

**MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION**

**GOVERNMENT POLYTECHNIC, JALGAON**

**(0018/1567)**

**Program Name and Code : Computer Engineering (CO)**

**Course Name and Code : ETI**

**Academic Year : 2021-22**

**Semester : Sixth(6<sup>th</sup>)**

**A MICRO PROJECT  
ON  
THE REPORT ON METAVERSE**

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**Submitted on 2022 by the group of 4 students**

<b>Sr. No.</b>	<b>Roll No.</b>	<b>Name of student</b>	<b>Enrollment No.</b>
<b>1</b>	<b>45</b>	<b>SHIVAM VISHWAS KAKADE</b>	<b>1900180229</b>
<b>2</b>	<b>47</b>	<b>PRATHAMESH ANIL PATIL</b>	<b>1900180231</b>
<b>3</b>	<b>67</b>	<b>SUMIT NANDU MORE</b>	<b>1900180251</b>
<b>4</b>	<b>83</b>	<b>MEHUL RATANSINGH CHAUDHARI</b>	<b>1900180267</b>

**PROJECT GUIDE :  
Minal Magare  
(ETI)**



# MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION

## Certificate

This is to certify that **Students of CO6I ( SVK,PAP,SNM,MRC) Roll Nos. 45, 47, 67 and 83** of 6th Semester of Diploma in **Computer Engineering** of Institute, **Government Polytechnic, Jalgaon** (Code:0018/1567) has completed the **Micro Project** satisfactorily in the Subject – ETI for the Academic Year 2021- 2022 as prescribed in the curriculum.

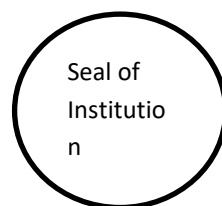
Place: **Jalgaon**

Date: \_\_/\_\_/2022

**Subject Teacher**

**Head of the Department**

**Principal**



# GOVERNMENT POLYTECHNIC JALGAON

## Teachers Evaluation Sheet

**Name of student:** SVK,PAP,SNM,MRC.

**Enrollment number:** 1900180229, 1900180231, 1900180251, 1900180267

**Name of Project:** The Report on Metaverse

**Title:** ETI

**Code:** 22618

**Course outcome achieved:**

a. Analyze the function of Metaverse.

b. Configure various methods of Metaverse

**\*Evaluation as per Suggested Rubric Assessment of Micro Project\***

Characteristics to be assessed	Poor (Marks 1-3)	Average (Marks 4-5)	Good (Marks 6-8)	Excellent (Marks 9-10)
Relevance to the course				
Literature Review/Information collection				
Analysis of Data and Representation				
Completion of the target as per project proposal				
Report preparation				
Presentation of the Micro Project				

## Micro Project Evaluation Sheet

Process and Product Assessment (6 marks)	Individual Presentation/Viva (4 marks)	Total Marks (10 marks)



## **-SUBMISSION-**

We the students of **Students of CO (A)-VI ( SVK,PAP,SNM,MRC) Roll Nos. 45 ,47 , 67 and 83** as students of 6th Semester of the Programme **Computer Engineering** humbly submit that We have completed from time to time the Micro-Project work as described in this report by our own skills and study between the period from ..... 2021 to ..... 2022 As per instructions/guidance of **Minal Magare.**

And that following students were associated with us for this work; however, quantum of our contribution has been approved by the Lecturer.

And that we have not copied the report on its any appreciable part from any other literature in contravention of the academic ethics.

Date: \_\_/\_\_/202

Signature of Student

45.

47.

67.

83.

## **Part A: A micro-project proposal**

### **THE REPORT ON METAVERSE**

#### **1.0 Aims/Benefits of the Micro-Project**

To implement a report on metaverse.

#### **2.0 Course Outcomes Addressed**

a) ANALYZE THE FUNCTIONING METAVERSE.

b) CONFIGURE VARIOUS CONCEPT OF METAVERSE.

