

SRUSHTI



**WHY VIRTUAL WORLDS ARE THE FUTURE -
THE HISTORY, GROWTH AND SCOPE OF 3D VIRTUAL WORLDS.**



THE TECHNOLOGY THAT CHANGED IT ALL

INTRODUCTION

There were so many genius brains that contributed to the miracle called computer technology. If someone had told the early developers of computers that one day it will have the potential to generate a parallel and separate existence, they may not have really believed it. But such is the case with many pathbreaking inventions. You just cannot predict its potential. From the initial goal of performing complex mathematical calculations to the modern virtual worlds, computer technologies have come a long way. So, let us see how we reached this far and how 3D virtual worlds shaped up.

EARLY VIRTUAL WORLDS

SENSORAMA

The starting point of this technology can be traced back to the American Cinematographer Morton Heilig who created a mechanical device called 'Sensorama' in 1962 after five years of hard work. This is one of the earliest known examples of immersive and multisensory experience. Heilig saw theater as a wonderful platform to surround all the senses in an effective manner and draw the viewer's attention onto the stage. Heilig called it the 'Experience Theater' and presented his vision in his 1955 paper, 'The Cinema of the Future'.

He created an exemplar of this vision in 1962 called 'Sensorama' that displayed five short films. The Sensorama could display stereoscopic 3D images in wide angle view, enabled body tilting, stereo sound and had separate tracks for wind and aromas to be set off during the film.





One of the films depicted a bicycle ride through Brooklyn and the viewers were able to feel the wind on their face, the vibration of the seat and the scent of the city! However, the Sensorama suffered a sorrowful fate as it was considered a costly mechanism. Heilig struggled to get financial backup and so the work on Sensorama had to be ceased. However, it has to be noted that the Sensorama is a machine that works, even today!

SWORD OF DAMOCLES

The first virtual world created with the help of computers was the work of none other than the 'Father of Computer Graphics'. Ivan Sutherland, along with his student Bob Sproull invented 'The Sword of Damocles' in 1968, which is widely considered as the first Virtual Reality and Augmented Reality Head Mounted Display system. In this, a computer program generated output in the stereoscopic display. The interpretation of the program depended upon the user's gaze and this was why head tracking was essential. The weight of the system and the requisite to track the head movements meant that the HMD had to be connected to a mechanical arm hung from the ceiling of the lab! In case if you are wondering what the Greek mythology Damocles have to do with Sutherland's system, the answer lies in its formidable appearance!



SOURCE : IVAN SUTHERLAND - HEAD MOUNTED DISPLAY

MAZE WAR

Today, we dwell around in 'Second life' or other virtual worlds using avatars but the first use of avatars came during the period of 1973-74, when the computer game '**Maze War**' was introduced. It was played on Advanced Research Projects Agency Network (ARPANET) funded by United States Department of Defense for the use in university and research laboratories. **Maze War** provided the base work for numerous computer game concepts that followed such as, first person 3D point of view, observer mode, level editor, network play, depicting player's position on a playing field map, altering clients to cheat at the game etc. In the game, the players moved around a maze and they were able to move forward and backward and also turn 90 degree right or left. The players were given an avatar known as 'Eyeballs'.

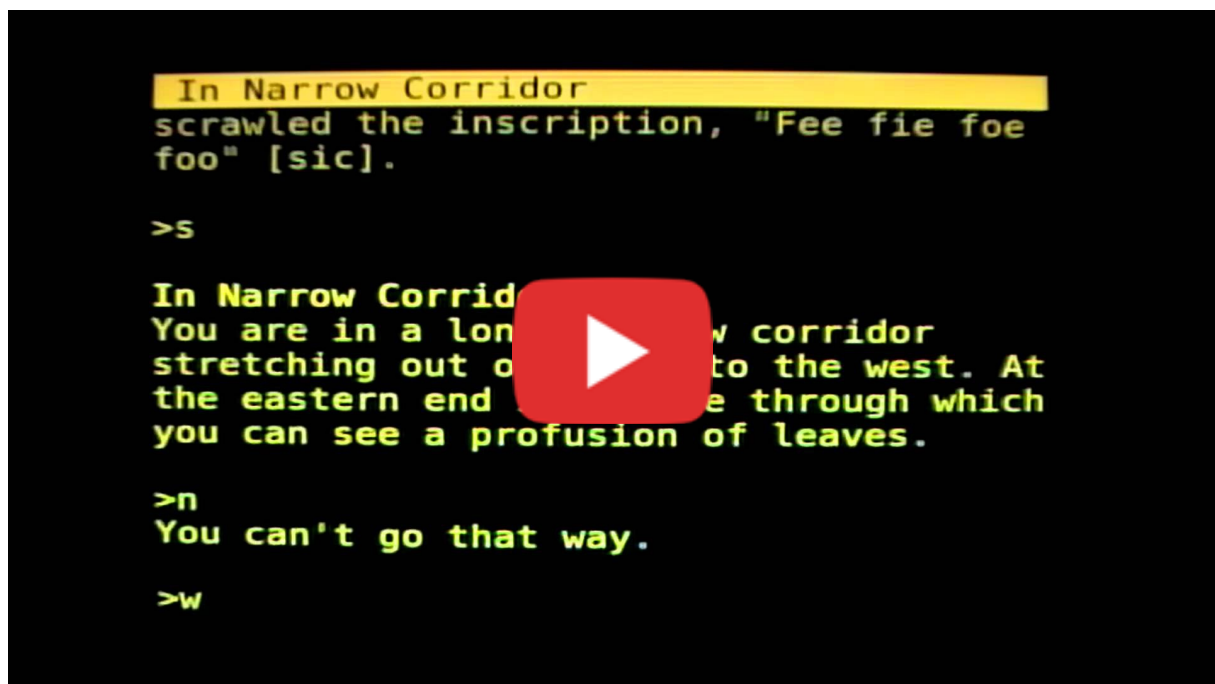
MUD - THE GAME CHANGER

One of the significant breakthroughs in virtual world came with the introduction of MUD. (Multi User Dungeon / Domain / Dimension). MUD was a real time multiplayer virtual world, that was predominantly text based. MUD featured online chat, interactive fiction, role-playing, hack and slash games etc. Users were able to communicate with each other and the world by typing commands in a natural language. Customary MUDs featured games set in fantasy worlds where users can select a particular class, acquire specific skills, complete missions, advance the character and create a story by roleplaying. Besides such common MUD worlds there were many other worlds that were based on famous books, movies and animations too. Some MUDs were designed for educational purposes also while there were others for just chatting. The background of modern day Massively Multiplayer Online Role Playing Games, (MMORPGs) like EverQuest and social virtual worlds such as Second Life can be traced back to the MUD era. In fact most of the MMORPG designers started off as MUD developers.

COLOSSAL CAVE ADVENTURE

The history of MUDs began with the introduction of '**Colossal Cave Adventure**', a text based adventure game, developed originally in 1976 by computer programmer William Crowther. In the next year, with the help of Don Woods and other programmers, Crowther expanded the game by implementing numerous variations.

The game can be thought of as a computer replica of treasure hunt! Players could control a character via simple text commands to probe into a cave that is supposed to be filled with hidden treasures. The mission was to find the treasure and escape the cave alive and the players who successfully completed the mission earned reward points. Colossal Cave Adventure is considered as the first known work of interactive fiction.



