IMMERSIVE TECHNOLOGIES IN AUTOMOTIVE RETAIL

2018

IN CONJUNCTION WITH (VRX) 2018 DECEMBER 6TH - 7TH, SAN FRANCISCO

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The Modern Retail Landscape

Differentiation through experience

Customer experience is the cornerstone of modern retail. The term encompasses the sum of every touchpoint a customer has with an organisation, leading senior professionals to state that 'everything is brand.'[1] Maximising the impact of each interaction with a brand drives positive attitude formation, directly influencing brand perception[2]. Those who offer a great customer experience therefore gain competitive advantage [3].This directly influences enterprise value, leading marketing resources related to building brand value to go towards the reinforcement of ongoing relationships with customers [4].

The internet has been credited as the catalyst in causing businesses to rethink their relationship with customers. An emerging 'battleground' in the late 90s sparked a need to differentiate through experience, putting customer perspective at the heart of all processes[5]. This approach has evolved in line with the coming of age of millennials, whose affinity with technology has shaped their expectations[6]. This demographic demands a seamless experience, meaning all touch points must be integrated so that there is always one single conversation that doesn't change depending on format[7]. With the dissemination of smart devices, customers can conduct product research, compare prices and read reviews at any time, even whilst in-store[8]. What's more, behaviour attributed to millennials is no longer exclusive, with other generations increasingly displaying similar conduct[9]. This lowers the impact of in-store touch points, leading brands to translate the philosophy applied online to in-store propositions, offering related experiences that can't be replicated on the web[10].

The rise of VR in automotive retail

The automotive retail sector sees tech-savvy car buyers more inclined to seek rewarding physical experiences in store[11]. As a result, virtual reality (VR) experiences are increasingly being deployed as part of the automotive sales and marketing suite. With new hardware making the medium more accessible and the digitisation of car libraries enabling the adoption of new store formats, VR and augmented reality (AR) can be integrated into existing pipelines, introducing customers to their digital vehicles on a 1:1 scale. Configuration experiences therefore translate well and can be incorporated into any stage of the purchase journey.

VR also offers methods of interaction and exploration with a sense of presence that would not be possible through any other medium, such as physically interacting with digital features, changing the environment or suspending all the components of a vehicle in mid-air. An installation with such signature characteristics elevates the car buying journey through engagement, driving affinity whilst enabling dealerships to adapt to modern trends and drive conversion.

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[11] Accenture, Digital Hits the Road, 2016 < https://www.accenture.com/hu-en/~/media/PDF-33/Accenture-Automotive-Retail-Point-Of-View-2016.pdf > [accessed August 2018]

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The customer perspective

To validate such claims, this report has been compiled between VR Intelligence and ZeroLight, market leaders in creating digital retail experiences for the automotive sector. Within the report are the results from a study ZeroLight conducted in 2017, deducing the viewpoints of 1,000 adults who own or plan to buy a car within the five largest economies in Europe.

Specifically, it looks at the benefit of the medium as part of the sales process, including type of experience, purchase intent, longevity, ability to drive footfall, impact on brand perception and associated features that make such experiences successful.

Following these results are the first-hand views of three pioneering experts in the world of immersive retail experiences, with positions at Audi, BMW and StarVR.

VR Intelligence & VRX 2018

This paper has been produced in conjunction with VRX 2018, the 4th edition of the world's leading annual gathering of senior-level VR & AR professionals, in San Francisco on December 6-7; organised by VR Intelligence, providers of year-round business insight for XR industries through its global network of immersive tech business leaders. To find out more about VRX 2018, go to www.vr-intelligence.com/vrx

ZeroLight

ZeroLight is an automotive visualisation specialist, empowering brands to reach customers with amazing experiences, wherever they are. With a focus on reach, engagement and analytics, ZeroLight drives personalization at scale throughout the customer journey, transforming both the buying experience and sales process by facilitating higher specification sales whilst increasing customer satisfaction. The company has pioneered some of the most compelling virtual reality experiences in the automotive market. Developed for pre, during and post-sale experiences, product launches, events and car concept delivery, ZeroLight's virtual reality solutions have been deployed by brands to engage customers at every stage of the purchase process. To learn more about ZeroLight, visit www.zerolight.com

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Understanding the value of immersive retail experiences within Europe's top 5 economies
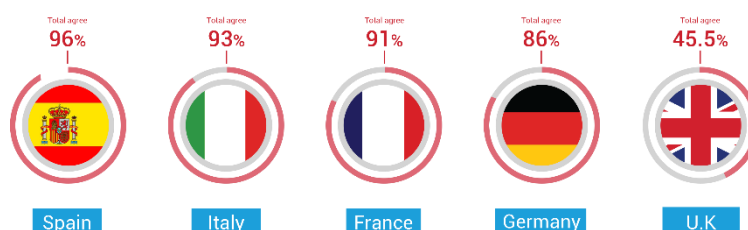
Sample

The study saw 200 respondents per territory, including the UK, Germany, France, Italy and Spain, with a combined 55% male 45% female split. 51.1% of all respondents stated they had tried a form of immersive technology before, 44.6% had not and 4.3% were unsure at the time. The demographic breakdown shows a respectable representation across age groups, with a skew towards the 25-34 and 35-44 cohorts.

Demographic split of total sample

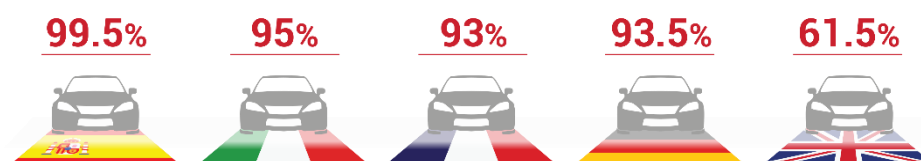|	
55% 45%	35-44 23.1%
Gender	25-34 32.1% 45-54 18.6%
	18-24 15.4% 55+ 10.8%
	Age Range
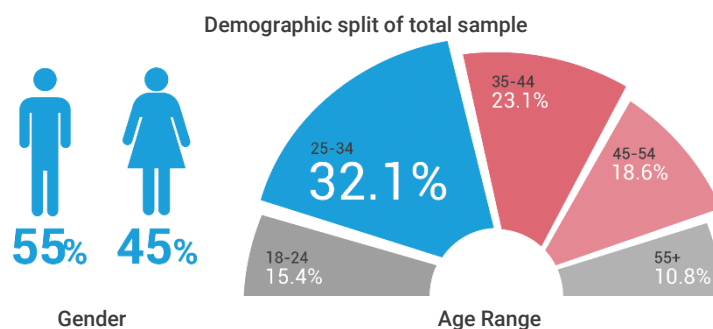
Influence on the sales process

When looking to deploy new technologies, it is critical to identify the type of experience it should deliver to drive commercial value. There was an overwhelming response across all territories to the prospect of being able to configure a vehicle. Overall, 90.1% of respondents expect to be able to see, design and select preferences for their car prior to purchase. 82.3% of respondents agreed that they would like to do so using immersive technologies, validating the use of immersive configuration experiences as part of the purchase process. This is seen across demographics, with more than 80% for each cohort between the ages of 25 and 54 giving a positive response. France, Spain and Italy showed the most desire for implementation, with over half of respondents in the 'strongly agree' category and total positive responses of over 90%.

Territorial Breakdown of those who would like to configure a car using immersive technology

Total agree 96%	Total agree 93%	Total agree 91%	Total agree 86%	Total agree 45.5%
Spain	Italy	France	Germany	U.K

Whilst there is clearly a desire to utilise immersive technology as part of a retail experience, potential customers also believe that it will influence purchase intent. 88.5% said they would be at least 'likely' to purchase a vehicle after exploring and designing the car using virtual reality, with 43.6% stating they would be 'very likely'. Germany, Spain, Italy and France all showed over a 90% likelihood of purchase, with over 50% of those in Germany (51%) and Spain (63.5%) stating they would be 'very likely' to purchase. Such results justify the medium's presence within showrooms from a brand and dealer perspective.

Territorial Breakdown of those who would like to purchase a vehicle after configuring in VR

99.5%	95%	93%	93.5%	61.5%

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Investment over time

The perceived lifespan of a deployment is critical in deciding on whether to invest in solutions that integrate with existing retail infrastructure. 83.9% of the total sample believe the medium will retain influence in the automotive retail market over the next decade. 25.3% agreed that it would be the primary method of exploring and customising new vehicles, whilst 58.6% stated that VR/AR would play an important role alongside other technologies in the sales process. This shows that return on investment will likely continue for years to come, ensuring a long-term benefit for brands that choose to deploy an in-store experience.

