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Contribution ID : 23

Semiological decision support systems : an application with Mapserver and PostGIS

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Although GIS and webmapping softwares provide technical means for producing thematic maps, the selection of relevant visual variables for displaying geographic data is a task that GIS practionners often do without applying the commonly agreed semiological rules.
This paper presents the implementation of these graphical rules (Bertin 1967, Hussy 1995, Rod 2000) in a semiological decision support systems based on Mapserver, PostGIS and PHP technologies. The potential visual variables are sorted by order of relevance, while the final choice is left to the users.

In thematic maps the choice a visual variable depends on its properties, as well as on the type of data to be mapped. For instance, a visual variable such as color allows the selection and the association of objects, but not their ordering (Bertin 1967). Therefore, color should only be used for representing qualitative or nominal data, such as a soil type, and not for quantitative data like population counts.
Combining the 6 visual variables (shape, orientation, color, texture, value, size) with the 3 spatial types (point, line, area) produces the generic graphical matrix containing the 18 basic types of representation (point in color, line in color, area in color, point in texture, etc.).
The proposed semiological decision support system provides the user with an evaluation of the most suitable variable visual to be used for mapping the available data. The system is based on metadata describing the data to be mapped (data types, spatial units) and tries to match the nature of the selected data with the properties of the potential visual variables. The final decision for a specific visual variable is left to the user.
The system is implemented using the follwing techonolgies: PostGIS (metadata and geodata), Mapserver (webmapping), PHP/javascript and HTML (scripts, user's interface).

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Primary authors : Dr. DAO, Hy (Department of geography, University of Geneva & UNEP/GRID)

Co-authors :

Presenter : Dr. DAO, Hy (Department of geography, University of Geneva & UNEP/GRID)

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