SOURCE : [COLOSSAL CAVE ADVENTURE PLAY-THROUGH](#)

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WELCOME TO ADVENTURE!!  WOULD YOU LIKE INSTRUCTIONS?

yes

SOMEWHERE NEARBY IS COLOSSAL CAVE, WHERE OTHERS HAVE FOUND FORTUNES IN
TREASURE AND GOLD, THOUGH IT IS RUMORED THAT SOME WHO ENTER ARE NEVER
SEEN AGAIN.  MAGIC IS SAID TO WORK IN THE CAVE.  I WILL BE YOUR EYES
AND HANDS.  DIRECT ME WITH COMMANDS OF 1 OR 2 WORDS.  I SHOULD WARN
YOU THAT I LOOK AT ONLY THE FIRST FIVE LETTERS OF EACH WORD, SO YOU'LL
HAVE TO ENTER "NORTHEAST" AS "NE" TO DISTINGUISH IT FROM "NORTH".
(SHOULD YOU GET STUCK, TYPE "HELP" FOR SOME GENERAL HINTS.  FOR INFOR-
MATION ON HOW TO END YOUR ADVENTURE, ETC., TYPE "INFO".)
- - -
THIS PROGRAM WAS ORIGINALLY DEVELOPED BY WILLIE CROWTHER.  MOST OF THE
FEATURES OF THE CURRENT PROGRAM WERE ADDED BY DON WOODS (DON @ SU-AI).
CONTACT DON IF YOU HAVE ANY QUESTIONS, COMMENTS, ETC.

YOU ARE STANDING AT THE END OF A ROAD BEFORE A SMALL BRICK BUILDING.
AROUND YOU IS A FOREST.  A SMALL STREAM FLOWS OUT OF THE BUILDING AND
DOWN A GULLY.

east

YOU ARE INSIDE A BUILDING, A WELL HOUSE FOR A LARGE SPRING.

THERE ARE SOME KEYS ON THE GROUND HERE.

THERE IS A SHINY BRASS LAMP NEARBY.

THERE IS FOOD HERE.
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ONLINE CHAT AND GRAPHICAL MUDS

The Programmed Logic for Automatic Teaching Operations (PLATO) system at the University of Illinois was the birthplace of first online chat system called 'Talkomatic'. It was developed by Doug Brown and David R. Wooley in 1973. Talkomatic offered six channels and each of them were able to include up to five users. The unique feature of this system was that each user appeared in their own section of the screen and messages appeared on user screens character by character as they were typed. Talkomatic, along with PLATO notes and a wide range of games created an uprising of an online community that became popular through early and mid 1980s. 'Talko', the smartphone app by software entrepreneur Ray Ozzie is named after **Talkomatic**, one which he experienced during his graduation at the University of Illinois.

Starting from 1975, PLATO systems became a platform for numerous graphical MUDs at Illinois and various other American Universities. 'Pedit5', created by Rusty Rutherford was one of the popular ones among them. It is widely considered to be the first dungeon crawl game where the player has to control a character that wanders a single level cell, collect treasures and kill monsters. The dungeon was rendered using on screen computer graphics. A similar dungeon crawl game that became popular during this era was 'Moria'. The game was an innovative concept and it facilitated ten people to travel as a group and message each other.



SOURCE : PEDIT5 (1975) ON PLATO SYSTEM - GAMEPLAY

The game also featured a wireframe first person perspective display. Another popular Graphical MUD of this period was '**dnd**', created by Gary Whisenhunt and Ray Wood.

The name was derived from 'Dungeons and Dragons', a tabletop game that was first introduced in 1974. The game was written in the TUTOR programming language for the PLATO system and it is noted for being the first interactive game that featured computer controlled enemy known as bosses. In dnd, players could create a character and then move into the multi level cell in search of two treasures; the grall and the orb. The cell comprised several maze like levels and players could advance to the next level as they complete one. However, players could also come back to previous levels or even move out of the cell altogether, which made '**dnd**', one of the very first games to make use of non linear progression. The game continues to be played, even today, on the NovaNET system and Cyber1!

The Colossal Cave Adventure inspired a group of students at the Massachusetts Institute of Technology to develop the interactive fiction video game '**Zork**'. The first version of the game was written between 1977 and 1979 using MDL programming language on a DEC PDP-10 computer by Tim Anderson, Dave Lebling, Marc Blank and Bruce Daniels. Zork was characterised by the sophistication of its text parser and thus the user was not just restricted to verb-noun commands. For example, the player could command sentences such as "put the sword in the case" or "look under the rug" instead of simple verb-noun commands such as "take lamp", "open mailbox" and so on. The commands such as 'save', 'restart', 'restore', 'quit' etc could be given to the game directly instead of pursuing actions within the fictional environment of the game. The game was also noted for its supreme storytelling and its premise centered around the ruins of an ancient empire lying far underground. The player is the adventurer who essays into this world and upon successful completion of the missions, one would inherit the title of 'Dungeon Master'. During its commercial release, Zork was split into three parts; 'The Great Underground Empire', 'The wizard of Frobozz' and 'The Dungeon Master'.

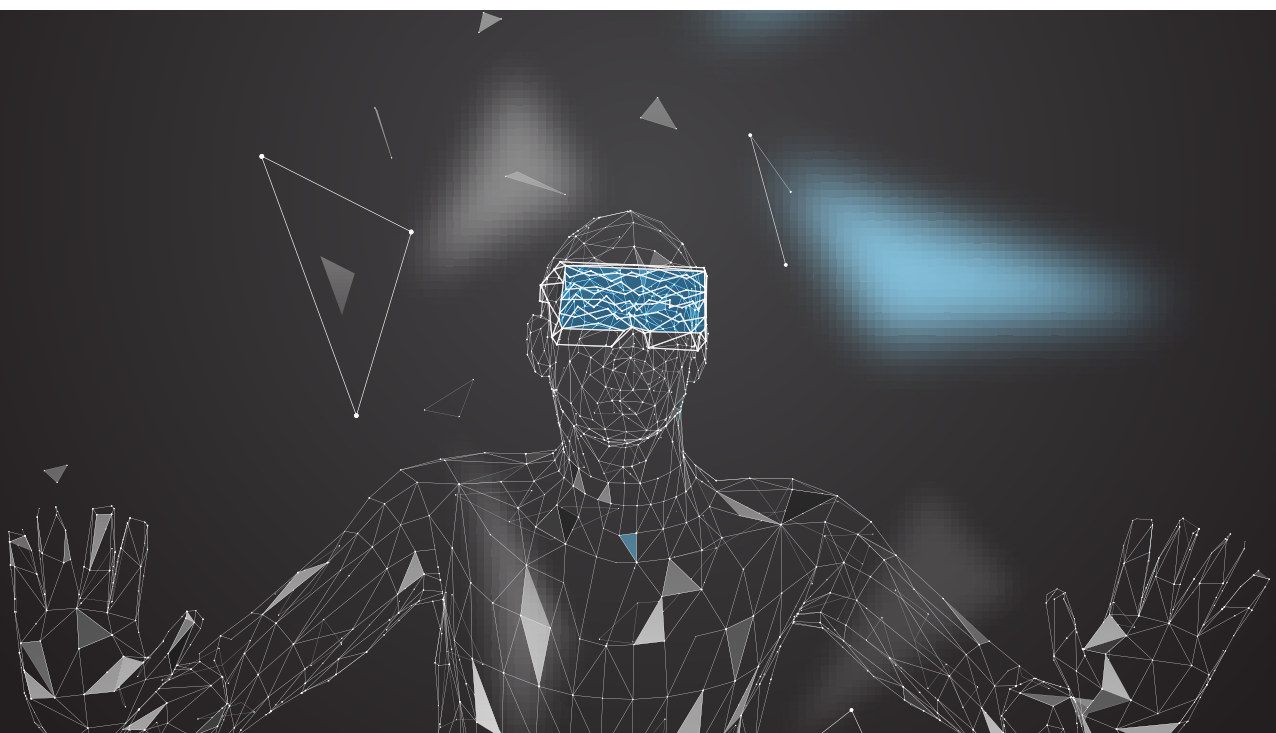
In the later years, MUD came to be known as Essex MUD and MUD1 and it became widely accessible when a guest account was created in the Essex University Network, which allowed users on JANET, a British academic x.25 computer network, to connect on weekends and between morning two to eight during weekdays. Wonder if that was the motivation for modern day internet plans! When Essex University connected its internal network to ARPANet in 1980, it became the first multi player online role playing game. However, the original game had to be closed down by late 1987 due to repeated pressure from CompuServe, the first major commercial online service provider in the US, to whom the game had been licensed by Essex's fellow student, Richard Bartle. This meant that 'MIST', a derivative of MUD1 was the only available option for the Essex University and quite interestingly, it went on to achieve massive popularity. MIST ran on PDP-10 until 1991.

