

ONTOLOGIES IN CARTOGRAPHY: POWER OF REASONING

CERBA O.

University of West Bohemia in Pilsen, PLZEN, CZECH REPUBLIC

Who is the current user of maps? It is not possible to give an unambiguous answer. But the important group of users could be defined as “people being able to create and distribute their own maps via web technologies, but they have not any cartographic education and knowledge”. Such users can create for instance choropleth maps or cartograms, but they do not know anything about these cartographic methods. They do not see restriction of methods, their advantages, signification or limits of usage.

The opportunity of cartographers consist in a cooperation on development of a solution supporting automatic providing of cartographic information and knowledge. Such agents are known as expert systems. On our poster we do not want to describe a complete expert system but only ontology as its fundamental part focused on a sharing of semantic information and knowledge.

Ontology is defined as “a formal specification of a shared conceptualization” (W. Borst). R. Poli have recommended to use and distinction between two words connected with ontologies – formal (application of formal terms) and formalized (formal way of coding). In this work we want to describe one type of ontologies – domain ontologies (sometimes called sharing vocabularies), which represent the most frequently used type of ontologies used to describing semantics of data.

Majority of users have domain ontologies connected just with technologies focused on description and sharing of knowledge structure (e.g. taxonomies, thesauruses). But domain ontologies bring other important benefits – the process called “reasoning” is able to generate new information based on original asserted ontological model.

In the case of cartographic expert system “reasoning” can recommend appropriate cartographic method based on detail description of source spatial data sets and purposes of map. If a “reasoner” and the ontological description of cartographic methods and their characteristics will be embed in any user interface, user just fill in a questionnaire concerned source data and demand on map. These information and the original ontology will be processed by “reasoner” and such solution send back recommended types of maps and other information to user.

This poster presents only a short fragment of proposed ontology. To be fully and efficiently operational the ontology needs to add following components:

- Complete system of description of spatial data (to find or to establish a closed set of spatial data properties).
- Complete system of description of maps, their components, include the methods of construction.
- Interconnection of different existing terminology systems and existing ontologies.

The openness, clarity, accessibility, interaction with other scientific disciplines, and the absorption of new technologies will signify not only a greater use of cartography in new and non-traditional areas, but also a prominent position in the market for geoinformation. In this context, the marketability of cartographic products, but inevitably also their quality will increase. Because informed and experienced users supplied a wide range of cartographic products will prefer the quality at the expense of easy access.