**Top 5 use cases of extended reality in the healthcare sector**

AUTHOR : [Binny Vyas](https://www.softwebsolutions.com/author/binny-vyas/)   POSTED : December 5th, 2019

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[Extended Reality](https://www.softwebsolutions.com/resources/posts.html?tag=292)

Immersive technologies have gained a lot of hype in recent years due to some of the remarkable developments in the digital space. Also, within the immersive technologies umbrella, augmented reality (AR) and virtual reality (VR) are largely popular. Many have perceived these technologies to be limited to the world of games and entertainment. However, things are changing and we are now moving forward into extended reality (XR) which is accelerating the use of immersive technologies for healthcare consumers. Interestingly, extended reality in the healthcare sector has already begun to realize its full potential and in this blog post, we will walk through some of the most interesting use cases of XR in the healthcare industry.

**Extended Reality – What is it?**

What if you could explore human anatomy virtually? Imagine a life-size 3D model appearing right in front of you where you can simply walk to it and interact with it. That’s exactly what XR does, creating virtual experiences. XR is a scientific visualization technology, that can tackle experimentally areas that are difficult to be studied in real life. As interesting as it sounds, XR is a wide range of experiences that blend the virtual and physical world, sometimes making it difficult to distinguish between the two.

XR experiences involve using devices that are controlled by voice, gestures, or eye movements. In brief, XR is an umbrella term covering the virtual reality (VR), augmented reality (AR), and mixed reality (MR) technologies.

**XR’s potential in healthcare**

[**The use of XR in healthcare**](https://www.softwebsolutions.com/xr-app-development.html) is opening up new opportunities for medical practitioners and holds a promising future, especially for modern healthcare organizations. XR solutions hold the potential to assist surgeons in the operation theatre by saving their time in seeking relevant information for critical decisions. Some of the major uses of XR in healthcare include, training new medical practitioners and providing them a deeper understanding of disease or illness to patients.

**Let’s look into some healthcare-centric use cases:**

**1. Help to understand patient’s condition better and relieve their pain**

XR can help relieve a patient’s pain as immersing them in experience during their treatment distracts them from what’s going on. For instance, in a university in Canada, students developed a VR-based game that would keep cancer patients occupied during chemotherapy and thus, distract them from their pain.  
This would lead doctors and healthcare providers to better understand their patients by engaging them in experiences that allow care-givers to walk in their patients’ shoes and see what they experience. This can significantly boost interpersonal trust in the doctor-patient treatment relationship.

**2. Enable to build surgery simulator for training medical practitioners**

Immersive technologies also have the potential to allow doctors to conduct surgery simulations. A surgery simulator can be created with the help of extended reality for the purpose of training medical practitioners. Using a surgery simulator, the need of a patient, cadaver or animal is greatly reduced.

**3. Prepare surgeons before actual surgeries**

Using XR, the opportunities are endless in healthcare. Here are a few uses which are aimed towards surgical planning and training:

* 3D replicas can be generated based on patient scans that can further allow surgeons to study and collaborate with their team on surgical tactics. Moreover, an XR immersive headset can be used as a device to showcase the cut, draw and measure tools and to develop a real procedure of operation.
* Additionally, an XR-based immersive interactive platform can be created for healthcare providers where multiple surgeons can collaborate for training lessons, discussions and more.
* Simulation-based applications can also be built for surgeons to practice and sharpen their skills.  
  An XR application can include realistic vibration patterns, allowing the surgeon to feel as if he/she is holding actual tools. Such an immersive application can be a lifelike platform to study surgeries when combined with the power of VR.

**4. Conduct educational training for medical students**

Extended reality in medical education plays a crucial role in training and teaching. XR-based apps can be created for educational purposes for doctors as well as medical students as it can help them to observe intricate details which are anatomically accurate models of a human body. This helps them to learn about different systems and practice their surgical skills.