Expected role of immersive technologies in the automotive retail market in 2027

Important alongside other technologies
58.6%

1.6%   No role

6.3%   Don't know

Primary method
25.3%

8.2%   Minor role
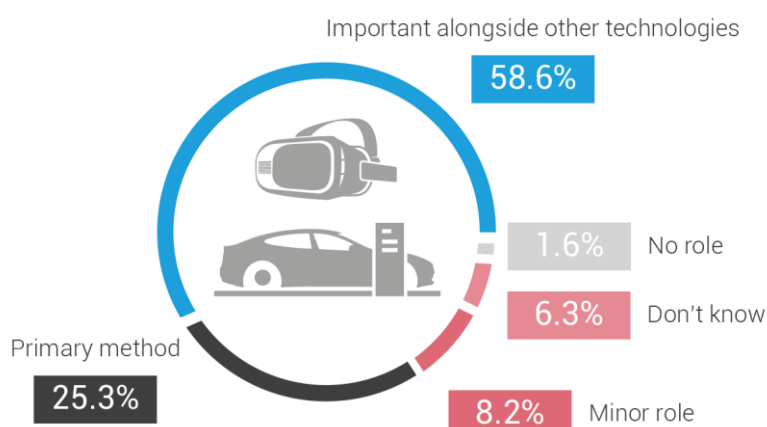
Does it drive traffic to dealerships?

Whilst the sample validates VR/AR tools, the medium still requires a hard install in most circumstances. Given that the current marketplace is seeing traffic to dealerships decrease[12], brands and dealers are looking for ways to increase footfall. The medium must therefore provide a significant level of differentiation through customer experience that counters current trends. When asked a multi-response question about the potential impact of a dealership offering an immersive experience, 64.7% of the total sample and more than 70% of those from France, Italy and Spain stated it would prompt them to visit. Alongside an increased propensity to visit the store, just under half (49.9%) of the total sample would use the medium to explore more of the dealer's range of cars. Germany provided the strongest response in this category, with over 60%.

Likelihood of visiting a dealership that offered an immersive tech experience

| 77.5% | 71.5% | 72.5% | 62.5% | 39.5% |
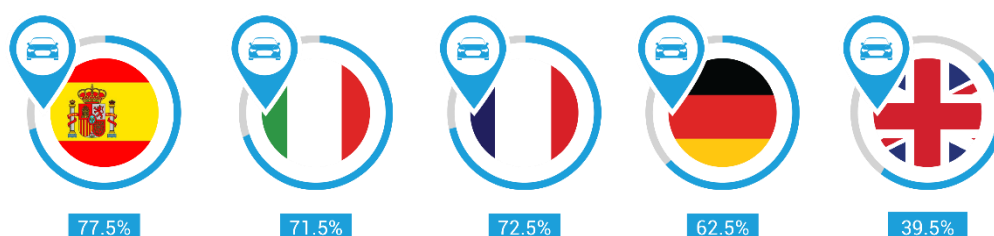
Alongside a greater exposure to products on offer, over 40% of the sample would experiment with optional extras. As customers explore more accessories, dealers have the chance to achieve higher specification sales. Spain provided the strongest response in this category (52%), followed by Italy (46.5%) and Germany (45%). Conversion potential was tested, with almost a quarter (24. 6%) of the sample explicitly stating they would buy a car from a dealer who

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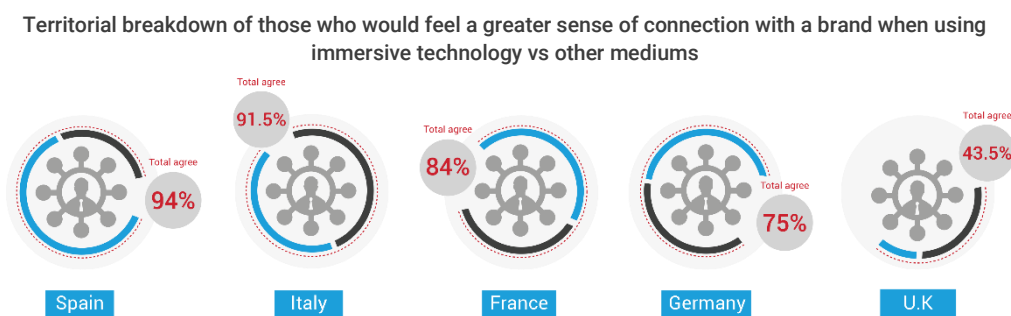[12] Belinda Parmar, *Oi car salesmen: it's time to talk to women, not just their 'husbands'*, 2014 <https://www.telegraph.co.uk/women/womens-life/10925075/Oi-car-salesmen-its-time-to-talk-to-women-not-just-their-husbands.html> [accessed September 2018]

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offered such an experience. Germany had the strongest geographical response at 28.5%. With just under 30% of the sample stating they would share their experience with their network, there is a strong chance of generating word-of-mouth promotion which would benefit the overall perception of both brand and dealership.

We can therefore deduce that there is both a demand for and a long-term expectation of immersive technologies as part of the automotive sales and marketing suite. An installation would provide a competitive advantage for dealerships, driving footfall as well as conversion potential.

Impact on brand value

The study also indicates that configuration experiences through the medium can directly impact brand value. 79.2% reported that a high-quality VR experience that lets you digitally design, interact with, and select preferences for a vehicle would positively impact their perception of the overall quality of the brand. 77.6% of total respondents agreed that they would expect to feel a greater sense of connection with a brand when using VR/AR verses other mediums. Only 5% of the total sample contradicted this statement, demonstrating the overwhelmingly positive take on the potential of immersive technologies. This could be due to the perspective on the digital vehicle the technology grants vs other devices, delivering a sense of presence in a way that is, to date, unique.

Territorial breakdown of those who would feel a greater sense of connection with a brand when using immersive technology vs other mediums

| Spain | Italy | France | Germany | U.K |

As a medium, immersive technologies have the potential to significantly drive brand affinity, justifying deployment outside of the dealership as a brand engagement tool during promotional campaigns and events.

What are the most critical features of an automotive VR experience?

Visual quality (22.8%) and interactivity (24.7%) were the two dominant features considered to be the most important within an automotive VR experience. Customers truly want to believe what they are seeing, especially within a commercial context. Resources should therefore be focused on visual fidelity and true product representation when creating experiences, whilst ensuring a breadth of interactive features that allow for full product exploration. Freedom of movement and sitting inside the vehicle are next in line, receiving similar response rates. Such capabilities can be used as variations on a VR experience when deploying in larger areas.

VR is distinctive in its ability to wholly immerse the user, providing a completely digital world rather than augmenting the current natural world. Environments can be crafted to reflect the proposition of the product or place it in iconic scenes from around the world. 75.8% of respondents confirmed there would be a direct influence on purchase intent if they could see the vehicle in multiple environments prior to purchase. A variation of settings provides potential customers with a complete understanding of how the vehicle looks in different scenarios, allowing for a confident assessment of chosen features.

The test drive is a highly influential touchpoint in the customer journey. The prospect of increasing efficiency by using immersive technology to replace the test drive has been touted and could have customer support. 84% of our sample confirmed they would like to take a virtual test drive, with 71.4% wanting total control over the experience. A deployment such as this would likely need to be accompanied by other technologies that mimic the physical

sensations of driving a vehicle to provide a realistic replacement. This would require a higher initial investment and move away from product exploration to full simulation.

The position of mobile VR

Mobile VR shows the most promise as a home engagement tool. 43.9% of respondents confirmed that they would most likely use mobile VR at home, with 23.5% stating use in-store. Connecting the two, mobile applications could supplement in-store VR activations, allowing for a continuation of the experience at home. Alternatively, mobile VR applications could act as a lead generation tool, allowing a brand access to a large install base to provide limited experiences, with a related, high-quality experience available in a dealership.

The UK's perception of a new medium

It's important to note that, whilst the UK still provided validation for the medium, it was not as strong as its European counterparts. This can be put down to the respondents' uncertainty over the medium's capabilities along with a lack of experience. Of the total sample size, only 15% had tried the medium before. Contrast that statistic with Spain (66%), France (67%), Italy (63.5%) and Germany (44%), and we can conclude that exposure to the medium correlates to a more positive attitude. Whilst the UK has a comparatively low response rate, it is not down to a lack of interest. Almost half (49%) of the entire UK sample stated that even though they hadn't yet tried VR/AR, they had an interest in doing so in the future.

