Cloud Computing & Virtualization in XR Technology

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Abstract:

Cloud Computing & Virtualization in XR Technology is most vibrant Technology in coming Technological World. Cloud Computing is a logical method of delivering, storing & retrieving data on any server for the purpose of future uses or manage the storage. Cloud computing is very helpful for any organisation or individual to make/manage their database or networking or storage for easy or multipurpose uses on the internet server. Whereas Virtualization provides the application, which helps the cloud users to share the infrastructure. XR (Extended Reality) is blanket term which is an enhanced Technology of AR (Augmented Reality), VR (Virtual Reality) or MR (Mixed Reality). XR Technology will provide the 3D models or assets of anything which is the demand of user.

Key Words: Cloud Computing, Virtualisation, Vibrant Technology, Retrieving etc.

I - Introduction

Cloud Computing is a general term for anything which involves delivering hosted services over the internet. Cloud Computing is categories in three manners are IaaS (Infrastructure-as-a- Service), PaaS (Platform-as-a- Service), and SaaS (Software-as-a- Service. Cloud Computing is an abstract manner collecting, storing, retrieving & disseminating of the data for the purpose future use.

It was Joseph Carl Robnett Licklide who developed the Cloud Computing in the year of 1960s with purpose of interacting with data & people from anywhere around the world. Cloud Computing pave the road for the implementation data at anywhere of the world to access & share. There are many

MNC's companies which provide cloud services like Amazon Web Services (AWS), Google Cloud, Microsoft Azure, IBM & so on.

Virtualization in XR by using cloud computing will give the user best and desirable experience for their expectations. Cloud Computing will provides the more encryption of XR Technology. XR Technology was introduced by Morton Heilig in 1962's. XR will the next revolution of future generation.

II- Methodology

What technique will help to expend Extended Reality Works with Cloud Computing

To understand how these technologies can work, it is important to consider all of the aspect of extended reality and how they may work with cloud computing resources.

Mixed Reality

This extended reality technology combines real and virtual objects within the natural world for users to explore. To explore this technology, users require enormous graphics and processing support. Also, specially designed headsets and sensors are used to manipulate virtual objects within the real world. Therefore, with the help of cloud computing, users can easily tap into technology's huge resources without making investments that they cannot afford. For example, two or more users can remotely participate in a mixed reality set-up via sensors using cloud computing resources as the gateway.

Virtual Reality

Virtual reality is a technology that encompasses a user within a virtually-created environment. As a result, a user technically lives and operates within this digital environment until they are disconnected. The virtual reality headset and sensors are used to simulate this type of complete computing environment. With cloud computing, users only require an internet connection to experience this reality. Many experts predict that the combination of virtual reality and cloud computing may likely replace some aspect of online gaming soon.

Augmented Reality

This technology is basically a less resource-consuming version of mixed reality. Rather than having objects embedded within the natural world, users are presented with information and images as an extra feature in the real world. Therefore, this technology can be implemented using smart devices and glasses. The inclusion of cloud computing into the framework of augmented reality has significantly reduced the need for powerful augmented reality devices.

Extended Reality in the Workspace through Cloud Computing Technology

As many industries embrace the use of extended reality within their workspaces, the inclusion of cloud computing technology into the mix makes its application possible.

In the Corporate World

Most medium-to-large enterprises operate using several offices which may be thousands of miles apart. To bridge the distance between workers and ensure productivity, extended reality technology can be deployed. Such technology allows employees to work closely in an interactive manner. As a result, ideas and work processes are managed and put into action in a more efficient way. Therefore, meetings and other corporate activities can be carried out using the state-of-the-art tools offered by the extended reality mix of technology.

At the backdrop of using such technology, cloud computing technology makes the entire process possible by providing the storage and processing capacity at the most cost-effective rate. This means a business can make use of extended reality technology and also get the latest software update to each device they own.

Within Education

The use of extended reality technology that is powered by cloud computing is not only useful within the corporate world. This technology is equally beneficial within educational sections of all kinds especially, specialized education centers like medical schools and schools of engineering.

