



The Reality of Enterprise XR

Tracking the trends, applications and benefits of virtual, augmented and mixed reality technologies across industry

By Thomas Wallis

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CONTENTS

1.	Trends and opportunities: What's happening in XR for enterprise?	4
1.1.	The areas with the highest demand are already pretty clear	4
1.2.	You don't have to create products to generate value	5
1.3.	The language you use can open new opportunity	6
1.4.	Standalone experiences are no longer the end goal	6
1.5.	Rethink your problem statement to create something new	7
1.6.	You might need to think beyond consumer headsets	7
1.7.	Real world applications of XR might surprise you	8
1.8.	Finding opportunity	9
2.	The 5 best ways to secure buy-in, demonstrate benefits and scale deployments	10
2.1.	Walk on the dark side... and act more like an accountant	10
2.2.	Don't try to win the argument, build relationships instead	11
2.3.	From proof of concept to XR at scale... Wait, you missed a step	12
2.4.	Move fast	12
2.5.	Don't spend time looking around for massive success stories, most of them are secret	13
3.	Top 10 insights on the place of XR in training and onboarding	14
3.1.	Direct cost savings aren't the only way to demonstrate value	14
3.2.	XR isn't the complete answer, so don't replace everything just yet	15
3.3.	Don't try and sell VR training to your CEO, it won't work	15
3.4.	We use 'XR' for a reason; think beyond just VR	16
3.5.	XR will reduce risk for your workers	16
3.6.	If you're going to invest in XR, don't do it half-heartedly	17
3.7.	Physical training centers cost a lot of money to run, and they usually require people attend in person	17
3.8.	New tools will help retain your workforce	18
3.9.	Repeating effort is a fast way to lose money	18
3.10.	XR can allow you to deliver training at the point of need	19
3.11.	XR for training and onboarding summary	19
4.	How is XR impacting design and visualization across enterprise?	20
4.1.	Having to describe things will seem odd in the future	20
4.2.	Consumer headsets are great, but professional headsets are here now	21
4.3.	Unreal for fidelity, Unity for speed	21
4.4.	The future will be driven by the mundane	22

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INTRODUCTION

To be the best, you need to learn from the best.

This is the mantra behind everything we do at VR Intelligence. It's why we invite you along to our VRX events each year to meet with the real leaders at the forefront of the development and application of XR technology across industry.

It's your chance to gain insight from those at the bleeding edge of virtual, augmented and mixed reality. The only problem with having so many talented individuals in one place, and for only a few days, is that you can't take everything in.

In this paper you will find the key takeaways from our most recent VRX conference, held at the tail end of 2018 in San Francisco.

Featuring insights from some of the speakers at the event, this paper covers some of the trends and opportunities, applications and benefits, as well as tips on how to build your own XR business case, and contains valuable nuggets of truth to help you get ahead in the XR game.

We hope you enjoy this paper. For more information on the upcoming VRX events in H1 2019, visit the links below or contact Pete Carkeek on pcarkeek@vr-intelligence.com

Upcoming VRX events, H1 2019



(VRX) | **IMMERSIVE ENTERPRISE**
VRX Conference & Expo
April 10-11, 2019 | Amsterdam, The Netherlands



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Conference & Expo
May 21-22, 2019 | Revere Hotel | Boston, USA

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“Opportunities for companies... to use XR technologies to drive real business benefits are becoming ever more evident”

1. TRENDS AND OPPORTUNITIES: WHAT'S HAPPENING IN XR FOR ENTERPRISE?

Opportunities for companies across almost every industry to use XR technologies to drive real business benefits are becoming ever more evident. The potential immersive technologies have to transform training, collaboration, design, manufacturing and marketing across industry are nothing short of incredible.

For vendors and suppliers developing XR tech and solutions today, this presents unprecedented opportunity. Whether developing new VR, AR or MR applications or hardware, or delivering a market offering that's already live, finding customers and making money in the enterprise is currently far easier than with consumer applications.

