Piloting a Map Service to Collect VGI for National Topographic Database

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Key words: Crowdsourcing, VGI Volunteered Geographic Information, National Mapping Agency

SUMMARY

Linked to the big renewal of the National Topographic Database (NTDB) the National Land Survey of Finland (NLS) wants to create a concept for the use of Volunteered Geographic Information (VGI) in the collection and update of the data for the NTDB. To test the concept, a pilot system is under development. In the pilot NLS provides a browser-based map service for citizens which enables data import and data editing. Some topographic data feature classes, such as hiking trails, have been selected to be in the focus during the pilot phase. The usability of the user interface (UI) in the map service has a major importance as the users don't necessarily have any expertise in mapping or cartography. Therefore, the UI needs to be intuitive and guide the user through the process of contribution. All the contributions by users will be displayed publicly in the map service and are immediately available for everybody. Contributing users are required to register by creating an user account whereas anybody may view the contributed data. There are still open questions on how the data will be validated before transferring it to the operational NTDB. The map service for the pilot is currently at the development phase. Once the pilot use has started, the usage will no doubt reveal needs for improvement to the system. Eventually we hope to get experience-based information and understanding of the applicability of crowdsourcing methods to support the collection and maintenance of the NTDB content.

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Helsinki, Finland, May 29–June 2, 2017

1. INTRODUCTION

Through existing feedback system National Land Survey of Finland (NLS) gets few hundreds of reports annually from private citizens on errors and changes on map data. In data collection, the power of citizens is the best on topographic data objects which are difficult to map with remote sensing techniques. In some cases Volunteered Geographic Information (VGI) is the best option to improve the data currency and to map temporal changes. Linked to the big renewal of the National Topographic Database (NTDB) the NLS wants to create a concept for the use of VGI in the collection and update of the data for the NTDB. The ultimate aim is to study whether it is possible to raise the quality of the NTDB with crowdsourced information. To test the concept, a pilot system is under development.

2. DESCRIPTION OF THE PILOT SERVICE

In the pilot NLS provides a browser-based map service for citizens which enables data import and data editing. The supported geometries are points and lines. The contributions can either be drawn in the service on top of the base maps or imported as files of different format such as gpx. All the contributions can be edited further by the owner or by other users. Some topographic data feature classes, such as hiking trails, have been selected to be in the focus during the pilot phase. For these focal feature classes, predefined data specifications are prepared. Users are asked to select appropriate attributes to make the contributions as complete as possible.

The usability of the user interface (UI) in the map service has a major importance as the users don't necessarily have any expertise in mapping or cartography. Therefore, the UI needs to be intuitive and guide the user through the process of contribution. All the contributions by users will be displayed publicly in the map service and are immediately available for everybody. Contributing users are required to register by creating an user account whereas anybody may view the contributed data. Only light authentication is expected, requiring a valid email address in order to allow contacting the user if needed. Registered users will be able to follow up the features they have created as well as the ones they have edited further.

Contributors will be encouraged to make data collection targeted especially on the feature classes in focus. However, data collection is possible also for other feature classes and contributors may even add their own features. It is important to allow users to propose new features even not all of them will eventually be included in the database. This way new user needs may be revealed.

3. CONCLUSIONS

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Building up a system to pilot data collection from the crowds is challenging. The service has to allow easy contribution and provide good user experience. There are still open questions on how the data will be validated before transferring it to the operational NTDB. Using crowds and other data sources which rely on crowdsourced data also for the data validation is forth testing. The map service for the pilot is currently at the development phase. Once the pilot use has started, the usage will no doubt reveal needs for improvement to the system. Eventually we hope to get experience-based information and understanding of the applicability of crowdsourcing methods to support the collection and maintenance of the NTDB content.

BIOGRAPHICAL NOTES

D.Sc. (Tech) Mari Laakso acts as a Senior Research Scientist at the Dept. of Geoinformatics and Cartography in Finnish Geospatial Research Institute which is part of National Land Survey of Finland. Her current research interests are in use of volunteered geographic information and location-based services in authorative data acquisition and to increase the physical and social activity of people.

Research Scientist, Mikko Rönneberg, Dept. of Geoinformatic and Cartography, FGI (since 2009). M.Sc. (Tech.), Helsinki University of Technology, 2009. Rönneberg developed a public multitouch map application for The Finnish Nature Centre Haltia in 2013 that has been a part of the Green Belt exhibition since. His research focuses on user interfaces, usability and integrated GIS solutions.

Tapani Sarjakoski is the Head of the Department of Geoinformatics and Cartography at the Finnish Geospatial Research Institute - FGI. He received his M.Sc. (Tech.) and D.Sc. (Tech.) degrees in photogrammetry from the Helsinki University of Technology. Currently he also serves as an Adjunct Professor in geoinformatics at the University of Helsinki, and as an Adjunct Professor in photogrammetry at the Aalto University. His current research interests include high-performance geocomputing for massive datasets and integration of high-performance geocomputing solutions to Web-based user applications.

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