Territorial breakdown of respondents who had tried immersive technologies before

TOTAL SAMPLE					
51.1%	66%	63.5%	67%	44%	15%
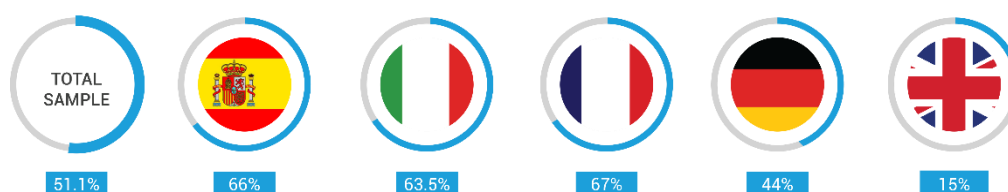
A lack of experience can subsequently lead to uncertainty over its capabilities, as seen in the 35% of UK respondents who did not commit to whether they would use the medium prior to purchase. Similarly, 37% chose not to comment on its influence on brand connection and just over a quarter stated they did not know whether immersive technologies would have a role in the automotive retail market 10-years from now. The overall response provided was still positive, however, with over 45% of the sample stating an interest in using immersive technologies as a product discovery tool prior to purchase. 42% agreed that the medium will play an important role alongside other technologies, with a similar amount (43.5%) agreeing that they would expect to feel a greater sense of connection with the brand when using immersive technologies vs other mediums. Almost half (48%) stated a high-quality VR configuration experience would provide a positive perception of brand quality, with just under 40% stating the medium would provoke them to visit their dealership.

Thoughts of the UK market not being primed for technological change should not put off the potential deployment of VR/AR sales and marketing tools. The UK sample is likely further behind its European counterparts in terms of its perception of immersive mediums due to a lack of exposure. With such an interest in trying the technology, it is possible that as the medium further penetrates the market, future samples would have representatives which are more familiar with VR/AR devices. Those respondents should be more certain in the capabilities of the technology as seen in other regional responses to this study.

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Insight from Industry Leaders

Marcus Kuehne, Audi AG

Marcus Kuehne is the Strategy Lead for immersive technologies at Audi digital retail. His team concentrates on technologies which have the potential to revolutionize the marketing, sales and development processes at Audi, but also the complete customer experience.

What does VR as a medium do to add value as part of the sales process?
As a car manufacturer we have the challenge that we have many markets where people can individualize their cars massively. A new car is a large investment for any consumer, so they want to define each detail. Then they are able to wait five or six months to receive their very own, truly personalized car.

For those people who wanted to really individualize their car, previously we only had the ability to show the product on paper or on a flat screen. Our customers had to take big decisions on, for example, the type of material for the roof, based just on a picture. It's the same with so many other options on offer.

People also don't spend that much time at the dealership anymore. Our web presence is pretty robust, and people have access from anywhere. So, they are able to inform themselves about practically every aspect of the car they want before they step foot into the dealership. The dealership hasn't been that place of discovery for quite some time.

We decided in 2012 that we had to react and worked to offer an experience in the dealership that you couldn't get at home. We want to offer a premium shopping experience, so digital sales tools like VR fit well into that landscape.

Right from the beginning we wanted to integrate the Audi products fully with whatever new experience we were going to offer. This takes more of an investment, but we didn't want to end up with just a product showcase that would quickly date and become obsolete. Every time there's a major product change – which can happen several times a year – our back-end infrastructure and content rollout means that our dealers are able to show those new products to customers.

How has uptake of the Audi VR experience been?
We knew we had to make this step into VR as far back as 2012. When a technology comes along that has the potential to become the new standard interface between humans and computers, starting early is certainly a big advantage. Investing early and seriously in such a young sector has allowed us to not only fully understand the technology but also to steer development in our own small way.

The flagship project, which we delivered through our Audi Cities dealerships, was extremely visible within the company. The success of that project has really helped everyone in the company, from the top down, to understand VR, how it works and crucially why it's important for the company. Once you have that foundation, you move beyond having to explain why it makes sense and instead move towards a space where different business units are thinking about how they can use the technology to benefit their own business needs.

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What success have you seen from the rollout?

The most important milestone for me was the quality bar we had to reach in order for us to be able to use this technology in a customer context. The first generation was nowhere near as good as it needed to be – which was completely expected. At Audi, our products are at the top end of premium, so fidelity is everything. Therefore, not only did the hardware have to get up to a sufficient quality, but our ability to render the vehicles had to really push the limits as well.

It's way easier to nicely render a car on a 4K screen than it is within a VR headset. You have to implement a lot of elements within the visualization engine: shadows, rendering, lighting etc. The cars cannot look artificial – we don't want a video game-y look. It's easy to render a car that looks close to what you would find in a video game today. Video game developers are concerned with how the car drives first, then how it looks second. You don't necessarily have time to look at every detail in the car when you're racing round a track. For us, the details are exactly what our customers want to see, so we have to create an ultra-realistic look.

Another milestone has been the ability for people to see each other within our VR experience and to interact.

The next milestone for my team is the merging of projects. VR is expensive. There aren't that many tools at your disposal, so you have to solve many technical problems by yourself. With each new project you have to weigh up the cost of almost every action you take against the benefit you will receive.

If we can present a real cost saving through the use of VR, then we will see the strategic importance of the technology accelerating. If the headsets get to a point where they are good enough, we could entirely replace the need for real physics and models in the dealerships. Similarly, at the design centers where it costs tens of millions of dollars to prototype vehicles, if we could reduce the need to physically render parts and whole vehicles by just 20% the cost savings would be in the millions.

Currently there are several – what I call "island" – projects that are using VR. Each of those projects has a slightly different aim, and different budgets, but broadly the same technology. If you could merge some of those projects together, you could potentially pool budgets to create a better end product, speed up the process and find new economies of scale. That could be the next acceleration factor for VR within Audi. That's a topic I am working on right now, not just within Audi, but the wider industry to see where we can collaborate.

Is there a trend amongst the type of customer you are seeing utilize the experience?

When we rolled out VR, one of the key things we decided was that we should offer it as a tool to enable the sales cycle, rather than a mandate where it must be used. We still have the screen-based experience available for our dealers to use for exactly the reasons you're alluding to. Some customers can be reluctant to use VR. The good thing is that this is the exception.

In the dealership setups where we have VR as an option, it is used in more than 50% of sales. That's great from my point of view because we don't have our flashy new tech gathering dust in the corner! The dealers are excited to use the technology and our customers want to use it. That's despite even our own concerns about the technology today: there is still room to improve fidelity and make the experience better.

As a VR and technology enthusiast, I always get a bit disheartened by the press: they frequently sensationalize VR and associate it with negative stories such as extreme individuals looking to escape reality. You don't need to search the mainstream press for long before you find such stories. Slowly, acceptance is happening, and it won't be long before people get more and more used to VR. This is no longer a proof of concept. Virtual reality is a reality.

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What's next regarding immersive experiences within Audi's retail offering?

We will continue to take a look at augmented reality to see if it's good enough for a first usage at Audi. My feeling is that we'll need to wait another generation before the AR technology is good enough to meet our needs. I had high hopes with the Magic Leap One, but the field of view really doesn't currently work for us.

AR is coming on leaps and bounds, but I don't see it replacing VR. Instead, I can see a convergence of the two technologies where each complements the other. As the technology matures, we will need to look at ways to use AR in places on the customer journey where it makes sense. Mixed reality would be great for us because you could more easily walk a customer through the features of the vehicle as part of the sales engagement.

The moment VR becomes mainstream – when everyone has a VR headset at home – that will be interesting. Interesting because we will have the opportunity to share the experience you can currently only get in the dealership with people in their homes.

At the same time, we will run into the same issues that brought about the introduction of VR into dealerships in the first place: differentiating the dealership experience. In this way you could say we're up against a constant innovation challenge, and that's a pretty exciting challenge to have.

I'm also working on a project that I can't talk about just yet, but I'm excited to talk more about it at the VRX conference in December!

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Damien Mauric, StarVR

Damien Mauric is the VP of business development at StarVR. Their new headset – the StarVR One – is currently making quite a splash in the media, with advances to field of view, user comfort, and imaging.

How do you see commercial VR differentiating itself from other niches within the industry?

One thing within your question that I would say is absolutely not right to begin with – commercial VR is not a niche. It's a personal point of view, but I would say that VR itself as a consumer play is definitely not a niche.

VR has been around for twenty or twenty-five years. Beyond that, companies like Oculus VR and HTC have brought great consumer products to the market. What they actually did is to make VR affordable and accessible to a greater number of companies that were in need of using VR as a tool for working on an everyday basis. It is such a big business today – I'm amazed at the number of companies we are talking to and that are reaching out to us. The types of use cases they are developing and the scale of the projects, it simply is greater than I had ever thought it would be.

So commercial VR is not a niche – it's something that is significant. If we look at just one industry sector like automotive for example, from the inception of the vehicle to the sale of the vehicle there isn't a single step in the process today that isn't making use of VR. The way we have to understand it is that VR today is like a second monitor on your desk. That's the reality. At some point you will have your monitor and do the work in 2D, but you will do the validation of your work in 3D using VR.

In terms of where it sits within the technological landscape, experiential tech like AR and VR have very different use cases. We have to separate VR from AR. Today, if we are realistic and pragmatic, AR is great, but it is still very early – it's in the very early stages of the technology. It will take time before we see a mass adoption. The limitations are around the coping power, the field of view and the sense of immersion. These are the things that we hear every day.

What do you believe will drive growth in the B2B VR marketplace?

