Business Applications of Augmented Reality

A whitepaper on how augmented reality is providing breakthrough solutions and transforming businesses from startups to enterprise.

THE SILVERLOGIC

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A Pokémon character appears out of nowhere in the middle of Central Park, a mischievous grin on its face. A cocktail placed on a bar coaster suddenly appears amidst the rolling, timeless backdrop of Van Gogh's Wheatfields with Cypresses. The right selfie filter increases warmth, color, and contrast while smoothing out skin tone and covering up dark circles. At one moment there is reality, and the next moment there is Reality Plus: A world augmented to be richer, more immersive, and more engaging.

Executive Summary

Consumers have become extremely familiar with Augmented Reality (AR) in recent years through overnight sensations like 2016's Pokémon Go, but for all its promise and ever-increasing ubiquity in the Business-to-Consumer (B2C) marketing space, the mass consumer adoption of AR technology that seemed such a sure bet at the outset of the decade has failed to live up to the hype. Conversely, AR is seeing enormous growth in enterprise settings, as a number of early adopters have utilized the technology to enhance productivity, streamline employee training, and bridge skill gaps in the workforce. This white paper will outline

- **How AR is already transforming existing processes in enterprise**
- **Several use cases of AR in large-scale industrial settings**
- **Examples of how AR is helping businesses streamline time-consuming projects and enhance their employees' skills and competencies**
- **Future directions with AR for traditional B2B marketers**

After reading the paper, professionals will have a better understanding of how AR can provide a number of breakthrough solutions to large-scale issues in enterprise. They will also be aware of how more traditional B2B companies have leveraged AR to differentiate their product and capture the attention (as well as the business) of a wide variety of enterprise clients.

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Augmented Reality:

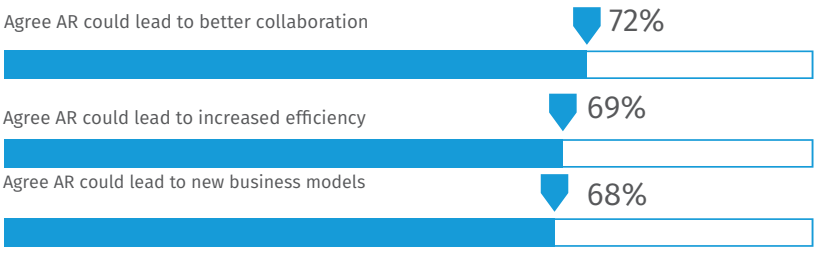
Breakthrough Solutions for Businesses

Business-to-consumer use cases of augmented reality (AR) seem to get all the press, but the business-to-business applications of AR deserve equal attention. The potential for AR to transform both the internal processes of business and the manner in which business-to-businesses market to clients means that professionals need to understand how critical AR technology will be to continued growth and development of companies in the coming years.

Augmented reality is already transforming how several Fortune 100 companies produce products and train employees, saving tens of thousands of labor hours and millions of dollars a year. It is allowing businesses to compensate for a growing labor gap by 'upskilling' their workers in real time, and it is providing established corporations with new and innovative ways to market legacy products to enterprise clients. Professionals reading this paper will come away with a better understanding of how AR is poised to substantially impact the B2B marketing space and a better idea of how they might integrate AR into their own current practices.

Most of the coverage devoted to augmented reality has focused on a few high-profile success stories (e.g., Pokémon Go) and a handful of infamous flops (e.g., Google Glass) in the consumer market. The success of these products hinged entirely on consumer adoption, but as Vicki Holt, President & CEO of Proto Labs pointed out last year, "It is dramatically easier to find business uses for AR than consumer ones." Consumer AR products have thus far thrived on their novelty, but novelty always has an expiration date. Ms. Holt continues, "Google Glass just wasn't perceived as being cool. But 'cool' isn't a factor in manufacturing plants in which workers have long had to dress a certain way or wear safety equipment, to meet the demands of their job."

A poll of business executives in the United States found widespread excitement over the potential breakthrough solutions offered by augmented reality



Source: IASCA Virtual Reality and Augented Reality Tech Brief

Although AR is largely looked at in terms of its transformational potential in B2C marketing, its B2B applications actually circumvent a number of potential B2C roadblocks. Industry leaders have already taken notice: A 2016 study by PricewaterhouseCoopers found that more than one in three manufacturers expect to adopt VR and AR technologies by 2018, with other data suggesting that the vast majority of these cases will involve AR (rather than VR) technology. The technology research firm Gartner estimates that by 2020 a full 40% of the of the AR/VR market will involve purely business use cases.

