

THE DEFINITIVE GUIDE: AUGMENTED REALITY 2020



This is a complete guide to Augmented Reality in 2020.

In this all-new guide you'll learn:

- What is Augmented Reality?
- How did Augmented Reality evolve?
- How Augmented Reality works?
- AR versus VR?
- Future of Augmented Reality?
- Industries reaping the benefits of AR?
- Real-world Applications of AR?
- Augmented Reality games?

I'm PUMPED to announce the all-new Augmented Reality.

Heard about Augmented Reality? If not living under a rock you must have probably used it as well. Ever sent a Snap chat with a filter on it? Snap chat is a classic example of AR. 'Pokemon Go' another example that may help you in relating to AR. The Pokemon Go fever gripped millions of people of different ages. People were crazy about capturing their Pokemon using AR in the real world.

This article explores the fundamentals of Augmented Reality Technology in detail.

What is Augmented Reality?

[Wikipedia](#) defines Augmented Reality (AR) as an interactive experience of the real-world environment in which objects residing in the real world are enhanced using the perceptual information generated by the computer.

Cambridge Dictionary defines AR as the images that are computer generated and used together with a view of the real world.

[Pokemon Go](#) the only game that comes in our mind with Augmented Reality. AR, however, extends beyond the world of gaming. It is now changing how industries and operate and make decisions. The findings of Goldman Sachs indicate that AR and VR technologies will have an \$85 billion market by the year 2025. Most of the conversation around Augmented Reality and Virtual Reality revolves around gaming and videos. Large market value is driven by the non-entertainment use of AR technology.

The journey of Augmented Reality started in 1968 by Sutherland. Started with an application in the construction world, AR flourished to another level.

Augmented Reality (AR) is a technology that offers an interactive experience of a real-world environment. AR enhances the real-world objects by computer-generated perceptual information.

There are three major features of AR :

1. A blend of a real and virtual world
2. A real-time interaction
3. An accurate recording of the real and virtual object

“**Augmented reality** is a revolution that augments reality in a manner that something bigger and better can be achieved”.

The Augmented Reality technology offers a seamlessly interwoven immersive experience with a physical world. The two widely used synonyms of AR are – Computer-mediated reality and Mixed Reality. AR is a user-friendly and comfortable technology that once installed in a particular field requires minimal guidance. By 2017, there were only 336 startups listed on Angelist based on augmented reality. This number will grow as high as 1 Billion by the year 2020!



“Is that you, or am I experiencing Artificial Reality?”

How did AR evolve?

Attention stage

The evolution of AR can be understood in three clear stages:

1. The first AR technology was developed in the year 1968 by computer scientist Ivan Sutherland. Sutherland is also known as “Father of Graphics”. Sutherland created the first AR head-mounted display.
2. Further, one of the first AR application for commercial use was developed in the year.
3. The purpose of AR application development was the advertisement. The German agencies of Munich used AR for advertisements. The advertisement agencies in Munich created a printed advertisement for BMW Mini. When the car model held in front of the camera, the same appeared on the screen.
4. The first commercial AR application appeared in 2008. It was developed for advertising purposes by German agencies in Munich. They designed a printed magazine ad of a model BMW Mini, which, when held in front of a computer’s camera, also appeared on the screen. Gradually the AR and VR technology was utilized by giant companies such as Disney, National Geographic and Coca Cola.
5. AR was utilized for different purposes, such as National Geographic used AR for showing the extinct animals, not in a cage but walking inside a showroom!
6. Coca Cola used AR for raising the environmental concern of the melting ice. The people till then only heard of the melting ice but AR let them experience the same in a shopping mall. The effect would have multiplied in terms of raising an environmental concern.
7. Disney used AR for showing the cartoon characters on a large screen making them interact with the people. It would have been a treat to watch!

Trial stage

1. The second stage of AR evolution started when the digital products were simulated. The simulation lets the products interact with the real world and real-time movements. Jewelry and watches were the product categories that utilized AR in the 2010s. The use of AR during this stage became popular for the product “try on”. [Apple watch also gave a virtual try on for giving life to its Apple watch.](#)

Usage stage

1. During this stage of evolution, AR was implemented in a broader range of industries. AR in this stage evolved as one of the valuable tools used for exploring geographic, historical and cultural and environmental aspects. The app operated when the user points out the mobile device towards a site or an object.
2. The AR display produced the superimposed content over the screen. During this stage of AR, evolution apps were developed for the tourism industry. The AR was used to take travelers in the past. For example, the AR app in the Museum of London let the visitors feel and experience the streets that were found 1000 years back. The paintings in the museum also come to lives using the AR app.
3. Similarly, apps designed for museum contexts let visitors get more information about famous paintings by overlaying a description over it on smartphone screens in real-time.
4. From the first computer-generated graphics and projections in the sixties and seventies to the newest AR games and Microsoft HoloLens Developer Kit, the applications and possibilities around AR are constantly evolving. In 2016 total investment in augmented and virtual reality reached €925 Million and shows no signs of slowing down.

