Discovering the Business Value of Virtual Reality in the Enterprise

Companies are adding virtual reality to their digital transformation strategy to unlock the value of their existing assets to create immersive experiences that can be used across the enterprise.

“Virtual reality as a medium will allow creators to build experiences yet to be imagined and we want to empower them by providing the best VR creation platform.”

— Kumar Chinnaswamy
Director of Commercial VR/AR, Intel Corp.

Executive Summary

Imagine being able to cut product development time from several days to just a few hours. That is what Ford Motor Company* did when they applied virtual reality (VR) to their grille design process, reducing the number of design iterations. Similarly, JPL* engineers are building a new Mars-bound spacecraft in a virtual world that lets designers and engineers interact with their creation before it hits the factory floor. Render Ltd.* and Intel want to collaborate with the business community to proliferate similar digital transformation across all industry sectors.

VR creates an immersive, virtual environment where users can experience products, processes, and services at their own pace. From marketing and sales, to product development, to training, VR offers the following benefits that can scale across the enterprise:

- Infinitely customize and expand content, such as changing language or product details, without creating multiple content versions.
- Eliminate silos of content and duplicated efforts.
- Create emotional connections and drive brand awareness and loyalty.
- Enable customers to easily experience your products and solutions in context and in real time.
- Reduce product development time and manufacturing errors.
- Accelerate customer purchase decisions.
- Decrease employee training time for new equipment and processes.

This white paper explains the business challenges that VR addresses, and provides a roadmap for VR success. Two case studies illustrate how to transform existing content assets into VR content. With Render’s guidance, along with breakthrough computing power and technologies from Intel, your VR journey can start today.

Business Challenge

In a global economy, teams and resources are spread across countries and continents. Language and time zone differences can cause departments and teams to operate in isolated silos that do not facilitate interaction and communication about products and services. These silos of communication and assets hinder business agility. In this environment, company assets such as CAD 3D content may not be shared across the enterprise, limiting the business value of such assets. When only certain teams or people have access to content, a company...
will naturally struggle to communicate with both internal partners and a global audience, and will be unable to create a consistent message for a range of products and services.

With shrinking budgets and a growing array of content platforms, it is easy for messages to become diluted. At the same time, sales and marketing departments are expected to deliver more ROI with the budget they have as they strive to cost-effectively deliver content across a wide range of digital platforms in multiple languages for their global customer base.

Enterprises already invest heavily in technology and content across web, print, exhibitions and conferences, and training using a range of static imagery, animation, film-based content, infographics, and interactive media to deliver their messaging. They can be hesitant to invest in yet another messaging venue, virtual reality (VR), because they do not realize the potential that new technology like VR can deliver across their operations. They do not understand what VR is or the business benefits it offers.

VR is commonly perceived to be difficult and expensive. Confusion exists over the range of VR options and what VR requires from a hardware and software perspective. Nor do companies fully understand the entry point to VR in their own business or how it can be scaled across the enterprise. These barriers can slow a business’ adoption of VR. The following sections demystify VR and its application in industry, and share some success stories that support VR as a practical and valuable addition to any company’s digital transformation strategy.

**What is the VR Business Opportunity?**

IDC* predicts that two-thirds of Global 2000 CEOs will center their corporate strategies around digital transformation.  

Business that manufacture products may already be familiar with the term, Industry 4.0—the next phase in the digitization of the manufacturing sector. And yet other industries, from entertainment to healthcare, from urban planning to crop management, are also poised for digitization.

VR is one technology that is at the forefront of Industry 4.0 and digital transformation. VR, which immerses the user in a virtual environment that is not bound by space or time, keeps users engaged 34 percent longer than traditional 2D messaging and generates a 27 percent higher reaction. Conventional 2D media such as TV screens offer a passive experience. In contrast, VR enables the user to drive the story, discovering and interacting in a way that is unique to their individual learning style. IDC predicts that together with augmented reality (AR), VR will generate USD 162 billion in combined sales by 2020, a thirty-one-fold increase from USD 5.2 billion in 2016.

Besides the companies mentioned earlier in the Executive Summary, many other enterprises are putting VR to work to address the business challenges discussed earlier. For example, Pratt & Whitney’s* customer training division is using VR for training jet engine maintenance mechanics.

