

Virtual Reality: the Paradigm Shift of Spatial Representation



[Virtual reality \(VR\)](#) is a computer-generated representation of a three-dimensional image or environment. Usually paired with a headset, it gives the user a fully immersive experience. It is now being successfully capitalised on in the gaming, film and education sectors, to name but a few.

(By Jonathan McCollin)

Over the years, spatial data has and continues to be represented using two-dimensional maps. Recent advancements in cartographic methods and GIS technology have allowed for data to be represented with a third and fourth dimension (height and time respectively), giving cartographers access to a new stratum of creativity. Still in the ambiguous stage of

its technology life cycle, the full potential of VR in the geomatics industry is yet to be recognised. However, with recent acquisitions by companies such as Esri, Intel and Google the rise in applications for VR is predicted to be exponential.

The direction of spatial representation is steadily moving towards the utilisation of VR, and it will only be a matter of time before start-ups begin to develop applications for the industry. There are a number of potential uses for spatial representation, threatening the use of conventional two-dimensional maps, including:

Topographic and Bathymetric Representation

Being able to fully interact with a topographic or bathymetric map is something that will be revered in the near future. The ability to physically inspect the elements of an area from a remote location using a VR headset has huge advantages over a typical map. Accurate data sets will allow for systematic decisions to be contrived utilising this new, cutting-edge approach.

Urban Planning

Layering proposed data over actual data in real time has long been a dream for urban planners. Thankfully, start-ups like CityEngine (recently acquired by Esri) are fully realising the potential of this advanced method. The ability to pair this engine with a VR headset in real time would aid in the transition from virtual reality to augmented reality, allowing for a truly revolutionary system.

Disaster Risk Management

GIS has been used in the minimising of risk for a number of years. Interacting with a thematic map in a virtual setting would have endless possibilities for the disaster management department. Comparing patterns of time-based animated maps will plunge the analyst into a new world of inspiration.

Fleet Management

In the simple sense, fleet management is concerned with the full supervision of a company's fleet of vehicles. Pairing a real-time GIS with a VR representation will quickly provide supervisors with information on the position of the vehicle, hours travelled, driver etc. The information provided can be selected to show the various attributes of each vehicle, giving managers a peace of mind.

With the advent of VR representation, complex GIS analysis will be greatly simplified as the traditional map is brought to life. The increase of mapping applications will be expected as the interest of cartography also increases. Virtual Reality has begun to cause some disruption in the industry but with the paradigm shift of spatial representation on the horizon it is only a matter of time before it is fully normalised.

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