#### **3.0 Proposed Methodology**

The selection of topic will be performed at beginning by the whole team, then there will be research on the selected topic then after the project is completed a project report will be created by few team members.

#### **4.0 Action Plan**

<b>Sr. No.</b>	<b>Detail of activity</b>	<b>Plan start date</b>	<b>Plan finish date</b>	<b>Name of responsible team members</b>
1	Group discussion	01-04-2022	03-04-2022	1.Shivam Vishwas Kakade
2	Searching of real-life task	03-04-2022	06-04-2022	
3	Selection of micro project topic	07-04-2022	10-04-2022	
4	Gathering of information and application of it	11-04-2022	13-04-2022	2.Prathamesh Anil Patil
5	Group discussion	14-04-2022	17-04-2022	
6	Distribution of work to be done	18-04-2022	22-04-2022	
7	Preparing the overview of the project	23-04-2022	27-04-2022	

8	Gathering the details	28-04-2022	02-05-2022	
9	Preparing rough analysis of the project	03-05-2022	07-05-2022	3.Sumit Nandu More
10	Study of metaverse	08-05-2022	15-05-2022	
11	Preparing the configuration installation steps	16-05-2022	20-05-2022	
12	Group discussion	21-05-2022	23-05-2022	
13	Gathering the data	24-05-2022	26-05-2022	4.Mehul Ratansingh Chaudhari
14	Working on connection diagrams	27-05-2022	29-05-2022	
15	Finalizing diagrams	30-05-2022	01-06-2022	
16	Preparing report	01-06-2022	05-06-2022	

### 5.0 Resources used

Sr. No.	Name of resources/material	Specifications	Qty.	Remarks
1.	WIKIPEDIA	METaverse	1	
2.	WINDOWS 11 PRO	VERSION 11	1	
3.	LAPTOP (HP)	8GB RAM, 2TB HDD, INTEL I7	1	
4.	MS WORD	PROFESSIONAL PLUS 2019	1	

## **PART-B Micro Project Report**

### **THE REPORT ON METAVERSE**

#### **1.0 Rationale**

The Rationale of this project is to learn about **METAVERSE**.

Virtual reality serves as a computing platform for living a second life online. In virtual reality, you wear a headset that immerses you in a 3-D environment. You carry motion-sensing controllers to interact with virtual objects and use a microphone to communicate with others.

#### **2.0 Aims/Benefits of the Micro-Project:**

To implement report on metaverse.

#### **3.0 Course Outcomes Achieved**

- a) ANALYZE THE FUNCTIONING METAVERSE.
- b) CONFIGURE VARIOUS CONCEPT OF METAVERSE.

#### **4.0 Literature Review**

The selection of topic will be performed at beginning by the whole team, then there will be research on the will be research on the selected topic selected topic then after the project is comp then after the project is completed a project reported a project report will be t will be created by few team members.

#### **5.0 Actual Methodology Followed**

(Write step wise work done, data collected and its analysis (if any). The contribution of the individual member may also be noted.)

## 6.0 Actual Resourced Used

Sr. No.	Name of Resources/material	Specifications	Qty.	Remarks
1.	WIKIPEDIA	METaverse	1	
2.	WINDOWS 11 PRO	VERSION 11	1	
3.	LAPTOP (HP)	8GB RAM, 2TB HDD, INTEL I7	1	
4.	MS WORD	PROFESSIONAL PLUS 2019	1	

## 7.0 Outputs of the Micro-Projects

(Drawings of the prototype, drawings of the survey, presentation of collected data, findings etc.)



# INTRODUCTION

If you've paid attention to the chatter surrounding Facebook's transformation into "Meta," you've probably run into the concept of the metaverse. In recent years, the metaverse has become the name for the "next generation of the internet," much like Google. But what does it mean to be the next generation of the internet?

