

# Rebuilding the Cadastral Map of the Netherlands, the Geodetic Concept

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## SUMMARY

The Dutch cadastral map is a nation-wide, topologically correct index for the cadastral registration. It is available as open data. However, its positional quality of about half a meter is not considered to be sufficient in a future where people want to derive the exact location of their legal boundaries from the digital map themselves. A research program aiming at renewal of the cadastral map was started and we succeeded in building a prototype software that is able to largely automatically read and vectorise the more than 5 million historical field sketches containing the original survey information. The prototype facilitates connecting the resulting local networks to gather the information for large-scale network adjustments that result in the new geometry of the cadastral map stored in the so-called reconstruction map. Currently, we are in the middle of a pilot project in which we will produce the reconstruction map from measurements extracted from about 10 thousand field sketches.

The geodetic concept adopted for the production of the reconstruction map is based on the Delft method of testing where quality control is performed in all steps of the process. This starts with the adjustment and testing of the measurements of the many small survey projects individually, of which the measurements are stored in the field sketches. After georeferencing the survey projects are connected using corresponding points in the overlap between the projects. All measurements are weighted and the so-called idealisation precision is accounted for in relation to the type of point. With every newly added project the redundancy improves, the network is re-adjusted, and the measurements are tested for errors. In this way the geometric base for the new cadastral map is being built while at the same time errors in the measurements are eliminated.

In this paper intermediate results of our research on the geodetic challenges in building the reconstruction map are presented. The main challenges are: the large number of field sketches, the

variability of their content, and the related number of errors in combination with a limited redundancy. Furthermore, we are investigating how to cope with the limitations in network size, as a nation-wide integral adjustment is not feasible. A fast and large-scale adjustment software is under development, as well as a procedure for renewal of the cadastral map based on the results of the large-scale adjustments.

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