What has limited the mass adoption of VR in enterprise is the fact that the products that have been available are consumer products. With the limitations of the consumer products: the field of view, resolution, sense of immersion, colour fidelity – all of that is about to be resolved. Businesses are seeing that these are the tools they want to use but when you are a professional you want something that meets your expectations in terms of performance, not something which is designed to be in your living room. We don't want to compromise in order for it to be affordable.

The hardware is one major factor in driving B2B growth. A lot of companies are in the process of learning how to use and how to do VR.

What is really supporting this is the mass adoption of the technologies from the gaming industry. Game engines like Unity and Unreal have hundreds if not thousands of companies and clients. There is not one of them that isn't using one of these two game engines. For them, it's a new playground. For us at StarVR, we have both Unity and Unreal developers because we need people who know how to use the tools.

This is exactly what businesses want. These tools are more practical and easier to use than industry-specific software. It's expanding super-fast. There are companies out there that aren't even creating content yet, but they

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are all hiring Unity and Unreal developers to boost their capabilities of developing in VR. Interestingly, game studios are beginning to struggle to find the best talent for Unreal and Unity because non-gaming companies are hiring all the best people. That fact alone tells you how big this is going to be.

Companies are beginning to see that if they don't invest in VR, they are going to fall behind. They need VR to solve problems faster and make money.

How do you see product experiences changing as immersive technologies evolve?
When you are looking to reach the end consumer, content is king. VR on the whole is still in the inception really. You just need to look at the controllers; how they have evolved and how they are evolving. The user experience is going to boost VR. Today the controllers are good, but not necessarily as user friendly as you would like. Tracking has been an issue; especially scaling the size of your tracking area at the same time as ensuring precision. Gradually, all of that is being solved. This supports the ecosystem.

How has entertainment utilized such advancements to create new experiences?
There was a clear boom in interest from consumers to experience VR, but the key is to separate what you are capable of selling in an event context versus what you can have at home. This is the differentiation that can drive people to come and visit your location. The new interactions; new hardware; new experiences – that's what will cause people to seek you out.

One thing which I believe will greatly support VR development is SteamVR 2.0. It is capable of following a user within an experience on a much larger scale than what we have come to accept as tradition room-scale. We have more and more powerful hardware and devices that can enhance the experience. It has to be significantly premium for people to be willing to do the experience but also to return time and again.

You have to crack the code to make this big business. If I have a VR experience where you come to my location – what is it that is going to make you come again and spend another $10 or more? What is going to change things is when we have replayability with the content and true multi-user interaction. Also – I wouldn't go all the way to esports, but – the fact that you can have bragging rights with you friends. All of these things will make commercial VR more viable. These things will make you want to spend the whole afternoon at the arcade and just keep playing.

What changes do you see in user responses as headsets become more advanced?
They still want more. They still want more immersion. There is still quite a lot on offer for early adopters, and we have to bear in mind that we are still within that timeframe now: VR users today are early adopters.

We haven't seen anything like Fortnite, GTA V or Pokemon GO just yet for VR. Content will drive adoption, and we haven't seen that product that causes an inflection point just yet. It's kind of like the chicken and the egg dilemma. The cost to create a VR experience on the scale of GTA V or Fortnite is significant: it's tens of millions of dollars. To make it work, you also need to have a certain install base that allows you to recoup your investment and generate profit. We still aren't seeing the incredible numbers that the analysts were predicting for VR headsets just a few years ago. PSVR has only hit three million units sold in a little over 18 months on the market. Whilst that is definitely impressive, it's a far cry from the 15 million VR units – not just those made by PlayStation – analysts were saying would be in homes by this point.

So, we currently don't have that flagship piece of content that is pushing the install base to expand. We also don't have the install base to warrant the budget needed to create such a piece of content.

I think instead what will happen will be something more incremental: that quality will increase in correlation with the install base.

VRX is the senior-level B2B event for VR & AR execs looking to drive business growth in immersive tech
More info at www.vr-intelligence.com/vrx

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Florian Stiller, BMW Group

Florian Stiller is the head of event and sport marketing for Central and South-eastern Europe at BMW Group. His recent projects have focused on expanding BMW experiences to incorporate new technologies and reach a larger customer base.

What led to the implementation of VR at the M-Drive Tour?
I had an introduction with ZeroLight a few years ago when I was actually working at a different division of BMW. We decided to work together on a small scale – because, I'm sure you can appreciate, BMW is pretty large. Within just the south-eastern region we wanted to see what we could do to make a very new product – in this case the M5 – a little bit more approachable, in the sense that it's easier to access for consumers. Our thinking was that we could essentially make the product available way before it becomes a physical reality.

How did the implementation of virtual experiences add value to the M Drive Tour activation?
We have a day program for our best customers, and generally our customer base for premium models like the M5 isn't especially broad. During the day program, it's quite impressive and thrilling to get behind the wheel of our sportscars on a race track.

But how do you stretch that positive product experience both before and after the event? We began by enriching the one-day experience. We integrated the event with our website, so now you have a dedicated welcome page for event attendees. They could go onto the site to then pre-configure their M5 to their specifications. Once they have finished configuring the car in whichever way they liked, they were provided with a code that they could bring to the event.

At the event, the customer could then provide their code and work with one of our product experts to finesse the car. We added in some other elements like the ability to view the set-ups your fellow attendees had created and to vote on them. So, there was also a social element to the experience.

How was the response to the experience when deployed for the first time at the Slovakia Ring?
The initial reaction was quite mixed. The youngest customer we had at the event was around 20, and the age range went right through to around 60 – so it was quite a wide demographic. Some of the customer base are tech savvy, and have an active interest in new technologies, as you would expect for those attending an M5 event.

Reading the room, it seemed to me that for 99% of attendees this was the first contact they have had with VR technology. What was particularly interesting was that once the first person used VR, and others could see them smiling and having a good time, everyone wanted to have a go. The first person to break the ice for everybody else was a younger guy, but once everyone saw that first use, it really snowballed from there.

Initially I was worried about having the real product alongside the virtual reality experience, as I thought people might not want to use VR – why bother when you have the real thing right there? In reality, what we saw was that this additional VR experience actually adds to the whole feel of the event, and it really feels special.

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How do you plan to build on this concept going forward?

There are other locations running the same event, so we are exploring how we can roll the VR experience we have created out to those.

Part of what made this such a success was having it alongside the real M5. In the future though we are thinking about using the all-new M8 – which is still highly confidential. Our feeling is that if we add the ability to see a new product first, in such an immersive way, that we will see even more interest in the experience.

When it comes to product launches – one of the ideas we are currently developing is the use of VR. Today, we invite very small groups to so-called "Closed Rooms" – around 25 people or so – and we have to take their phones and cameras off them in order for them to see the new vehicle and not leak information before our official start of communication kicks in. VR could become a nice use case within that space, as we could show off the car without needing to have the car physically there. It's also harder to surreptitiously capture any footage of the new product if it is all contained within the VR experience.

We might also move the experience out of the M Drive Tour and use it within broader car shows where BMW goes in force with a full display booth. There are a lot of future possibilities to explore and I'm very excited to create other brand and product immersive experiences. What's for sure is that we will build on this VR experience.

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Hear more at VRX 2018

Every year at VRX, the world's biggest automotive brands gather alongside leading XR business leaders from across industry, to get to the core of the major challenges and opportunities in pushing immersive technology to its full potential.

This year's event, taking place on December 6-7 in San Francisco, presents speakers from immersive leads at General Motors, Cadillac, Fiat Chrysler and Audi, alongside ZeroLight, Google, HTC Vive, Microsoft and over 90 speakers from the most pioneering XR companies.

Their insights will be shared in a high-level networking environment, focused exclusively on business decision makers – with over 800 gathered from around the world. The expo will feature over 40 companies showcasing some of the most game-changing XR solutions, from the likes of ZeroLight, HP, Siemens and many more to be announced.

To learn more, visit www.vr-intelligence.com and **book before October 14ᵗʰ to save $300 on tickets.**

For speaking, sponsor and partnership opportunities, contact Pete Carkeek at pcarkeek@vr-intelligence.com

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(VRX) 2018

December 6–7 | San Francisco

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Register before September 14

VR & AR Reality Check
What's Real? What's Hype? What's the Future?

The global summit where business leaders track the real market opportunities and impacts of virtual, augmented and mixed reality

We ask the key questions – you get the clear answers!

⊙ **WHO** are the companies leading the charge that you should be partnering with? And what are the secrets of their success?

⊙ **WHAT** are the primary platforms, hardware, software and solutions options that will take immersive tech and content to the next level? And where are the tech gaps?

⊙ **WHERE** are the real consumer and enterprise market opportunities right now? And what's coming round the corner?

⊙ **WHEN** will VR & AR go mainstream? What major successes are we seeing already? And what are the barriers holding back adoption?

