

Consistency of Data in Cadastral Systems

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SUMMARY

Cadastral systems should provide users with reliable data. However, cadastral systems established by a systematic approach in the 19th century are burdened with errors caused by long-term and uncoordinated maintenance in an analog form on paper. In addition to regular maintenance, systematic documentation reconstructions were carried out. Even during the reconstructions, mistakes were made, which were later converted into the electronic form. The social and political changes that significantly influenced the registrations in the cadasters in the past two centuries are briefly presented. Dynamic changes in land rights caused intensive registrations in the cadaster and thus, illegibility of documentation. Such illegibility documentation made it difficult to convert it into the electronic form, which led to new misinterpretations.

After the conversion into the electronic form, it was possible to detect and correct these errors by using the approach proposed in this paper. First, a typical analog documentation of the cadaster created by a systematic approach is presented and analyzed. The general approach to the digitization of descriptive data and the vectorization of the cadastral map are presented and discussed. Redundant data that were kept in analog documentation and those that were produced during the conversion to the electronic form were detected. A comparison of these redundant data (e.g., parcel area from the register and the area calculated from the vectorized map) is proposed to detect inconsistencies. It is also suggested to compare the constraints that the data should meet to detect inconsistencies. For example, the number of parcels on the cadastral map should be equal to the number of parcels in the register, having the same parcel IDs. A strategic approach to performing comparisons of redundant data was developed to implement error correction efficiently and quickly. A typical case of discovering the cause of the inconsistencies and a proposal for error correction are presented in detail. The presented quick detection and correction of errors increased the quality of data in the cadastral system and strengthened the user confidence in it.