**5. Diagnose health conditions of patients**

What if doctors could scan a patient’s body and straight away point out any health problems? As intriguing as it sounds, it’s now possible with an XR application. A set of immersive technologies can be brought together using 3D models to detect patient’s illnesses. Certain health problems like tumors or broken bones and others can also be detected using such applications. Moreover, images from the application can be used to show patients a step-by-step process of their potential surgery.

**Take away**  
[**Extended reality technology**](https://www.softwebsolutions.com/resources/best-practices-for-extended-reality.html) is undoubtedly creating numerous opportunities for healthcare organizations. From medical devices and pharmaceutical manufacturers to hospital systems and insurers, healthcare service providers are looking for ways to shape the future of the healthcare industry. If you are among them, then reach out to us and see how our immersive technology solutions can help you enhance both productivity as well as experience.

**Extended Reality In Healthcare: 3 Reasons The Industry Must Get Ready For AR And VR**

[**Bernard Marr**](https://www.forbes.com/sites/bernardmarr/)

Contributor

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There is huge potential to apply [extended reality (XR)](https://www.bernardmarr.com/default.asp?contentID=1942) technologies – namely, virtual reality (VR) and augmented reality (AR) – to healthcare. From self-care and wellbeing to treatment and even surgical procedures, XR is already helping to improve many aspects of healthcare. Sure, it’s early days, but the transformation is underway. And that means the healthcare industry must get ready.



Extended Reality In Healthcare: 3 Reasons The Industry Must Get Ready For AR And VR

ADOBE STOCK

Here are three reasons why the healthcare industry should embrace XR technologies.

**1. XR can improve wellbeing**

The positive effects of mindfulness and meditation on overall health and wellbeing are well documented. As such, a plethora of meditation apps have sprung up to help people meditate and de-stress, often using relaxing sounds and guided instructions. Now, some of these solutions are incorporating VR to make guided meditations more immersive.

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Guided Meditation VR is one such app. It comes with more than 100 ready-made meditations in beautiful virtual settings, such as a beach, a secluded forest, and even the top of a mountain. Meanwhile, gentle audio instructions guide you through various breathing exercises. If you’ve struggled with meditation because you can’t tune out the real world, then putting on a VR headset and using a VR meditation app could help you literally block out everything around you. I can certainly see the benefits of this.

**2. XR can help to visualize medical data more effectively**

Now let’s move onto an AR example. Because it overlays digital images and information onto the real-world view, AR is ideally suited to visualizing medical information – such as overlaying anatomical data onto the patient in real life. This can help clinicians carry out procedures in a faster, more accurate way.

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A simple example comes from AccuVein, the global leader in vein visualization. Here, a map of veins is overlayed onto the surface of the patient’s skin to help health professionals find veins more easily (for starting IVs and drawing blood). The technology is primarily used to help clinicians find veins that otherwise couldn’t be seen or felt, and evidence shows that vein visualization dramatically improves clinicians’ ability to find these difficult veins on the first attempt – by as much as [98 percent in pediatric cases and 96 percent with adult patients](https://www.accuvein.com/news/vein-visualization-emerges-as-premier-augmented-reality-application/).

**3. XR can improve therapeutic treatments and even surgeries**

Meanwhile, VR is proving to have serious therapeutic chops. Among other things, it can be used to immerse patients in relaxing simulated environments, which can help to calm them before (or even during) treatment, reduce pain and generally improve the experience of being in a hospital or clinical setting.

In one example, a team in Brazil used VR to help children beat their fear of vaccinations. The project, called VR Vaccine, involved children watching (via a VR headset) an animated adventure story, while a nurse (who can see the story unfolding on a separate screen) synchronizes the action of cleansing the skin and administering the injection with the story. The team's research showed that most children feared the needle itself rather than the pain they might feel, so the VR approach was devised to essentially block out and distract from the needle. The project, the brainchild of Brazilian pharmacy chain Hermes Pardini, was so successful, the company has since [installed VR headsets](https://www.bbc.com/news/business-45978891) in all of its pharmacies to help with its vaccine campaigns.