THE INTRODUCTION OF TALKERS

Stripping away the complex gaming machinery of MUD and keeping just the communication level commands in tact, 'Talker', a chat system was introduced in 1980s. This communication system can be considered as a direct predecessor to instant messaging and MMORPGS. Talkers formed an online virtual world where multiple users connected to chat in real time. People could access Talker generally through telnet and they were provided a basic text interface to chat with each other. Many of the terms used by Talkers such as 'Rooms' and 'Residency' remain in use even in the modern day 3D platforms!

Mark Jenks and Todd Krause, two students at Washington High School in Milwaukee, were the first ones to introduce the concept of Talkers as they wrote a software program to talk among a group of people in the school year 1983-1984. For creating the program, they made use of PDP-11 minicomputers at the Milwaukee Public Schools central office. While going through the files and directories, Mark came across the PDP-11 program 'talk' and then decided that they could do a better job.

The program was written to carry out several functions such as tables, private messages, moderators and actions all of which can be seen in Internet Relay Chat today! In 1990, 'Cat Chat' became the first Internet/JANET talker. The website talker.com was created in 1996 and it served as the first platform to sell spaces for talkers. During the booming period of mid nineties, the website had more than 90 talkers on it at one time. As of September 2009, talker.com only hosts their owners.



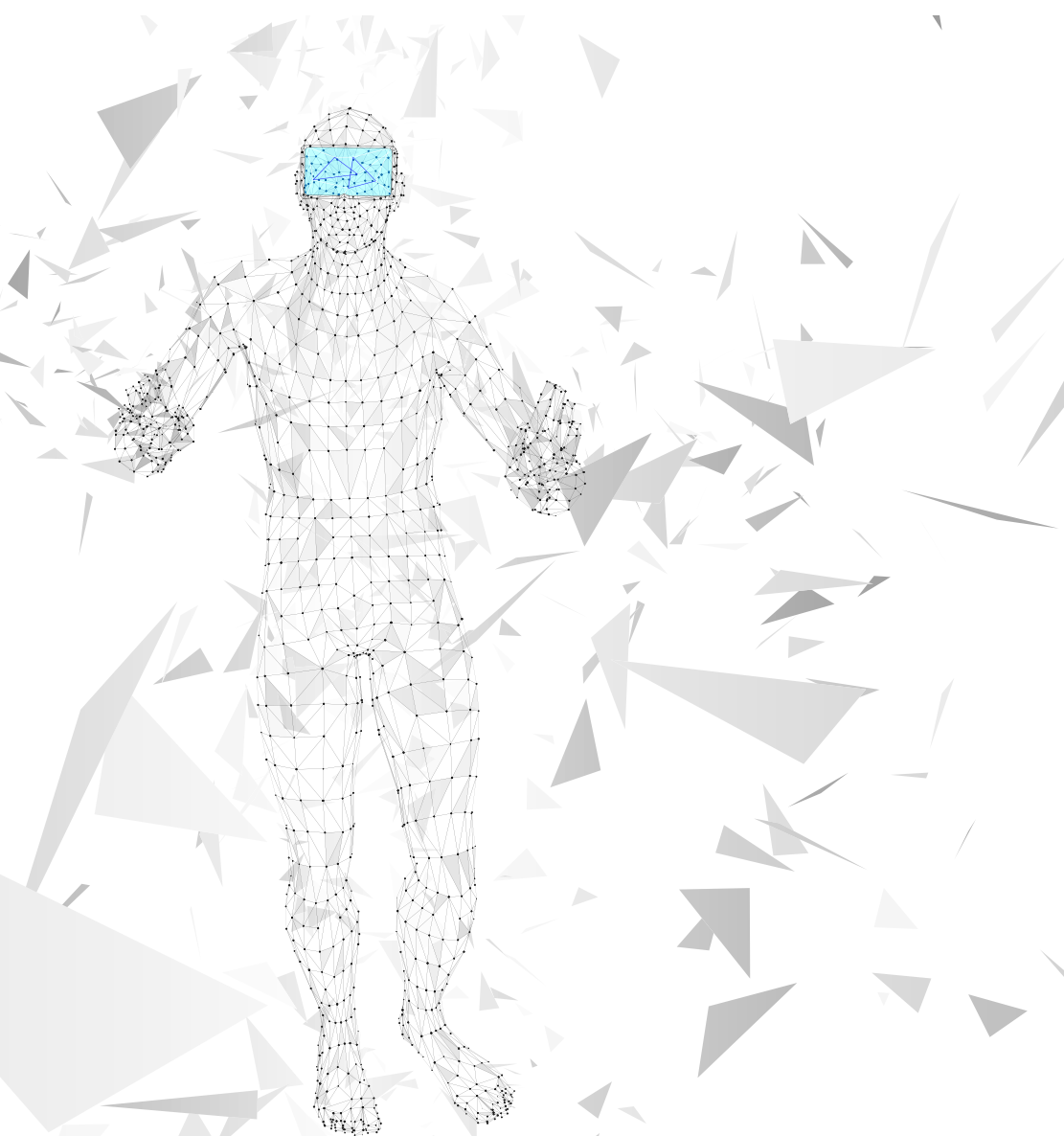
THE ARRIVAL OF INSTANT MESSENGERS

The next giant leap in virtual worlds was the introduction of Instant Messaging (IM). The first widely available chat service to the public was the CompuServe CB Simulator which was released in 1980. CB had 40 channels and used commands like 'tune', 'squelch', 'monitor' etc but later they enabled multi player games, digital pictures, multimedia and large conferences. Mick Jagger, the English songwriter and singer held the first online multimedia conference using CB simulator on December 7, 1995. CB simulator was also stage to one of the earliest online weddings! The wedding was attended by almost 50 virtual guests.

