WHY NOW?

When a Kickstarter from Oculus VR secured $2.5m in pledges in 2012, the technology world was turned on its head, and VR became the hottest tech on the planet. (For many, though, this hype brought with it a sense of deja vu.)

VR was an overnight success, decades in the making, and as advances in technology finally caught up with the vision and imagination of early VR pioneers, new use cases and opportunities for virtual reality began to emerge.

In this report, we hope to paint a true picture of the varied business cases for VR, by undertaking the broadest piece of business-focussed VR research to date, whilst also shining a light on how VR is being used in the real-world today.

JACK DAVIES
HEAD OF CONTENT
AT QUALTRICS EMEA

THE SURVEY

As we head towards 2019, little is known about the positive business impact that VR can have.

To help reveal what the real-world implications of using VR within your business are, Qualtrics—in association with Dell—has surveyed 500 business decision makers (BDMs) around the world during April 2018, who were either currently working on a VR project, or who had already completed one. These are the people making VR real. And our aim was simple: we wanted to go beyond the buzz, and find out the financial benefits, pitfalls, and business considerations, when it comes to implementing virtual reality within your organisation. Topics raised by our respondents included funding, planning, training, education, return on investment, and technology barriers (to name a few).

To accompany our survey, we have also conducted a series of in-depth interviews with a broad cross-section of VR experts, from artists, to agencies, to clients, and startups.

We believe that—alongside our survey results—the experts’ insight delivers the most authoritative look at the global VR industry to date.

THE EXPERTS

Six experts—covering the client, agency, startup, and developer sides of VR—share their insight and advice

CHRISTINE CATTANO
GLOBAL HEAD OF VR
FRAMESTORE

Based in New York, Cattano leads a team of highly creative minds, developing VR strategies at Framestore. With a growing roster of clients Cattano has led projects including the highly-awarded Game of Thrones ‘Around the Wall’ experience, Volvo Reality and Harrell ‘Freshcura’.

PROF. GEORGE PAPAGIANIKIS
CEO / CTO
OlarmVR

OlarmVR hopes to take virtual reality into the medical training and education space, and enable surgeons to learn their trade without the need for human cadavers. OlarmVR also reduces surgical errors thanks to better knowledge retention.

MEL SIMKISS
GLOBAL RETAIL
ENVIRONMENT MANAGER
JAGUAR LAND ROVER

Simkiss works with global franchise teams at Jaguar Land Rover to ensure that LR retailers have the support that they need to get their showrooms up to speed, as well as monitoring ALR’s global footprint.

GLEN SOUTHERN
CREATIVE DIRECTOR
SOUTHERNGFX

Southern is a freelance visual effects artist and digital sculptor based in Cheshire, England. He splits his time between his studio there and Post production houses in Dublin and London. Southern’s team now use VR for modelling, which Southern claims to be an ‘utter delight’.

SAM WATTS
DIRECTOR OF IMMERSIVE TECH
MAKE REAL

Watts has 15+ years of experience in development, e-learning and the games industry. He is currently focused on immersive tech and the benefits to learners and businesses. And on pXX of the report you can find a list of 10 lessons that Watts has learned during his VR dev.

LLOYD DEAN
HEAD OF DIGITAL AND INNOVATIVE LEARNING
EDF ENERGY

As Head of Digital and Innovative Learning at EDF Energy, Campeon, Lloyd Dean leads up a team tasked with identifying new technologies that can have a positive business impact within the company. EDF took control of the UK nuclear generator, British Energy, in 2009.

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Some of the most important work on a virtual reality job has to take place before the project has actually begun.

A VR project brings with it a number of challenges; some unique, but most shared, and revolving around the same issues, such as how to secure funding, how to get your colleagues on board with new technology, how to get people trained up, and how to find the right people to do the job!

In our survey, we found that 71% of our 500 respondents had chosen VR before scoping their project, which aligns with the 76% of respondents who said that they had chosen VR because of its ‘Wow’ factor. Add this to the fact that 61% of respondents also believed there to be a skills gap in the VR industry, and what you have a recipe for mediocrity. In these circumstances, our experts raise concerns about VR’s reputation.