Within this chapter you'll gain front-line insight from leaders and analysts in the field, including:

- Allan Cook, Digital Reality Business Leader at **Deloitte Digital**
- Connor McCollough, Product Architect for Innovation and Business Transformation at **GE Power**
- Lorenz Schweiger, VR Strategy at **Audi Business Innovation**
- Ricardo Rodríguez, Global Virtual Design and Construction (VDC) Specialist at **BASF**
- Ross Neumann, Head of Partnerships at **Lowe's Innovation Labs**
- Stephanie Llamas, VP of Strategy and Head of XR at **SuperData Research**
- Urho Konttori, Founder of **Varjo**

1.1. The areas with the highest demand are already pretty clear

For XR providers, generating demand is possible, however it's also costly. The marketing spend alone can rack up as you set about convincing your target audience to invest in what you have to offer. However in the enterprise there are already clear frontrunners when it comes to demand. As Stephanie Llamas, VP of

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Strategy and Head of XR at SuperData Research explained, “Where are the places that you’re actually going to be able to find your consumer, as a supplier? It’s been pretty clear that healthcare and education are the key drivers for this industry”.

However that doesn’t necessarily mean you’ll want to jump right in to developing education XR applications, as these areas also boast the largest supply. In fact, SuperData found that 52% of global suppliers to the VR market were operating in education in 2018. For Stephanie Llamas, that might well mean considering other options when it comes to carving out a niche that can deliver revenue, “When you think about where you go as a developer, think about where no-one else is going... Education has a huge supply [in XR]... Is that where you’re going to jump in first? Maybe you want to jump in to somewhere that has a little bit less [supply] and a little bit more demand”.

At VR Intelligence, we’re also seeing a big uptick in interest and activity from across enterprise sectors including industrial manufacturing, AEC, automotive and retail / CPG. Depending on the applications being considered, there is certainly an appetite across all these sectors for knowledge and examples of how the successful implementation of XR technologies can help reduce costs, increase productivity and improve business outcomes.

1.2. You don’t have to create products to generate value

Many enterprises know they must act in order for their business to not fall behind in the XR race. However these same organizations often don’t know where to begin. Allan Cook, Digital Reality Business Leader at Deloitte Digital said, “We did work with one of the big telco hardware providers looking at AR field engineering, and they had over 100 different use cases... We showed them which ones were viable today. What we showed them was that with an \$8-12 million investment over the next two years, they could have a cost avoidance of between \$55-92 million over five years. They would get payback in under 11 months in that kind of engagement”.

When you think of XR in these terms, a significant revenue opportunity for many in the industry rests in the knowledge they already have; advising and guiding the enterprise on the most lucrative opportunities.

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1.3. The language you use can open new opportunity

An interesting take away from Cook at VRX 2018 was that a simple flipping of language can open up entirely new conversations with different stakeholders within the enterprise. He said, "What we have found is that if we change the wording from 'learning' to 'safety and compliance', we all of a sudden get a completely different audience and a completely different price point". While the output may be largely the same, the value proposition is entirely different. Rather than telling the enterprise they could do things better with XR, the conversation starts to revolve around the risk factors that you are removing through XR implementation.

1.4. Standalone experiences are no longer the end goal

When XR first became a viable opportunity for the market, many scrambled to create something that would deliver a tangible benefit or return on investment. Certainly we have seen any number of successes over the past few years, as well as some notable failures. The majority of these might now be considered proof of concept projects – even if that wasn't the initial intention. The thirst within enterprise today is for XR to be far more strategic.

Allan Cook commented, "Our clients are no longer asking for standalone, shiny digital reality experiences. What they now want is the connection to the ERP systems. How does it run on cloud? What are the AI components? What kind of machine learning can we put into this?" Cook's view is that this is the way companies like Deloitte and many system integrators will move into the XR market in the near future.

Connor McCollough, Product Architect for Innovation and Business Transformation at GE Power said, "The platform approach conceptually is spot on... When you start going and building PoCs, you create a bunch of one-offs and executable Unity projects and quickly realize that you just invested everything into that one little pocket of work... but thinking first about more of a platform approach... makes our business stakeholders feel like it's a real product, because it is".

