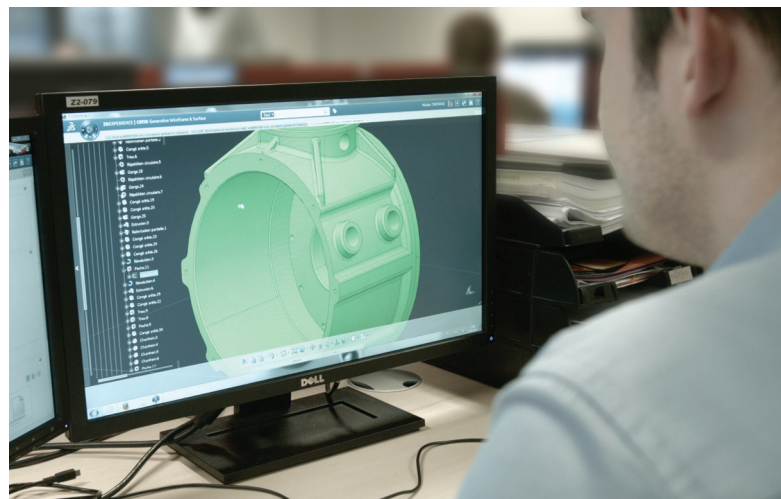
Top image: 3D digital mock-up of the Link & Go concept car designed with Dassault Systèmes solutions

Bottom image: AKKA Technologies engineers use the Dassault Systèmes solutions to ideate, design, simulate and validate the Link & Go concept car on a single collaborative platform hosted on the cloud.

Dashboards displayed all pertinent project information along with quick and easy access to engineering applications. They also contained information, such as project status and milestones, and external sources of information with RSS flows. "There's no doubt that communities and dashboards enhanced team spirit," Julien said.

CATIA, the **3D**EXPERIENCE platform's design application, was used for mechanical, electrical and fluid system design and assembly, and for the vehicle's mechatronic systems. "A major challenge with the Link & Go 2.0 is its complex mechatronic systems that link the vehicle's mechanical and electrical components," said Anouar Dhouibi, work package leader Drive by Wire, AKKA Research. "For example, we used CATIA Systems to model the behavior of the drive by wire system, the electrically-assisted power steering, before assembling the physical prototype. It was easier and faster to detect and correct errors in the virtual model. In the Link & Go 1, with only a physical prototype to work with, we ended up spending weeks testing and making adjustments," Dhouibi said.

A FAMILY OF INNOVATORS

AKKA Research's Link & Go 2.0 concept car provides a platform of innovative solutions to society's future urban mobility challenges. Associating engineering expertise with technologies and tools in the high tech, cloud, big data and cognitive intelligence areas, the smart Link & Go 2.0 vehicle accelerates the family company created by Maurice Ricci over 30 years ago into the future toward a greater ambition: placing consumers at the heart of tomorrow's cities with a combination of mobility services that respond to their needs. "We cannot meet tomorrow's challenges with today's solutions but we can certainly succeed with innovative ones," Obry concluded.

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