Augmented reality is also much more cost efficient to adopt: while full virtual reality involves, at minimum, the purchase of a large and customized headset, augmented reality requires as little as a user's existing smartphone. Judging by the AR use cases described in this paper, it is clear that many enterprise leaders have already seen the benefits of AR and plan to dramatically increase its use within their companies.

Untapped Potential:

Solutions in Manufacturing

Companies such as GE and Boeing have already been gathering data on worker performance when using AR devices to assist with complex tasks such as turbine repair and wire harness assembly, and results show productivity is enhanced by anywhere from 25% - 50% when technicians perform their tasks when assisted by AR. Additional data gathered from several other large firms by the Harvard Business Review showed an average productivity increase of 32% across a diverse range of applications. Scaled across the entire workforce of a large firm like GE, this enhanced productivity has the potential to save a company tens of thousands of man hours without the need to train any additional technicians.

32%

productivity increase with AR solutions

Augmented reality solutions increase manufacturing and repair productivity by an average of 32% across a range of applications: Essentially, it is like having four workers for every three

Increasing the productivity of existing workers is a pressing issue in the manufacturing industry, where the lack of qualified workers has long held back firms from reaching their full production capacity. A study by Deloitte and the Manufacturing Institute found that 84% of executives believe that there is a talent shortage in US manufacturing, and as many as 6 out of 10 production positions in the US are unfilled due to this talent shortage. As many as 2 million jobs are expected to be unfilled by 2025 simply because there are not enough skilled workers to do them.

This talent gap is largely due to the increasingly technical nature of modern manufacturing. The US Labor Department states that a majority of manufacturing jobs now require at least some college experience, which stands in stark contrast to even a decade ago, when the majority of these jobs were filled by individuals with a high school education. AR provides a relatively rapid and cost-efficient solution to this shortage in the labor gap.

Using AR technology in smart glasses, a worker could view a complicated diagram overlay with step by step instructions or be taken through various other complex processes in real-time. In industry parlance, this is referred to as 'upskilling:' enhancing an individual's existing abilities by means of an interactive technology solution like AR. Augmented reality is a feasible solution to the education and skill gap between the manufacturing jobs being created and the skills of the workers seeking to fill them - with AR to assist with a task, a worker could potentially double her output with no additional training. It is easy to see that the ROI on augmented reality, with its limited adoption costs and great number of practical applications, will make it extremely attractive in the enterprise market over the coming years.

Faster and Better: AR for Optimization and QA

Manufacturing provides the clearest example of how businesses could leverage and implement augmented reality to enhance production at relatively minimal cost, but AR has several broader applications in optimization and quality assurance already being implemented by industry leaders.

The Coca-Cola Company has been piloting the use of AR in a handful of bottling facilities as a tool for equipment inspections, service calls, and audits, and has seen the same uptick in employee productivity reported by other early AR adopters. However, the most valuable use thus far for the company has likely been the reduction in travel costs and the increased connectivity and flow of information among its globally-distributed workforce. "We no longer need to fly in people from Germany – where our main equipment suppliers are based – to troubleshoot our machines...This allows us to operate 'virtually', unencumbered by time or distance," said Helen Davis, VP of supply chain for Coca-Cola Refreshments.

For an international corporation like Coca-Cola, the ability to have only a handful of service experts troubleshoot issues with plants all over the world is a game-changer, allowing the company to put its best-trained specialists on far more cases without losing time to travel. Even outside of these technical cases, the broader implications for AR are clear: AR offers a far more immersive experience for long-distance collaboration than existing tools like Google Docs or Hangouts, with the potential to connect diverse stakeholders with a wide variety of specialties in a more integrated, dynamic fashion.

Changi Airport in Singapore, already seen as a paragon of quality in the airline industry, has been using AR to streamline and optimize several processes at the facility, from air and ground traffic direction to passenger check-in. Early data suggests that the combined implementation of AR at the airport could reduce turnaround time per flight from 60 to 45 minutes. To put this in perspective, Changi currently handles around 350,000 flights per year, meaning that AR technology could be saving the airport tens of thousands of hours annually by the time the airport has its systems fully operational.

