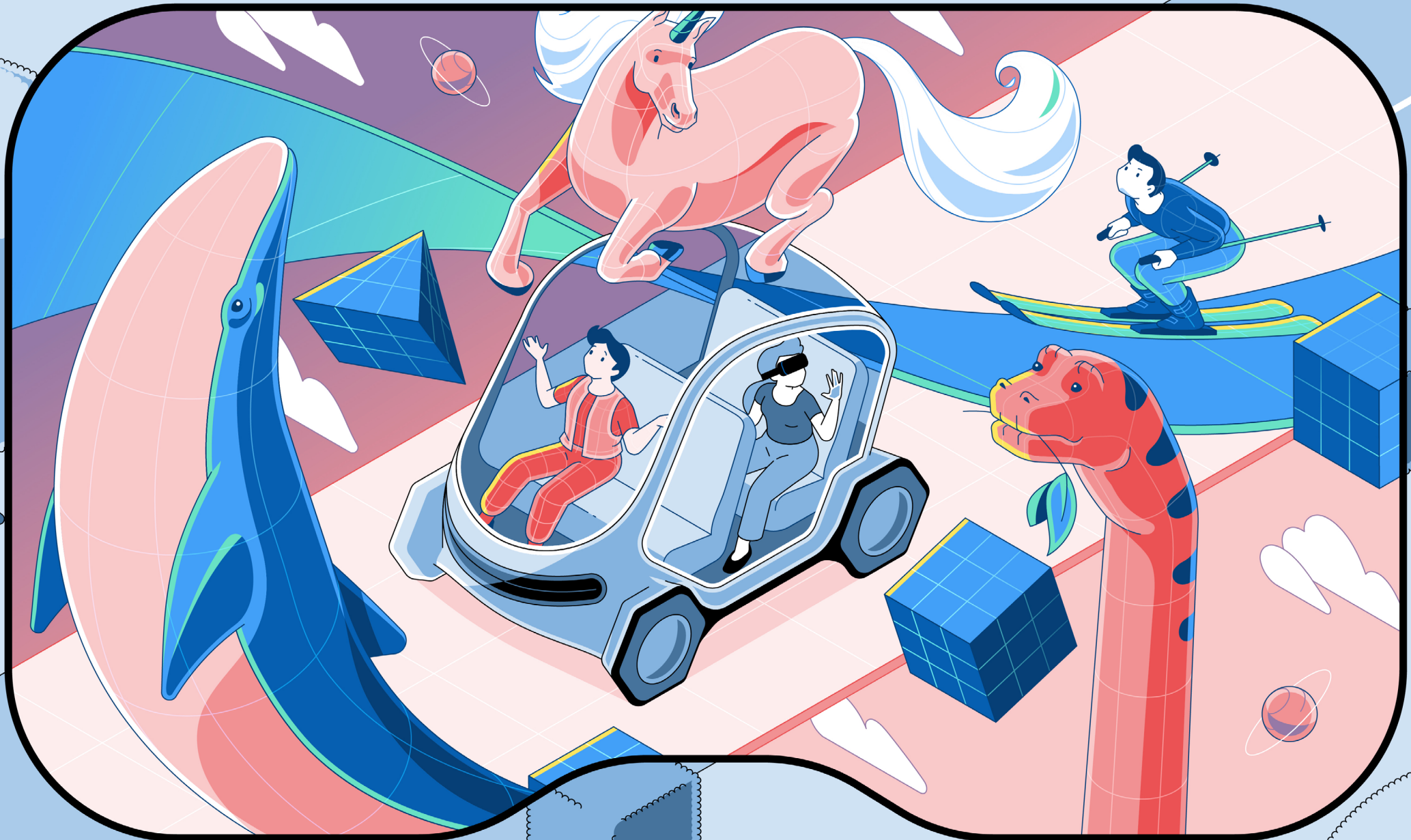
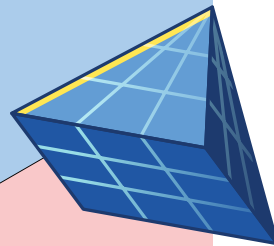
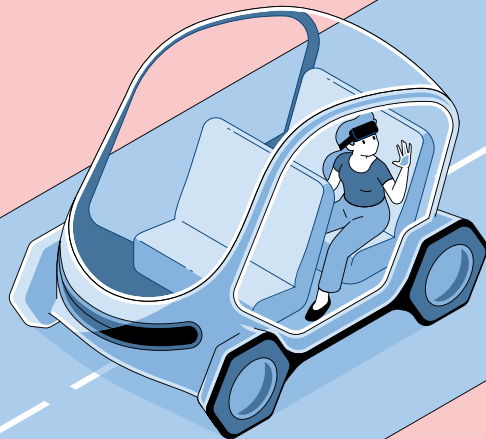
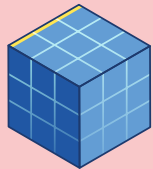


How Will The Post-Hype Metaverse Change Motoring?