**VR Aligns Digital Assets Across the Enterprise**

As mentioned earlier, content assets scattered in silos around the world dilute a company’s message and overwhelm managers with a plethora of content platforms. Using VR, companies can unify digital assets and improve collaboration between teams and departments. Immersive technology allows people dispersed around the world to come together and experience a product or a service in the same space and in the context of how it is used.

**VR Content Has an Infinite Lifespan**

Over time, film-based content becomes increasingly fragmented in the attempt to deliver stories for multiple audiences and purposes. VR offers business value by delivering a wide variety of content and messages for different audiences, within a single, consistent framework. VR is not just “content”—it is a solution that is infinitely customizable, upgradable, and expandable. Think of a video game: once it is purchased, incremental updates can be installed when they are needed—it is not necessary to buy the whole game again just to update a scene or a character. Similarly, once VR content is created, it can be updated with new messaging.

**Virtual Reality Takes Industry 4.0 to the Next Level**

Virtual reality (VR) is dramatically changing the enterprise landscape. Immersive environments let users explore products, processes, and services in the context of how they are used. Not just another type of content, VR is a solution that enables the enterprise to customize content to create new immersive experiences for different audiences across the business globally—without creating brand new content. The following examples illustrate that VR can go far beyond industrial manufacturing, with the power to digitally transform a wide range of industries:

- Urban planners and architects can build realistic VR models and analyze how new construction will affect traffic flows and to help architects design smart cities.
- Agriculturists, meteorologists, and others can experience complex data in a more manageable way, such as to examine crop yield over time using satellite imagery, to see a broader picture of weather patterns, or other Earth-monitoring applications.
- Building information modeling experts can use VR to help shape real-time decisions about construction projects, such as adding doors, pushing out walls, raising ceilings, and so on.
Because it is a framework for content, VR can scale across the enterprise to communicate in many different use cases (see Figure 1):

- **Product development and engineering.** Designers and customers can collaborate in the product design phase and reduce errors. For example, prototypes can be tested to see if all the components fit together as expected, or products can be assembled in real time just as if the user was present in a clean-room in the facility.

- **Sales.** Imagine being able to invite customers into your virtual sales room to share your latest products and showcase where and how they are used—that is, redefining the customer experience. For example, if you sell safety equipment for oil rigs, the customer can be right there on the deck seeing the equipment in action.

- **Marketing.** By allowing the audience to experience the finer details of your products, processes, and services—not just read about them or watch a film—you can generate enhanced brand awareness and loyalty, create a relevant context for audience subsets, and improve engagement with potential customers.

- **Training and education.** VR can be used for training, where students log in from across the world and appear in the same virtual space as their instructor in the form of an avatar. For example, imagine being on an oil rig and demonstrating how to connect a personal safety device. Then each student, from their own in-room VR location at their home office, can take turns practicing in a safe, controlled environment, while receiving feedback in real time.

**Most Companies Already Possess An Entry Point For VR**

CAD content and 3D models are excellent entry points to VR, as shown in Figure 2. Render, Ltd.* can help businesses get started with VR using the following basic steps:

1. Take inventory of the content already being used in the business.
2. Explore and integrate the organization’s messaging and interaction for each specific audience into the VR content to deliver multiple messaging.
3. Integrate the VR content into an application that spans the enterprise.

The end result is a digital gallery of content that can be used by all divisions and can be tailored to specific audiences to tell the appropriate story in the most compelling way across multiple platforms—all within a single application. This reusable content is in stark contrast to having to produce film-based content to deliver new messages for each audience, usage, and language.

**Who Is Doing VR and Doing It Well?**

VR is dramatically changing the enterprise landscape. Applications are scaling rapidly across a broad spectrum of industries. Companies that learn to use VR well have an advantage over less digitally savvy competitors. The two case studies on the following page are examples of different businesses that are benefitting from VR.
MSA Latchways* Unveils VR’s Business Benefits

MSA Latchways*, a leading manufacturer of personal protection products that keep workers safe in hazardous conditions, is a shining example of how to reap multiple business benefits from VR.

In 2017, MSA asked Render to develop a ground-breaking initiative for the health and safety sector: a VR experience that lets potential buyers experience products in application and in complete context, albeit a virtual context.

Through the VR experience, prospective customers can scale a high building and carry out maintenance tasks safely using MSA's personal protection equipment combined with engineered lifeline solutions. Without VR, this scenario simply would not be feasible in the confines of a sales space. Also, by creating an experience that is cinematic, memorable, and entertaining, the business gains a dramatic uptick in user engagement.

