Classifying decision support systems in spatial planning - Proposal for a research grid for comparative analysis

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Spatial planning is engaged with coordinating different and often conflicting types of land uses to be allocated in a particular planning situation. From a governance perspective, it also operates as a public task being interdisciplinary, cross-section-oriented, and integrated in a multilevel system (Danielzyk and Münter 2018). It must be understood as a decision-making process. The development of space involves a multitude of different perspectives and concepts from various stakeholders and specialized disciplines, which means that the development and planning of space might be confronted with strong conflicts of interest and the planning solution can largely vary (Pinson 2004). To arrive at a decision that considers and balances the various interests, spatial planners use various intuitive as well as more analytical assessment methods (Scholles 2018).

The megatrend of digitalization as a global and multi-disciplinary phenomenon has also arrived in spatial planning (Van Winden and De Carvalho 2017; Pallagst and Liggesmeyer 2022). On one hand, this creates challenges for spatial planning, and, on the other hand, it opens many new opportunities that have the potential to provide planners with new methods to improve planning tasks. One of these opportunities addresses the already mentioned complexity of the planning tasks and actors involved, which requires a reliable and comprehensible decision-making process. Digitalization is moving us to digital solutions such as a Spatial Decision Support System (SDSS). An SDSS is a tool to facilitate these day-to-day decisions by digital means (Sugumaran and Degroote 2010). It combines different types of spatial and non-spatial data, performs analyses and visualizations, and can thus suggest possible solutions (Keenan and Jankowski 2019). SDSS can make processes more efficient and enable decision-makers to make better decisions faster (Crossland et al. 1995). One prerequisite for the efficient use of SDSS is the availability of qualitatively suitable data. Thus, the technologies, functionalities, and data types employed vary significantly. This, at times, also affects the type and quality of the benefits derived from a SDSS for spatial planning. Furthermore, it is crucial to distinguish which user groups are utilizing the program to discern whether it constitutes an expert tool or rather an application designed for a broader user base. However, practice shows that the term SDSS is not always easy to categorize. In 2018, Ghattas suggested that research is needed to better understand the feasibility of various available assessment tools for sustainable land-use planning.

To gain knowledge about the types of SDSS at hand in spatial planning and their application in practice as regards best practice examples, this contribution provides an attempt to classify SDSS used in spatial planning. Various technical, data-related, and spatial planning-related aspects are applied to formulate different assessment criteria. The research on this topic emerged in connection with the interdisciplinary research project "Ageing Smart" and it aims at developing a systematized research grid for comparative case studies in this field.

Literature:

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