

Challenges in Modelling Uncertainty of GIS-Data

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Modelling the Uncertainty of GIS-data is a challenge when specifying, acquiring using and presenting spatio-temporal data. Three reasons appear to be decisive from a research point of view: (1) the theoretical basis is worked out mainly for simple situations, e. g. scalar, vector or sets of discrete or continuous values, the theory for representing the uncertainty of structure of objects still is at the beginning. (2) Theoretically adequate and practically feasible statistical techniques are necessary for specifying and empirically determining the uncertainty of acquired data based on multiple measurements, especially when taking the complexity of objects and acquisition processes into account. (3) The uncertainty of object models directly influences the all steps in automatic data capture as well as the evaluation of existing data sets via 'soft constraints', however, models for the uncertainty of complex objects practically to not exist. The presentation addresses issues of open research in uncertainty handling, which are driven by experiences in 3D-city modelling.