15

minutes saved per flight

At the 'world's best airport' - Changi International in Singapore - augmented reality solutions are reducing average turnaround times from 60 to 45 minutes per flight, saving tens of thousands of hours per year

Dozens of other examples like those discussed here exist, and these early successes will undoubtedly serve as a call to action for competitors and collaborators alike: If augmented reality enhancements can improve productivity and efficiency this early in their adoption, then there remains a vast and untapped market for their implementation across a wide spectrum of industries.

Beating 'Content Shock:' AR as a Way to Differentiate Products and Services

Thus far, this paper has discussed the myriad opportunities for companies to adopt and integrate augmented reality as a means to enhance current practices, but AR technology should also be of particular interest to B2B marketing professionals looking to engage and retain clients in any industry. In a time when marketers across domains face the ever increasing problem of 'content shock,' which Mark Schaffer memorably defined in 2014 as, "increasing volumes of content intersect our limited human capacity to consume it," AR offers a way to differentiate, providing interactive experiences and a more immersive way for marketers to demonstrate the utility of their products to businesses.

2018 is going to be a major year for augmented reality, as the technology begins to mature and professionals are finally able to see the full scope of its applications in enterprise.

B2B marketers face several challenges specific to their niche space of working with enterprise clients: their products are often nuanced, complex, and difficult to demonstrate for a variety of reasons. AR can help bridge this gap with tangible product demonstrations that can communicate complex value propositions to a wide variety of stakeholders, some with little to no expertise in the technical details of the product.

Hexagon, an IT provider than builds geospatial and industrial enterprise applications, faced this exact problem: How to communicate what their technology actually does to investors. In a clever play on the traditional annual report, Hexagon built an app that was 'triggered' by a visual cue on page in the paper report. By pointing their devices' cameras at the image, investors were treated to an immersive 3D experience that visualized geo-mapping and measurement technologies on the page's surface, allowing them to see Hexagon's product in action in a way that was simple and clear.

The Fortune 100 company Caterpillar, which sells heavy equipment, machinery, and engines around the globe, has made use of remote simulations and demos to allow businesses to experience and 'test' their products without directly experiencing them in person. Since most of Caterpillar's machinery is so large, it is not feasible for the company to live demo it for each potential buyer. The company has been experimenting with AR (and VR) as a means to put people in the driver's seat of their heavy equipment, allowing them to circumvent the expense of physically shipping the equipment for demonstrations or flying executives to a test site.

These marketing use cases demonstrate that augmented reality has much broader B2B applications than simply considering how certain companies could use the technology to improve internal productivity. Because developers and executives are just now exploring the many different ways AR can be integrated into a company's strategy and roadmap, 2018 looks to be a watershed year for augmented reality as the technology finally begins to mature and professionals are able to see the full scope of its applications in enterprise.

Future Directions and Final Thoughts

Augmented reality seems poised to finally come of age. Within the last year, Apple introduced ARKit for iOS and Google released ARCore for Android, development environments that will simplify and streamline AR production and deployment for developers around the globe. Already, companies like Marxent have leveraged ARCore to build novel AR experiences for internal use at businesses, and complex 3D modeling company Dotty has begun transitioning its entire library of technical diagrams and models to an AR environment that a user can interactively explore. The potential marketing uses for these and other tools should be evident to any professional who has struggled to explain the value proposition of any complex enterprise product to clients.

Innovations and marketplaces are also emerging that will be of direct interest to marketing professionals in 2018, Utah-based startup Seek recently pivoted from a B2C focus to become a hub for AR projects, looking to emerge as a marketplace for businesses to seek out talented developers for AR projects and for those developers to post and demo their work. Likewise, a team of Google and Snapchat developers at the most recent TechCrunch Disrupt Hackathon built a prototype for inserting advertisements into 3D AR environments. One can imagine this field of advertising to businesses and consumers alike becoming an enormous industry that develops in parallel with the mass adoption of AR. Marketing professionals should take notice and seriously consider coming into the AR advertising business while it is still in its infancy.

In summary, marketing professionals should note that the B2B applications for augmented reality are diverse and span across all industries. Furthermore, with analysts forecasting tremendous growth in the AR for Enterprise space in the coming years, the technology seems well-positioned to be the next major avenue by which marketers can communicate effectively to a wide variety of business stakeholders.