However, MSA's foray into VR has revealed additional benefits. Working with MSA on digital transformation, Render, with the power of Intel® Core™ i7 processors, advised building the VR experience using the company’s existing CAD data as the entry point. This means VR can be created efficiently and cost-effectively by using existing data as the initial building blocks.

Once existing data assets like CAD become digitized for a VR experience, they exist in a real-time content pipeline and can be used to create additional content almost instantaneously. This digitization process has given MSA the ability to create content for the whole business: from new product development to marketing, sales, training, and STEM. Multiple disciplines within a single enterprise can reap the VR rewards.

Historically, MSA – like most enterprises – used filmed content as the core of its customer communications. But when a new version was required, the company would have to start over by re-editing and re-rendering. Now that MSA has a real-time content pipeline, however, new content can be made in real time while also delivering higher engagement.

“Through VR and digital transformation, Render is helping us transition from using 2D demo visuals to creating something more visceral. VR gives us an opportunity to let prospective customers experience, rather than merely see, our products and how they work together to provide a comprehensive safety solution. It’s an ultra-engaging communications tool that conveys products in a representative environment whilst empowering us with an incredibly efficient real-time content pipeline.”

Evelyn Webb
Global Customer Marketing Communications Manager, Fall Protection, MSA

Airbus*: Putting the User in the Cockpit

Airbus*, a worldwide leader in aeronautics, space, and related services, used VR at the 2017 Paris Airshow to present eight different virtual experiences that took the user on a journey featuring Airbus products. Like MSA Latchways, Airbus started their VR journey with existing CAD assets and transformed them into real-time content. But unlike a product that can be easily manipulated (like a coffee cup), or a commonly experienced product (like a car), or even MSA's fall-protection equipment, Airbus' products are not that easy to experience in person, due to the sheer scale and footprint of their products.

Working with Render and using Intel® technology, Airbus used VR to enable conference attendees to truly experience—not just watch a video about—Airbus' products in use. For example, the user could fly a helicopter over the ocean and rescue a person who went overboard from a vessel, or use the helicopter to deliver emergency supplies to a disaster site.

In addition to communicating and allowing audiences to experience current products, Airbus is also using VR to create immersive experiences that demonstrate the latest in product innovation, even though these products are still in the design phase.

“VR allows Airbus to more easily communicate to our customers our range of products and services and allows people to not just see and hear about the company's products but to be placed at the heart of the Airbus experience.”

Dirk Erat, Head of Digital, Airbus DS

Your Company Can Be Next

VR, as part of an overall digital transformation strategy, can help enterprises rise above the competition. By asking, “What can we do now that we could not do before, thanks to changes in technology and user behavior?” your organization can “drive toward market leadership in a time of significant disruption.”

TURN EXISTING ASSETS INTO VR CONTENT

Start with what you have. It’s simple to turn existing CAD and film assets into versatile VR content.
**Solution Architecture**

While most people associate VR with a headset, it is really a new communication platform and involves more than just one component. While a headset and a VR-ready GPU are required for real-time rendering, the CPU brings VR experiences to life and puts the “reality” in VR. Therefore, whether creating or sharing, investment in the appropriate high-performance processor is key (see Figure 3).

What Is Needed For VR Creation?

The exact development platform for creating VR content varies—for example, the CPU, system memory, and storage requirements differ depending on what software the company uses and the business goals. Generally, a workstation powered by a fast CPU like the Intel® Core™ X-series processors (in particular, an Intel® Core™ i9 processor) is critical in order to feed the graphics card, positional tracking, physics, and audio. Each new generation of processor provides new functions and improved performance to support fast video encode, image rendering, audio production, and real-time previews. In some cases, an Intel® Xeon® processor may be beneficial.

A render engine (a specialized SDK) is required to translate a scene from a mathematical approximation to a finalized image. Although much of the existing CAD and video assets can be transformed into VR, cameras and editing software may also be needed. VR files can be large, so high-performance storage is a must, which can be provided by Intel® Optane™ Solid State Drives.

What is Needed to Share VR Experiences in a Room-Scale Environment?