WATTS: The main pitfall of VR for business is raising it in and creating an application without a clear use case or purpose, without clear outcomes and objectives defined within the discovery and design stages to be able to measure the impact against post-deployment. This is the surest way to guarantee that the hardware and associated software experience will underutilise and deemed a failure, waste of budget and that the technology is irrelevant for future use.

Without a clear problem to solve, then there are no key factors to measure the impact and success ratings against. Don’t just use VR for the sake of using VR because it’s currently a trend. Scopics are quick to claim VR is a fad or a gimmick and using it in this way is the best way to quantify their claims.

CATTONO: There are different challenges for different projects. I think one of the big challenges is purely that it’s new. Development requires iteration and testing, sometimes throwing out things you thought were great and then starting from scratch, and developing new technical solutions on the fly. Most companies are still figuring out (or not even thinking about yet!) how this technology can solve business problems for them in new ways.

If you’re experimenting with it, we often see there isn’t yet the proper infrastructure and investments to really move the needle. I’m confident this will grow, especially with the AR boom.

DEAN: If you’re working in an emerging technology, you can often have members of your team that aren’t in the same headspace they might have focused on one kind of technology, and being that comfort zone where people can be harder to bring along with you. So we rolled out an initiative called Freedom Friday. The idea behind this was to block out time on a Friday, where we turned off external comms, and we were able to research new learning technologies and share them internally.

SOUTHERN: Ensuring my entire team had the correct hardware was the first thing we did when we started planning our VR implementation. After we had our VR capable machines and the relevant rig it was really just a matter of time to get everyone comfortable in the VR modelling workspace. The core modelling technology in Medium is V-Ray rather than subdivision modeling and that is a huge change in itself. The main different is that giving high resolution surface detail is a challenge that the feedback, and then write a new spec for what something we’re going to keep using, because retailers do see the benefit of it, but we also need to evaluate what’s changed over this two-year period.

DEAN: What’s important to is how this technology supports our team. Our team was attending conferences, networking reading posts, swotting up on new tools. We were doing all of these things, and as the tech matured, we then moved the work we were doing into a proof of concept. We found very distinct business problems, and worked on those. So when a new real business issue arose, we could act.

SIMKISS: We’re coming to the end of our initial two-year VR project now. We ran for two years, which means the people that contributed to the initial project might not feel like the money has been spent and that there is a business case for it. So we’re really getting the work out in the field, and then write a new spec for what we’re going to do next with VR. It’s definitely something we’ve going to keep using, because retailers do see the benefit of it, but we also need to evaluate what’s changed over this two-year period.

DEAN: There’s also a disconnect between the funding, currently available for VR in the UK, and actually getting it into the hands of the people that can use it. For example, if we want to engage with Innovate UK, they are not proactive. Also, anecdotally, what I’ve found is that some of the bigger technologies, they aren’t actually interested in investing unless it’s a large amount of money–they want big projects. But when we go back to how we implemented VR, we didn’t start with one massive, huge lump sum. It was small iterations. And I think that’s where the likes of Innovate UK are missing a trick, if I’m honest. It’s a fundamental problem.

WATTS: The other main issue is the disparate gulf between US and EU funding and access to knowledge and finance outside of the Silicon Valley cluster. Slowly local government schemes are getting on-board to assist startup companies and allow ideas to flourish, enabling non-US companies to become heavy hitters, too.
LESSONS LEARNT WORKING WITH EDF ENERGY

Many lessons were learned from deploying a range of immersive technologies for EDF Energy and other clients, and here Make Real’s Sam Watts provides a rundown of advice for other businesses looking to work with VR.

1. **Start Small**
   - Begin with a small budget—that is more acceptable to those who have financial sign-off—to create a prototype or proof of concept piece of content that has one or two clear business objectives, or learning outcome goals defined.

2. **Collaboration is Key**
   - Everyone likes to feel involved, and when they are, you are likely to meet less resistance further down the development path. This is especially true when dealing with new technologies that people may not be aware of or sure of, creating mental barriers to deployment and success.