Another one of early instant messaging services was the Quantum Link that worked on Commodore 64 and 128 personal computers from November 5 1985 to November 1 1995. Along with instant messaging they provided email, online news and chat and public domain file sharing libraries. The Quantum Link's client software divided the screen into sections and instant messages appeared as yellow bars which displayed the sender's name and message and presented various options for reverting back. [PowWow](#), [ICQ](#) and [AOL](#) Instant Messenger came to power during mid 1990s and this created an uprising for the modern day internet wide, GUI based messaging clients. PowWow was introduced by a company called Tribal Voice, which was established in 1994 by the software millionaire John McAfee. The program featured many innovative aspects such as Voice over Internet Protocol, WAV sound file playing, Offline messages via Post Office Protocol and Simple Mail Transfer Protocol, built in speech synthesizer, shared whiteboard. It also facilitated simple drag and drop interface which made file sharing very easy. [PowWow](#) was also one of the very first instant messaging programs that was compatible across multiple platforms. The program ran with both AOL Instant Messenger (AIM) and Microsoft's MSN Messenger.

The phrase 'I Seek You' was the idea behind the name for open source instant messaging computer program '[ICQ](#)'. The program was launched in November 1996 by the company Mirabilis. Using this, the users could register an account and then they would be allocated a number, much like a phone number for others to locate and contact them. This was the first program that featured a fully centralized service and one in which one on one conversations with individual user accounts was the focus point. ICQ is still an active platform and as per 2013, it is estimated to have 11 million monthly users. At its best period of 2001, ICQ had more than 100 million accounts registered. Over the years, ICQ has introduced several features such as ICQ Game Center - a game platform that enables to play with or against other users, SIM Card - that is offered to people across Europe at a discounted rate, and a video magazine that broadcasts teen content 24*7.

America Online (AOL, now known as AIM) Instant Messenger was launched in 1997 by AOL Inc. AIM was very popular in the late nineties and with 52% market share in 2006, it once held the largest share of instant messaging market in the United States. The official 'Running Man' mascot of AIM was so popular that an editor of 'Complex' media called it a 'symbol of America'. AIM was characterized by the presence of chat robots that could talk to users in natural human language and also play games, provide advice and also aid in studies!



GROWTH OF INSTANT MESSAGING

From then on, instant messaging went on to become a massive revolution and the introduction of IM services from Yahoo, MSN, Excite etc ignited the fire. The popularity of mobile phones and that too the ones with multi touch features, significantly empowered the system of instant messaging. You don't have to log in to a complex system or wait to make a connection now.

It can be done by a small device that fits your pocket and within a matter of nanoseconds! A survey indicated that in 2015, mobile phone messaging apps were used by 1.4 billion customers and in 2018 it is expected to reach 2 billion, which forms 80% of smartphone users worldwide. Even Facebook CEO Mark Zuckerberg in the Facebook F8 Conference went on to say that "Instant Messaging is going to be the next big platform for helping you connect with all kinds of services in new ways".

We are already familiar with the potential it has in store. How many Skype Interviews and conferences have you attended? Most employers today prefer to have the preliminary round of face to face interview using a video chatting platform like Skype. This is a significant life saver as it helps to save time, energy and money of both employers and employees. Imagine those periods where you come across a job vacancy notification, flies down to the interview spot and wait hours for your turn. Furthermore, no office can smoothly run today without proper application of real time video conferencing. Staff, managers and clients can take part in an important meeting from literally anywhere in the world with an easy swipe of the thumb! When geographical limitations are surpassed nobody has to worry about missing an important event and this reduces the day to day stress in an organization and allows easy flow of information.

We know how quickly an interesting content moves around in the instant messaging era. An interesting piece of message, picture or video get shared across millions around the globe in no time. This is a fabulous tool when it comes to advertising. Expensive and high profile advertisements are good but that's not the only one that can attract a customer anymore. An interesting message, a photo or a catchy video can help popularise a brand at remarkably low price and effort. Similarly chatbots are available in numerous platforms like wechat, nimbuzz, facebook messenger etc. This is an incredible tool that helps business concerns create bespoke responses based on natural language inputs.

As its use expand, it will be a new breakthrough in customer - business relations as customers can easily place orders by just messaging the chatbots! They can also get all the queries addressed real time, filter the products according to their needs and even gain after sales services by mentioning what the defects are... All through instant messages!

Messengers today feature much more elaborate teamwork and communication tools than traditional emails. The number of emails that people need to send within an organization has significantly reduced as all major communication can be made possible through instant messaging. Each department can create its own instant messaging group and just one message will ensure that all employees of that group are notified immediately. A study in 2016 by Symantec Corporation, an American software company indicates that 55% of people who use instant messaging at work claims that it has cut down on Internet traffic and 50% find it an efficient mode of communication than email.

Instant messaging is also an easy tool to educate, train and coordinate employees. New projects, ideas and updates can be communicated quickly using photos, audios or videos. Any confusion and doubts can also be cleared immediately as you don't have to wait for your superior to come down to your table! Enterprises can also enable networks based on each department and assign individual functions and settings.

Messengers have the potential to assist users in almost all online matters. In China, the application WeChat is used to order food, taxi, purchase airline tickets, check bank balance and even play games! Using the Japanese messenger '[Line](#)', users can even place orders at stores. So just like texting a "hello" to your friend you can purchase products from stores! '[Line](#)', together with Snapchat and Facebook also provides the option to send and receive money within the app.



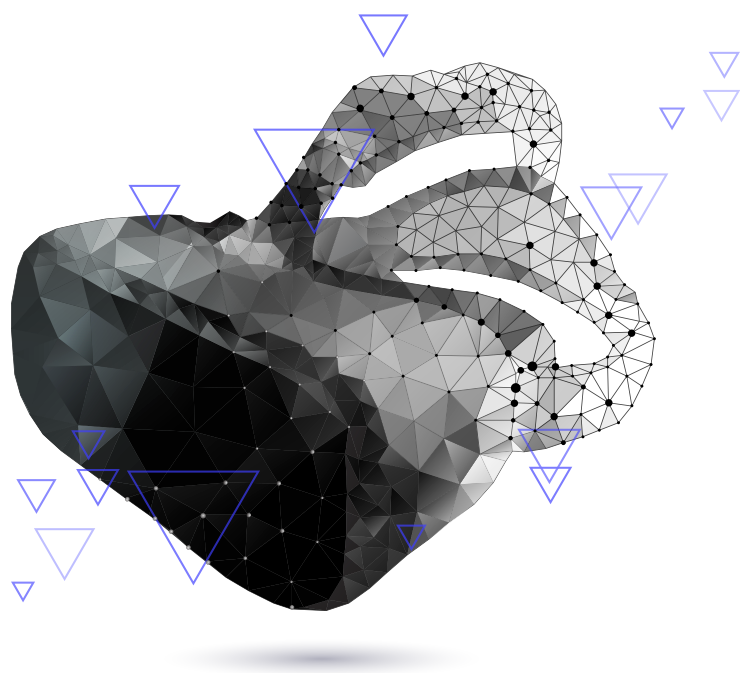
BEGINNING OF 3D VIRTUAL WORLDS

MUDs and instant messaging services slowly started the heritage for virtual worlds. The first attempt at large scale virtual community came from none other than the mighty filmmaker George Lucas's video game publishing concern. LucasArts launched '[Habitat](#)' in 1986 as a beta test by Quantum Link, an online service for the Commodore 64 computer. Habitat had a Graphical User Interface and a strong base of consumer oriented users which made it the benchmark for modern day online 3D virtual communities. The user interface was provided by the client software which generated a real time display of events happening and then translated it as messages into the host.