The sun is out and the sky is blue, but that's the only normal thing about the view from the car window...



On the other side of the road, giant animals are speeding past in magenta buggies. Overhead, trees are floating high in the air on little rocky islands. As the car pulls up at a pedestrian crossing, a flock of blue and white chickens bounce across in front of you.

But the most unusual thing of all? For all the otherworldliness, you're in a real vehicle that's driving on real roads.

This vision of the future of in-car entertainment has been created by the German company Holoride, a spin-off from Audi. Its technology provides car passengers with entertainment experiences through virtual reality (VR) and augmented reality (AR) headsets. These experiences, which might be games or perhaps artistic reinventions of the world around you, respond in real time to the vehicle's speed, steering and location data. This synchronisation makes those virtual experiences more immersive.

Certain Audi models now rolling off the production line are Holoride-compatible. To some commentators, it is not just a glimpse of a new optional extra. It is a glimpse of the metaverse.

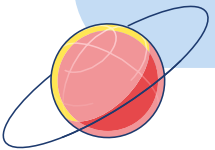
The word "metaverse" seems to have dominated tech discourse for the past year – and gone through a whole hype cycle in that time. If you find it hard to unpick precisely what it means, that's because it does not have a precise meaning. But broadly speaking, it refers to an emerging class of virtual experiences. Perhaps these are VR, or perhaps these combine the digital and physical worlds using AR. Or maybe these experiences take place in the kinds of virtual worlds we are already used to experiencing via our smartphones and game consoles. It depends on who you ask. But right now, tech companies are battling for their particular definition to win out.

One of the reasons this battle is raging so hard is that these digital realms are potentially places for users to go shopping, participate in marketing experiences, own virtual property, make things, work, play games and socialise. In other words, there is money to be made.

Some think the scale of this business opportunity is colossal. The most evangelical proponents of the metaverse are still beating the drum for a particularly radical vision. They believe that the virtual experiences emerging today – experiences of the kind Holoride is making – will eventually meld together into an interoperable network. They speculate that these worlds will be able to accommodate unlimited numbers of users and that they will be persistent, meaning they will continue to exist even when you are not using them. In their eyes, this will be the true “metaverse” – the virtual worlds we have now are merely “proto-metaverses” – and it will constitute nothing less than the next version of the web.

This is the bull case, and it says that the experience of this next iteration of online life will be 3D. Its applications, interfaces and mass-market hardware will recalibrate themselves around this paradigm, and you will be able to move seamlessly between the connected virtual worlds that make up the “metaverse” taking your virtual possessions, your virtual finances, and your virtual identity with you.

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Obviously, that is far from a given, and there are plenty of high-profile metaverse critics. Indeed, over the past year, public discourse has shifted towards the bear case, and sentiment around the idea has become noticeably more skeptical. But since billions of investment dollars are flowing into the vision that it describes, many businesses remain keen to know if the tech execs are on to something – or at least if there’s a kernel of truth within there that they shouldn’t ignore.

The automotive industry has certainly been following this conversation. Auto manufacturers the world over are assembling teams and initiating projects to explore the potential of virtual worlds and their associated technologies. To Tim Walther, group manager of metaverse and NFT at Volkswagen Group, which owns Audi, the motor industry lends itself well to virtual formats. “If you speak to people about the metaverse and tell them you’re from a car brand, people say, ‘Oh, you’re very lucky’, because a car is such an emotional product, so the metaverse opens so many new opportunities,” he says. “And there are so many experiences with cars in real life that you can take into the virtual world. This is going to be a very exciting thing for the industry.”

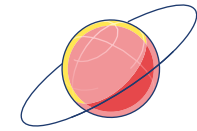
“...a car is such an emotional product, so the metaverse opens so many new opportunities.”