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1.5. Rethink your problem statement to create something new

A wider creative solution perhaps, but nowhere is this more applicable than XR. Many of the XR projects being created today are incremental improvements to problems that have to a certain extent already been solved, rather than a demonstration of how technology can be used to fundamentally reimagine.

Allan Cook explained, “If I asked you to build a new alarm clock... thermometer or vase, I would kind of limit what the answers would be. If instead I asked you: How about doing a better way to wake up in the morning? What’s the best way for me to show flowers? How can I control temperature better? I think what you would then see is completely different answers to the questions. As we move into this new technology, we can’t be asking the same questions and then expecting different answers”.

1.6. You might need to think beyond consumer headsets

Consumer headsets, such as the HTC Vive and Oculus offerings, have been fantastic in their ability to spark an entire industry. However, even as we close in on the second and third generations of this technology, consumer tech is somewhat limited compared to what could be achieved with professional grade equipment. Urho Konttori, Founder of Varjo, commented, “You will rarely see [consumer tech] companies investing in professional products because they are all about scale”.

He continued, “If you want to create an illusion where you cannot tell apart what is real and what is virtual, video see-through technology is by far the best way to do that.” But for Urho’s money, there isn’t currently a consumer headset on the market that can achieve that desired effect.

Especially if you’re working in an area where optics are crucial – perhaps remote visualization of real-life locations to assess risk, or if you’re marketing luxury consumer goods – even the two OLED panels of the HTC Vive might not be adequate.

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1.7. Real world applications of XR might surprise you

In recent years, many in the industry have been talking about education and training in the enterprise. It's not surprising, as recent studies have shown more than a 15% increase in information retention for immersive head mounted displays, when compared to desktop displays (Krokos, Plaisant and Varshney, 2018).

However, the scope of development has by no means been limited to purely this arena. For Ricardo Rodríguez, Global Virtual Design and Construction (VDC) Specialist at BASF, his use cases for XR implementation in construction are fourfold:

1. Showcasing a product for marketing or a sale
2. Learning and training, both internally to make people more competent with the portfolio, and externally to engage third parties in the supply chain
3. Analytics to determine how behind or ahead you are against plan and interacting with logistics
4. Quantity measuring to improve estimate accuracy

“With AR technology reaching maturity, the future is incredibly bright in the XR world”

If you have been paying attention in recent months you will have seen how luminaries such as Lorenz Schweiger, VR Strategy at Audi Business Innovation, are using VR to give potential customers the opportunity to sit in the driver's seat of Audi's high-end vehicles, without the need for an increase in stock. But for different products, a seemingly similar use case: at the highest level that of making a product tangible without physically building it, will have a dramatically different implementation.

Lowe's, for example, use AR to bring their kitchen and bathroom offerings to life, as Ross Neumann, Head of Partnerships at Lowe's Innovation Labs explained, “What AR does for us that VR doesn't do, is it marries the context of the home with the actual product whether you're in the store or not. When you're in the store you have the product, but not in the context in which it will live... We saw AR as an opportunity to help customers really see the kitchen or bathroom they are paying upwards of \$50,000 for... It's extremely rare that contractors and suppliers in our industry offer that service”.

With AR technology reaching maturity, the future is incredibly bright in the XR world. As Rodríguez commented, “As you collect more and more information from professionals... especially through AR applications... having the ability to extract that and deliver it to another individual will be exponentially useful”. Although this partially

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brings us back to training, the notion here is that in future users could not only learn by doing, as they are successfully today in VR, but they can learn through what *others* are doing, through innovative AR implementation.

1.8. Finding opportunity

The XR opportunity in enterprise is real. But much of the low-hanging fruit has already been plucked. As technology continues to mature, those pushing the industry forward are rethinking strategies to take a more considered approach through platform creation (rather than mere tactical PoC project execution), attempting to open conversations to new areas of business, and considering what it means to deliver a professional-grade XR solution. An entire area of the industry – XR consultancy and enablement – is today delivering impressive revenue generation for those who demonstrate supremacy in the field; lighting the way forward for the enterprise.