Within medical schools, medical students can be exposed to detailed and complex medical conditions and procedures using extended reality. With the help of cloud computing technology, such educational material can be centralized and enriched by several contributors from around the world.
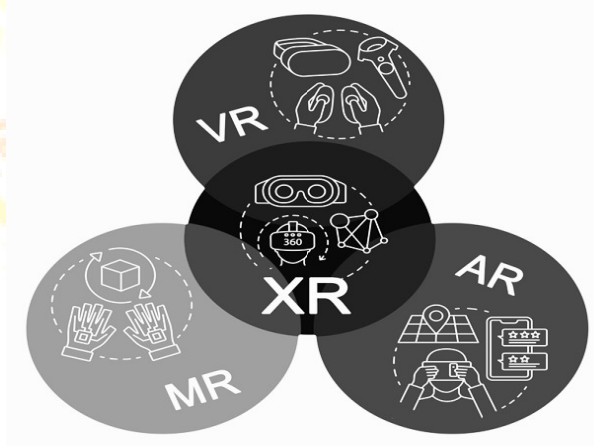
III- Figures & Graphs

Fig. 1

As shown in Figure (Fig.1) we can understand the virtualization of XR Technology. It is a complete enhanced vibrant technology of AR, VR & MR which gives the user real 3D desire of anything.
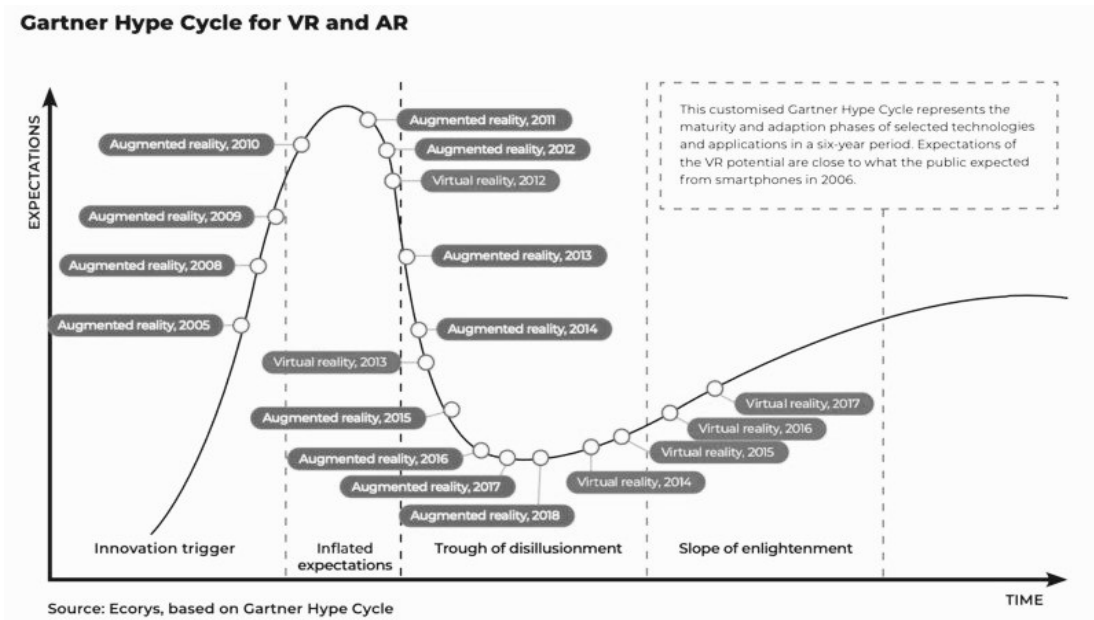
Fig. 2

In Figure Fig.2 that it is an interesting graph which is showing the gradually progress of AR & VR. It has loads of useful data & graphs. Graphical representation simply shows that time complexity is gradually decreasing by the user of accessibility. It will go to be more enhanced for the user to get better experience in Extend Reality XR.
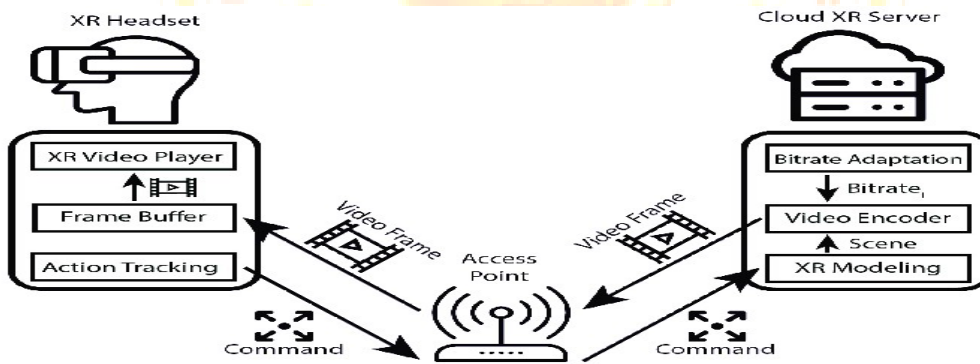

