

THE DEVELOPMENT OF DERIVATIVE REFERENCE DATABASE IN POLAND

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Implementation of the INSPIRE Directive in Poland requires that not only appropriate legal resolutions are transposed, but also that a series of technological solutions are developed, which will allow for practical implementation of the harmonisation and interoperability ideas with respect to spatial data and services. Although INSPIRE does not put any requirement on the production of new data with generalization techniques, Polish NMA decided to treat it as an opportunity to develop the concept of the new, MRDB reference database in Poland.

One of the key tasks is to develop a complex geo-reference data base model and technology to be used for supplying its components with source data of high precision. Therefore, that task is equivalent to the process of cartographic modelling at many levels of LoD, which requires that generalisation techniques of geographic information are applied and the idea of the multirepresentation data base (MRDB) is applied.

Thus, the objective of the implemented project is to develop methodology, as well as prototype software tools, which facilitate the creation of the TOPO250 component of the Geo-reference Data Base basing on the source TOPO10 component.

The most important objective of the authors was to propose the idea of a computerised system, which performs generalisation of geographic information using constrained-based methods, amended by defining and maintaining topological relations between particular objects and classes of objects in the reference data base (BDG) (TOPO10 and TOPO250 components).

The designed system will allow for implementation of the process of generalisation of geographic information stored in a precisely defined structure of the conceptual model of the Geo-reference Data Base. This means that the following assumptions should be made:

1. TOPO10 and TOPO250 models should be completely coherent with respect to terms and classification,
2. the TOPO10 component should be assumed as the only data source for creation of TOPO250,
3. the, so-called, model generalisation (DLM generalisation) should be assumed as the basic procedure of spatial data processing.

Performed research and obtained results allowed to make use of advantages of tested modules in the final solution and to avoid their disadvantages, such as, for example, low system effectiveness.

Considering experiences resulting from the above research, as well as outcomes of projects performed by topographic services of other countries, it has been decided to propose the concept of the MRDB type data base and to use Oracle 11g data base tool environment. Development of the system functionality requires that own PL-SQL and Java scripts are developed, which allow for widening Oracle data base functionality by generalisation functions.

An important criteria of evaluation of final solutions are effectiveness of the system operations (finally about 1700 "sheets" will be processed), as well as its universality and openness for modifications. This means that the dedicated system should be equipped with the processing engine, independent from external parametric files, defining not only the generalisation parameters, but also the structure of TOPO10 and TOPO250 components and SQL scripts, allowing for selecting particular objects from the TOPO10 source data base, because it may not be excluded that the BDG data base structure will be modified in the future. The XML language has been adopted as a format of recording parametric files and SQL syntax.