4.1.3 Using GIS Spatial Data to Develop Virtual-Reality Transportation Applications

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This paper explores the opportunity for utilizing GIS spatial data to facilitate the development of Virtual Reality (VR) systems for transportation engineering and planning.

Virtual Reality technology is becoming increasingly useful and accessible to transportation professionals, who can use this visualization tool to conduct design and analysis. VR allows transportation engineers and researchers to study the transportation system as well as individual components through 3D visualization in a much-enhanced "immersive" manner.

By maintaining large amounts of spatially referenced data, GIS and particularly GIS-T can provide the essential spatial data required for the development of VR models in transportation applications.

To facilitate this information sharing process, an interface is developed to transform existing GIS spatial data to VR models in an accurate and cost-effective way. Using an example, the paper describes the process involved in developing a purposeful VR system based on a proposed rural highway, with a focus on different driver's perspectives and their interaction with highway infrastructure.

The paper concludes by providing recommendations based on experience gained through the developing exercise, and observations on the relationship among VR systems, GIS, and other CAD-based civil design systems.