⊙ **HOW** are businesses across industry reacting to the shift to immersive tech? What impacts are VR & AR having on day-to-day operations and productivity?

⊙ **WHY** should you be investing? Will early movement pay-off, and what levels of ROI can you expect?

REGISTER NOW @ WWW.VR-INTELLIGENCE.COM/VRX

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SAMSUNG NEXT | SURVIOS | Schneider Electric | Felix & Paul STUDIOS | Cadillac | LOWE'S | Audi | COMCAST VENTURES

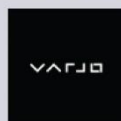| **800**	**90**	**4**	**40+**
Senior-Level Attendees	World-Class Speakers	In-Depth Streams	Interactive Demos

DIAMOND SPONSOR	**GOLD SPONSOR**	**SILVER SPONSOR**	**NETWORKING DRINKS SPONSOR**	**BRONZE SPONSOR**	**EXHIBITORS**
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Appendices

(VR) Intelligence

ZL ZeroLight

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ZL ZeroLight

Results: Total Sample

Demographic Breakdown
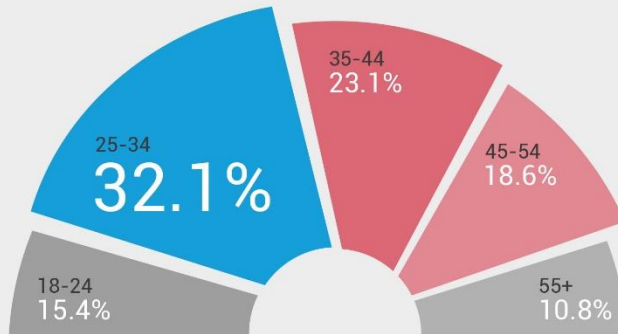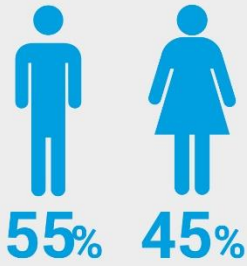
Male 55% Female 45%

- 35-44: 23.1%
- 25-34: 32.1%
- 45-54: 18.6%
- 18-24: 15.4%
- 55+: 10.8%

90.1% expect to be able to **see, design** and **select preferences** for the car prior to purchase

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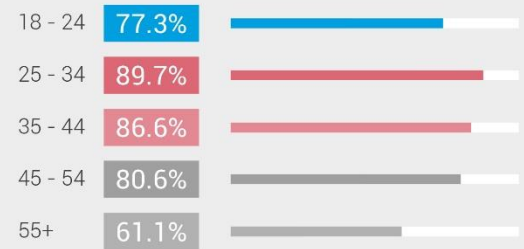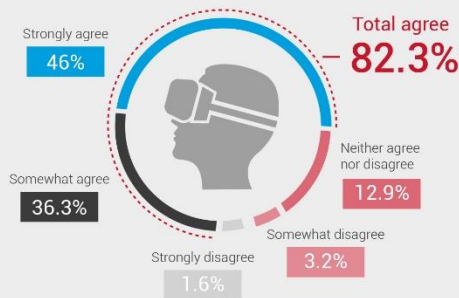I would like to **see, explore** and **configure** a car to my preference at scale **using immersive technology (VR/AR)** prior to purchase

- Strongly agree: 46%
- Total agree: 82.3%
- Somewhat agree: 36.3%
- Neither agree nor disagree: 12.9%
- Somewhat disagree: 3.2%
- Strongly disagree: 1.6%

% of those who agree within **demographic segment**

- 18 - 24: 77.3%
- 25 - 34: 89.7%
- 35 - 44: 86.6%
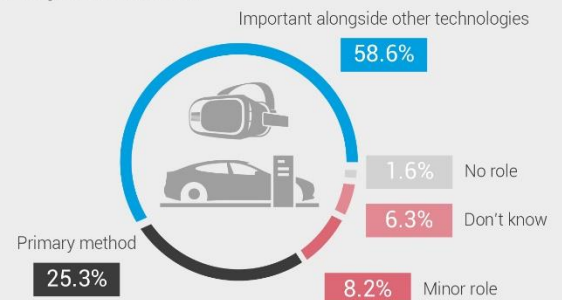- 45 - 54: 80.6%
- 55+: 61.1%

Likelihood of **purchasing** the vehicle of choice after **exploring** and **designing** in VR

88.5%

- 43.6% **Very** Likely
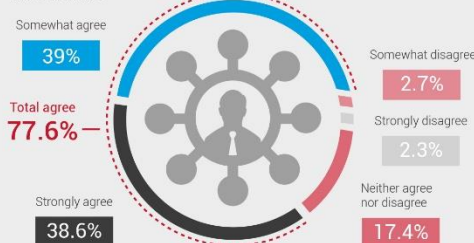- 44.9% **Somewhat** Likely

Expected role of **immersive technologies** in the **automotive** retail market **10 years** from now

- Important alongside other technologies: 58.6%
- No role: 1.6%
- Don't know: 6.3%
- Minor role: 8.2%
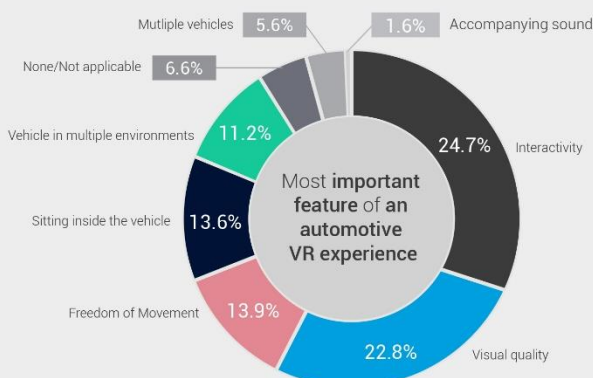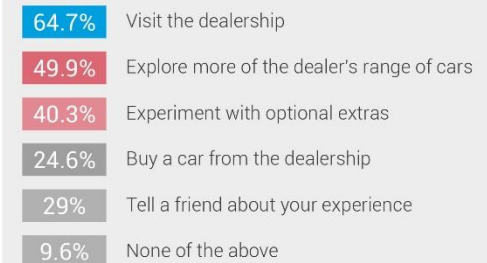- Primary method: 25.3%

Impact of **high-quality automotive VR** experience that lets you **design, interact and select preferences** in VR on the perception of **brand quality**

- 79.2% Positive
- 3.5% Negative
- 17.3% None

I would expect to feel a greater **sense of connection** with a brand when using **immersive technologies** such as **VR/AR** versus other mediums

- Somewhat agree: 39%
- Total agree: 77.6%
- Strongly agree: 38.6%
- Somewhat disagree: 2.7%
- Strongly disagree: 2.3%
- Neither agree nor disagree: 17.4%

Likelihood of **action** if a **dealership offered** an **immersive** tech experience

- 64.7% Visit the dealership
- 49.9% Explore more of the dealer's range of cars
- 40.3% Experiment with optional extras
- 24.6% Buy a car from the dealership
- 29% Tell a friend about your experience
- 9.6% None of the above

Most **important feature of an automotive VR experience**

- Multiple vehicles: 5.6%
- Accompanying sound: 1.6%
- None/Not applicable: 6.6%
- Vehicle in multiple environments: 11.2%
- Sitting inside the vehicle: 13.6%
- Freedom of Movement: 13.9%
- Visual quality: 22.8%
- Interactivity: 24.7%

Influence of **seeing a car** in different **environments** on **purchase** intent

- More Likely to purchase: 75.8%
- Less likely to purchase: 4.6%
- Would not influence purchase: 19.6%

Results: Spain

Demographic Breakdown

68.5% (male) 31.5% (female)

- 25-35: 44.5%
- 35-44: 29%
- 45-54: 12.5%
- 18-24: 8.5%
- 55+: 5.5%

97.5% expect to be able to **see, design** and **select preferences** for the car prior to purchase

---

I would like to **see, explore** and **configure** a car to my preference at scale **using immersive technology (VR/AR)** prior to purchase

- Neither agree nor disagree: 4%
- Strongly disagree: 0%
- Somewhat disagree: 0%
- Somewhat agree: 26.5%
- Strongly agree: 69.5%
- **Total agree — 96%**

% of those who both **strongly** and **somewhat agree** within demographic segment

Age Group	% Of Segment	Difference VS Total Sample
18 - 24	100%	+22.7
25 - 34	97.8%	+8.1
35 - 44	93.1%	+6.5
45 - 54	96%	+15.4
55+	90.9%	+29.8

% difference of those who agree

VS Total **Sample**

+13.7%

+ 23.5% Strongly Agree
- 9.8% Somewhat Agree

Likelihood of **purchasing** the vehicle of choice after **exploring** and **designing** in VR