But VR isn’t just for kids. For adult patients under regional anesthetic (i.e., they aren't "put under" for the procedure), VR has been proven to help patients stay calm and relaxed during surgery. At St George’s Hospital in London, patients undergoing procedures with regional anesthetic were given the option of using a VR headset before and during their operation, which immersed them in calming virtual landscapes. This proved incredibly effective; a staggering [100 percent of participants](https://www.stgeorges.nhs.uk/newsitem/vr-headsets-relaxing-patients-during-surgery-at-st-georges/) said wearing the headset improved their overall hospital experience, 94 percent said they felt more relaxed, and 80 percent reported feeling less pain. Patients reported feeling so immersed in the experience; they weren't even aware of being in the operating theater.

I hope these examples show how XR can help to enhance healthcare. As well as improving patient outcomes, VR and AR can improve accessibility for health and wellbeing services. With a growing population and people generally living longer lives, healthcare services around the world are coming under increasing pressure (and that's without the impact of COVID-19). Our healthcare systems are already struggling. Waiting times can be long, access to certain services (such as mental health services) can be limited, and, depending on where you are in the world, medical treatment can be hugely expensive. We urgently need greater adoption of technology in healthcare to alleviate these pressures – and I believe XR has a key role to play in this.

What are 4 current trends in healthcare?

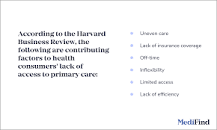
**Personalized, transparent, patient-centered care**. Virtual care, like telehealth, and virtual acute care. Increase in ambulatory care for lower-acuity patients. In home care services such as hospital-at-home programs.

What is the biggest challenge in healthcare today?

**The Biggest Issues Facing Healthcare Today**

* Costs and transparency. ...
* Consumer experience. ...
* Delivery system transformation. ...
* Data and analytics. ...
* Interoperability/consumer data access. ...
* Holistic individual health. ...
* Next-generation payment models. ...
* Accessible points of care.

What is the biggest problem in health care right now?



**High Costs of Care**  
  
According to annual report data from the Health Cost Institute, average healthcare prices have increased year over year, with rates that were 15.0% higher in 2018 compared to 2014. In 2018, U.S. firms and consumers spent 10% of GDP on healthcare—and this number has risen over the years.

What is digital strategy in healthcare?

**Helping healthcare organizations to strategically employ digital and analytics to transform their businesses and dramatically improve performance**. The rise of big data and digital capabilities is changing the way healthcare payers and providers operate.

How can extended reality be used in healthcare?

It **enables the surgeons to visualize the complexities and issues of the human body and allows them to detect every part of the human body**. It is also used in providing training to other medical students and memorizing things properly. The extended reality has provided a helping hand in studying the brain via 3D modes.

What kind of technology is used in nursing?



Patients are given **wearable devices, such as a heart monitor**. The medical devices use sensors to record vital signs and other information and then communicate it to computer systems at the hospital or physician's office. Nurses can then monitor information from the medical devices while the patients are at home.

**1.    Demonstrate the Impact on Education**

By 2026, experts say the combined value of AR and VR in the global healthcare industry will reach [around $10.82 billion](https://hbr.org/2019/10/research-how-virtual-reality-can-help-train-surgeons), and it’s easy to see why. Extended Reality is already making a major impact on the way we help patients and support employees alike.

For instance, virtual reality in healthcare can be an excellent tool for medical professionals who need to develop their skills through the repetitive completion of procedures.

With a virtual reality headset, it’s possible for medical students to perform a range of procedures, without having to worry about wasted resources.

There’s also the option for multiple students to continue improving their education when they’re not able to visit a theatre or classroom in person – improving the chances of ongoing, retained skill.

[One study conducted at the UCLA](https://hbr.org/2019/10/research-how-virtual-reality-can-help-train-surgeons) even found that surgeons who train using VR goggles are up to 20% faster in their tasks and complete up to 38% more steps correctly.