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2. THE 5 BEST WAYS TO SECURE BUY-IN, DEMONSTRATE BENEFITS AND SCALE DEPLOYMENTS

The enterprise C-Suite. Historically, they have been the scourge of creative innovation. Only changing when forced by market conditions. As Kyle Jackson, CEO at Talespin told us, “The biggest challenge [we have] is companies not looking longer term with budget allocation”. As many XR benefits are often more intangible than immediately monetary, developers are often either driven toward a specific area that will present a financial return on investment, or their budgets are cut when they fail to show ROI in the short term.

But this doesn't have to be your XR story. Securing buy-in, demonstrating the benefits and scaling deployments of XR for enterprise can be achieved, and in this chapter you'll find out how, with insights from:

- Connor McCollough, Product Architect, Innovation and Business Transformation at **GE Power**
- Douglas Arnold, Director and Client Service Leader for Global Science, Technology, and Commercialization at **Merck USA**
- Kyle Jackson, CEO at **Talespin**
- Mike Pell, Envisioneer at **The Microsoft Garage**
- Vinay Narayan, Vice President of Product and Operations (Americas) at **HTC Vive**

“I would recommend to anyone in an enterprise trying to get buy-in to talk to a good salesperson of a service provider”

2.1. Walk on the dark side... and act more like an accountant

When it comes to XR, “You need to get a little more tactical about your narrative. Leaning into the economics of the equation is the way you've got to do it”. This was the advice of Connor McCollough, Product Architect, Innovation and Business Transformation at GE Power. He continued, “I would recommend to anyone in an enterprise trying to get buy-in [for XR] to talk to a good salesperson of a service provider. I've found what they are leading with is the economics; the business case to sell this internally”.

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“Producing actual financial data to illustrate the benefit of your XR project can be far more effective than demonstrating the technology”

Much of the C-Suite, with perhaps the exception of the CMO or CTO, will likely see XR projects as the dreams of excitable technologists. They may perceive a desire to play with cool technology, rather than positively impact the business in a tangible way.

McCollough suggests an exercise that could be as simple as creating an excel spreadsheet, “You can show the cost of your [training] scenario today: flying a hundred people to a hotel; a week in the hotel; food; twenty teachers etc. Then putting that right against what your scenario would look like using VR”.

Producing actual financial data to illustrate the benefit of your XR project can be far more effective than demonstrating the technology.

Just a few years ago VR evangelists claimed that seeing was believing. We are now at the point where the vast majority have seen VR, but the C-Suite believes in the numbers. Show them the math, and you’ll be well on your way to gaining their buy-in.

2.2. Don’t try to win the argument, build relationships instead

Convincing budget holders to grant your XR request can be a long, drawn out process. Your initial business case may well get rejected, just as Douglas Arnold’s (Merck USA) was two years ago. However rejection isn’t necessarily a bad thing.

Connor McCollough said, “Even if you don’t get the buy-in on that project, what you’ve done is to start to build a relationship not just as a technologist who is trying to play with all the cool technology, but as someone who is actually analyzing the business case and cares about the numbers”.

Having those relationships can have a major impact on the future projects you pitch, XR or otherwise. That makes success much more likely.

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2.3. From proof of concept to XR at scale... Wait, you missed a step

Many XR project leads have been able to develop and launch a successful PoC. Vinay Narayan, Vice President of Product and Operations (Americas) at HTC Vive has seen this happen countless times, and each has been marked with a particular business route from concept to launch, “We first went to the technologists and went to the IT departments because they were interested in technology. We got them really excited and did some awesome PoCs”.

However, enterprise projects that come up through IT departments will almost always be limited in scope. Broadening a PoC into a project that can produce an active ROI then becomes a real challenge. As Narayan explains, “It’s really about understanding how to go from PoC to pilot. We think scale is the next step after pilot, but it isn’t. A pilot is meant to solve an ongoing business problem... Those are important nuances”.