99.5%

63.5% Very Likely
36.0% Somewhat Likely

% difference of those likely

VS Total **Sample**

+11%

▲ 19.9% Very Likely
▼ 8.9% Somewhat Likely

Expected role of **immersive technologies** in the **automotive** retail market **10 years** from now

- Important alongside other technologies: 66.5%
- No role: 0.5%
- Don't know: 1%
- Minor role: 2.5%
- Primary method: 29.5%

Impact of **high-quality automotive VR** experience that lets you **design, interact and select preferences** in VR on the perception of **brand quality**
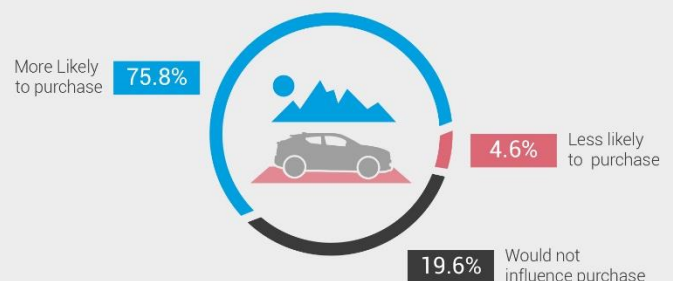
95% Positive
1.5% Negative
3.5% None

I would expect to feel a greater **sense of connection** with a brand when using **immersive technologies** such as VR/AR versus other mediums

- Strongly agree: 63.5%
- Somewhat agree: 30.5%
- Neither agree nor disagree: 6%
- Somewhat disagree: 0%
- Strongly disagree: 0%
- **Total agree 94%**

Likelihood of **action** if a **dealership** offered an **immersive** tech experience

- 77.5% Visit the dealership
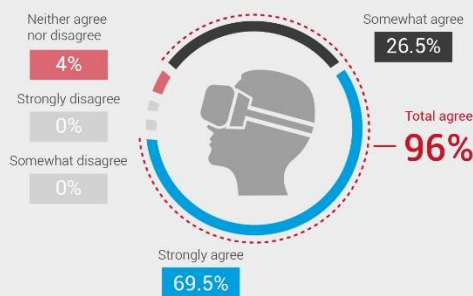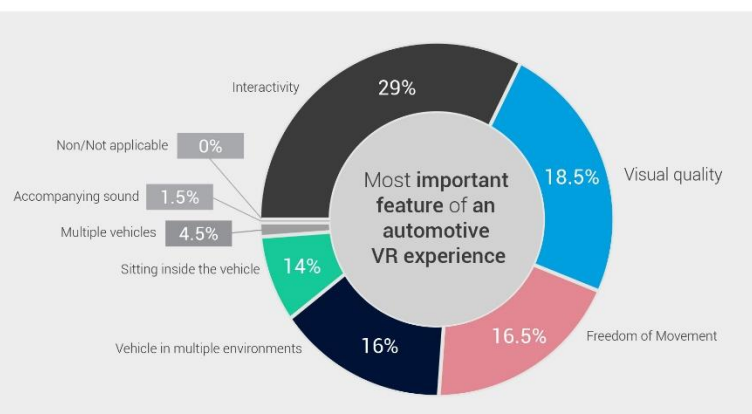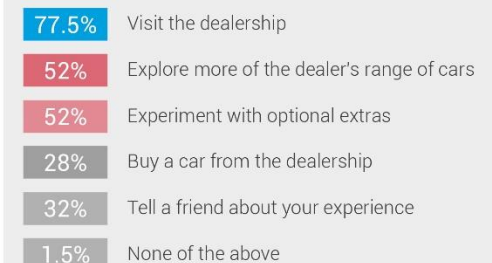- 52% Explore more of the dealer's range of cars
- 52% Experiment with optional extras
- 28% Buy a car from the dealership
- 32% Tell a friend about your experience
- 1.5% None of the above

Most **important feature of an automotive VR experience**

- Interactivity: 29%
- Visual quality: 18.5%
- Freedom of Movement: 16.5%
- Vehicle in multiple environments: 16%
- Sitting inside the vehicle: 14%
- Multiple vehicles: 4.5%
- Accompanying sound: 1.5%
- Non/Not applicable: 0%

Influence of **seeing a car** in different **environments** on **purchase** intent

- More Likely to purchase: 95%
- Less likely to purchase: 3%
- Would not influence purchase: 2%

ZL ZeroLight

Results: Italy

Demographic Breakdown
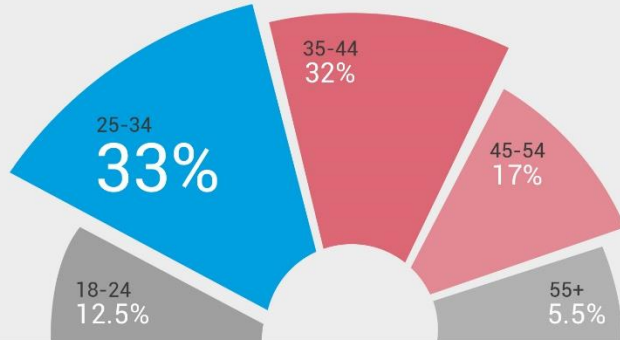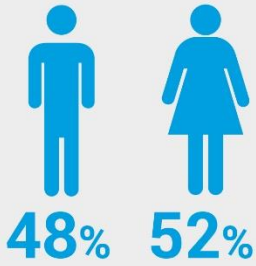
Male: **48%**
Female: **52%**

- 35-44 **32%**
- 25-34 **33%**
- 45-54 **17%**
- 18-24 **12.5%**
- 55+ **5.5%**

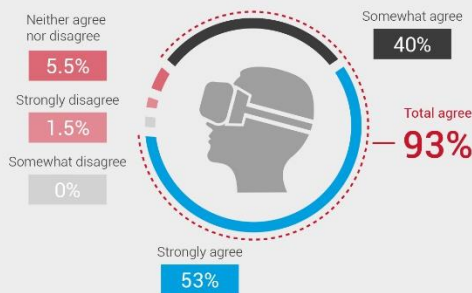**97%** expect to be able to **see, design** and **select preferences** for the car prior to purchase

---

I would like to **see, explore** and **configure** a car to my preference at scale **using immersive technology (VR/AR)** prior to purchase

- Neither agree nor disagree **5.5%**
- Somewhat agree **40%**
- Strongly disagree **1.5%**
- Somewhat disagree **0%**
- Total agree — **93%**
- Strongly agree **53%**

% of those who both strongly and somewhat **agree** within demographic segment

Age Group	% Of Segment	Difference VS Total Sample
18 - 24	88%	+10.7
25 - 34	92.4%	+2.7
35 - 44	95.3%	+8.7
45 - 54	97.1%	+16.5
55+	81.8%	+20.7

% difference of those who agree

VS Total **Sample**

+10.7%

+ 7.0% Strongly Agree
+ 3.7% Somewhat Agree

Likelihood of **purchasing** the vehicle of choice after **exploring** and **designing** in VR

95%

39.0% Very Likely
56.0% Somewhat Likely
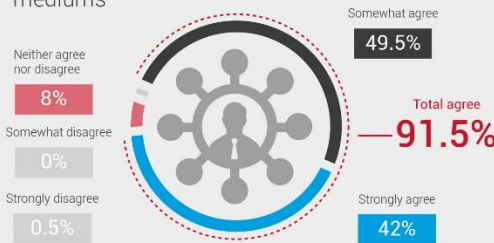
% difference of those likely

VS Total **Sample**

+6.5%

▼ 4.6 Very Likely
▲ 11.1% Somewhat Likely

Expected role of **immersive technologies** in the **automotive** retail market **10 years** from now

- Important alongside other technologies **65.5%**
- No role **0.5%**
- Don't know **0.5%**
- Minor role **5.5%**
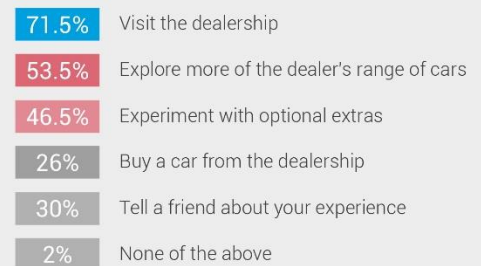- Primary method **28%**

Impact of **high-quality automotive VR** experience that lets you **design, interact and select preferences in VR** on the perception of **brand quality**
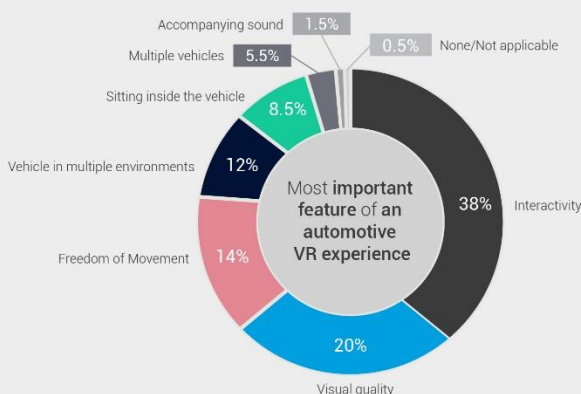
90% Positive
1.5% Negative
8.5% None