Tim Walther

Group manager of metaverse and NFT at Volkswagen Group

A recent report from the research company Markets And Markets estimates that the global metaverse market for the automotive industry will grow to \$16.5bn by 2030. So, what’s happening now, and what could this mean for the future?

Possible Tomorrows



As the saying goes: prediction is hard, especially about the future. No car manufacturer knows how extended reality (XR) – the umbrella term for VR and AR – will evolve, or whether it will come to enjoy mass-market adoption. And they certainly don’t know if it will bring about the next version of the web – a development that would be many years away, if it even happens at all. But their thinking is starting to focus on a few key use cases – and projects are already seeing the light of day.

1. Design And Manufacturing

“There is an incredible opportunity for organisations to think about how an immersive experience could help in the manufacturing of a vehicle,” says AJ Dalal, senior managing director of data strategy at digital transformation consultancy Publicis Sapient.

The automotive sector has been leading the way in using VR and AR in the design process for a number of years. Companies use software that allows them to view 3D renders of vehicles in XR, as if they were real objects. This also allows them to see the design in different scenic environments. What’s changing is that these designs are becoming more true to reality. “We can now see digital twins also in the process, allowing more efficient planning and production,” says Volkswagen Group’s Tim Walther, referring to the idea of virtual objects that don’t merely simulate appearance but also functionality in a way that’s true to materials, physics, and performance data. This can accelerate prototyping and optimise manufacturing. He adds that a social dimension is also emerging. “Visual data can become connected across working groups and even continents, and allows for joint interaction. Things are moving from stand-alone to interaction. So perhaps this will become more of a space where we can meet with other people and co-create together, compared to what we have today.”

In the future, that social interaction element could also extend to showing the design to would-be customers – a form of marketing, but also focus grouping, providing designers with instantaneous

feedback. As the technology improves, becoming more photoreal, the proposition would become ever more compelling.

2. In-Car Experiences

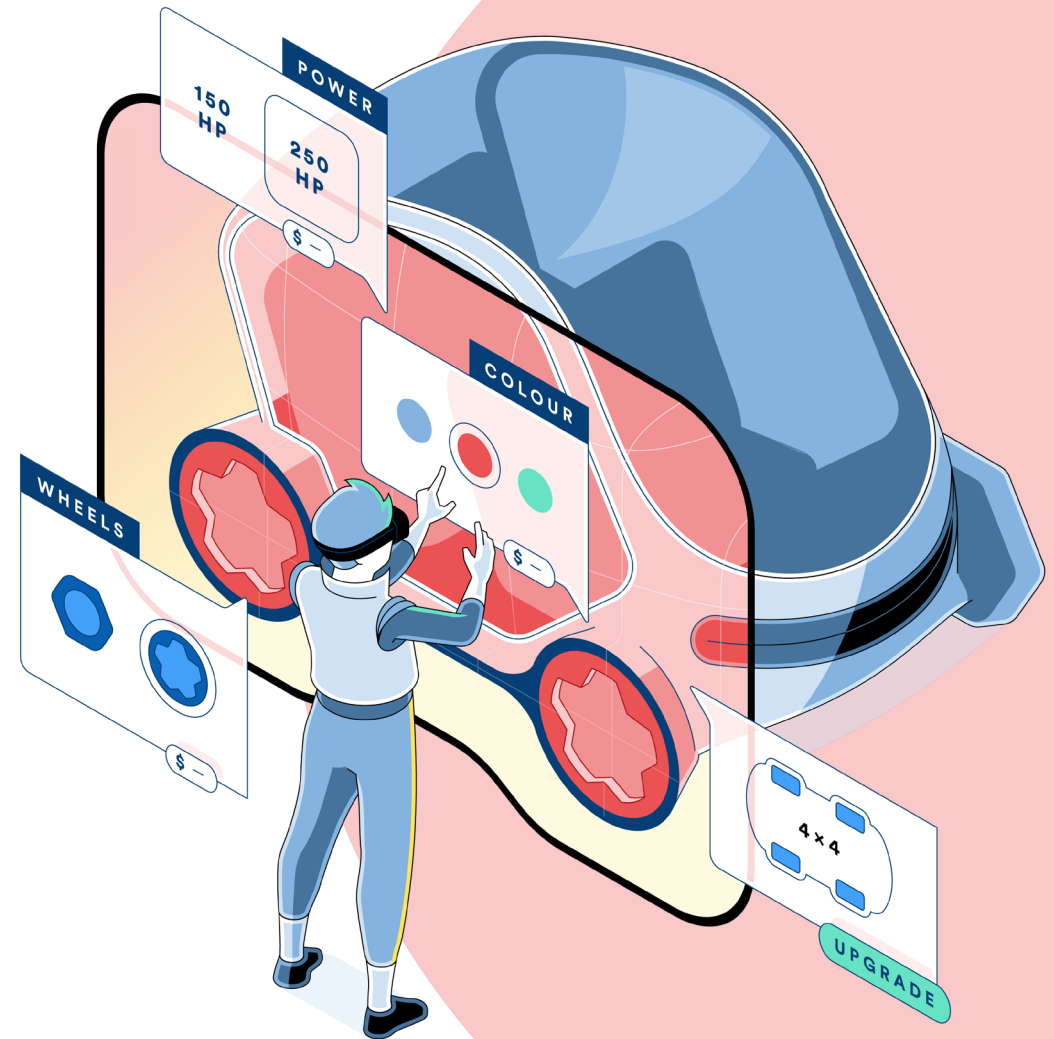
“Head-up displays” are becoming increasingly commonplace in cars – glass panels that overlay part of the driver’s view with information such as speed. To Walther, in-car virtual experiences of the kind that Audi is exploring with Holoride merely extend that idea – and have the potential to go well beyond games. “I consider it a metaverse product because it is a platform, it is a tool to access something,” he says. “What that thing is, is still evolving.”