The players of this virtual world were assigned with on screen avatars and interestingly enough, the virtual world was governed by its own citizens. Initially, this led to severe chaos as avatars were even robbed or killed by other avatars! Later on, a system was established to maintain order within the virtual world.

In 1999, the first educational virtual world, [Whyville](#) was launched by the company Numedon Inc. [Whyville](#) was one of the earliest virtual worlds to introduce the concept of virtual currency. Depending upon their educational activities players earned a 'clam' salary. These clams can be used to buy furniture, bricks, projectiles, face parts or other virtual goods and in 2007 they partnered with Bankinter, a Spanish bank to build a virtual banking system!

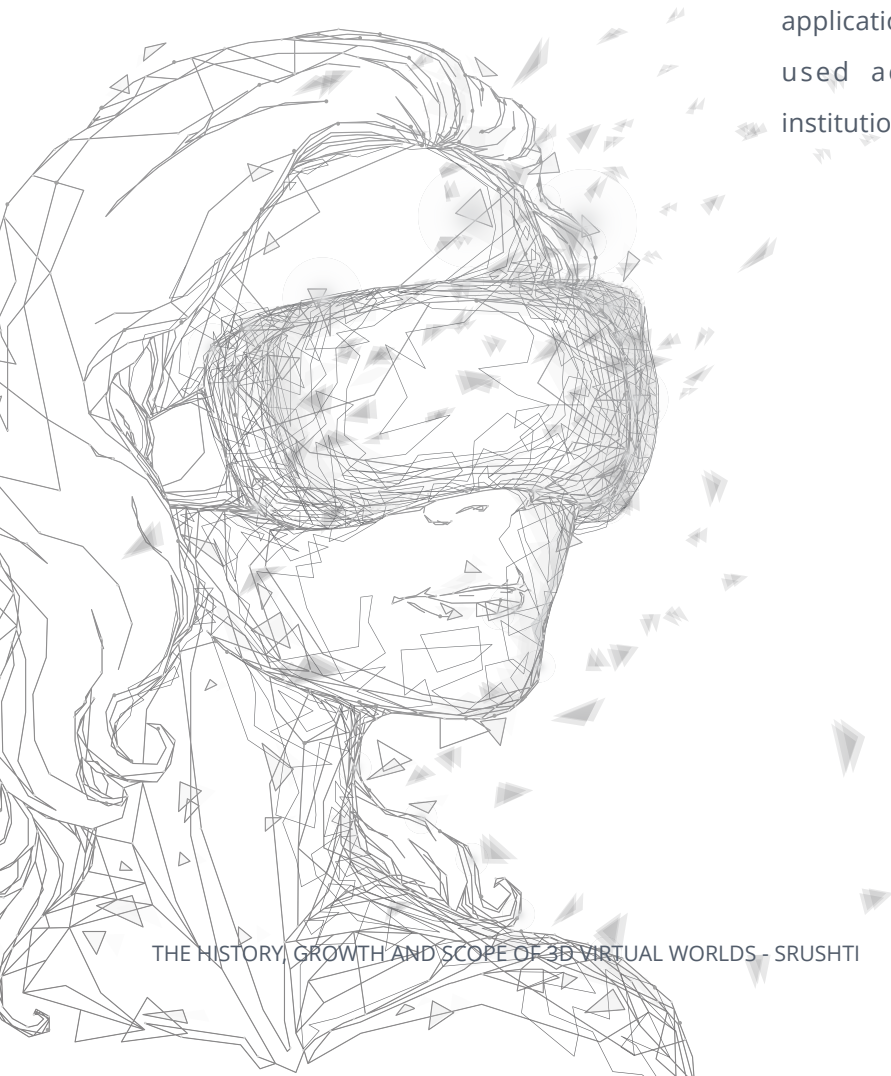
[Whyville](#) has been involved in many projects and researches related to education and schools and it is considered to be an innovation in digital learning and education online engagement of children.



Another virtual world that became popular during this era was 'Habbo', an online community that was specifically aimed at teenagers. It was launched in 2000 by Sulake, a Finnish Corporation and it has now expanded to nine online communities with users in more than 150 nations. Habbo's unique attraction is the 'Hotel'. Players could navigate around the Hotel, search the catalogue to see the items that can be purchased, read user made stories on Habbo stories widget, message other users or entire their own private rooms. Its public rooms are available to all members and they include scenes such as dance clubs, restaurants and cinemas. Public rooms are featured by automated robots who speak pre recorded messages and offers food and drink to the members.

One of the earliest introduction to 3D virtual worlds came through 'Active Worlds' which was launched in 1995. In Active Worlds, users can assign themselves a name and explore 3D virtual worlds that others have created. They also provided web browsing capabilities, voice chat and instant messaging. Another one of the most significant achievements in 3D virtual worlds came with the arrival of 'Second Life' in 2003. The virtual world was designed by Linden Labs and it allowed users to create visual avatars and they could also socialize, shop, trade or even build content across the virtual world.

The software is build in with a 3D modelling tool that is based on simple geometric shapes and this allows users to create virtual objects. The application level of Second life is so vast that it is used across Social networks, Educational institutions, Workplaces, Science Projects etc.



CURRENT IMPLICATIONS

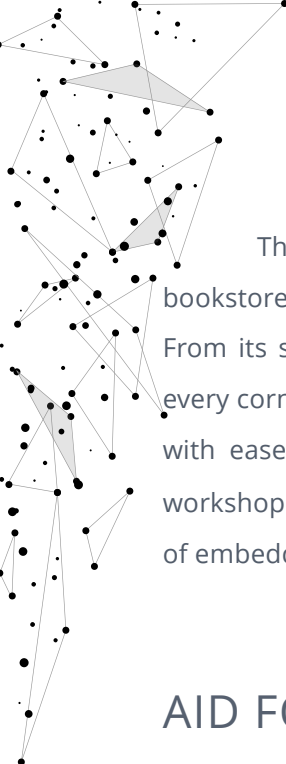
BUSINESS AND COMMERCE

3D virtual worlds have drastically changed different spheres of daily life. The business and commerce industry have already started reaping benefits out of it. Companies could set up online stores in virtual worlds and invite other 'players' to take a look around their new product. One of the prime examples in this regard is the online store that 'Apple' set up in Second Life. From the comfort of your room, you could visit an Apple store and check out its cool features! Just with a swipe of the thumb you can be inside any shop that you want. Aside from the cost and time benefits, this also helps a business concern to obtain valuable **customer reaction and feedback**.