## What is the Metaverse?



The metaverse is the name we've given to what we expect the internet to become: a collision between the physical and digital worlds, when **VR** and **Augmented Reality** bridge the gap between the physical and the virtual to interact intimately. While this seems a bit vague, metaverse enthusiasts believe it will essentially be a 3D reality overlaying the real world, wherein people can shop, game and conduct business in shared virtual spaces.

For instance, Mark Zuckerberg describes the metaverse as "an embodied internet that you're inside of," where "creation, avatars, and digital objects" are central to self-expression and lead to "entirely new experiences and economic opportunities."

# HISTORY

The Metaverse was first introduced in 1992. Many people saw Metaverse as a new word but the concept of Metaverse is not a new term. However, Zuckerberg's press release drew all the attention to the Metaverse. This study presents a bibliometric evaluation of metaverse technology, which has been discussed in the literature since the nineties. A field study is carried out especially for the metaverse, which is a new and trendy subject. In this way, descriptive information is presented on journals, institutions, prominent researchers, and countries in the field, as well as extra evaluation on the prominent topics in the field and researchers with heavy citations.

In our study, which was carried out by extracting the data of all documents between the years 1990-2021 from the Web of Science database, it was seen that there were few studies in the literature in the historical process for the metaverse, whose popularity has reached its peak in recent months. In addition, it is seen that the subject is handled intensively with virtual reality and augmented reality technologies, and the education sector and digital marketing fields show interest in the field. Metaverse will probably have entered many areas of our lives in the next 15-20 years, shape our lives by taking advantage of the opportunities of developing technology.

# CONCEPT OF METAVERSE

A Metaverse is a network of 3D virtual worlds focused on social connection. In futurism and science fiction, it is often described as a hypothetical iteration of the Internet as a single, universal virtual world that is facilitated by the use of virtual and augmented reality headsets. The term "metaverse" has its origins in the 1992 science fiction novel *Snow Crash* as a portmanteau of "meta" and "universe." Various metaverses have been developed for popular use such as virtual world platforms like Second Life. Some metaverse iterations involve integration between virtual and physical spaces and virtual economies. Demand for increased immersion means metaverse development is often linked to advancing virtual reality technology.



