

Automatic Creation of Schematic Maps - A Case Study of the Railway Network at the Swedish Transport Administration

Today, one of the needs of the railway information systems is sharing the precise and exact data among varieties of stakeholders. In addition, efficient use of Geographical Information Systems (GIS) encourages the railways administrations to centralize their data and prepare an information model which purpose is to reduce the demands associated with the transformation of the data. One such reduction of data handling is to be able to extract both geographical and schematic representations from the same database.

Currently, one difficulty which is encountered by the Swedish Transport Administration (Trafikverket), is that different representations (geographical and schematic) have to be updated separately, which imply larger costs and there is also a rise of inconsistency between the two representations. However, when the information model was initially developed, the schematic representation was not a requirement; subsequently, there might be some unresolved issues associated with updating these representations.

This research study is aimed to examine the information model for Trafikverket support the automatic generation of schematic maps. By studying the experiences in other European countries such as France and Holland, and doing some case studies on some central stations in Sweden, it tried to understand the ability of ArcGIS Schematic extension for automatic generation of schematic maps. In addition, this research study wants to evaluate whether the data in the current database provided by Trafikverket are suitable input for ArcGIS Schematics. The results show that Trafikverket achieved the aim of this study for automatically generation of schematic map for railway networks. It seems they can use it for their production in the real life since it makes the situations much easier for them to create the schematic maps than currently they do it manually. In addition, the evaluation of current data uses in Trafikverket shows that ArcGIS Schematics extension is matched with their data, but some improvements must be done on their data.

Keywords: GIS, ArcGIS Schematics, Schematic representation, Geographical representation, Schematic Diagram, Geometric network