3. **Determine How to Scale**
   - A single deployment will only ever be treated as a test or a prototype. Once a solution can scale effectively and within reasonable cost, then it will be considered a product and given the due respect and authority to grow within a company.

4. **Engage as Many Stakeholders as Early as Possible**
   - New projects and new technologies gather interest from all departments, even if they are not 100% related to the client key stakeholders associated with sign-off and review. By spending the time bringing more peripheral stakeholders onboard, new avenues of opportunity open up as minds begin to understand the possibilities and benefits, and barriers to adoption are broken down once any fears are removed and understanding is increased.

   - This is especially true if the client has internal departments who are technically and theoretically aligned to the product, such as a learning and development department, or innovation lab, or learning technology specialists.

   - By working with and involving them early on, it is possible to avoid any pushback through fear of impeding on their area of responsibility or taking away their control and purpose.

5. **Be Prepared for the Unexpected**
   - Both the development and deployment of a VR project can throw up interesting issues, and factors that can’t be foreseen during design or initial scoping. Ensure that everyone involved is aware, and has a reasonable amount of acceptance that there will be learning along the way.

   - This is especially true if working on prototypes or proof of concepts that commence by utilizing development kit hardware before the final, commercial units are available.

6. **Keep It Simple**
   - In terms of design, development, deployment, setup, operation and ease of use, always bear in mind the unknown end-user, either the learner or the instructor / facilitator, and their technical abilities and knowledge. This makes the technology as invisible as possible and allows the learning content to shine through and serve its purpose.

7. **Determine Success Metrics Early**
   - It’s a lot easier to implement tracking of user data and input at the design phase rather than trying to shoehorn it in at a later date. This also applies to any supported or required learning content standards, such as SCORM, in order to be able to integrate into a learning management system, either directly or through CSV output.

8. **Design for All Levels of User**
   - The majority of people haven’t tried a full VR system, though some may have briefly seen a 360º film on a Google Cardboard; but they will already have a pre-conceived perception of what the technology can (and can’t) do. You should ensure that there is a tutorial in place at the start of each experience, which covers the necessary elements to allow a user to fully interact with the learning content (which can also be skipped if so desired).

9. **Use Business Hardware**
   - Most VR hardware manufacturers offer business editions of the headsets and systems. Whilst priced higher than the consumer units, push for their inclusion as part of the final deployment with the procurement team, to ensure longer term warranties and support options are available to the client to cover any future eventualities or faults.

10. **Be Excited**
    - If you are positive and excited about the technology and the possibilities it offers, then the client will be too. If your business revolves around the wider adoption of the technology, play the long game and ensure that users come away with positive thoughts about the potential uses rather than promising unrealistic outcomes that lead to disappointment and disinterest in the short term.
COST & BENEFITS

Judging the cost and benefits of a VR project are critical for sustained success.

As our table opposite shows, the budgets for a VR project can be significant, and the potential benefits can often be overlooked by these looming costs. In short, the risks are just too great. Here, though, our expert panel sheds light on why VR has had a positive impact on how they operate.

SOUTHERN: VR has been hugely positive for us. We are now delivering workshops in VR sculpting in Europe and the UK. We have done several client reviews inside VR. As you can invite a second user into the VR world, we are able to direct and review models and assets.

WATTS: Feedback from EDF Energy suggested that over the suite of learning products deployed at Cannington Court for its one day course—replacing the PowerPoint slide presentation format with VR-based training—training time for the main course content has been reduced by two hours on average. With the additional complementary, gamified learning VR experiences, the assessment scores have increased from 50% to 75% on average. Across 16,000 employee learners (approximately) this is a huge saving and benefit to the company across all departments.

SINKEVITZ: One of the questions we asked of retailers was whether they thought it was good value for money, and delivered a good return on investment? We had 49% of people saying that it was good value for money, because we did our best to make it affordable. If you look at what we had for our first VR work, spending hundreds of thousands of pounds per vehicle, and then a £50k investment from the retailer, the £49k cost of our later system made it much more viable.

