

New line generalisation algorithm implemented as a web service – our experiences

Dražen Tutić, Miljenko Lapaine

University of Zagreb, Faculty of Geodesy, Kačićeva 26, Zagreb, Croatia

Contact e-mail: dtutic@geof.hr, mlapaine@geof.hr

Abstract:

When a new algorithm for mapping is published, cartographic community can use it and react on its value if there is available implementation. It is not expected that regular users (cartographers or other professionals) will implement a number of different algorithms only to test which fits their needs. Web services are very convenient technology that enables authors of algorithms to make them available to the users and as such provide testing environment. Web services can make algorithms available to the whole world from one place. Open GIS Consortium specification of Web Processing Service (WPS) serves as standard for web services for spatial data. It is designed to fulfill a wide range of applications; in this case it was used for implementation of our algorithm for cartographic line generalisation. There are already available implementations of OGC WPS which means that users can focus on algorithms for spatial data rather than on technical side of WPS itself. We have implemented our algorithm as a separate module in the GRASS GIS. Using PyWPS server the module is made available to the public. The tested WPS client is WPS plug-in for Quantum GIS. In this paper, the advantages and obstacles which emerged from chosen tools will be given.

Distinct properties of our algorithm for line generalisation are area preserving and one input parameter, which represents desired map scale denominator. This makes it convenient for use in process oriented environment because the only input parameter, the map scale, is usually known during map creation. First property is chosen because during manual generalisation cartographers often should or tend to preserve area of features. The property of line which substantially changes with map scale is its length. By analysing dependence of the length change with the map scale, we were able to find approximation of the relation of the map scale, line length and minimal dimensions of line segments. Minimal dimensions of length can be linearly related to map scale. That way user or the web service client needs to know only the desired map scale in order to get acceptable results. For now the main intended usage of this algorithm is generalisation of natural or curved map line data, but additional constraints such as preserving orthogonality along with area is planned.

Keywords: web processing service (WPS), cartographic generalisation