“The nice thing about a pilot is that as long as a pilot is running, the business is getting value. That’s a great time to figure out – and your technology teams are integral to this – what you can solve for now [and] where you need to spend time to future proof as much as possible, especially as the industry catches up”.

2.4. Move fast

“Within the enterprise... it’s such a complicated space that in order to have a conversation you have to make [XR] real enough in order to show someone”. That was the advice of Mike Pell, Envisioneer at The Microsoft Garage. Building out your XR idea into something tangible rather than theoretical takes time and effort. But speed is paramount, and creating something – anything – testable, is far better than wasting time building a fully realized asset before testing any part of it. Pell continued, “Don’t wait until you build something out in code before you test it... Go quickly from idea to having something in-device that’s even rough to go show real people”.

These have been hard-earned lessons for Pell, as he told us “the most important thing that I’ve found is to get your teams inside the enterprise to be able to use the right toolset and a lightweight methodology to take those great ideas and turn them into working prototypes”. He continued, “In this space, designing in the headset is super important. Even using something as simple as Tilt Brush is an amazing tool. Being able to draw your ideas spatially very quickly... Go from waving your hands and drawing on a whiteboard to actually being able to experience something in the device. It’s super important to get in the device with your ideas as quickly as possible”.

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2.5. Don't spend time looking around for massive success stories, most of them are secret

The easiest route to building a robust business case for an XR project is to show prior art. It's true, there have been a lot of projects that are today in operation and delivering value. Other than a handful of helpful luminaries however (most of whom come to share their learnings at VRX), the majority of these projects are kept secret.

"We have some of the best implementations that we can't talk about because our partners feel they are competitive advantages – massive ones. You're talking about years off of development of equipment to market... ten times faster than what has come before", Vinay Narayan, Vice President of Product and Operations (Americas) at HTC Vive told us.

Anecdotally, you may well find XR project leads who are happy to talk about their experiences and what they learned along the way to success. However, when it comes to firm numbers and concrete steps in the development process, information is far less forthcoming.

Rather than looking outside of your business for a similar use case to gain buy-in, spend that time developing your own story and performing your own ROI calculations. If you are looking for the inside track though, the VRX events are the perfect place to start.



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3. TOP 10 INSIGHTS ON THE PLACE OF XR IN TRAINING AND ONBOARDING

No matter your industry, training and onboarding are a necessary expense. Almost every business relies on having the right people – trained to perform at the right level – to deliver business outcomes.

Training and onboarding innovations have delivered historic ROI. Just consider the prevalence of PowerPoint, and the previous solution it replaced, to understand what a step change in the world of presentation looks like.

But XR represents a truly seismic change, with improvements in the physical and emotional experience of training and the effectiveness of such programs that can only be described as colossal.

Within this chapter you'll find key insights from:

- Amir Rubin, Co-founder and CEO at **Sixense Enterprises**
- Amrita Bajwa, Innovation Program Manager at **Jacobs**
- Christine Koppinger, Global AR/VR Innovation Lead at **Nestlé**
- Jeff Meador, COO at **Portico Studios**
- John Cunningham, Chief Revenue Officer at **The DiSTI Corporation**
- Kevin Carpenter, Director of Global Operations Training Network at **Siemens Energy Inc.**
- Lee Burrell, Director of Business Development - Automotive, Engineering & Manufacturing at **DHL Supply Chain**
- Sean Hurwitz, CEO at **Pixo VR**

“XR represents a truly seismic change, with improvements in the physical and emotional experience of training”

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3.1. Direct cost savings aren't the only way to demonstrate value

Kevin Carpenter at Siemens Energy Inc. says his team are performing “evaluation before, evaluation during, and evaluation after” XR training programs are rolled

out. But a lot of the proof of success might not come as direct cost savings. “The other thing we looked at was what we call ‘NCCs’ – non-conformance costs. The translation for that I guess would be ‘screw ups’. If you have fewer screw ups, you have fewer costs that are associated with that... The efficacy part will be borne out through our NCC numbers, and we’re tracking that closely”.

