MAPQUAL: A Quality Framework for Geographical Maps based on Quality Framework for Conceptual Models

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Abstract

The science of cartography is currently undergoing a change with the demand for more ubiquitous, context sensitive and dynamic maps. As well as an increase in the number of cartographic application in the society is recognized - mostly due to the rapid technological development. Combined, this pose for a need to understand the quality of maps. Preferably motivated by the science and not developed as a response to technological development.

In a response to this we approach cartographic maps as conceptual models and investigates the adaptation of a framework for understanding quality in conceptual models, SEQUAL (**??**), into a cartographic context. SEQUAL is based on semiotic theory and takes a set theoretic approach to investigating quality facets of conceptual models. We follow the same structure of SEQUAL in the investigation and adaptation.

During the investigation we find that many of the foundational principles of conceptual modeling are relevant and applicable in cartography. Some principles are already existing in cartography. However these currently lack structure and are often proposed in isolation. We survey the main principles of understanding quality in cartography and adapt them to the structure of the framework.

The result of the investigation is a proposal of a framework for understanding quality of maps, named MAPQUAL. We find that this approach is requiring a shift of notion in cartography. Especially we propose that the language the map is composed in is seperated from the map itself, enabling for better understanding of maps.

An illustrative evaluation of the framework is performed and discussed at the end of the paper. Mainly to illustrate main benefits and principles of the framework but also to briefly investigate if the framework captures current cartographic understanding of quality.

The framework proposed is an initial step into understanding quality of maps and is thus not considered to be complete. We mention throughout the article elements that need further work and sum up what we believe is the most important aspects of further work at the end of the paper.