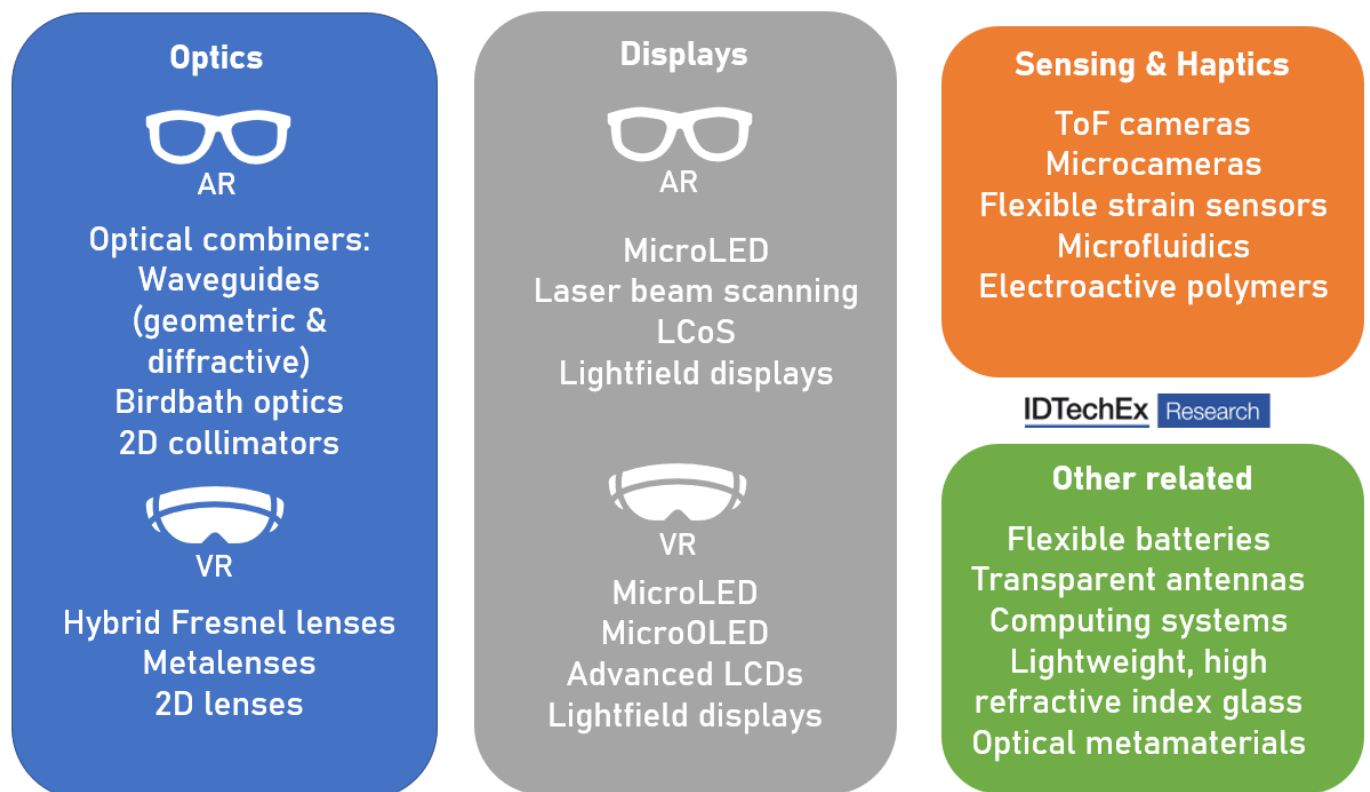
# Technologies And Adaptations

## ➤ Hardware –

Access points for metaverses include general-purpose computers and smartphones, in addition to augmented reality (AR), mixed reality, virtual reality (VR), and virtual world technologies.

Dependence on VR technology has limited metaverse development and wide-scale adoption. Limitations of portable hardware and the need to balance cost and design have caused a lack of high-quality graphics and mobility. Lightweight wireless headsets have struggled to achieve retina display pixel density needed for visual immersion, while higher-performance models are wired and often bulky. Another issue for wide-scale adoption of the technology is cost, with consumer VR headsets ranging in price from \$300 to \$3500 as of 2022.

Current hardware development is focused on overcoming limitations of VR headsets, sensors, and increasing immersion with haptic technology.

