

Integration of Icon and Text Positioning Algorithms in Web Map Service

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Abstract

A map is nowadays more often a digital product than a paper product. Digital maps demand a standardized way of communication between the map provider and the user. There is also a need for maps that are of good cartographic quality. Since digital maps are automatically rendered and presented on a screen or a display the map-making process has been altered. The making of a paper map concentrates on a good overview and excellent cartographic quality. A digital map is restricted to its presentation device and therefore loses the overview property and resolution of a paper map. On the other hand it enables a set of new functions on a map, such as zooming between scales and different levels of interaction.

Well-defined, standardized interfaces between servers and clients are necessary when digital maps are rendered in real-time. The *Open Geospatial Consortium* (OGC) is an international standardization organization, which has developed standards that define the interface between a map-providing server and a client. Two of these are *Web Map Service* (WMS) and *Web Feature Service* (WFS). Briefly, WMS defines requests on the layer level whereas WFS defines requests on the feature level. There are several implementations of both servers and clients featuring these standards. Examples of both WMS servers and clients are given in this report.

The positions of icons and text are essential for the readability of a map. When a map is automatically generated in real-time, algorithms need to optimise these positions so that icons and text do not overlap objects in the map. This study works with symbol and text placing algorithms. These algorithms were developed within the *GiMoDig* project and this study documented them and made some modifications of the algorithms' programme structure.

Neither the WMS nor the WFS standard deals with icon and text placement matters. Thus, it is a task for developers of WMS servers to include such functionalities. The algorithms used within this study are effective and guarantee a high map quality. This report discusses an approach on how these algorithms could be implemented in a WMS/WFS service.