References

2016 IT Risk/Reward Barometer US Results . (2016, November). Retrieved December 18, 2017, from http://www.isaca.org/About-ISACA/Documents/rrb/2016-IT-RRB- US-Results.pdf

Abraham, M., & Annunziata, M. (2017, September 20). Augmented Reality Is Already Improving Worker Performance. Retrieved December 18, 2017, from https://hbr.org/ 2017/03/augmented-reality-is-already-improving-worker-performance

Augmented/Virtual Reality to hit $150 billion disrupting mobile by 2020. Retrieved January 26, 2018, from https://www.digi-capital.com/news/2015/04/augmentedvirtual- reality- to-hit-150-billion-disrupting-mobile-by-2020/#.WmtwupM-dTY

Blake, P., & Polidoro, R. Exclusive: Why Apple CEO Tim Cook Prefers Augmented Reality Over Virtual Reality. Retrieved January 26, 2018, from http://abcnews.go.com/ Technology/exclusive-apple-ceo-tim-cook-prefers-augmented-reality/story?id=42064913

Casey, S. (2017, September 20). VR and AR Offer Innovative Solutions For Real B2B Marketing Problems. Retrieved January 26, 2018, from https://go.forrester.com/blogs/ vr-and-ar- offer-innovative-solutions-for-real-b2b- marketing-problems/

Customers Use Virtual Reality to Evaluate Motor Grader Cab Designs. Retrieved January 26, 2018, from https://www.cat.com/en_US/articles/customer-stories/construction/customers-use-virtual-reality-to-evaluate-motor-grader-cab-designs.html

Dorsey, J. (2017, December 25). How augmented and virtual reality will reshape the food industry. Retrieved January 26, 2018, from https://techcrunch.com/2017/12/25/how- augmented-and-virtual-reality-will-reshape-the-food-industry/

Giffi, C. (2017, May 18). The skills gap in U.S. manufacturing | Deloitte US | Manufacturing Industrial Products and Services. Retrieved January 26, 2018, from https://www2. deloitte.com/us/en/pages/manufacturing/articles/boiling-point-the-skills-gap-in-us-manufacturing.html

Holt, V. (2017, October 06). Augmented Reality Becomes a Game Changer in B2B Operations. Retrieved January 26, 2018, from https://www.huffingtonpost.com/entry/augmented- reality-becomes-a-game-changer-in-b2b-operations_us_59cab356e4b03faa973bee92

Lynley, M. (2017, September 17). ARAD helps developers get ads in their augmented reality apps. Retrieved January 26, 2018, from https://techcrunch.com/2017/09/17/arad-helps- developers-get-ads-in-their-augmented-reality-apps/

Merel, T. (2017, January 11). The reality of VR/AR growth. Retrieved January 26, 2018, from https://techcrunch.com/2017/01/11/the-reality-of-vrar-growth/

Miller, R. (2016, July 10). Face computers slowly find their place in business. Retrieved January 26, 2018, from https://techcrunch.com/2016/07/10/face-computers-slowly-find- their- place-in-business/

Miller, R. (2016, July 10). Face computers slowly find their place in business. Retrieved January 26, 2018, from https://techcrunch.com/2016/07/10/face-computers-slowly-find- their- place-in-business/

References

Moye, J. (2017, May 05). Coca-Cola Testing Augmented Reality for Bottling Equipment Maintenance and More. Retrieved January 26, 2018, from http://www.coca- colacompany.com/stories/coca-cola-testing-augmented-reality-for-bottling-equipment-maint

Rogers, B. (2016, February 04). Marxent Positioned At Center of $100 Billion Virtual and Augmented Reality Market. Retrieved January 26, 2018, from https://www.forbes.com/ sites/brucerogers/2015/12/21/marxent-positioned-at-center-of-100-billion-virtual-and-augmented-reality-market/#153b2a90279d

Royce-Greensill, S. (2017, July 28). Straight Up: City Social's augmented reality cocktails. Retrieved January 26, 2018, from http://www.telegraph.co.uk/luxury/drinking- and-dining/city-social-mirage-augmented-reality-cocktails-bar-review/

Sandau, C. B2B Use Cases in AR/VR. Retrieved January 26, 2018, from http://blog. opteragroup.com/augmented-and-virtual-reality-in-b2b

Shieber, J. (2017, December 11). Augmented reality treasure hunting app Seek pivots to become a hub for AR projects. Retrieved January 26, 2018, from https://techcrunch.com/ 2017/12/11/augmented-reality-treasure-hunting-app-seek-pivots-to-become-a-hub-for-ar-projects/

Tan, Y. (2017, September 06). AR glasses are giving airport ground staff superpowers on the runway. Retrieved January 26, 2018, from https://mashable.com/2017/09/06/changi -airport-ar-sats/#623mZSqeUmqQ