Data visualisation in

the metaverse



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Introduction

The metaverse has opened up new avenues and opportunities in several industries. Data visualisation in the metaverse goes beyond traditional two-dimensional graphs which does not offer as much clarity as 3D data objects and allows users to navigate and interact with three-dimensional data objects almost like they would in real life.

Other possibilities offered by the metaverse include displaying real-time data with aesthetic, visual elements and presenting data on virtual reality platforms. When users interact with data in an detailed and immersive manner, they have a better understanding of it, which in turn enhances the efficiency of the data visualisation process.



Technologies used in data visualisation in the metaverse

Some technologies are important for effective data visualisation in the metaverse. Data visualisation tools like online chart builders and interactive chart-building web services are commonly used for this purpose. 3D data visualisation in the metaverse, however, requires technologies that make access to virtual reality possible for the users. Some of these technologies are:

3D virtual reality device

This device provides users with a three-dimensional virtual experience. It enables the users to enter and experience a virtual world with features similar to real life. Users can easily step into a virtual data world through this kind of device.

Application programming interface (API)

This defines the set of protocols that allow distinct software applications in communicating and initiating interactions with each other. API is used for integrating the front end with the back end and providing data taken from the back end to the front end in the form of visually appealing 3D charts.

3D game engine

This application enables the creation of interactive experiences across a range of platforms. Designing the front end in 3D game engine enables the presentation of data to the users by attaching scripts to figures like 3D pie charts and bar graphs.

Technologies like edge computing and 3D modelling have been instrumental in enabling the further development of metaverse. This, in turn, has increased the possibilities of the better data visualisation on a metaverse platform. Furthermore, with the increasing popularity of virtual reality more people are using metaverse for 3D data visualisation.



Benefits of data visualisation in the metaverse

The metaverse provides 3D interactions with the data to users from multiple industries. This 3D experience offers many advantages in comparison to the traditional 2D data visualisation methods. Some of the advantages are:

Better data utilisation for scientists

Scientists and researchers can benefit from interacting with data through 3D data visualisation. Identifying potential data discrepancies and scrutinising data becomes much easier for scientists and researchers when the information is presented to them on a 3D platform compared to the traditional 2D format. Some of the examples where 3D data visualisation can help researchers are climate models, ocean currents and airflow simulations.





Ease of data analysis for decision-makers and stakeholders

Decision-makers and analysts can use 3D data to make their work easier and more interactive. They do not have to go through multiple pages of 2D charts and graphs for decision-making. 3D plots can be employed to visualise financial data such as portfolio performance, asset allocation and risk analysis.

Enhancement of user engagement

The metaverse enhances the engagement of the users with the data by providing an immersive experience. The users can look into the intricate aspects the of data through detailed 3D interactions which makes the process of understanding the presented data far easier thereby increasing the user engagement with the data.





Actual representation of geographic data

Geospatial data can be represented in a 3D plot with latitude, longitude, and elevation. For example, visualising terrain data, showing mountains and valleys or plotting buildings in a cityscape are all possible using the metaverse. Having a 3D view of a specific region or terrain provides the users with an accurate idea of how they are in real life. Important decisions like determining the feasibility of construction of buildings in a specific region can be taken quickly without physically visiting the site which can help in increasing the accuracy and efficiency of the professionals who are working on such projects.

Easier grasp of complex data sets

Data visualisation in the metaverse can make complicated data sets more visually appealing, thereby enabling the users to get an easier grasp of relationships, trends and patterns in the data. Users can manipulate and interact with the data, and explore the data on a real-time basis.





Better medical imaging

3D plots can be used to visualise medical imaging data, including MRI scans, CT scans and 3D ultrasound images. These plots enable the users to have a better understanding of anatomical structures and abnormalities. For instance, multiple health-related attributes can be plotted on 3D graphs. These graphs make the data easier to understand compared to two-dimensional graphical representations. Plotting multiple health attributes like weight, diastolic and systolic blood pressure numbers on the same 3D graph, for example, can help professionals in quickly determining whether a person is healthy or not and enable healthcare professionals to make appropriate diagnosis and healthcare decisions.

It is clear that data visualisation in the metaverse has several benefits and offers many advantages. A platform which can facilitate metaverse-based data visualisation can allow users to have clearer interactions with data and make appropriate decisions quickly.

How PwC can help

PwC is developing a solution that can enable users to move on from the traditional two-dimensional dashboards to more aesthetic and engaging 3D data visualisation in the metaverse. The software solution focuses on utilising 3D game engine for providing vital data in the form of charts and ensures the integration of data with the back end through REST API. Our solution provides the opportunity for greater user interactions with data, enhanced clarity of information processing and higher levels of user engagement.



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