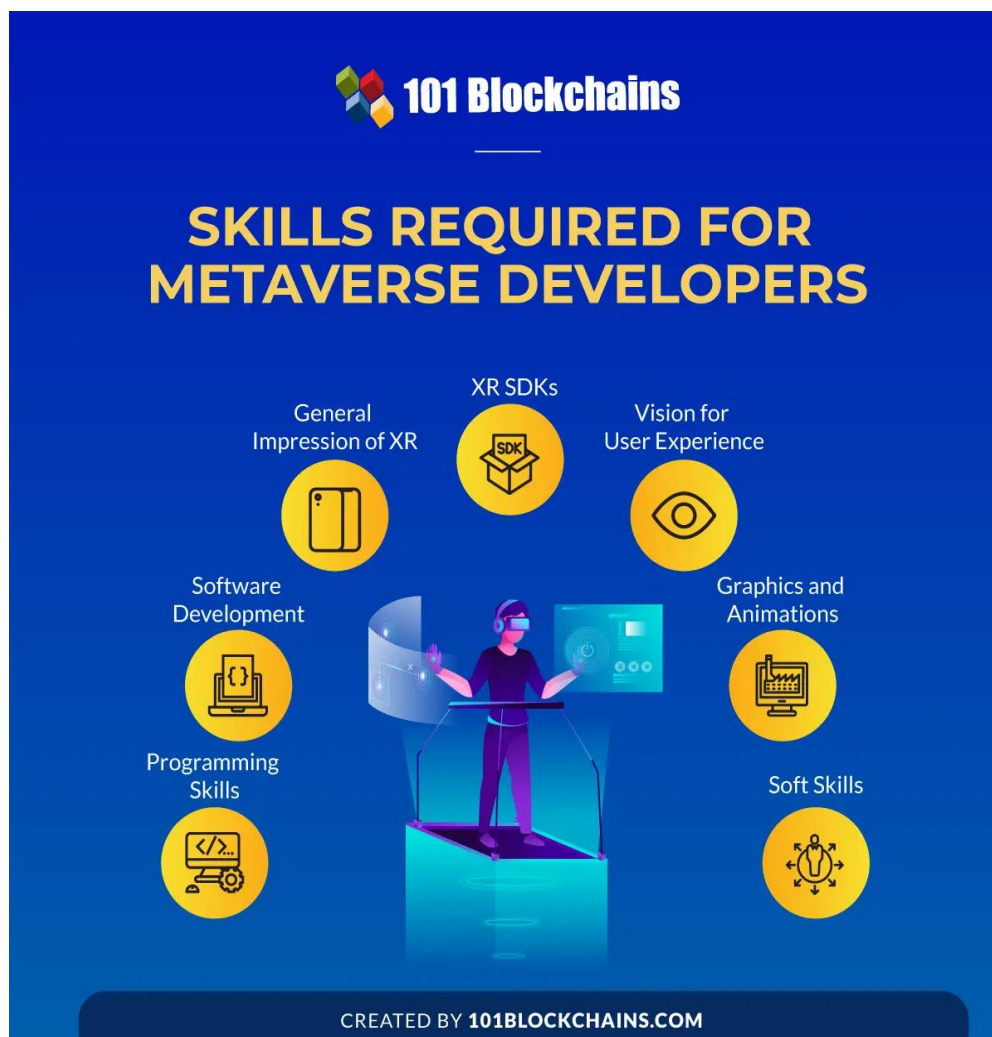


## ➤ Software –

There has been no wide-scale adoption of a standardized technical specification for metaverse implementations, and existing implementations rely primarily on proprietary technology. Interoperability is a major concern in metaverse development, stemming from concerns about transparency and privacy. There have been several virtual environment standardization projects.

In a January 2022 interview with Wired, Second Life creator Philip Rosedale described metaverses as a three-dimensional Internet that is populated with live people. Universal Scene Description is a specification for 3D computer graphics interchange created by Pixar and supported by Blender, Apple's Scene kit and Autodesk 3ds Max. The technology company NVIDIA announced in 2021 they would adopt USD for their metaverse development tools.

OpenXR is an open standard for access to virtual and augmented reality devices and experiences. It has been adopted by Microsoft for HoloLens 2, Meta Platforms for the Oculus Quest, and Valve for SteamVR.



- **From a technological perspective, some key imperatives for the growth of the metaverse are :**

- Improved performance in avatar movement and environment rendering
- Reduction of environment ‘sharding’ so all participants can interact with each other live in the same location
- More capacity to support complexity in design and interactions
- Reduction of local hardware requirements for complex interactions with 3D rendering
- Expanded accessibility across devices (including mobile)
- Development of interoperability or cross-virtual world interactions, and ways to manage engagement and digital assets across these platforms (think of it like being able to seamlessly change channels on the television)
- Definition of standards for digital assets (wearables, objects, brands) and virtual/cryptocurrencies, so they can be transferable across various virtual worlds (with potentially different manifestations in each world, e.g., the same NFT manifests as a special edition t-shirt in a virtual world but is a uniquely designed vehicle in a race car video game)
- Advanced discovery mechanisms such as the ability to find friends or recommendations on things to do, places to visit, and customized virtual goods to shop
- Expanded data analytics and reporting for virtual spaces. These will be specifically designated for commercial and marketing usage and will track business key performance indicators (this already exists in some worlds, such as Crypto voxels).