**2.    Highlight the Value on Patient Care**

Extended reality presents incredible value for patient care, in a number of different settings. The use of MR and VR apps would allow for doctors and surgeons to check in on patients regardless of where they are and offer an immersive telemedicine experience.

Combined with other advanced technologies like digital twins, AI, and wearable health monitors, it could even be possible to conduct aspects of a physical examination at a distance.

Augmented Reality, and Virtual Reality, could also be useful in improving self-care amount patients. Doctors and care professionals could create their own rehabilitation apps to help individuals move through the recovery process as effectively as possible after a surgery. VR devices are also being used for things like reducing feelings of stress or fear when people are undergoing a medical treatment.

XR devices can also be extremely useful in giving doctors and healthcare professionals the extra data they need to provide more accurate and effective treatments. For instance, with a VR solution, a surgeon could potentially map the body of a patient before starting a surgery, to plan for any potential issues they might encounter.

**3.    Examine Treatment and Surgical Opportunities**

Virtual, Augmented, and Mixed realities have all begun to have an impact on the treatment and surgical landscape in healthcare. As early as 2017, a [VR technology](https://www.xrtoday.com/virtual-reality/how-does-virtual-reality-work/) assisted a chief of medical paediatric surgery to perform an incredible difficult procedure [separating conjoined twins](https://www.washingtonpost.com/news/innovations/wp/2017/07/21/how-doctors-used-virtual-reality-to-save-the-lives-of-conjoined-twin-sisters/https:/www.washingtonpost.com/news/innovations/wp/2017/07/21/how-doctors-used-virtual-reality-to-save-the-lives-of-conjoined-twin-sisters/).

Headsets and augmented reality applications are helping with the management of a lot of different kinds of mental health treatments too. People with dementia and Alzheimer’s disease can use these tools to help them remember important feelings and moments from their lives.

[](https://servedbyadbutler.com/redirect.spark?MID=173714&plid=1838168&setID=458772&channelID=0&CID=676501&banID=520722405&PID=0&textadID=0&tc=1&adSize=728x90&mt=1662552064323095&sw=1366&sh=768&spr=1&referrer=https%3A%2F%2Fwww.xrtoday.com%2Fmixed-reality%2Fbuilding-a-business-case-for-xr-in-healthcare%2F&hc=7ece9e41e7988e1a22d01dad3cb6cb6db13c3030&location=)

Those with depression and stress can use similar tools to learn how to overcome their fears and improve their relaxation techniques, without exposing themselves to potentially worrying situations.

Some medical professionals are even beginning to look at extended reality as a solution for managing things like chronic pain in individuals with life-long conditions.

More research is currently underway to discover how XR solutions can help with various forms of treatment in the medical landscape.

**4.    Look at Productivity and Collaboration**

The right extended reality applications can even improve how team members in a healthcare setting work together. For instance, in Germany, a start-up named Goodly Innovations developed an AR suite for biopharma and pharma manufacturing which helped [technicians to increase their productivity](https://www.goodly-innovations.com/).

In various landscapes, extended reality can help team members to visualize data more effectively and use those visualisations to explore potential treatment solutions or cures.

We already saw an example of this in the VR technology used to help scientists seek out a cure for the COVID-19 pandemic.

Another way XR can make teams more productive, is by improving the way they work together. In today’s modern healthcare landscape, many specialists are working collaboratively with each other from a range of different destinations.

Through virtual reality, specialists could share data and information in real-time, or even work on complex pharmaceutical projects together.

**5.    Consider the Marketing Opportunities**

There are even benefits for medical companies and medical device brands who need to sell their technology to groups around the world. Leveraging XR can help to improve the understanding consumers have of how certain treatments and products might work.

Facilitating good communication between pharmaceutical companies, medical professionals, and device manufacturers will be crucial in helping healthcare groups to make the right decisions going forward.

Amazing demonstrations which allow professionals to go behind the scenes of a new product or drug to really see how it work should help the major stakeholders of life science companies to make intelligent decisions.