How Augmented Reality works?

Excited about knowing how this technology works? The process of AR starts with computer understanding that what is going around in the user environment. This is done using the content of the camera feed. AR then adds the digital details to the real world. In simple words, this platform adds layers of information on the real-world objects by projecting graphics on the same.

In simple words, AR overlays a projected image or object to layer the real world view of the user. The AR generated display can be seen on devices such as mobile phones, glasses, screens, handheld devices along and head-mounted displays. Gradually, future advancements may reach a level where AR will be used in the contact lens or even a virtual retinal display.

Augmented Reality works in combination with other technologies including [IoT \(Internet of things\)](#). [Yelp](#), a crowd-sourced review forum, and a leading business directory service are already on its way to use AR. Using AR Yelp is showing the reviews to its customers simply by pointing a restaurant in the camera.

Augmented Reality versus Virtual Reality

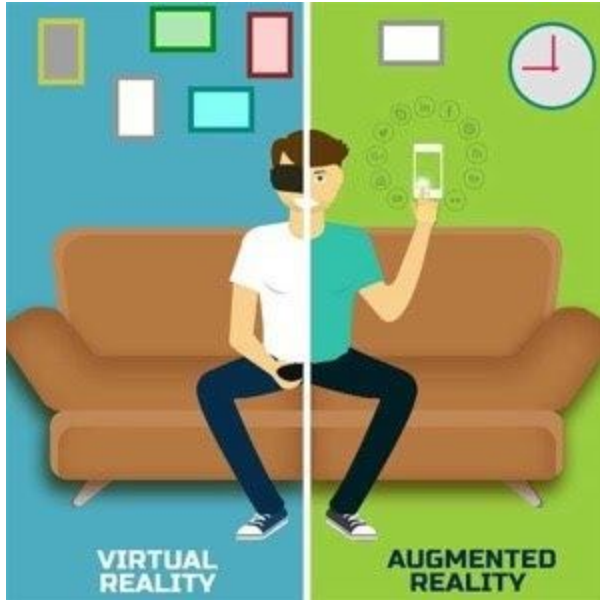
Augmented Reality versus Virtual Reality

	Augmented Reality	Virtual Reality
Environment	A digital environment that overlays the real environment with images and objects.	A digital environment that blocks the real-world environment
Experience	A user sees both the real and virtual worlds at the same time.	VR fabricates everything in the environment of a user. The user feels the present in a Virtual Environment.
Devices	Smart phones and wearable devices including sensors, compass, and digital projectors.	VR uses Head Mounted Displays are used along with the input devices.
User location	Users need to be present on location.	Users need not be present at the location.
Physical movement	The physical movement of the user is possible	The user cannot move physically in the environment.
Usage	AR is used in areas such as interior designing, games mapping and demonstration	VR is mostly used in medicine, military, and games
Information	New information is added to the real world view	Heavy graphics are used for creating a real world view.

Future of Augmented Reality

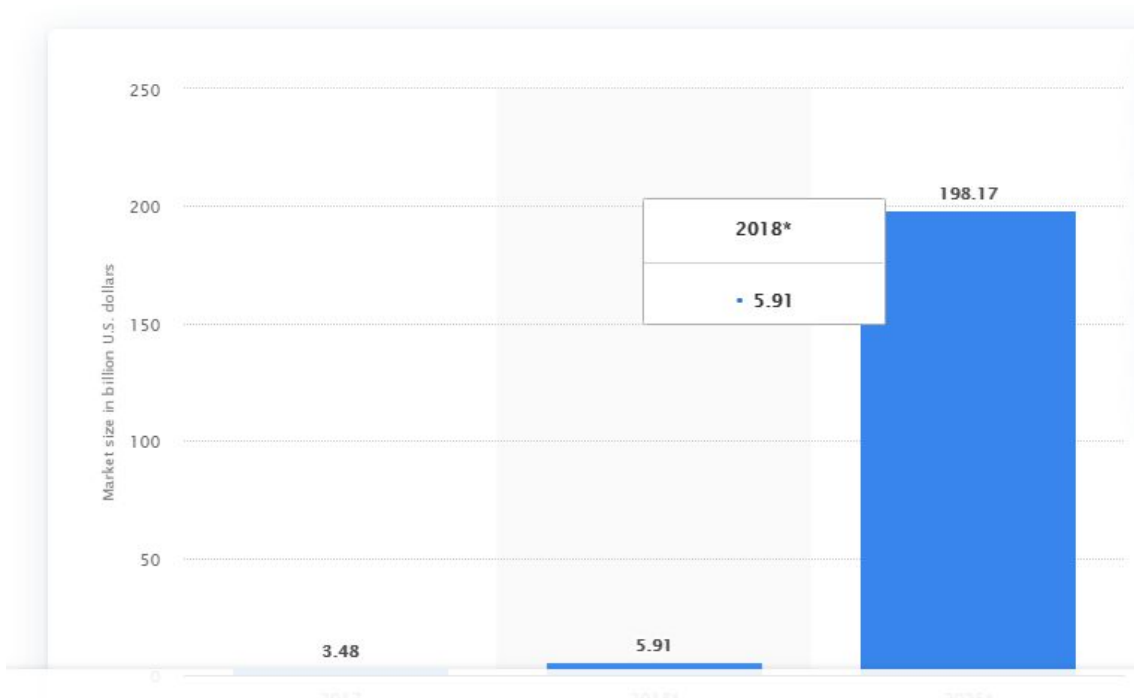
Where will AR be found in the next 10 years?