## **The Metaverse is already here**

### **❖ Top companies building their virtual reality future :**

#### **➤ Google –**

Google Cardboard might be the most successful VR project in history. In 2014, what was then the world's largest tech firm asked millions of people to strap their smartphone to their face with a piece of cardboard. Google says it shipped "tens of millions" of foldable headsets and Google Cardboard apps were downloaded over 160 million times. It wasn't the highest-resolution, or high-tech, experience but the strategy helped introduce millions of students and aspiring developers to virtual reality.

#### **➤ Microsoft –**

Microsoft announced the HoloLens mixed reality glasses in 2015. Rather than flood the consumer market with marketing hype, Microsoft quietly launched HoloLens a year later as an industrial manufacturing tool targeted to a select group of enterprise firms. The \$3,000 commercial suite shipped with a professional edition of Windows, with extra security features and software to aid application development. The second iteration debuted in 2019 and was slightly more expensive, but had a better set of cameras and lens mounts allowing for more precise operation, and offered a broader range of software capabilities including industrial applications.



## ❖ Expanded opportunities across industries and countries :

It is not just business-to-consumer environments that will benefit. The metaverse will provide a massive opportunity for business-to-business enterprises. Take a manufacturer that is buying new parts for its equipment. Presently, the process involves receiving a physical brochure or an emailed PDF with static 2D pictures.

In the metaverse, users could test the products in a virtual environment at lower cost. Imagine being able to build a complex digital twin of a factory or industrial space at massive scale, and test how robotics systems will interact with the physical environment. One of the great possibilities of the metaverse is that it will massively expand access to the marketplace for consumers from emerging and frontier economies. The internet has already unlocked access to goods and services that were previously out of reach. Now, workers in low-income countries, for example, may be able to get jobs in western companies without having to emigrate.

Educational opportunities will also expand, with VR worlds being a low-cost and effective way to access training. With these developments there will also have to be clear governance. From a corporate perspective, there are opportunities to massively scale. Instead of having stores in every city, a major retailer might build a global hub in the metaverse that is able to serve millions of customers. Beyond retailers, the metaverse will turbocharge the shift in gaming, sports betting and gambling from cash to crypto. Companies such as Sightline Payments, that have built infrastructure to support cashless digital gaming for live sports and casinos, are ideally placed to capitalize on the opportunity as these industries rapidly transition to offering experiences to gamers in the metaverse.