3.2. XR isn’t the complete answer, so don’t replace everything just yet

“While it is technically possible to say that 100% of our training is going to be within virtual reality and augmented reality, that’s not a good idea. Nobody wants that quite yet,” said Jeff Meador, COO at Portico Studios.

Instead, Jeff advised temperance when it comes to rolling out XR training, “We need to figure out how [VR and AR] is going to fit in as a supplement to what you already have, and more importantly, how you redesign what you currently have so that everything is working together and complementary”.

3.3. Don’t try and sell VR training to your CEO, it won’t work

“When you sell into the C-level, you can’t sell a virtual reality training solution. The CEO doesn’t care”. That was a bold statement made by Lee Burrell from DHL Supply Chain.

When it comes to the C-suite, Lee’s view was that outcomes need to be more tangible – and demonstrated – than a pure technology play. “What problem are you solving? Virtual reality training isn’t about training. It’s about consistent and iterative testing. I’m capturing all of this information through this headset and if I can put someone at proficiency in three days instead of five, I have saved time and money. That’s what the CEOs care about”.

“When you sell into the C-level, you can’t sell a virtual reality training solution. The CEO doesn’t care”

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3.4. We use 'XR' for a reason; think beyond just VR

A lot of the focus in recent years has been on VR, however technology has evolved to the point where now AR has become a serious and viable solution. Especially with mobile AR, you have the opportunity to utilize the technology you can practically guarantee your customers and employees already own: their smartphone.

Christine Koppinger, Global AR/VR Innovation Lead at Nestlé, told us, "We're doubling down on AR because of the ease with which consumers can access the technology... Now we're suggesting to our clients that they build AR futures as a part of their existing applications... so that their consumers can access really rich content without having to download and additional application".



3.5. XR will reduce risk for your workers

Industry is a dangerous place, and mitigating risk is an ongoing concern. Amrita Bajwa outlined the issue from Jacobs' perspective, "The biggest application for us is safety. Everyone in the construction industry has a big focus on that... Right now we just have people doing site walks and job walks, which in itself is unsafe". With the possibility of virtual site walks; delivered without compromising the level of detail needed to complete an effective assessment, Amrita said, "We can use VR as a way of saving our safety folks".

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Within the warehouse environment, safety is also a concern, as Sean Hurwitz explained, “Manufacturers have fulfillment centers with conveyor belts. They don’t shut the conveyor belts down for training... so the first time [engineers] touch them is when something breaks”.

3.6. **If you’re going to invest in XR, don’t do it half-heartedly**

There are many entry-level XR systems on the market, including practically free (Google Cardboard) and extremely low-cost (Gear VR, Oculus Go etc.) options. Initially, one of these might seem like a low-cost way to produce an XR solution and prove a business case. However, dipping your toes in the metaphorical XR water in this way could actually damage your efforts.

Amir Rubin, co-founder and CEO at Sixsense Enterprises told us, “The important thing is that full presence is critical in our world. It’s fundamentally what works against everything else that doesn’t work... The Oculus Go and Gear VR are not only useless for us, but are extremely damaging for our industry... This is not VR, this is View-Master on steroids”.

3.7. **Physical training centers cost a lot of money to run, and they usually require people attend in person**

Siemens operate training centers in Berlin and Müllheim, Germany, as well as Charlotte and Orlando, the USA. Kevin Carpenter explained, “We were looking for ways to train people remotely and to do it faster”. In that context, XR became the ideal solution; delivering remote training capability and accelerating training accomplishment. On average, a complex training programme would take staff two-and-a-half days to complete to a satisfactory level. Using VR, the same course could be completed in as little as four hours.

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For Lincoln Electric, one of Sixense Enterprises' major clients, VR has been the answer to a specific training need. Amir Rubin explained, "Their master welders are retiring, and the high-schoolers and college kids are not interested. They needed to give a low-liability, low-cost training – because giving a torch gun to a high-schooler, I don't recommend to anybody – so using VR to certify the beginner class can mean you get a discount on insurance premiums for those workers to complete their training".