I would expect to feel a greater **sense of connection** with a brand when using **immersive technologies** such as **VR/AR** versus other mediums

- Somewhat agree **49.5%**
- Neither agree nor disagree **8%**
- Somewhat disagree **0%**
- Total agree — **91.5%**
- Strongly disagree **0.5%**
- Strongly agree **42%**

Likelihood of **action** if a **dealership offered** an **immersive** tech experience

- **71.5%** Visit the dealership
- **53.5%** Explore more of the dealer's range of cars
- **46.5%** Experiment with optional extras
- **26%** Buy a car from the dealership
- **30%** Tell a friend about your experience
- **2%** None of the above

Most **important feature of an automotive VR experience**

- Accompanying sound **1.5%**
- None/Not applicable **0.5%**
- Multiple vehicles **5.5%**
- Sitting inside the vehicle **8.5%**
- Vehicle in multiple environments **12%**
- Interactivity **38%**
- Freedom of Movement **14%**
- Visual quality **20%**

Influence of **seeing a car in different environments** on **purchase** intent

- More Likely to purchase **88%**
- Less likely to purchase **2.5%**
- Would not influence purchase **9.5%**

Demographic Breakdown

51% 49%

25-34 **39%**
35-44 **23%**
18-24 **22.5%**
45-54 **10.5%**
55+ **5%**

92%
expect to be able to **see, design** and **select preferences** for the car prior to purchase

---

I would like to **see, explore** and **configure** a car to my preference at scale **using immersive technology (VR/AR)** prior to purchase

Strongly agree **51.5%**
Somewhat agree **39.5%**
Strongly disagree **0%**
Somewhat disagree **1%**
Neither agree nor disagree **8%**
Total agree **91%**

% of those who both strongly and somewhat **agree** within demographic segment

Age Group	% Of Segment	Difference VS Total Sample
18 - 24	95.6%	+18.3
25 - 34	89.8%	+0.1
35 - 44	91.3%	+4.7
45 - 54	95.2%	+14.6
55+	70%	+8.9

% difference of those who agree **VS** Total **Sample**
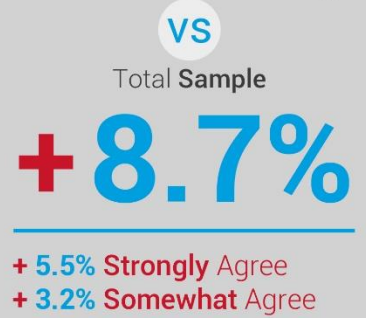
+8.7%
+ 5.5% Strongly Agree
+ 3.2% Somewhat Agree

Likelihood of **purchasing** the vehicle of choice after **exploring** and **designing** in VR

93%
49.0% **Very** Likely
44.0% **Somewhat** Likely

% difference of those likely **VS** Total **Sample**

+4.5%
▲ 5.4% **Very** Likely
▼ 0.9% **Somewhat** Likely

Expected role of **immersive technologies** in the **automotive** retail market **10 years** from now

Important alongside other technologies **52%**
No role **0.5%**
Don't know **1.5%**
Minor role **7.5%**
Primary method **38.5%**

Impact of **high-quality automotive VR** experience that lets you **design, interact and select preferences in VR** on the perception of **brand quality**

82.5% Positive
5.5% Negative
12% None

I would expect to feel a greater **sense of connection** with a brand when using **immersive technologies** such as **VR/AR** versus other mediums

Strongly disagree **0%**
Somewhat agree **46.5%**
Somewhat disagree **2.5%**
Neither agree nor disagree **13.5%**
Strongly agree **37.5%**
Total agree **84%**

Likelihood of **action** if a **dealership offered** an **immersive** tech experience

72.5% Visit the dealership
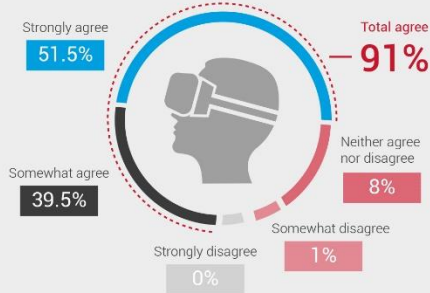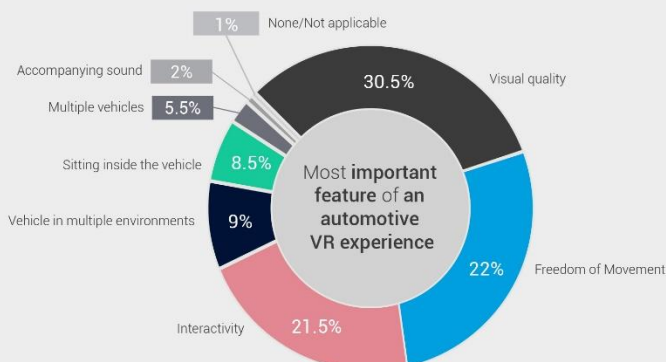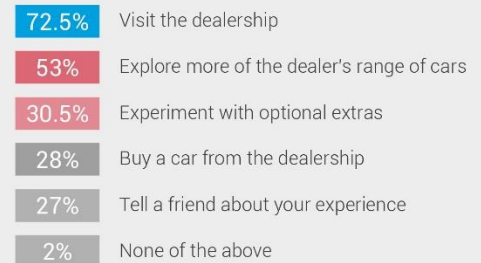**53%** Explore more of the dealer's range of cars
30.5% Experiment with optional extras
28% Buy a car from the dealership
27% Tell a friend about your experience
2% None of the above

None/Not applicable **1%**
Accompanying sound **2%**
Multiple vehicles **5.5%**
Visual quality **30.5%**
Sitting inside the vehicle **8.5%**
Vehicle in multiple environments **9%**
Interactivity **21.5%**
Freedom of Movement **22%**
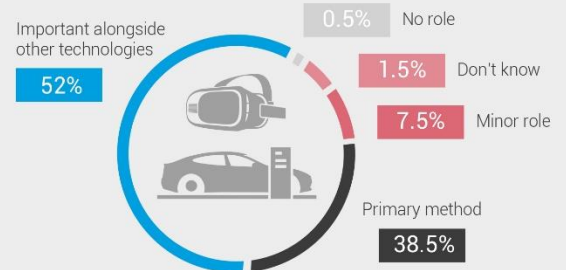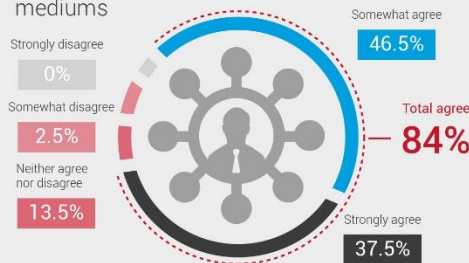
Most **important feature of an automotive VR experience**

Influence of **seeing a car** in different **environments** on **purchase** intent

More Likely to purchase **82.5%**
Would not influence purchase **11.5%**
Less likely to purchase **6%**

Results: Germany

Demographic Breakdown
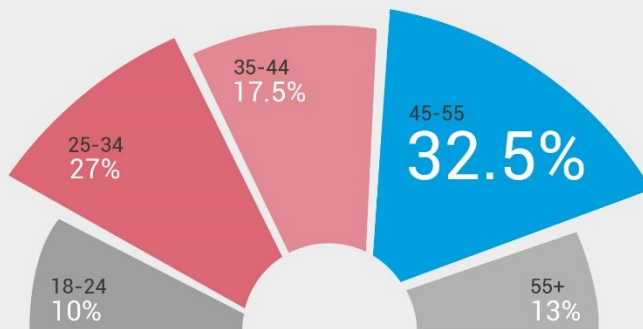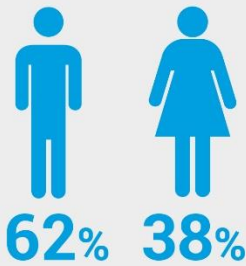
62% 38%

- 25-34 27%
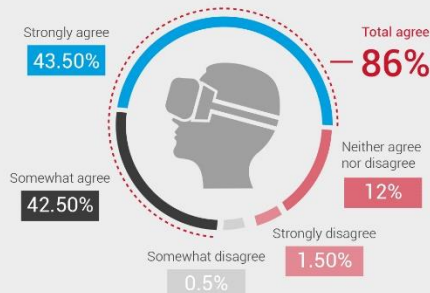- 35-44 17.5%
- 45-55 32.5%
- 18-24 10%
- 55+ 13%

90% expect to be able to **see, design** and **select preferences** for the car prior to purchase

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**I would like to see, explore and configure a car to my preference at scale using immersive technology (VR/AR) prior to purchase**