Fig . 3

In Figure Fig.3 shows the architecture of Cloud Computing & Virtualization in XR Technology. In this XR Cloud Server will recommend/suggest the user to avail the better 3D models according to their desire.

IV- Conclusion

The Cloud Computing & Virtualization in XR Technology will more enhanced technology by using cloud computing in XR Technology. Cloud Computing & XR Technology is newly introduces technology for the coming generation. Virtualization of XR Technology with help of cloud computing

will provides lots of benefits like reduce operating cost or reduce human resources or useful for any tasks. It will more effective for the education & IT sectors.
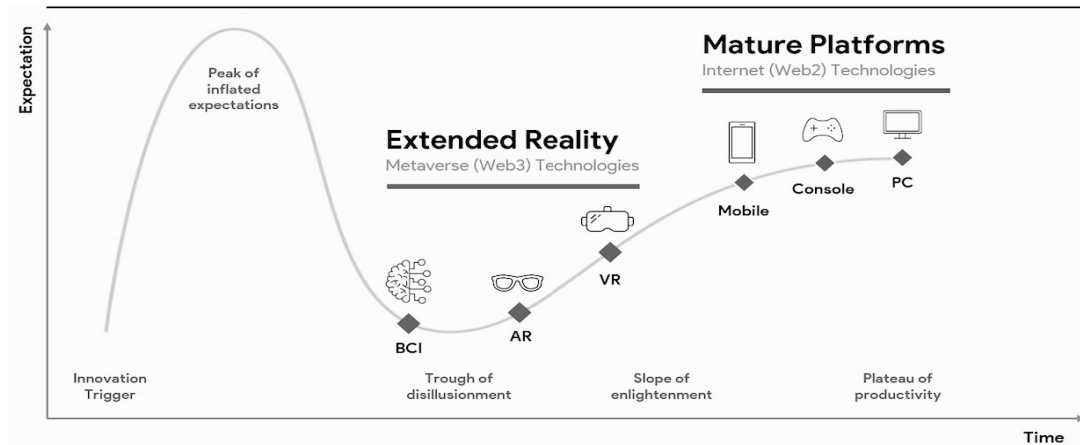
V- Future Scope

Fig. 4

In figure Fig. 4 Virtualization in XR Technology will made the rapid progress towards the mainstream adoption, with predictions that VR and AR headsets will surpass global game console shipments as early as 2025. And human digital experiences and is likely to be provides the newest points of choice to the Metaverse.

VI- Newly Introduce Technologies

Newly Introduce XR Technologies by using Cloud Computing for better Virtualization:

- Impressive 3D Printing
- Intuitive Security
- 5G Transformation
- 3D Analysers
- 3D Video Games

VII- Acknowledgement

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VIII- References

1. Park, Y.; Kim, H. Development of Immersive Vehicle Simulator for Aircraft Ground SupportEquipment Training as a Vocational Training Program. In Proceedings of the International Conferenceon Human-Computer Interaction, Orlando, FL, USA, 26–31 July 2019; Springer: Berlin, Germany, 2019;pp. 225–234.54

2. Bainbridge, W.S. The scientific research potential of virtual worlds. Science (80)2007,317, 472–476

3. Bye, K.; Hosfelt, D.; Chase, S.; Miesnieks, M.; Beck, T. The ethical and privacy implications of mixedreality. In Proceedings of the ACM SIGGRAPH 2019 Panels on—SIGGRAPH'19, Los Angeles, CA, USA,28 July–1 August 2019; pp. 1-2.

4. Farra, S.; Miller, E.; Timm, N.; Schafer, J. Improved training for disasters using 3-D virtual reality simulation.West. J. Nurs. Res. 2013,35, 655–671