3.8. New tools will help retain your workforce

By 2025, millennials will make up 75% of the total workforce; a statistic that Kevin Carpenter is keenly aware of. "For the workforce coming in, they're expecting to see these newer tools. So that became part of our business case".

Traditionally, Siemens could be considered a mechanical engineering company; building steam and gas turbines as well as generators. It was felt that this type of work struggled to attract and retain younger workers, Kevin explained, "the idea [was] that we would be able to retain some of the younger people in what used to be a not so sexy business".

3.9. Repeating effort is a fast way to lose money

"DHL has around 32,000 employees in the supply chain group in North America," Lee Burrell said during a panel session at VRX 2018. "80% of our training at 472 locations is the exact same". That overlap is significant, with location-based training programs that delivered little to no additional benefit over a generic version.

The benefits to standardization through XR training isn't just through efficiency, Lee continued, "If we can create a training platform for that 80% then I can do very innovative things such as labor sharing. If a new product of my client's gets on Oprah, and demand goes through the roof – I can take employees trained in a VR environment to come over to another warehouse and help ship our products". Since warehouse design is near-identical across the business, the opportunity to deliver economies of scale in training is clear.

"For the workforce coming in, they're expecting to see these newer tools. So that became part of our business case"

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3.10. XR can allow you to deliver training at the point of need

John Cunningham from the DiSTI Corporation explained, “If you’re working on a piece of equipment [at] school... When you go out on operations you might not see that equipment for six months to two years... You’ve lost a lot of the learning that you experienced in the classroom”.

XR then becomes the best route for bringing training closer to where it is needed; near eliminating the lag between classroom learning and practical application.

3.11. XR for training and onboarding summary

With effective training, speed and profitability are the two biggest business outcomes. While training innovations have been historically incremental, XR can bring a step change across every industry. Digitization brought standardization to classroom-based programs. On-demand has become a fundamental part of training for many organizations. XR is set to outstrip both; delivering benefits to workers, accelerating time to proficiency and delivering real, tangible value.

If you’re yet to incorporate XR into your training mix, now is the time.



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4. HOW IS XR IMPACTING DESIGN AND VISUALIZATION ACROSS ENTERPRISE?

We've all seen impressive uses of VR and AR in the mainstream, but how is it being used to revolutionize, or even galvanize, design and visualization across the enterprise? Envisaging a future where human communication is entirely transformed by XR and tips on how you can get started with your own XR projects, four of the leading lights across the XR world gave us their view of the current state of adoption across industry. Read on to discover their vision of what the near future will bring.

In this chapter you will find commentary from:

- Lorenz Schweiger, VR Strategy at **Audi Business Innovation**
- Ricardo Rodríguez, Global Virtual Design and Construction (VDC) Specialist at **BASF**
- Ross Neumann, Head of Partnerships at **Lowe's Innovation Labs.**
- Urho Konttori, Founder of **Varjo**

4.1. Having to describe things will seem odd in the future

“People are going to always expect to be able to show you what they are looking at”

Ricardo Rodríguez, Global Virtual Design and Construction (VDC) Specialist at BASF told us to “look at the gaming industry to see how they handle very complex data. I was taking a look at some of these Twitch streaming channels; just that in itself is so much more sophisticated than what the average construction site has in the field in terms of the amount of data being conveyed. It blows my mind that no-one has really jumped on it”.

Rodríguez believes that must change, however, saying, “As soon as people start seeing what you can do with visual context, people are going to always expect to be able to show you what they are looking at. It's going to become odd to verbally describe what you are seeing”.

Eradicating miscommunication in industry by the widespread adoption of direct, visual feedback could be a game changer across any number of verticals. With 5G well on the way to rolling out globally, the infrastructure needed to produce such an outcome may not even be that far away.

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4.2. Consumer headsets are great, but professional headsets are here now

Arguably the most valuable aspect of the explosion of high-end consumer HMDs for XR has been that you can take advantage of the investments made by others. The HTC Vive, for example, has taken tens or perhaps even hundreds of millions of dollars to develop to this point. With very few exceptions, companies cannot warrant such an expense unless their primary focus is XR technology itself. You wouldn't find a construction company, for example, developing such a headset because it isn't their primary business concern.