This helps a firm to understand the market and what **customers expect from new products** which is quintessential to stay in the competition. Virtual worlds is also a wonderful platform to enhance the reach of a business. Once you have opened an online store in a virtual world, other business units or clients from any part of the world seeking your service can take a look at your firm anytime. Business to business communication can be made simple and there are stronger possibilities to tie up with other organizations and to also enhance the client territory. Similarly, Sun Microsystems, an American computer company opened an Island in Second Life where its employees could go and seek help, exchange new ideas or advertise new product! Virtual worlds will remarkably change the way business is conducted.

EDUCATION

Another prominent area of influence for virtual worlds is none other than education. Virtual worlds provide an excellent platform to teach field specific communication. For example, imagine an MBA negotiations class. The class can meet virtually with different company leaders to negotiate an agreement! Besides textbook knowledge you would gain the real skill that you need to survive in a real business environment. Today, in the field of forensic pathology, Second Life is widely used to teach autopsy procedures. Similarly, virtual worlds is an effective tool to showcase student projects or works. For example, students at the London College of Fashion held a virtual degree show and developed a Second Life building to project their final year project works.

A decorative graphic in the top-left corner consisting of a network of black dots connected by thin grey lines, forming a complex, web-like structure.

The 'Mayo Clinic' in Second Life features several virtual events on diseases and even has a bookstore. Science and medical students can make use of this and enhance their level of knowledge. From its start, Second Life has been well known for language learning. Since there are users from every corner of the world, language schools can easily be set up and you can learn multiple languages with ease! One day or the other, that will come in handy in the real world. Virtual classrooms, workshops and campuses are already popular where professors, experts and universities make use of embedded videos, illustrations, ebooks and 3D models to help various virtual players.

AID FOR THE DIFFERENTLY ABLED

Starlight Children's Foundation based in U.S helps hospitalized children create virtual worlds where they can interact with avatars around the world which in turn helps them to come out of their restrictions and relieve stress. Researchers at the University of Texas worked together with young adults diagnosed with Asperger Syndrome - a form of autism to create virtual worlds where they can practice their social skills. For these youngsters, tasks such as attending an interview for a job or socializing in general can be a difficult process. For this, the virtual world setting was equipped with daily life elements such as shops, offices, restaurants, parks, apartments etc. For example, if the aim is to apply for a job, the avatars can interact with other online players and take part in virtual interviews until their fear and anxiety goes away. Similarly, they can also be better trained to improve their social life.

They can visit virtual shops and practice how to purchase commodities, they can take part in virtual parties or gatherings and improve their socializing skills. This will tremendously help their day to day life in the real world! There are no disabilities in life. Virtual worlds cement that fact!



VIRTUAL CURRENCIES AND PLATFORM FOR LIKE MINDED

The growth of virtual worlds have also given shape to virtual economies. Entropia Universe is a virtual world where players can buy in game currency with real money, which can later be redeemed to U.S Dollars at an exchange rate of 10:1. That is, virtual items obtained through this world have a real cash value and a player can withdraw them whenever they like. Interestingly, in 2004 and 2008 Entropia Universe entered the Guinness World Record Books for the most expensive virtual objects ever sold! Another game that synced real currency with in game currency was 'WildStar'. The game had a subscription fee and it offered two options to make the payment. Players can either opt for a monthly fee or purchase an in game item called C.R.E.D.D with real money. C.R.E.D.D offered 30 days of playtime and it could be traded with other players for in game currency. This enabled players to set up an in game price for C.R.E.D.D which also facilitated exchange rate between real and virtual currency. Star Trek, the renowned franchise launched a virtual world 'Star Trek Online' where players could gain skill points, expertise, and credits like fleet credits, fleet marks, dilithium etc after successful completion of missions. The virtual currencies ZEN and Lobi Crystals are paid using real world money.

Virtual worlds also provide a smooth platform for like minded people to gather together and share their thoughts, ideas and works. In the real world, it may not be that easy to come across a group that shares the same passion as you. Say if you are a writer, you can find many writing groups where you can get tips to improve your writing or share your materials and obtain feedback. If you are a history enthusiast, you can visit several communities of historians and scholars and get informed about relevant information. In other words, virtual world is one where information flows abundant and it can massively broaden your knowledge, skills and passion.



THE GIANT FUTURE

So, we have seen how 3D virtual worlds shaped up and what its influence is in the present era. But what about the future? What promise does it hold? Let us have a look.

SHOPPING AND BUSINESS

The very purpose of technology is to make life easier. And that means getting most things done within the comfort of your room. We have all come across the arduousness of shopping, especially during a holiday season. After hours of travelling, we come across the hurdle of long line of customers and this also spoils the chance to get effective assistance from sales representatives. Moreover, shops in the real world have a closing hour and we have to be there before the shutter goes down. Most of us even take a day out of our work to go shopping! Now, what if there is an online virtual store of your favorite retailer that you can visit 24*7, sitting in your own home. Additionally, what if there are robots or customized digital sales assistants that provide you one on one assistance! You don't have to wait for your turn to get attended and you can communicate in any language as you wish. Quite often, when you order clothes online, you find that the delivered product is not exactly as you had imagined and it may not fit you properly. But, in virtual worlds, you can create an exact 3D replica of yourself which makes it possible to try on clothes virtually! You can sit in your room and be absolutely sure that the cloth you are buying suits you perfectly.

Retailers will also get to know your taste based on your purchase history and your digital sales assistant can instantly suggest you outfits that you will love! Seems like the 'Netflix' of shopping. Similarly, if you are buying fancy items or home accessories you can check out its working without any fuss at all. You don't have to worry about breaking or damaging it and you can even expose them to different conditions and see how they behave. For example, you can analyse how good an air conditioner is and how much can it comfort you during the peak of summer or you can try keeping different things on your virtual refrigerator and see how it behaves during different seasons! With one tap at the product, you can also get the complete history of the product such as where it was made, how it was made, what materials were used etc. You will also know the expiry date and what harm the product can cause if you consume it after the expiry period. If you are purchasing food or drink products you can even check out how fresh they are! Future shopping will only require you to have a gadget like smartphone that has internet access. Nearly all the major tech firms have already introduced digital home assistants like 'Siri' and 'Alexa' that respond to voice commands.

In the near future, you can just command a shopping list and your digital assistant will add them to a virtual trolley. Moreover, you can set up a regular shopping schedule and you will never have to even think about buying day to day products! Furthermore, most companies are in the process of linking home appliances like fridge, coffee machine etc to the internet so that they can fill up automatically without any interaction with their owner!

ADVERTISING

Virtual worlds will be a huge boon for future advertising. The future of advertising will no longer be of observing but will be of experiencing. You will be able to feel them and just by thinking about brands you will be able to release oxytocin, the same hormone that is generated when you are hugged! Advertisers can determine what kind of ads do we like through smart watches that capture our pulse and every ad we see will depend on who we are. Advertisers can filter out ads based on our gender, age, purchase history, brands we follow in social media, our friends network etc and thus make the entire ad viewing experience more personalized. Today, we come across several advertisements that is of no use to us. And most of them we can't even skip. Now, imagine if we get to watch only the advertisements of products we love. Space is never a problem with virtual worlds and depending upon a user's frequent visiting sites, advertisements can come anywhere.

