

# **Sustainable Decision Support by the Use of Multi-Level and Multi-Criteria Spatial Analysis on the Nicaragua Development Gateway**

**Vera HERNANDEZ, Angi VOSS, Wolf GÖHRING, Germany and  
Cornelio HOPMANN, Nicaragua**

**Key words:** Spatial Decision Support, Web GIS, OLAP, Warehouses, Multi-dimension, Spatial Analysis.

## **SUMMARY**

Decision support systems should help decision-makers at any organizational level in government, local communities and development organizations. The challenge of supporting sustainable development is to take into account a variety of decision makers as well as the complex natural, social and economic background over time. How can this be solved by the use of new technology for information and communication? Which are the requirements for such systems? After a review of possible solutions for spatial decision support techniques this paper proposes a technical approach which combines geospatial mapping with multidimensional analysis methods using the business intelligence capabilities of datawarehouses. The goal is a tool which can handle complex, structured data and information and which can be integrated into the decision processes of various groups of users. One task to fulfill concerns navigation through spatio-temporal data and the interactive recomputation of visualizations and analysis results when the hierarchical level or the dimensional view is changed. The other task is to provide the information through an easy to use medium integrating existing informational and functional services. The approach in this paper will be illustrated with its application in real projects for the Nicaragua Development Gateway niDG.