Mastering Map Scale: Balancing Workloads Using Display and Geometry Change in Multi-scale Mapping

Paper summarized by G11 (*Jason Anderson, Sami Eriax*)

Peer-reviewed by G10 (*Anuj Karpatne, Vijay Mohan*)

**About the paper:**

The paper presents a new conceptual model for determining the time and cost (workload) of producing a multi-scale map from multi-resolution spatial databases by using the role played by the combination of symbol change and geometry change. They also introduced the concept of Level of Detail (LoD) into the map production workload.

**Review of the presentation:**

The narrative and the slides have been developed coherently, and they both capture the essence of the problem in a very interactive format using examples, illustrations and exercises. The examples and the exercises included in the narrative and slides provides a clear description of the problem and is directed for a very broad audience. It is helpful in explaining the paper in more detail, and cross-checking our understanding through exercises and examples. The presentation is technically accurate and is in line with the 6-point format for reviewing a research work. The critique provided is also relevant and important. However, the following improvements can be proposed to improve the presentation:

- It can be mentioned whether the current work falls into the category of the first of its kind approach for addressing to the problem at hand or is it an optimization of an existing model.
- The novelty of the current work hasn't been reflected clearly in the slides and the narrative. Relation of the current work to the existing approaches in this area or in related areas should be pointed out so as to highlight the novelty of the current approach.
- Definitions can be provided in more detail in the key concepts section along with their reasonings, in line with the Q&A format of explaining the key concepts that they have adopted.
- The paper mentions that DLM is more accurate than DCM and LoD. However, it was not shown clearly why the authors did not choose DLM in place of LoD. The motivation behind choosing LoD as opposed to DLM can be included providing advantages and disadvantages of both the approaches.
- The authors mention that they utilized the workload model instead of complexity in the graph. But the presentation lacks in making it clear how complexity is computed in the first place. The advantages of using workload than the complexity model should be argued, providing a better perspective on
the motivation behind choosing workload model.

• The workload is said to depend on processing complexity, time, and skill level and tool sophistication. But the impact of each of these in workload is not addressed. Questions like which one will occupy more weight, under what circumstances, or do all of them have equal weights, also need to be addressed in the presentation.

• While comparing the workload magnitudes for case study one, the authors mention that the tasks are separated as easy, moderate etc., and each of them is assigned a value. But the exact parameters of deciding easy or moderate is not addressed. This can be mentioned as one of the assumptions of the model.

• Though the LoD is empirically tested. It was mentioned that LoD adds extra work at the lower resolution. The threshold as to at what resolution point it adds to the workload or the criteria to select such threshold is not empirically discussed but rather left to the manager to decide.

Most of the above questions are relevant to be answered if an empirical study is done. But since the model is purely conceptual, the drawbacks are imperative.