In other words, we can view advertisements on the go and be updated about the latest modifications and developments in the products we love. With a simple tap, you will be able to analyse the features of a product and the content and style of narrative in the advertisement will change as per the simulations we make! Along with virtual worlds, the other important tool that will significantly change the style of advertisements is Virtual Reality. What if you could live inside the luxury apartment before you make the purchase? Live inside, check out the floor, tiles, windows, views or even determine how comfortable you are during different climates and seasons before you make a deal!

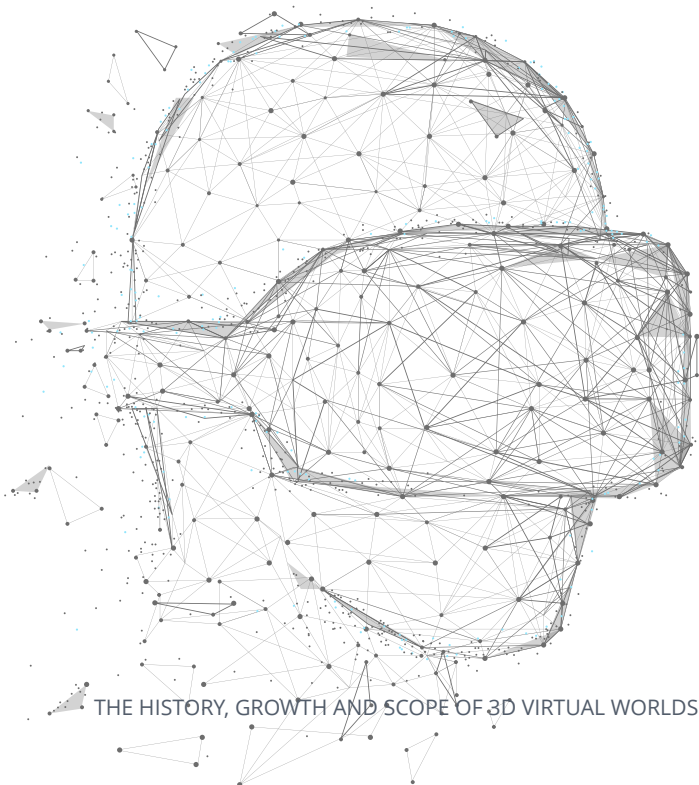
This is the future of virtual reality advertisements. Before buying a car, you can virtually ride through the locations where you will be regularly driving through and check how the car fares. You can even go into the minute mechanical levels of each component and see how they all shape up to smoothly run the car! Also, instead of interrupting people with ads, marketers can sponsor virtual reality experiences that people will reach out for. For example, during the 2014 FIFA World Cup, Coca-Cola staged a VR experience where participants got into a model of the locker room in Brazil's Maracana Stadium.

Then, using Head Mounted Displays, they moved from the locker room and played on the field! Moreover, brands can also offer you virtual entries towards various events or programs. Various big events will have many brands as collaborators and imagine Coca-Cola giving you a virtual seat for a World Cup Final or a front row seat during an Akino Concert! Yes, that is the future.

WORKPLACE

In all possibilities, your room will be your future workspace. You might be working with a giant corporate but you will not have to shuttle to and fro your office everyday. You can easily provide your access credentials and simply log in to a virtual workspace using your 3D avatar and move on to your work! You can meet with colleagues, take part in discussions with managers and all by just sitting in your room. Managers can easily track the performance of each and every employee without physically having to be there. So, in the future, geography might not be a barrier at all. You can sit in your own room and get employed by a firm from anywhere in the world! You can see each other and communicate, wherever you are, using facilities such as video call but that doesn't really provide you the benefits of sitting next to each other. For example, it is extremely difficult to show your supervisor or manager what problems you are facing while performing a work in your system. But, in virtual worlds, your supervisor can come and sit with you and guide you, even if he is really miles and nations away! Remember Arnold in the Paul Verhoeven film 'Total Recall'? If you have to take a break from your work and enjoy leisure time, your employer can even assign you with teams that take you for a virtual tour. You can visit any place you like and it will feel absolutely real.

You will have all the memories and feelings of a person who actually visited that site in real! Virtual tours can be useful for students and explorers too. The promises of the future is mighty big indeed. In a similar way, governments too can set up virtual offices so that you can easily get all your legal requirements and questions addressed easily. There will also be virtual police stations where you can enter and lodge your complaint!



EDUCATION

Virtual worlds can severely empower distance education with virtual classrooms and universities and by remaining in your room you can attain a professional certificate of your choice. Several schools and universities already provide interactive online teaching and in the future its scope is only going to expand. You can get into a virtual classroom, attend classes and even take exams. Your professors can monitor you even better than in real life and make sure students practice no foul play during exams. Just like you can get employed by any firm in the world, you can attain a professional degree from any university in the world and in the future there will even be universities that exist exclusively in the virtual worlds alone. Even normal college going students can enhance their knowledge through virtual groups and classrooms created by experts. Students and professors can create avatars and enter into virtual classrooms run by experts of another nation and engage in productive discussions. Information will flow easily and interacting with different students and professors who deal with same topic will drastically improve the quality of education. Through virtual reality, students will also be able to relive any historical period, explore the molecular and atomic particles of any organism and even take a visit to any place in the universe! If education is power, the future generation will be full of super heroes!

MEDICINE AND HEALTHCARE

Establishments such as Mercy Virtual Care Center in U.S have already started the trend of virtual healthcare centers. This 125000 square foot facility has no waiting rooms or hospital beds but houses more than 300 medical professionals who watches over patients in 38 hospitals spread around seven states. Doctors direct care and provides guidance of treatment to several community hospitals and virtual hospitalists also reads and orders tests and addresses queries from other hospitals. Some doctors even stay in regular touch with chronically ill patients. Mercy Virtual's president says that the system is working really well as mortality rate has down by 40 percent less than what was expected! Similarly, Virtual Hospitals are already taking shape where e-clinics collect medical information from patients using mobile phone or computer and then pass it on to a General Practitioner at the Virtual Hub. The practitioner will then either provide a diagnosis or refer the patient to relevant Virtual Hospital Department where professionals all around the world are connected through internet. This is the beginning of a wonderful revolution in hospitals and healthcare.

In the future, we can walk into an online virtual hospital using our 3D replica and consult a doctor from our home. How often have you heard someone say that you have take the patient abroad for better treatment? Or the patient could have been saved if it was possible to take him abroad. Well... In the future, you can sit at your home and avail the service of any doctor in the world! You can also get live feedbacks and suggestions when you eat something you are not supposed to or if you skip your exercise! Virtual doctors can give you timely tips on how much you should eat, what you should eat, how long should you work, how long should you sleep etc. Technology has always played a vital role in improving the life expectancy of human beings. It will continue to in the future!

CONNECT WITH CELEBRITIES AND LEGENDS!

You ever wanted to go on a run with Tom Cruise? Or kick the villains along with Arnold? Well.. Now you can. You can easily interact with your favorite celebrities in the virtual world and relive some of their iconic moments together. Stars are no longer unreachable with virtual worlds! How about a football match with Cristiano Ronaldo? A tennis match with Roger Federer? Anything is possible. Just meet with real life like 3D models of your celebrities in virtual world and make them do whatever you want. What about legends of the past? Do you want to meet Nelson Mandela or Mahatma Gandhi and thank them for all their noble acts. You can! Life will never be the same with 3D virtual worlds.