- Strongly agree 43.50%
- Somewhat agree 42.50%
- Neither agree nor disagree 12%
- Somewhat disagree 0.5%
- Strongly disagree 1.50%

Total agree — **86%**

% of those who both strongly and somewhat agree within demographic segment

Age Group	% Of Segment	Difference VS Total Sample
18 - 24	90%	+12.7
25 - 34	90.7%	+1.0
35 - 44	88.6%	+2
45 - 54	83.1%	+2.5
55+	76.9%	+15.8

% difference of those who agree
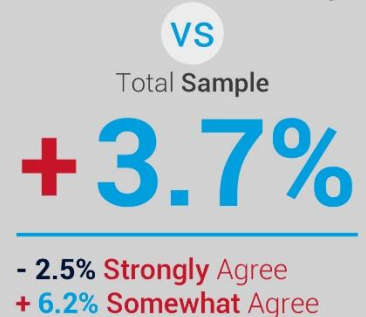
VS Total **Sample**

+3.7%

- **- 2.5%** Strongly Agree
- **+ 6.2%** Somewhat Agree

Likelihood of purchasing the vehicle of choice after exploring and designing in VR

93.5%

- 51% Very Likely
- 42.5% Somewhat Likely

% difference of those likely

VS Total **Sample**

+5%

- ▲ 7.4% Very Likely
- ▼ 2.4% Somewhat Likely

Expected role of immersive technologies in the automotive retail market 10 years from now

- Important alongside other technologies 67%
- No role 1%
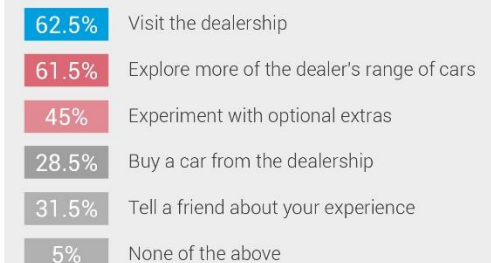- Don't know 2.5%
- Minor role 5.5%
- Primary method 24%

Impact of high-quality automotive VR experience that lets you design, interact and select preferences in VR on the perception of brand quality
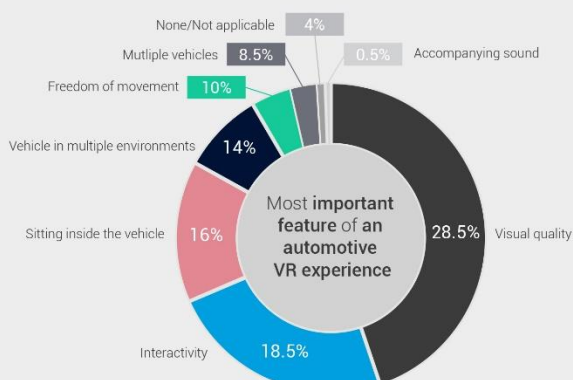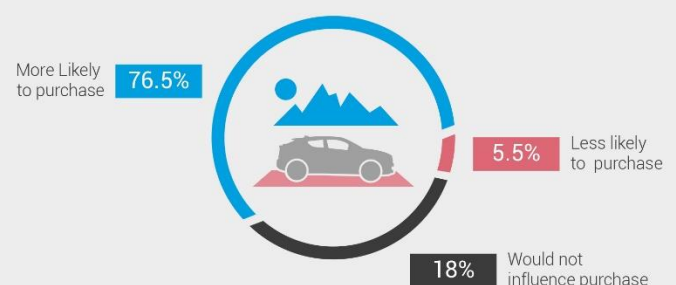
- **80.5% Positive**
- **3% Negative**
- **16.5% None**

I would expect to feel a greater sense of connection with a brand when using immersive technologies such as VR/AR versus other mediums

- Somewhat agree 35.5%
- Strongly agree 39.5%
- Somewhat disagree 1%
- Strongly disagree 1.5%
- Neither agree nor disagree 22.5%

Total agree — **75%**

Likelihood of action if a dealership offered an immersive tech experience

- 62.5% Visit the dealership
- 61.5% Explore more of the dealer's range of cars
- 45% Experiment with optional extras
- 28.5% Buy a car from the dealership
- 31.5% Tell a friend about your experience
- 5% None of the above

Most important feature of an automotive VR experience

- None/Not applicable 4%
- Mutliple vehicles 8.5%
- Freedom of movement 10%
- Vehicle in multiple environments 14%
- Sitting inside the vehicle 16%
- Interactivity 18.5%
- Visual quality 28.5%
- Accompanying sound 0.5%

Influence of seeing a car in different environments on purchase intent

- More Likely to purchase 76.5%
- Less likely to purchase 5.5%
- Would not influence purchase 18%

Results: U.K.

ZL ZeroLight

Demographic Breakdown

45.5% (male) 54.5% (female)

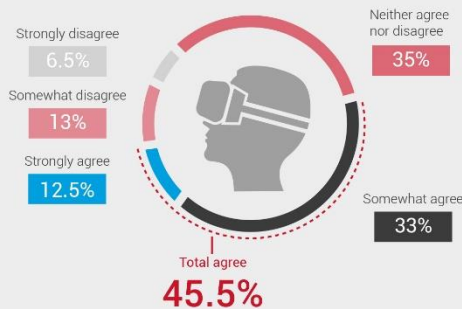- 18-24: 23.5%
- 25-34: 17%
- 35-44: 14%
- 45-54: 20.5%
- 55+: 25%

74% expect to be able to **see, design** and **select preferences** for the car prior to purchase

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### I would like to see, explore and configure a car to my preference at scale using immersive technology (VR/AR) prior to purchase

- Strongly disagree: 6.5%
- Somewhat disagree: 13%
- Strongly agree: 12.5%
- Neither agree nor disagree: 35%
- Somewhat agree: 33%
- Total agree: 45.5%

% of those who both strongly and somewhat agree within demographic segment

Age Group	% Of Segment	Difference VS Total Sample
18 - 24	40.4%	-36.9
25 - 34	61.8%	-27.9
35 - 44	42.9%	-43.7
45 - 54	46.4%	-34.2
55+	40%	-21.1

% difference of those who agree
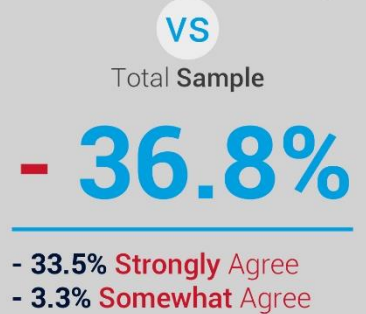
VS Total Sample

- 36.8%

- 33.5% Strongly Agree
- 3.3% Somewhat Agree

Likelihood of purchasing the vehicle of choice after exploring and designing in VR

61.5%

- 15.5% Very Likely
- 46.0% Somewhat Likely

% difference of those likely

VS Total Sample

- 27%

- ▼ 28.1 Very Likely
- ▲ 1.1 Somewhat Likely

Expected role of immersive technologies in the automotive retail market 10 years from now

- Important alongside other technologies: 42%
- No role: 5.5%
- Don't know: 26%
- Minor role: 20%
- Primary method: 6.5%

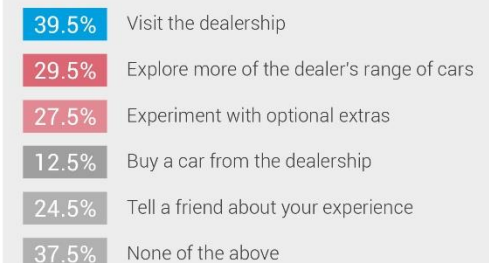### Impact of high-quality automotive VR experience that lets you design, interact and select preferences in VR on the perception of brand quality

- 6% Negative
- 48% Positive
- 46% None

I would expect to feel a greater sense of connection with a brand when using immersive technologies such as VR/AR versus other mediums

- Strongly disagree: 9.5%
- Somewhat disagree: 10%
- Strongly agree: 10.5%
- Neither agree nor disagree: 37%
- Somewhat agree: 33%
- Total agree: 43.5%

Likelihood of action if a dealership offered an immersive tech experience

- 39.5% Visit the dealership
- 29.5% Explore more of the dealer's range of cars
- 27.5% Experiment with optional extras
- 12.5% Buy a car from the dealership
- 24.5% Tell a friend about your experience
- 37.5% None of the above

Most important feature of an automotive VR experience

- None/Not applicable: 27.5%
- Accompanying sound: 2.5%
- Multiple vehicles: 4%
- Vehicle in multiple environments: 5%
- Freedom of Movement: 7%
- Sitting inside the vehicle: 21%
- Interactivity: 16.5%
- Visual Quality: 16.5%

Influence of seeing a car in different environments on purchase intent

- Less likely to purchase: 6%
- Would not influence purchase: 57%
- More Likely to purchase: 37%