



Notice

Date

July 15th, 2016

Subject

Response market survey automatic field sketches reading

From

Ad Spaan

Contact details

inkoopservices@kadaster.nl

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Dear Sir, Madam,

The Netherlands' Cadastre, Land Registry and Mapping Agency – in short Kadaster – collects and registers administrative and spatial data on property and the rights involved for real estate, utility and telecom networks, ships and aircraft. Kadaster holds over 10 million analogue field sketches (technical drawings) containing reconstruction information for parcel boundaries. There is a need to convert these field sketches to usable digital (vector & administrative) data. Between July 15 and August 29, 2016 Kadaster published a market survey, asking parties to provide us with information that might contribute to partial or complete solutions for the analogue-to-digital conversion of the field sketches. Our main goal was to determine the feasibility of automatically reading and interpreting the sketches in order to aid us in our decision making process.

A total of 10 parties have responded to the market survey by sending in answers to our questions. One additional (partial) submission was sent in show capabilities of software that was developed. The great number of responses, in combination with the high overall quality of the submissions, has exceeded all of our expectations. We have gained valuable information that will help us choose a direction in which to proceed and we would like to thank dearly all who have submitted a response for their effort.

The submissions can be divided broadly into two groups of overall approach to the matter. The first group suggests to use a semi-automated solution to interpret and extract the information from the scanned field sketches and convert it into the required digital format. The tools that are proposed by these parties serve to aid the operators in their manual work in order to speed up the process and to guarantee a higher degree of accuracy in translating the information. The second group of submissions centers the approach around software tools that will extract the information automatically using image processing technology. In all cases it is foreseen to complement the automated solution with some manual data entry. Of the 11 responses in total, 5 fall in the first group of mostly manual conversion aided by digital routines. Of the remaining responses, 5 fall in the second group of automatic conversion with manual handling of exceptions.

Submissions were sent in by parties with very diverse backgrounds: commercial geospatial companies, cutting edge technology companies, system integrators, often in a consortium with a number of partners, and data entry service providers responded to our market survey, as well as researchers in the field of image processing attached to universities both from within and outside Europe.



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The technological challenges of an automated method of processing the field sketches lie mostly in the fields of line recognition and handwritten text recognition, combined with algorithms for validating and integrating the data found into correct and complete information.

One thing has been made clear to us and that is that a fully automatic solution does not exist in the market at the moment. Partial solutions with some or more manual work are feasible. In all cases where automatic interpretation of our field sketches is considered, there is the need to develop, enhance or integrate pieces of the technological puzzle. In order to further detail such an approach to our challenge, performing one or more Proof of Concepts was strongly advised by several respondents.

For a semi-automatic approach to the challenge, a proof of concept was also suggested with a limited number of sketches, in order to validate the process and to get a better understanding of the time required to convert a field sketch.

After our initial analysis of all submissions we still have a number of questions. We also need to consider the larger picture of our registration and processing of cadastral information in relation to the reading and interpreting of the field sketches. In order to get a better understanding, we will be contacting in the coming month those parties who we would like to ask additional questions. In case the submission was clear no further questions will be requested. For this next step, we need one month to finalize our analysis and formulate our questions. We will contact the respondents which we would like to clarify their submission before 1st of November 2016.

We intend to follow up on this market survey and go forward with our project. Based on our understanding of the submitted information, we expect to need about one year to define our approach to improving our registration and processing of cadastral information. After we have formulated a clear overall approach, we will take the next steps in converting our field sketches and take the decision on how to solve this challenge. This could result in a public tender, but this is not certain at this point. If a tender would be issued, all parties that have submitted a response to our market survey will be informed when the tender is published on TenderNed.

With this notice we are closing this market research. We would like to thank you very much for your cooperation and the time and effort that you have put into your response.

Best regards,

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