ism THOUGHT LEADERS IN CUSTOMER STRATEGY

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June 28, 2023

BMW XR/VR/AR Technology Case Study: Pioneers in the Application of XR/Metaverse Technology

In this case study, I would like to talk about BMW's impressive use of virtual reality (VR) and augmented reality (AR), increasingly referred to as extended reality (XR). But before I share the BMW story, I want to give you a high-level overview of how the vast majority of the more than 60 automotive brands around the world are putting immersive XR technology to use today.

Marketing

Several automotive manufacturers, including Acura, have launched VR showrooms, where online visitors can check out detailed representations of the latest and most luxurious car exteriors and interiors. They can walk around the vehicles to examine them from every angle as well as open doors, sit in the seats, and even start up the engines or interact with features such as the in-car entertainment system.

Automotive manufacturers are also encouraging customers to leverage AR technology to view their car parked in their own driveway or to help customers 'try-on' and purchase after-market accessories such as new wheel rims, roof racks, tow packages, etc. without the pressure of a pushy car salesperson.

Automotive manufacturers are offering customers VR test drives from anywhere by simply plugging an XR headset into their PC and accessing a YouTube video.

In 2021, Porsche went as far as to launch the Porsche Vision Gran Turismo, a concept car designed solely for the virtual world**.**

Sales

Fiat has reinvented the customer buying journey by creating an alternative car shopping experience in the Metaverse. The company's Fiat Metaverse Store made its North American premiere at the CES 2023 event in Las Vegas. Fiat is already employing the technology in Europe, which it launched in Italy in December 2022. The Fiat Metaverse Store allows customers to research, configure, and purchase the Fiat 500 La Prima by Bocelli. Fiat also sees its Metaverse Store as a "key pillar" to the launch of the new Fiat 500e all-electric car in North America in 2024.

Customer Experience

To enhance the customer experience, automotive manufactures including Audi are allowing customers to turn their windscreens into an AR-enabled screen. Vital information is beamed directly to the driver such as car performance, speed of travel and lane assist information, as well as navigation information and indicators showing the distance between the car and the vehicle in front thereby eliminating the need for the driver to take their eyes off the road to check their instruments. These features also incorporate eye-tracking so the position and size of the projected information can be moved so it is always in an optimal position considering the driver's head movements.

Many automotive manufacturers also offer AR after-sales support, giving hints and advice on cell phone screens to help customers troubleshoot technical problems and connecting them with experts who can offer remote assistance if needed.

Engineering

In 2019, Nissan adopted HaptX Virtual Gloves to bring touch and input into the vehicle design process. Designers can touch and interact with 3D models via haptic feedback**,** further reducing the need for physical prototypes.

Over the past few years, several automotive companies, including Mercedes Benz, have partnered with Nvidia's Omniverse platform, which is a VR-enabled "digital twin" collaborative environment for 3D design that speeds up a new car's time to market while decreasing development costs by 30+%.

In addition to VR-enabled 'digital twin' technology, the automotive industry is also deploying AR technology to help engineers and designers visualize how components will fit together during the manufacturing process, and to allow more experienced engineers and designers to provide remote assistance to newbies and trainees in the engineering environment.

Employee Training

One other area of growing importance to automotive manufacturers is employee training that ranges from training mechanics to training dealership personnel. For example, Ford currently has a program whereby 150 technicians using AR headsets receive 5,000 weekly virtual inquiries from technicians at dealerships across the country and quickly resolve >95% of these inquiries. Mercedes-Benz has built a Global Training platform to provide dozens of virtual VR courses that provide hands-on training for troubleshooting technical issues, helping to resolve customer service inquiries, onboard staff, enable supervised on-the-job training, and reduce the cost and wastage associated with training in a real-world environment.

Let's now turn to the BMW story.