RELIVE HISTORY

Museums are a great place to relive history. But what if you can witness the history in front of you. Imagine you see a beautiful replica of Alexander the Great's sword. With just one tap on it, you can see how Alexander himself fought the war! Or if you are in a virtual Eiffel Tower, with a simple click, you can witness how it was constructed. You can take a tour across the Pyramids of Giza and see how ancient Egypt buried Mummies! This, will be a massive help for students especially history majors. You no more have to learn about events or places through textbooks. You can just take a virtual tour and you don't even need a passport or visa! Isn't the future cool.



ENTERTAINMENT

It's weekend and a latest blockbuster has hit the theaters. You book tickets and take your family to the movie hall. But, in the future, through virtual worlds, the movie hall will come to your home! You can simply walk into a virtual movie hall and experience the movie like in a theater from the comfort of your living room. You also don't have to worry about being in time as you can get in whenever you want. Additionally, you can also customize the theater settings. If you want to reduce the intensity of the speakers that surround you or if you prefer a bigger screen, you can! Entertainment will be a lot more fun in the future.

DECISION MAKING

Future virtual worlds can help you in quality decision making. For example, suppose you want to book a flight journey. You can get into as many virtual airlines as you prefer, make simulations and decide which one suits you the best! The comfortness, customer service, food, drinks, punctuality and other services of every airline can be thoroughly examined and you can make a decision accordingly.

VIRTUAL PROPERTIES

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CONNECT WITH ANYONE!

Language will never be a problem with future virtual worlds. You can meet with anyone in the world and communicate in your regional language and artificial intelligence will convert it to the language of the other person. So, you can have friends or even build serious relationship with someone who doesn't even speak your native language but understands you completely! Geography is another limitation that virtual worlds completely nullify. You can take a trip around Los Angeles by remaining in India or you can even take a virtual visit to Moon or Mars! Unless someone is a criminal or a terrorist, life will be so easy in the 3D virtual worlds of the future.

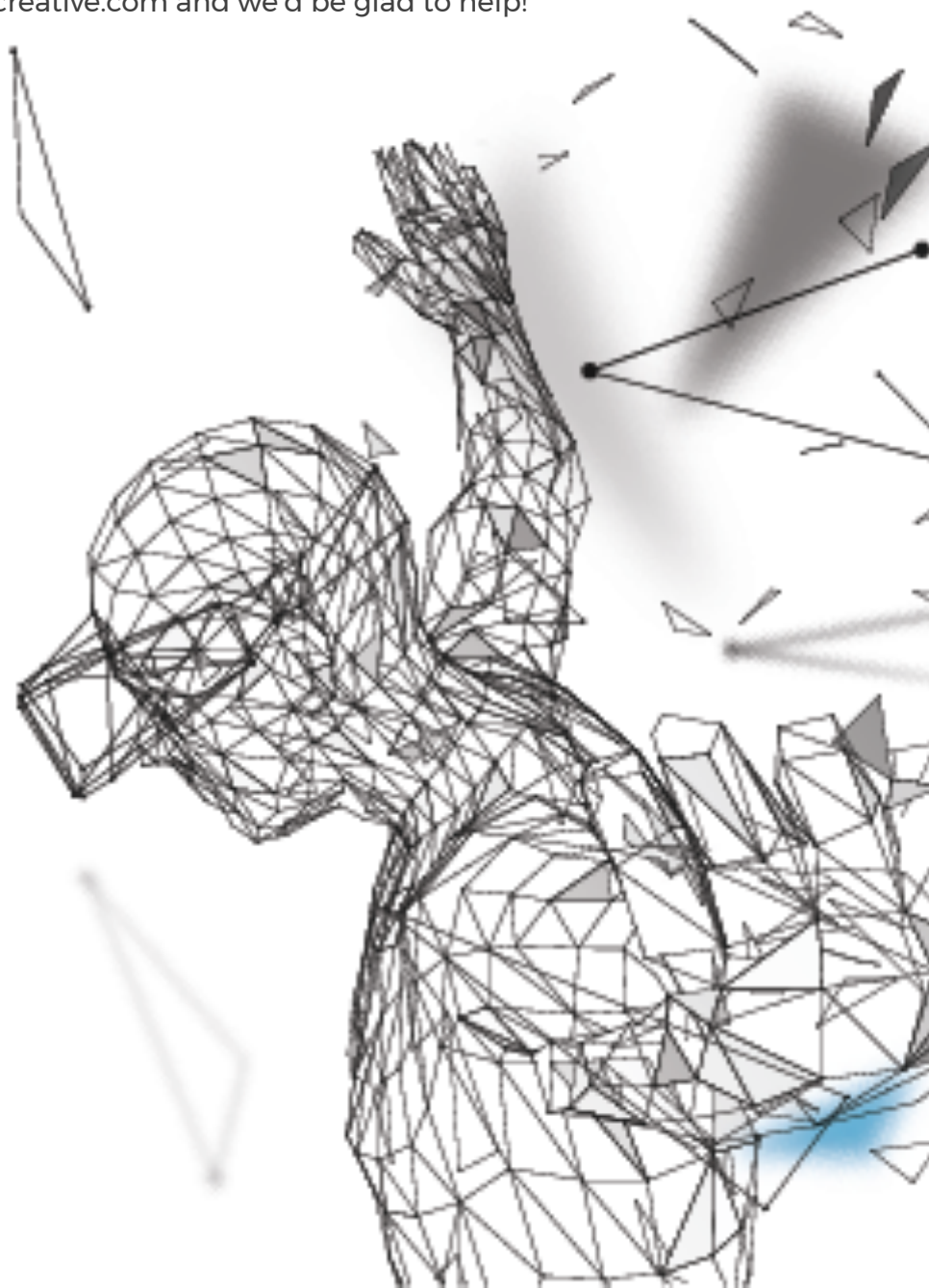
GAMIFICATION AND GRAPHICAL REALISM

The gamification of virtual worlds make it an enjoyable and relishing experience. Even if you are taking your classes in a virtual university or working in a virtual office, the entire process feels like a game and it is a massive help in reducing stress. How often have we discussed about tensions and stress surrounding students and working professionals? Even for doctors performing a complex diagnosis or for a management making a major decision, virtual worlds can help reduce the level of worry involved. Additionally, the graphical realism make virtual worlds a near real life experience. Computer graphics and 3D are ever changing and in the near future, you won't be able to differentiate between what is real and what is artificial. This way products, people, places, equipments, reports and all will look absolutely real and the fact that you are not in a real world will not even bother you!

THE NEXT BIG LEAP

Elon Musk, the mighty entrepreneur has just found 'Neuralink' that facilitates brain computer interfaces, using which you can create a digital version of yourself. From Morton Heilig's Sensorama to Elon Musk's Neuralink the world has connected dot by dot to improve our lifestyle. Evolution is an ever continuing phenomena and with the aid of creative human brains, it takes a faster route. Human beings have always tried to make the most out of what is available. We will continue to do so and create a delightful world for future beings!

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