This will also ensure the creators of innovative new product sin the healthcare space get the right attention directed towards their solutions.

For instance, when making a new surgical instrument, a company could allow a surgeon to step into a simulation and test how the device works.

The possibilities for XR in healthcare are endless. Once you begin to look into the outcomes already happening in the landscape, creating your business case is much easier.

## ****What is Extended Reality?****

Extended Reality is an immersive technology used to create virtual experiences to enhance user experiences. It is a visualization technology that enables users to interact with VR elements as if they were real.

Extended Reality is known to comprise AR, VR, and MR fused together to create an immersive environment. The most important fact about XR is that it possesses a wide range of experiences that combine the virtual and physical worlds. These experiences can be controlled with voice, virtual movements.

### ****How is Extended Reality Used in the Healthcare Domain?****

Extended Reality in the healthcare industry has been known as the driver of new opportunities for medical practitioners who are ambitious. And this applies specifically to the new day healthcare organizations.

XR solution can potentially assist surgeons during a procedure. It is significant as it can help save time and carry out surgeries accurately in the future. So let us now get into the benefits of XR solutions in the healthcare domain.

### ****1. Help Diagnose a Patient’s Condition Better****

XR can help medical practitioners relieve the pain a patient is going through by engaging them and distracting them from it. For example, a developer can use it to develop a VR-based game that is designed to keep patients occupied during various surgeries and distract them from their pain.

This allows doctors and healthcare professionals to understand their patients better. XR provides experiences that allow healthcare professionals to take the patients’ place and see what they experience.

Not only does this facilitate better treatment but also helps improve the relationship between a doctor and his patient.

### ****2. Surgery Simulators for Trainees****

Extended Reality consists of immersive features that open up possibilities to conduct simulated surgeries. These features can be largely helpful for the training of aspiring surgeons. A stimulated surgery process helps them learn the procedure in greater detail and also eliminates the need for a cadaver to try it.

### ****3. Preparation Before Actual Surgeries****

**XR technology helps surgeons prepare for surgeries in the following ways:**

* It generates 3D replicas according to patient scans. They allow a surgeon to have a look at it in detail and collaborate with his or her team on how to go about the actual procedure.
* Surgeons can use an immersive XR headset to gain a clear vision of elements like the cut, the draw, and the tools required for the procedure.
* An XR-based platform can be created for preparation where multiple surgeons can collaborate for discussions.
* Stimulated applications can be created so that surgeons can practice the execution of the procedure.

An Extended Reality application involves various vibration patterns that place the surgeon in an environment where he or she feel like holding actual tools. An app providing such immersive experiences can be the ideal platform to study surgeries integrated with VR.

### ****4. Educational Training for Students****

Extended Reality apps in medical education play a crucial role in the training of the budding medical practitioner. These apps are created specifically for educational purposes.

Both doctors and medical students can use them productively to observe intricate details from an accurate representation of a human body. This helps users learn about different procedures and how to they are carried out.

### ****5. Rapid Detection of Health Conditions and Timely Treatment****

Have you wondered how many lives can be saved if a doctor can determine someone has a serious health condition by just looking at him or her? This intriguing thought might have been unrealistic a few years back. But it is possible now courtesy of Extended Reality.

A set of immersive technologies can be combined using 3D models to detect the illness of a patient. Complicated health problems like tumors, broken bones, tissue degenerations, etc. can also be detected by XR apps.

The images from this app can be used to show patients a chronological preview of their condition and also the process of their treatment.

#### **Closing Thoughts:**

There is no doubt that XR technology is creating several promising opportunities for healthcare industry. Be it advanced medical devices, improved hospital systems, and insurers, or skilled healthcare service providers, the prospects appear very good.

If you are looking to integrate XR into your healthcare domain, Sapizon Technologies is the ideal partner for you. We are one of the top Augmented Reality and [**Virtual Reality app development companies**](https://sapizon.com/vr-ar-development/) and possess substantial experience in creating immersive apps.