

Semi-Automatic Production of a 1:50k Map at BEV

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Abstract:

The most relevant Cartographic Models of the Austrian Federal Office of Metrology and Surveying/Bundesamt für Eich- und Vermessungswesen (BEV) exist in the scales 1:500.000 (KM500), 1:250.000 (KM250) and 1:50.000 (KM50). Whereas the KM500 and KM250 are already available as nationwide (+ sections of neighbouring countries) vector-datasets, the KM50 is currently being built up in vector format using automatic generalization processes.

Therefore back in 2014 a feasibility study on automatic generalization for deriving the topographic map in scale 1:50.000 from the digital landscape model has been started (as presented at EuroCarto by Knapp and Pammer (2015)).

As a result of this study we came to the conclusion that a fully automatic approach is not capable of creating a map which is suitable to serve our high cartographic quality standards regarding actuality, accuracy, reliability and assured continuous revision.

Instead we developed and established a semi-automatic approach with several steps leaving to a manual post-production process. While the KM50 is currently being built up for the whole of Austria, the first map sheets have already been printed and published based on the KM50 (Figure 1) at the end of 2021.

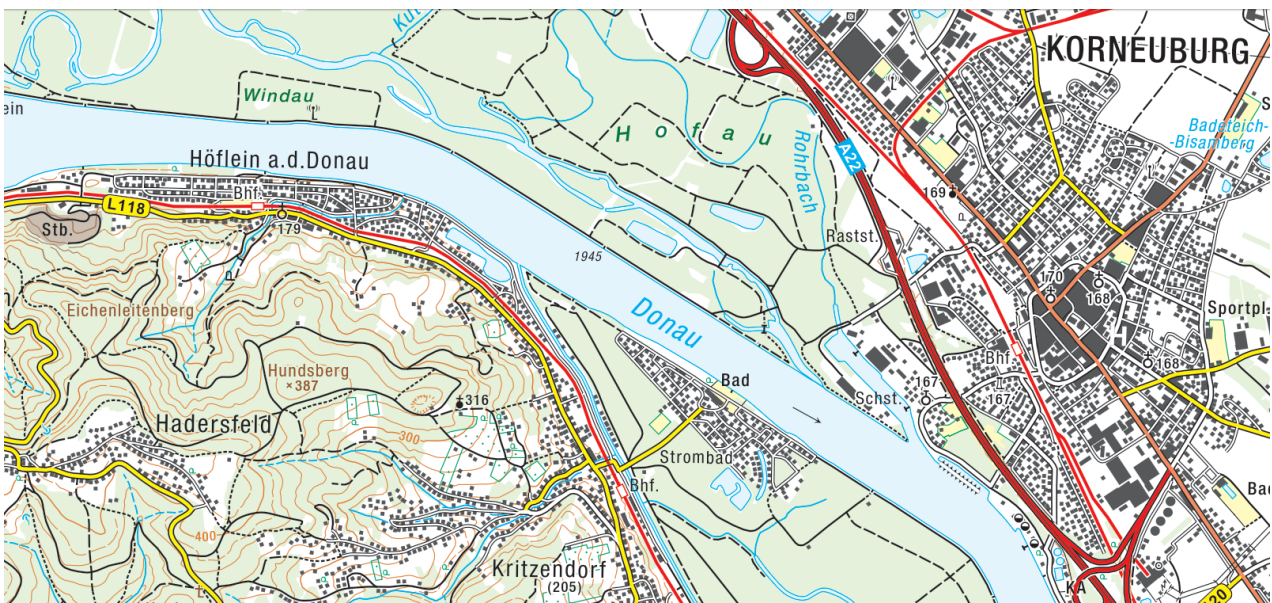


Figure 1. Map excerpt of the Digital Cartographic Model 1:50.000 (KM50).

For the development of a generalization procedure the framework of ESRI ArcGIS was used including the ArcGIS Model Builder as the main developing platform to create generalization models where geoprocessing tools deliver a wide range of possibilities. We had to set up very complex and sophisticated models for model generalization of roads, railways, hydrography and buildings as well as models for cartographic generalization in order to be capable of imitating various skills and intuitive actions of a cartographer.

Additionally we use several ArcGIS Extension for the production, one of them is the Pro Suite QA which is configured to detect graphic conflicts that can not be solved by the automated generalization procedure and helps the cartographer to solve them manually. Another one is the Pro Suite Carto extension which is used to assign cartographic representations to the vector dataset and to apply some tools for cartographic finalization in order to create a high quality cartographic model.

The presentation will show an overview about the workflow and some insights about the challenges we had to face and overcome during the development and production of the KM50.

References:

Knapp, A. and Pammer, A., 2015. Automated Generalization at BEV – From Base Models to 1:50k Map. In: Proceedings of the 1st ICA European Symposium on Cartography, November 10-12, 2015, Vienna, Austria, pp. 52–54.