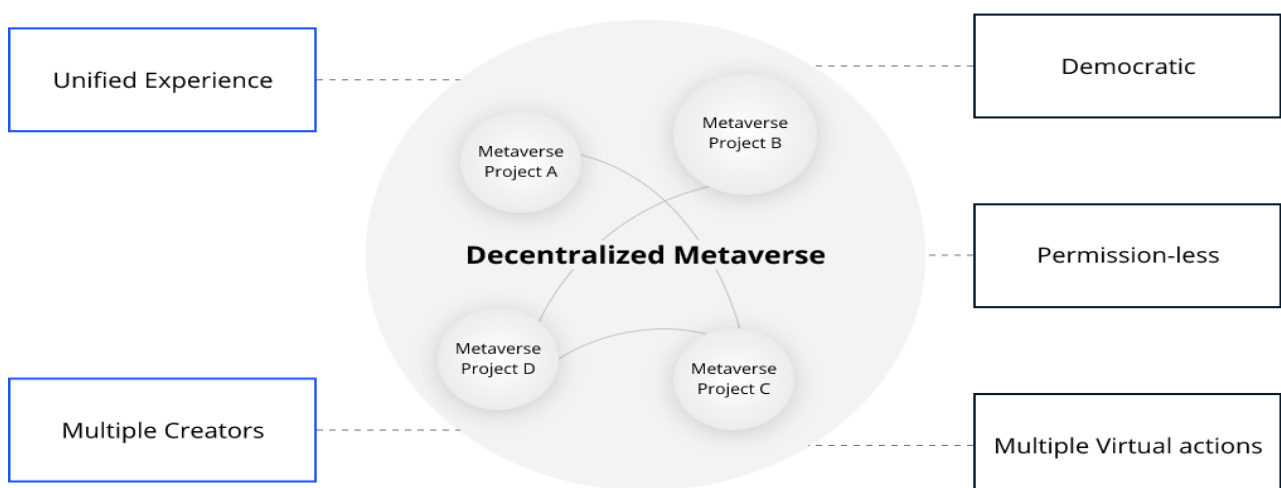


## ❖ Our approach to the metaverse –

The success of building and scaling in the metaverse is dependent on having a robust and flexible financial ecosystem that will allow users to seamlessly connect between the physical and virtual worlds. Our approach to payments and financial infrastructure will allow that interoperability to grow.

We believe the existing virtual gaming landscape (each virtual world with its own population, GDP, in-game currency and digital assets) has elements that parallel the existing global economy. This is where our long-standing core competencies in cross-border payments, foreign exchange, financial assets creation, trading and safekeeping, in addition to our at-scale consumer foothold, can play a major role in the metaverse. We are building and scaling new emerging technologies to modernize infrastructure and business models including but not limited to tokenization and digital identity, as we strive for perpetual innovation and better ways to organize financial transactions and payments in the decentralized web.

### Metaverse with multiverse approach



LeewayHertz

## ❖ Advantages of Metaverse –

Following are the benefits or advantages of Metaverse:

- ➡Metaverse is massively scaled and interoperable network of multiple virtual worlds used by unlimited number of users.
  - ➡It creates more demand for goods and services and hence helps in creation of jobs for developers, designers and creators.
  - ➡Metaverse requires heavy processing and huge demands of data. This creates demand for semiconductors and sensors in headsets such as Ultrasonic sensor, infrared sensor, force sensor, strain sensor, motion sensor etc.
  - ➡Individual technologies used in metaverse will become efficient in their own domains. This delivers better results and opportunities for all the stakeholders.
  - ➡It provides boost to e-commerce and virtual economy. Customers can interact with merchants and merchandises. Cryptocurrencies and NFTs will become more popular and their usage will increase.
  - ➡Metaverse upgrades social media platforms such as Facebook and twitter.
  - ➡Metaverse is compatible with blockchain technology. Hence it can be used for several applications with the help of digital currencies.
- Disadvantages of Metaverse Following are the limitations or drawbacks or disadvantages of Metaverse:

- ➡It requires faster and reliable internet connection with the help of fiber-based connection and 5G wireless network.
- ➡VR or MR headsets are essential requirements of the metaverse to provide real immersion experience to the users. These headsets are very expensive and it is difficult to afford by average users. It will take some time for it to become affordable by 17 common users.
- ➡Metaverse requires access to relevant digital tools. Hence poor families and communities will not enjoy its benefits until they are available at affordable rates.
- ➡There is a huge disparity between real world and virtual world. This often leads to psychological disorders to the users such as stress, trauma etc.
- ➡VR/MR headsets give headache, if worn for longer duration (~ 30 minutes). Moreover, it gives strain to eyes and motion sickness to the user.

- ➡The headset devices are heavy in weight.
- ➡Metaverse leads to privacy threat and data theft due to internet use.
- ➡People leave in actual world and it takes time for them to become accustomed to the new virtual worlds to get benefits of the metaverse.
- ➡Present AR/MR headsets are less competitive compare to mobile phones.
- ➡Animation quality offered at this moment is not so good and it will take some time for it to become popular.

## **Conclusion**

Metaverse is the hot word these days and everyone around wants to learn about it. This virtual 3D world has great potential to bring out exceptional opportunities but caters to risks beyond imagination. Our fingers are crossed and so are yours, let's see how the Metaverse takes shape during the upcoming years and how the world changes.

## References

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- [www.investopedia.com/metaverse-definition-5206578](http://www.investopedia.com/metaverse-definition-5206578)
- [www.gartner.com/en/articles/what-is-a-metaverse](http://www.gartner.com/en/articles/what-is-a-metaverse)