



SDSS as a Tool for Physical Planning Based on Scientific Knowledgebase

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Karstic areas are essential for public water supply, since currently karstic aquifers contribute 25% of world-wide water supply. These areas are at the same time highly sensitive and valuable natural environments. Conversely, development of such areas is increasing. Sustainable development of karstic areas means a maximum use of the environment with simultaneous conservation of natural resources. This is difficult to achieve in practice. It requires an exceptional knowledge of natural resources and skill and knowledge of physical planners who have to optimize effects of human activities. Governmental authorities are forced by law to take decisions within the framework of European, national and regional directives in the fields of spatial planning and groundwater and environmental protection. These tasks can be supported by a spatial decision-support system (SDSS), which integrates data from various sources and helps to make decision processes more effective and transparent.

Basic work for such a SDSS has been done in the transnational and interdisciplinary project KATERII, supported by the INTERREGIIIb programme, involving co-operation between institutions from Austria, Croatia, Italy and Slovenia. With the help of an inventory all existing data about land-use, existing and potential pollutants, soil and aquifer characteristics and, as far as possible, time-series of water and substance fluxes was recorded for selected pilot areas. These areas were chosen to reflect a range of land-use types and different national settings. Land-uses considered include summer and winter tourism, settlements, transport, forestry, agriculture and pasture management. Legal frameworks and socio-economic aspects with emphasis on land-use activities were also implemented in the SDSS. Also, the complex relationships between social and techno-economic variables must be taken into account in order to

understand how people behave and to help them decide.

A spatial decision-support system (SDSS) is comprised of specialised databases (including GIS), knowledge base and interactive modelling. Knowledge base is a system of rules describing the concrete forms of impacts of land-use activities (derived from an activity impact model) on the natural environment, as described in vulnerability models. This system of rules – the formalised knowledge base - is the core of the decision support system and it was made in existing ontology DOLCE.