Not everyone wants to watch giant chickens out of their window, of course, but there may be a market for more practical and social applications. Imagine using AR to beam family members into the seats next to you, so that you feel like you’re travelling together. Or what if it could layer the shops you’re driving past with information about special offers? Or put a beacon above restaurants with good reviews and free tables? Walther believes that if autonomous driving becomes the norm, freeing up drivers’ attention, demand for in-car XR will grow.

Still, if experiences such as these are going to catch on in the mass market, there will need to be hardware improvements. David Oxtoby, research delivery manager at Jaguar Land Rover, says this is already happening. The company’s Open Innovation strategy sees Oxtoby work with startups to explore metaversal ideas. “The technology is evolving so fast, we’re seeing headset sizes come right down,” he says. “It’s probably not going to be unrealistic to assume that those types of headsets are eventually going to be similar to the size of glasses. There are even concepts around contact lenses that have that kind of capability.” When it comes to in-car XR, there’s speculation that “smart windows” and “smart mirrors” could ultimately remove the need for wearables: just look through the windshield, for instance, and the virtual elements will be layered on.

3. Virtual Showrooms

Online experiences are already a major part of how consumers buy cars. When it comes to researching optional extras, comparing



specs and viewing imagery, much of that already happens digitally. Naturally, then, brands are already experimenting with virtual showrooms.

The prevailing view, however, is this probably won't consign the real world counterparts to history. Cars are physical objects and the sensory element, from how it smells, to how the seats' fabric feels, to how it drives, is hard to emulate digitally. That's why Benjamin Moncrieffe, Jaguar Land Rover's head of strategic foresight, who sits with Oxtoby on the company's metaverse Open Innovation team, is skeptical about "virtual test drives" – a trope of many "cars in the age of the metaverse" forecasts – replacing the real thing. "You still can't replicate the sensorial experience with VR, so that for me would be a bit of a red herring. VR will enhance the customer experience by becoming a new integrated element of the purchase journey."

Yet, the metaverse could change how consumers interact with those dealerships. The initial meeting with a salesperson might happen over a VR desk, some believe. Others say that extended reality will have a role in enhancing the experience of visiting the real life showroom. "Maybe you go into a dealership and see a car and say, 'This is great, but I don't want it like that, I want it in silver', and then your AR glasses let you see it in silver. Or you say, 'Can I see it with 21-inch wheels?',” says Publicis Sapient's AJ Dalal. "The ability to see all the colours, all the options, would be really cool."

In turn, that may help dealerships overcome an age-old problem: their large physical footprint makes them expensive to operate. If they need only have one vehicle on show, which can be adapted via AR, then the other vehicles can be held in a warehouse until they're sold.

4. Marketing

Car brands have long struggled to market themselves to the adolescent audiences who could become their future customers. "I can't imagine when I was a teenager walking into a car retailer and just having a wander around," says Moncrieffe. "I wasn't a

customer and it wasn't in my gift to be able to test drive. But with this technology? Actually, I could have interacted with them."

