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Integrating of Multi-Criteria Decision Making and Spatial Data Warehouse in Geographic Information System

Authors : Zohra Mekranfar, Ahmed Saidi, Abdellah Mebrek

Abstract : This work aims to develop multi-criteria decision making (MCDM) and spatial data warehouse (SDW) methods, which will be integrated into a GIS according to a 'GIS dominant' approach. The GIS operating tools will be operational to operate the SDW. The MCDM methods can provide many solutions to a set of problems with various and multiple criteria. When the problem is so complex, integrating spatial dimension, it makes sense to combine the MCDM process with other approaches like data mining, ascending analyses, we present in this paper an experiment showing a geo-decisional methodology of SWD construction, On-line analytical processing (OLAP) technology which combines both basic multidimensional analysis and the concepts of data mining provides powerful tools to highlight inductions and information not obvious by traditional tools. However, these OLAP tools become more complex in the presence of the spatial dimension. The integration of OLAP with a GIS is the future geographic and spatial information solution. GIS offers advanced functions for the acquisition, storage, analysis, and display of geographic information. However, their effectiveness for complex spatial analysis is questionable due to their determinism and their decisional rigor. A prerequisite for the implementation of any analysis or exploration of spatial data requires the construction and structuring of a spatial data warehouse (SDW). This SDW must be easily usable by the GIS and by the tools offered by an OLAP system.

Keywords : data warehouse, GIS, MCDM, SOLAP
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