

3D Geovisualization Techniques for Crime Scene Analysis

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Abstract

This contribution presents an approach that combines methods of geospatial crime scene analysis with three-dimensional mapping techniques. Using the example of the German city of Cologne, methods of geoinformation science are applied to discover certain hotspots of robbery scenes. To visualize the outcomes of spatial crime scene analysis and to promote an instant grasp of such complex geospatial information, the benefits of three-dimensional geovisualization techniques are explored.

According to this concept, a first step implies spatial crime scene analysis. For the purpose of processing and analysing geocoded crime scene data, a geographic information system (GIS) is used. In this regard it is of substantial interest to detect spatial clusters of crime scene distributions (hotspots). Once identified, those hotspot areas provide a basis for further crime related geospatial analysis.

In a second step an interactive three-dimensional geovirtual environment is created to explore additional visualization techniques. While for initial data processing as well as for in-depth hotspot analysis the GIS is applied, the interactive visualization demands for using a specialised 3D visualization software system. This combination of crime mapping methods and 3D geovisualization techniques may help to facilitate an instant grasp of complex spatial phenomena in the field of crime mapping – for decision makers in security agencies as well as for authorities related to urban planning.