BMW origin start in 1916, with the founding of the aircraft producer Bayerische Flugzeugwerke. One of the most incredible facts about BMW is that it only got into producing automobiles after the Treaty of Versailles following World War I. As a stipulation of the treaty, German companies were no longer allowed to produce warplanes and warplane engines. This forced the company to adapt and expand into the automobile industry and to change their name in 1922 to Bayerische Motoren Werke or BMW for short.

Today, the BMW Group consists of 3 major brands including BMW (automobiles and motorcycles), MINI, and Rolls Royce. In 2022, BMW sold 2.4 million units globally, including 215,000 fully electric vehicles, while maintaining the #1 position in global premium car segment. BMW is a truly global company with China accounting for 33% of total BMW units sold globally, the US accounting for 15%, Germany 10.6%, the UK 6.6%, S. Korea 3.7%, France 3.2%, and Italy 2.8%.

BMW was an early user of AR/VR technology that goes back to 2014, when BMW tested the original Google Glass for quality control of pre-series vehicles in one of its U.S. plants. The luxury automaker has since embraced AR/VR in product development, production, training, marketing, and more. This includes:

- Using VR for workstation planning
- Leveraging AR to provide training for engine assembly and other processes, inspect parts, and even assist drivers.
- Creating an AR app to place and customize a virtual BMW i4 or iX in a customer's driveway

- Putting VR headsets on customers allowing them to test drive a physical BMW M2 through a futuristic virtual city.
- Creating a Mixed Reality virtual platform for developing real-time immersive driving experiences that merge the real and virtual worlds.
- Collaborating with Meta to jointly explore how augmented and virtual reality technology can work inside a fast-moving vehicle.
- Building the world's first virtual factory on Nvidia's Omniverse platform; this virtual factory is a perfect digital twin of BMW's future 400-hectare plant in Debrecen, Hungary, which reportedly will produce around 150,000 vehicles every year when it opens in 2025.
- Developing their latest concept car called the i Vision Dee, which debuted at the 2023 Consumer Electronics Show in Las Vegas to rave reviews. I spent time at the BMW CES booth and was blown away. The iVision Dee car was inspired by the Metaverse. "Dee," which stands for Digital Emotional Experience, features a voice interface and digital windscreen displays, a Mixed Reality slider that controls the car's instrument display, and sensors to select a variety of features ranging from analog, communications, augmented-reality projection, and even entry into a virtual world. Externally, Dee contains 'phygital' elements – a fusion of digital and physical. In combination with natural language, the car's technology allows it to both talk to humans and express emotions with facial expressions through its front headlights and grill. The full exterior surface of the car is made up of e-ink segments and can display up to 32 colors. This enables the side windows of the car to project avatar versions of the driver, extending the interior virtual world to the car's facade.
- The BMW story will only get better as BMW approves production of the iVision Dee car, and new devices including the incredible Apple Vision Pro get both utilized by BMW personnel and integrated into future BMW models.

In summary, automotive companies have been at the forefront of adopting XR technology and the Metaverse for almost a decade. As an industry, automotive is a perfect example of how XR technologies are transforming an entire sector**.** Over the next 5 years, these XR technologies and the Metaverse will transform many additional industries, which is why ISM is so committed to help educate executives on the opportunity, help companies create their XR/Metaverse strategy, and implement pilots based on these technologies.

My Metaverse business partner, Tim Bajarin, and I are keen to assist automotive companies at each step of the way to ensure their successful entry into the Metaverse. To read about additional automotive and related manufacturing Metaverse case studies, I strongly encourage you to visit ISM's award-winning Metaverse Resource Center – www.ismguide.com/metaverse-resource-center – where in addition to gaining access to more than 275 Metaverse case studies, more than 275 Metaverse articles, and more than 100 Metaverse videos, you can download ISM's new '8 Steps to Do Business Successfully in the Metaverse' White Paper, download ISM's New 'VR Training Guide for the Enterprise,' learn about and sign-up for ISM's complimentary 2-hour Metaverse Executive Bootcamp, and more.

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