Car brands are already creating virtual experiences to do just this. Take Cupra, for instance, which is owned by Volkswagen Group. It is launching Metahype, a virtual world where "brands, startups, and content creators can host a wide variety of events and experiences for individuals to create and share culture". Cupra will have its own hub within that world to host "spectacular experiences for different points throughout the customer journey". Other brands are making their cars available for video game-style racing experiences.

To Cathy Hackl, a tech futurist who is cofounder and chief metaverse officer of Journey, an innovation consultancy, and also the author of *Into The Metaverse*, these brand-building exercises will also come to target vehicle owners specifically. One use case will be allowing them to show off their physical vehicles in the virtual world. "In the future, when I buy a vehicle, maybe I also get a digital asset that represents the car. Perhaps I can use that in the metaverse, and drive it in a game," she says. This digital asset will have its ownership registered on a blockchain as an NFT (non-fungible token). "Perhaps the car has an NFC [near-field communication] chip that you have to scan to get the NFT. Then the digital asset also proves the ownership of the car."

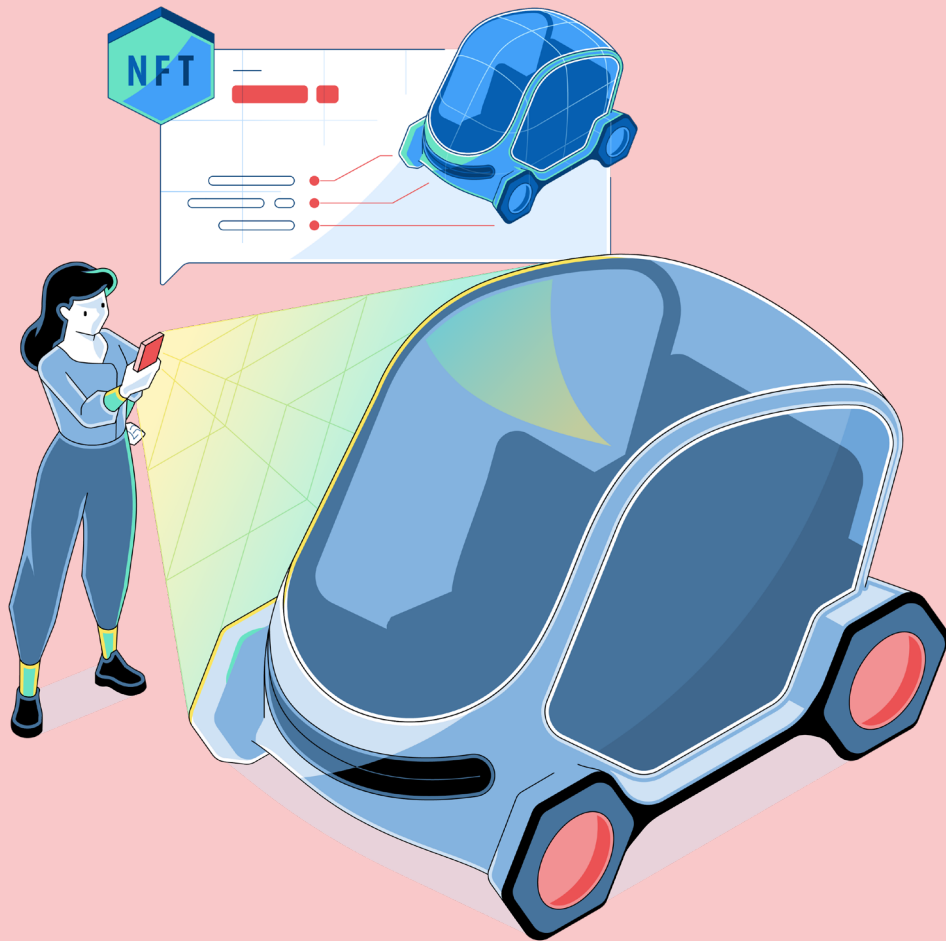
Where that gets interesting, she says, is the ramifications for the secondary market. "When you sell the car, the new owner will scan the NFC chip to receive ownership of the NFT, so the car brand could track that the sale has happened, and potentially take a percentage of that deal if it's offering something in return like warranties."

"In the future, when I buy a vehicle, maybe I also get a digital asset"

Cathy Hackl

Cofounder and chief metaverse officer at Journey





So What's The Play For The Automotive Sector?