CATTON: We’re a services based company, so of course profit is important, but I think everyone’s taking a longer term view. Leasing tool building and efficiency is also incredibly important to us. For our clients, we’ve just turned a corner where people are talking about profit, but there’s still a lot of VR being used for marketing/props/PRI purposes. We’re also starting to see a lot of products being developed (for profit) outside of the entertainment industry - especially in healthcare.

PAPAGIANNAKIS: We received seed capital funding from the PJ Tech Catalyst VC fund in Greece, and so far we are measuring qualitative outcomes from interviews based on all our early adopter trials, permanent installations around the world, demonstrations, clients and partners. We are still only one year and a half in this journey, but we are extremely excited from the feedback so far and optimistic for the near future. For us VR surgical training will eventually take place alongside VR flight simulators and become mandatory for training the next generation of physicians.

DEAN: One of the interesting things about this sector is commercialisation. We’ve had a lot of interest within the energy sector in the VR training that we’ve done around the UK and the UK. We have done several workshops in VR sculpting in Europe and the UK.

WHAT IS THE BUDGET FOR VR ACTIVITY?

Source: 'Making VR Real' survey of 500 business decision-makers (April, 2018)

Just over 25% had a budget of $100-$250k for VR activity.

Why are business decision makers choosing VR?

We choose VR because it offers benefits that no other medium did

Source: 'Making VR Real' survey of 500 business decision-makers (April, 2018)

Assessment scores have increased from 50% to 75% on average.
As part of its 2018 survey, JLR spoke to 2,500 retailers, asking about the sales impact of VR. This is what they had to say.

**CUSTOMER FEEDBACK**
- 50% felt the experience was exciting and fun
- 42% saw it as innovative and on-trend
- 33% saw it as being informative, engaging and intriguing
- JLR now knows that customers are comfortable using VR in the retail environment
- 83% were more educated about the vehicle after using the experience
- 85% keen to use the experience

**RETAILER FEEDBACK**
- VR experience contributed to the JLR brand credentials in a positive way, driving “premiumness” in innovation, technology, performance, design and craftsmanship forward
- 88% quality was excellent or good for both augmented and virtual
- 50% saw the VR experience added value to the sales process and 43% advised that VR would add value to the sales process if it contained a configurator
- 50% appreciated the benefit of VR, and 31% saw the kit as good value for money, offering a good return on investment—although 50% still believed it was too expensive

**CASE STUDY**

Lloyd Dean of EDF Energy explains how VR had a positive business impact.

We had an incident in 2015 at the Hinkley Point B power station, where someone was undertaking a scheduled safety test. There was a degloving incident, where the person in question lost the flesh and skin from the fingers of one hand. An in-depth investigation was set up as a result of the accident, and the business owners at the power station found a disproportionate amount of “lost-time” incidents in training—too many of these, and everyone working in the station has to undergo fresh training, costing the plant significant amounts per-hour.

The station director approached our team, and we scoped out the project, to identify what the problem actually was. Having identified the issues, we looked at the potential of using VR. We then worked with an agency to help create a training app. We’ve calculated the return on investment, and in the last year the reduction in health and safety costs, associated directly with our VR training, reduced by £90k. The lost-time incidents in training—which was what got our team involved in the project—reduced significantly as well. And we are rolling this project out to multiple power stations across the country.
WHERE DO YOU SEE THE FUTURE FOR VR IN BUSINESS?

CHRISTINE CATTANO
GLOBAL HEAD OF VR
FRAMESTORE

Obviously, Hollywood and entertainment is a big part of the picture for us. Personally, I’m excited about how VR can be used in areas like education and healthcare. We’ve been dabbling a bit here - but some of the products and R&D projects that are currently out there are pretty mindblowing, I think those are the types of things that will start to move the needle for the general public on the true potential of AR and VR tech.

GLEN SOUTHERN
CREATIVE DIRECTOR
SOUTHERNFX

Everyone is very positive and excited by what is coming in the future. My team and I firmly believe that VR is only a stepping stone to full MR and AR so things can only get better. Add to that VR backpack and wireless HMDs and it just keeps getting more exciting. I get very badly VR/motion sick playing VR games so I thought I’d not be able to take part in the VR revolution. VR sculpting has firmly changed my stance on this and with high resolution, high frame rate HMDs arriving, things will just improve at a phenomenal rate. Incredibly exciting times for designers.