For a room-scale VR environment, a high-quality headset, headphones, motion sensors, and controllers, as well as depth-sensing and other peripherals—all connected to a powerful system featuring a 7th generation Intel Core i5 or Core i7 processor, or higher—are minimal investments. This platform will help ensure the user has the best possible experience. An affordable headset and a connected smartphone with a VR app installed can bring the benefits of VR to remote users who do not have access to the room-scale VR environment. However, the low-cost headset experience differs greatly from the room-scale immersive experiences offered by higher-end headsets.

**Intel and Render® Collaborate to Accelerate VR Success**

Render is forging relationships with academia and universities as well as with hardware manufacturers such as Intel, putting Render in a powerful position to look at VR technology from both a research and application perspective. Using this knowledge, Render can provide businesses with solutions to help market their products, as well as deliver training, in new and exciting ways.

Every major Intel product division is actively engaging the VR ecosystem because VR demands horizontal solutions that deliver the necessary processor, graphics, memory, and I/O capabilities. In addition to powerful Intel® processors, the following Intel® technologies can benefit the VR experience:

- **Integrate human-like senses** into applications using Intel® RealSense™ technology.
- **Increase the data transfer rate** with Thunderbolt™ technology.
- **Decrease latency and accelerate systems** for workloads demanding large capacity and fast storage with Intel Optane technology.
- **Enhance wireless performance** using Intel® WiGig products.

By working with Render and Intel, companies can feel confident about their VR investment and are poised to be leaders and innovators in their sector.

**Take the Next Step**

Digital transformation is creating opportunities for enterprises to expand the use of digital technology in their business. For example, VR lets design engineers experiment without requiring expensive and time-consuming prototypes—which powers both faster decision making and adaptation to industry innovation.

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**Figure 3.** A virtual reality (VR) communications platform starts with a high-performance Intel® processor, which powers all the other components, such as the render engine and cameras.

―Mark Miles, CEO, Render Ltd.
VR allows enterprises to create content solutions that can be used across the business from product design to sales, marketing, and training. To get started, companies can take advantage of existing CAD and 3D animation assets that describe products, processes, and services.

It is important to remember that VR is not just about converting CAD files into 3D so it looks more real and interesting. Creating immersive VR scenarios allows your customers to experience the finer details of your products and services more effortlessly, in real time, and in context. It is about taking the user on a journey that engages their senses and tells them a story that they feel part of.

Although it may be new to many enterprises, VR does not have to be intimidating. With help from Render and Intel, you can get started today!

For more information about making VR a reality at your business, contact your Intel representative.

### Render Ltd.*: Virtual Reality Evangelists

For enterprises, Render sees virtual reality (VR) as a key driver and component of digital transformation. By harnessing an enterprise’s existing CAD assets, multiple departments – from R&D to training – can realize their content objectives all through a single, adaptable software solution. Render helps enterprises first identify their entry point to immersive technology and follows this up by demonstrating how the technology solution can be scaled across the enterprise. With over 20 years of experience in CGI, Render delivers a strategic roadmap and framework that covers infrastructure, content creation, deployment, and future-proofing. As VR evangelists, Render is also committed to bringing the possibilities of immersive innovation to everyone – from STEM classrooms to the C-suite and the boardroom.

### End-to-End Virtual Reality Hardware Solutions from Scan Computers*

Scan Computers* has been building PCs, workstations, laptops, and servers in their state-of-the-art factory in the United Kingdom for more than 30 years, under the brand 3XS®. Their team of engineers has racked up more than 293 awards in the press and has a Royal Warrant of Appointment to Her Majesty the Queen as supplier of high-performance PCs and IT hardware. Scan has partnered with Render* to provide end-to-end virtual reality (VR) solutions for the enterprise market.

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1 “Ford is using Microsoft’s HoloLens to change the way cars are designed,” digitaltrends.com/cars/microsoft-hololens-could-help-design-future-cars
2 “How Reality Technology is Used in Aviation,” realitytechnologies.com/aviation
5 “Virtual reality technology is going way beyond video games,” cnbc.com/2016/11/03/virtual-reality-technology-is-going-way-beyond-video-games
7 This white paper focuses on room-scale VR. Customers that cannot attend an onsite room-scale VR demo could download a smartphone app and place their phone inside a VR viewer. In this way, for example, they can experience a sales manager demonstrating new products. But the headset-and-phone experience is not as immersive as room-scale VR.
8 “The Art of the Possible,” forbes.com/sites/strategyand/2014/10/28/the-art-of-the-possible

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