The hype machine promises that the metaverse will be the next internet. But that's merely a prediction – and a bullish one at that. For that definition of metaverse to become reality, it would not only require much cheaper, lighter, better headsets but also an untold amount of computing power, plus a completely new global networking infrastructure. These are not problems that will be solved tomorrow – although, admittedly, they are possibly solvable in time. What is less clear is whether people actually want that vision of the metaverse to emerge in the first place. Do they want to spend their time wearing headsets? Would they really rather online life were 3D rather than 2D? No matter how much tech executives invest in an idea, there's no guarantee it will succeed – just look at 3D TV.

Perhaps a better mental model for thinking about the metaverse is to fixate less on the grandiose vision, and think more about the component technologies and their potential. Even if it doesn't form the basis of the next web, XR seems likely to have a place in the future. The question is: what role will it play, and how widely will it be adopted?

Given the unknowns, you might ask if it's worth automakers even experimenting at all. Jaguar Land Rover's Benjamin Moncrieffe believes it is. "Incrementalism and innovation doesn't work for businesses anymore – the world and technology moves too fast. You have to make big leaps forward," he says. "In order to do that, you have to be knowledgeable and learn as technology develops. If you want people to work with the metaverse technology, today those people don't exist, so you have to train and upskill your employees, and let them learn through experimentation of the technology. This is about being prepared: if we don't do this, it will leave us behind."

Clearly, many brands are in agreement, given the number of real, diverse examples of XR in use today across the industry. For

companies who have yet to take the plunge, Jaguar Land Rover's David Oxtoby advises focusing on projects that serve a clear purpose. "What we're really trying to do within our business is make sure we've got a clear reason as to why we're using the technology," he says, "rather than the technology leading the experience."

For Journey's Cathy Hackl, it's also vital to keep younger generations in mind. "If you're not thinking about Gen Alpha and how they're going to impact the experience in-vehicle, or the car buying process, I think you're missing the mark," she says. "In four or five years, Gen Alpha's going to start driving in the United States. They've already spent money and time decorating their virtual homes in whichever game it is that they're playing, so why don't they have virtual cars as well? Why not start to create ways for them to build up to buying the virtual version of the car you make, or create relationships with those customers where the things that they do now could potentially translate into a discount in the future?"

However companies decide to approach this, agility is key. This is a fast-changing space. "Understand that you've got to create internal review cycles and adjust," says Publicis Sapient's AJ Dalal. "Organisations have to develop a strategy, realise that it's going to change, and be okay with it."

So, what's one prediction for a coming change that businesses need to anticipate? "I believe that augmented or mixed reality will prove to be a much larger thing than virtual reality," says Volkswagen Group's Tim Walther. "We have had virtual reality for quite some years, and it hasn't fully taken off for various reasons. One of these is that people don't want to spend eight hours in a VR headset. That's why I think AR is the game-changer."

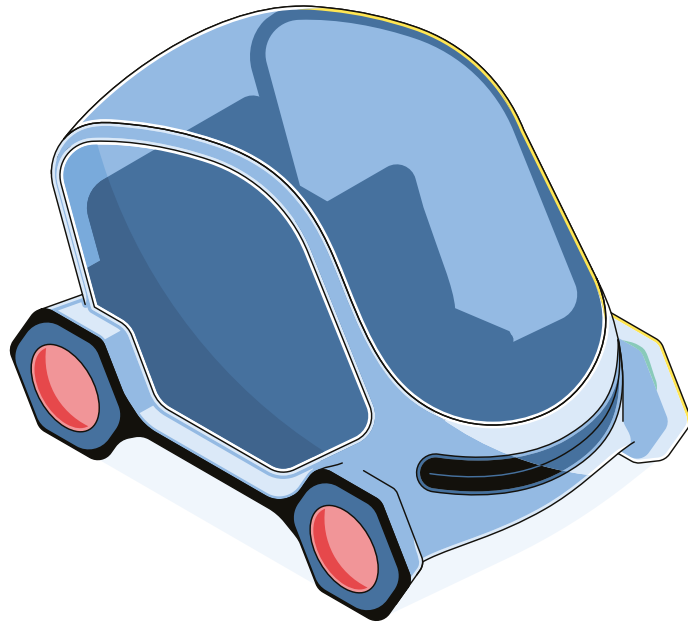
He sees developments in that space happening as soon as the next year or two. "It's going to be really exciting," he says. "Everyone is asking: 'What is the metaverse?' Finally, we might start getting some answers."



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