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Quality Assessment for Geographic Web Services

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ABSTRACT

To be able to assess the quality of a service is a significant factor in distinguishing the success of service providers. In this context, the quality of geographic Web services can be measured through the assessment of regular Quality of Service (QoS) parameters plus of those specific of the domain. From this perspective, we propose a framework to assess the quality of geographic Web services, as well as the quality of the data that they provide.

The proposed framework allows a human operator to assess the quality of geographic Web services through three main functions: a) monitorization of the services performance and availability, b) test services scalability, c) assessment of the geospatial data quality returned by the services. The Web services that can be assessed by this framework are expected to implement open standards such as those provided by the Open Geospatial Consortium (WMS, WFS, CSW, etc.).

The proposed framework was implemented in the GeoWatchDog (GWD) system. The GWD application has three components, one for each assessment function, plus one specific for administration and other for operation. The GWD administration component manages the services registered in the GWD application. The GWD Monitor component monitors the services performance and availability, by periodically sending pre-defined requests to the services. The GWD Load-Tester component executes load tests in order to assess scalability. The GWD Data-Tester component applies data quality algorithms to the data returned by the services. Finally, the GWD Playground component is an operational module from where a user can invoke and assess the responses returned by the services.

The GWD was evaluated using services available from the Portuguese Geographic Institute (IGP) and the Spanish IDEE portal. The results of these evaluations are also presented in this paper.

Finally, the GWD is all implemented in Java, and will be released as open-source.