However, the downside to this mentality is that consumer-grade products are often lacking when placed in a professional setting. With VR in particular, the benefits of XR use must outweigh any negatives in order to warrant implementing the technology at all. Urho Konttori, Founder of Varjo went as far as to claim, "If you cannot work naturally inside VR, it's almost useless. It can actually be detrimental to your... process".

While Audi has used consumer technology to develop their VR offering within dealerships, Lorenz Schweiger, VR Strategy at Audi Business Innovation, admits, "One of the big challenges has been improving the optical capability of the headsets we use within Audi dealerships [because] we want to give a real feeling of the quality of the car".

The answer then could be professional-grade technology, and a number of companies are on the brink of releasing headsets that house superior tech to consumer HMDs. However these are also likely to come with a professional-grade price.

"If you cannot work naturally inside VR, it's almost useless"

4.3. Unreal for fidelity, Unity for speed

When it comes to VR content development, Ross Neumann said, "We started off with Unity, and we've stuck with it". A lot of the reason for that choice has to do with development complexity, or more specifically the availability of people with the necessary skills, as Ross continued, "There does seem to be a greater supply of developers that are comfortable with Unity rather than Unreal".

However it seems the consensus is that Unreal is superior when it comes to visual quality, as Ricardo Rodríguez, Global Virtual Design and Construction (VDC) Specialist at BASF, explained, "If you're looking for very high fidelity, then you would probably go for Unreal, at least from my experience as an architect".

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For Audi, where the primary use case for VR has been through virtual car showrooms, Unreal presented the more viable solution for displaying high-end vehicles. Lorenz Schweiger, VR Strategy at Audi Business Innovation, said, “The lighting system, the materials and all those things... the dynamic lights which are quite important for us because we have a highly configurable product so we do not want to rely on baked-in shadows”.

However, that decision wasn't as clear cut as it might at first appear. Lorenz explained, “I did research in terms of usage of game engines and I found it was a split depending on the use case. I perceived it as the Unity community were using the engine as a rapid prototyping platform. Unreal was more for high-end visualization use cases. I do not think you can say that one is better than the other; it really depends on the use case”.

4.4. The future will be driven by the mundane

“What are the boring examples where it's the boring use case; the dozens of calls that you do every day?”

The majority of companies developing XR hardware, software and use cases are driven by the ‘wow’ factor. Impressive displays of power and scale are what gets investors excited, and drives column inches on XR development in general. However, the future of XR will be actually be realised through the mundane. As Ross Neumann, Head of Partnerships at Lowe's Innovation Labs, explained, “I met with the guys at Spatial and you can imagine a really big product creative sprint where you need to have all these documents out to view every sketch... but I only have like one of those types of meetings a month, if ever. What are the boring examples where it's the boring use case; the dozens of calls that you do every day?”

There are hundreds upon hundreds of tiny use cases where XR could improve the experience for everyday people. However the size of the problems individually hasn't warranted the investment necessary to create an XR solution. As XR investment has been used to fix much larger problems, there is a huge opportunity in the market to take already developed technology and begin to pay attention to the smaller issues that could be solved. As Neumann says, “there is currently an absence of mundane use cases [for XR]”.

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5. CONCLUSION

The future is indeed bright for XR within the enterprise. Already there are established use cases that are delivering real returns, and can act as a template for your own efforts.

There is also a lot of untapped potential, from using the now widespread XR technology to address new business opportunities that would have been uneconomical just two years ago, right through to adopting professional-grade XR to elevate your proof of concepts or pilot programs.

Whether choosing the technology that's right for you today, building a business case for the professional HMD you will need tomorrow, or considering how your business will operate fundamentally differently moving forward, XR will play a part in your future.

The VRX events outlined below are purpose built to help you get ahead and give you the contacts and knowledge you need to succeed.

Upcoming VRX events, H1 2019



VRX Conference & Expo

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