PROF. GEORGE PAPAGIANNAKIS
CEO / CTO
ORAMAVR

The evolving healthcare climate will almost certainly require educators and administrators to cooperate to make the best use of their resources. The experience with simulators confirms that hospitals that support their use will recoup that investment by reducing time in the operating room and improving patient outcomes. Just as laparoscopic simulators took some time to be validated, VR orthopaedic simulators will reach that point as well.

LLOYD DEAN
HEAD OF DIGITAL AND INNOVATIVE LEARNING
EDF ENERGY

There will be some training teams who haven’t thought of how they might use VR yet. And there will be some teams, like ours, who have followed this journey for a longer period of time, and understand the developments being made in the market, and how they can be applied to training. However, what I see at most of the VR conferences that I attend is people working in marketing and social, where VR is being used predominantly because it looks cool. But when you then ask them how VR helped to deliver against an objective, you realise that those teams are using VR for the sake if it, rather than as a tool for business growth and development.

MEL SIMKISS
GLOBAL RETAIL ENVIRONMENT MANAGER
JAGUAR LAND ROVER

Having VR more integrated into the sales process is something we need to work on for future projects. What would be great is a customer comes in, having configured the car at home, and they are then issued a code which we can use to demo the car they’ve configured using VR. Then we can help them order it, there and then, in the showroom. We’re a way off just now, but ultimately that’s the goal. We also need to have something that is more configurable. We never initially wanted it to be a full configurator, but what we’ve learned is that customers actually want to see how a car will look with a full configuration, that they’ve maybe worked on at home.

SAM WATTS
DIRECTOR OF IMMERSE TECH
MAKE REAL

The challenge is always to go beyond initial expectations and especially with VR, it’s easy to illicit the Wow Moment (such as revealing the true scale of the nuclear power reactor circuit at the end) but now VR-based learning content needs to be measurable and ensure it has meaningful impact and long-lasting use cases and value. Creating content, aligned to hardware advances, that lasts longer than 5 minutes that a learner is going to want to be immersed in for periods of time, is the key factor to advancing the wider adoption of the technology. Beyond gaming, VR will have the biggest impact in the simulation, training, learning and development sectors where virtual environments will allow learners to fail safely without posing risk to day-to-day operations. Many people look to understand how they could make money from VR, whereas the question they should be asking themselves is how can VR save them money?

WHERE DO YOU SEE THE FUTURE FOR VR IN BUSINESS?
TOP TECH

In this section, we focus on the platforms and hardware currently driving the new wave of developments in virtual reality.

And whatever your views on the predisposition of the mainstream media and critics to fan the kooky headlines and ‘plugging in’ elements of VR, it is these subjects that also concern those at the most serious end of VR usage.

Of our panel of 500 business decision makers who have worked in the VR field, we found that 52% still view VR as “emerging technology”, with 32% also saying it was too costly.

And when we turned our attention to our panel, they shared some similar misgivings, but their responses also highlighted that VR can go from being seen as ‘established’ to ‘emerging’ technology, depending on the industry that you’re operating in.

HERE’S WHAT OUR EXPERTS HAD TO SAY ...

CATTANDO: “Right now there’s a big difference in the type of content that’s supported across all the different headsets out there, which can make it really challenging (and often expensive) to create content that maximises each platform’s individual capabilities. Some of the best, most immersive experiences, are some of the least accessible for a home consumer.

This is being addressed to some degree by location-based experiences, but more often than not we have clients asking us to design and develop an experience that is accessible from mobile all the way to location-based entertainment (LBE), and in my opinion, they’re totally different canoises.”