The AR & VR industry is expected to reach a worth of \$25 Billion! So if someone is thinking of investing in this technology, it would be a high yielding idea. The Augmented reality application ranges from the healthcare industry to the [Real Estate industry](#). The healthcare industry will reap revenues of around \$5 Billion using AR technology by 2025. The Travel industry on the same hand is forecasted to generate revenue of \$4.1 Billion and a retail industry revenue of 1.6 Billion. Augmented Reality has a serious future in several industries.



PWC also forecasts that the adoption of AR and VR technologies will add over [£1.3 Trillion to the economy by the year 2030](#). Also, the report indicates that AR and VR will generate 23.5 million jobs in the future.

[Statista](#), a leading online portal for statistics also says there will be a drastic increase in the market size of AR. By the year 2025, the AR market size will reach as high as to over 198 billion U.S. dollars! Isn't it huge?



The AR and VR in the future will affect people at different stages of their career ladder. These technologies will be used in processes ranging from design, operations to marketing and sales .

Industries reaping the benefits of Augmented Reality

The huge technological advancements have already increased the competition in the market. Companies are striving to find new ways and technologies to attract and engage their customers. What can be a better solution than AR? AR is emerging as a revolutionary technology that offers the possibilities that are difficult to be achieved with other technologies. There are industries that have realized this fact and are now using AR to improve performance.

Healthcare

Imagine a beginner surgeon doing the first surgery... anxiety and fear may be the prominent feelings at that moment.



**“I have no idea what that thing is either.
Let’s just take it out, stitch him up, and see
if he gets better.”**

The AR apps are now serving as the helping hands for the armature surgeons. The [AR apps in surgery](#) offer a video platform with augmented hands that can be projected on the patients. The augmented hands are used by experienced surgeons to guide the new one regardless of their location.

Education

Not every student is a book worm ...there are many who want to study but may not find studying interesting. AR in education is a revolutionary Augmented Reality that has also helped the people and students to learn and understand their surroundings. The British Museum uses AR technology to help children and people understand their statues. This AR apps uses a Samsung tablet and introduces a game which can be played by the children



5 Real-world applications of Augmented Reality

Augmented Reality is a sophisticated technology that helps organizations in improving customer experience. This section will focus on the real-world application of AR

Airport navigation app

Terminal 1, Terminal 2, Terminal 3Navigation in airports is never easy. [Gatewick Airport passenger app](#) was developed using AR for the navigation of passengers at the airport. The app uses over 2,000 beacons (Bluetooth) to navigate the passengers through the airport. This app may evolve as one of the tools for managing the traffic flow at airports.

Ikea using Augmented Reality application

Did you have the number of doubts while purchasing furniture? The color may not compliment the walls ... the furniture may look small and big in the room...and many others. [Ikea Place app](#), an AR app will help the customers in the same. The app uses [ARKit technology](#) that allows a user to scan the room for which furniture has to be bought. The users can easily design the space and decide the color of furniture by placing the objects in a new digital environment.

Sephora using virtual artist

This lipstick may not go with my skin tone....what color lipstick should I wear?? Questions that generally arise during the purchase of a cosmetic. Purchase of Cosmetics is a costly affair, a wrong decision leads to wastage of money. [Sephora a cosmetic company understands this issue of its customers. The company hence utilizes AR technology for helping its customers to try the products realistically without actually buying them!](#)

Real-world use of AR in healthcare

Augmented Reality can be a lifesaver too! Yes, you heard it right...you is thinking that is AR replacing the medicines and procedures? No, not at all. AR apps in healthcare will provide real-time information that can be used for diagnosis, treatments and surgery plans of patients. [Accuvein a proactive player in the healthcare sector is using a device that scans the veins of a patient. A human body contains around 10,000 miles of vessels.](#) A manual method of scanning these may lead to escalations. AR helps

Accuvein in reducing the escalations to up to 45%. Surgeons can model their procedures using this technology.

AR Games

By now the idea regarding the AR games and apps such as Pokemon Go and Snapchat is clear. Does another AR game come into your mind? Give a thought. [The market of AR games is expected to raise \\$284.93 billion by the year 2023](#). There are several games other than Pokemon such as [the Zombies Run, Ghostbuster World, Kings of Pool are some of them](#).

The above blog in detail focuses on some of the most important concepts and fundamentals of Augmented Reality. Many of the doubts related to AR may have been clarified with the above blog. AR is, however, a vast concept which needs to be explored continuously. Do not treat AR as a destination but a Journey.