PAPAGIANNAKIS: “Whether it’s selling into an implant company, or selling and executing new programs at teaching hospitals, the VR hardware is still under development. This can make the already long sales cycles for enterprise technologies even longer, and good sales tactics are critical. Also VR hardware still lacks an ‘iPhone moment’ and the evolution of VR at lower cost, hardware still lacks an ‘iPhone moment’ as devices are still cumbersome, of low resolution and not long-lasting, and good sales tactics are critical. Also VR hardware still lacks an ‘iPhone moment’ as devices are still cumbersome, of low resolution and not long-lasting, and even when they are used they can be quite expensive.”

SIMPSON: “One of the things we knew was that customers felt a little bit intimidated, so we made something a little smaller. We used a Samsung GearVR headset and an Oculus GearVR headset, combining AR and VR. We used AR to give a functioning geometry to work with beyond VR. We then found Oculus Medium on the Rift, and we have pretty much stuck with that since then. So we were able to decide on tech fairly quickly, but we were lucky. I still think that the cost of implementing VR is the biggest barrier. Once you get past the peripherals, you still need to invest in hardware that’s good enough to run them, and in our case we can also pay thousands for software.”

WATTS: “We are only within the second year of commercially available VR hardware devices and there are current shortcomings associated with each platform. As a result, VR should have champions internally who are able to setup and operate the hardware, ensuring that the currently immersed learner who has had their senses taken over is not a danger to themselves or others back in the real world.”

USING VR 41% ENCOUNTED TECHNOLOGICAL PROBLEMS.

Remember to look at all the areas of your project when scoping, including whether it will require training.

WATTS: “We tend to scope a project, and then choose the right tools for that particular job. Make Real has deployed eight learning products since 2014. Three are specifically VR-based, either using HTC Vive or Oculus Rift + Touch. HTC Vive was used originally for “Reactor Builder”, as at the time it was the only commercially available, low-cost hardware that provided tracked input controllers. Now that the Oculus Rift supports the Oculus Touch controllers, this VR system is our preferred choice, thanks to ease of setup, part of our deployment process includes in-depth training of how to setup, operate and breakdown the VR hardware effectively and we have to consider the technical knowledge and capabilities of all potential employees who may have it.”

DEAN: “I think that VR is 98% ready as a consumer product, and I wouldn’t class it as emerging. For me, then, the biggest challenge of introducing VR into your business isn’t the technology. If you have one person acting as your VR thought leader, how do you form a team around them? What is the culture of that team? It’s those questions that are more critical, if I’m honest.”

SOUTHERN: “The first app we looked at was Google Tilt Brush, which we liked, but it didn’t give us the functioning geometry to work with beyond VR. We then found Oculus Medium on the Rift, and we have pretty much stuck with that since then. So we were able to decide on tech fairly quickly, but we were lucky. I still think that the cost of implementing VR is the biggest barrier. Once you get past the peripherals, you still need to invest in hardware that’s good enough to run them, and in our case we can also pay thousands for software.”

WE ASKED WHAT PEOPLE’S MAIN CONCERNS ABOUT VR WERE ...

36% say there are too many competing products
52% say it’s still an emerging technology
1 in 3 say it’s too costly to develop VR projects
44% say too few consumers own VR-enabled devices

WE CHOSE VR BECAUSE IT IS CURRENT”

Our experts had concerns that VR was being used for its buzz factor, especially within the marketing industry. And our survey showed that buzz plays a major role in VR being employed.
The world of virtual reality still appears to be one of contradictions. Many people working in VR are vocal about no longer presenting it as emerging tech, yet more than 50% of those that had worked on a VR project viewed it as just that: emerging.

Elsewhere, we discovered that four out of five survey respondents said that they chose VR because of its buzz factor. Viewed in isolation, you can see why some businesses may be put off using VR in any serious capacity by statistics like these.

However, once you move beyond these questionable use cases, you discover that VR is contributing a huge amount to the economies of those countries we surveyed. On a single training project, we saw how VR helped reduce costs by £90k. Elsewhere, we learned that 67% of businesses that undertook a VR project said it was a commercial success. And 27% of the 500 BDMs we surveyed said that VR offered something beyond ROI: it was unique in being able to deliver an experience no other technology could.

The ‘Making VR Real’ report showcases the potential of virtual reality in 2018, and provides a unique insight into one of the world’s most innovative industries.