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Application of WebGIS for traffic risk assessment

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Roads and railways are threatened throughout the year by several natural hazards around the world, leading to the closing of transportation corridors, loss of access, deviation travels and potentially infrastructures damages and loss of human lives and also financial, social and economic consequences. Protection measures used to reduce the exposure to natural hazards are usually expensive and cannot be deployed on an entire transportation network. It is thus necessary to choose priority areas where protection measures need to be built.

The aim of this study is to propose a friendly tool to evaluate and to understand issues and consequences of section closing and affected parts of a transportation network at small region scale. The proposed tool, currently in its design and building phase, will provide ways to simulate different closure scenarios and to analyze their consequences on transportation network; like deviating traffic on others roads and railways sections, additional time and distance travel or accessibility for emergency services like police, firefighters and ambulances.

The tool is based on OpenGeo architecture, which is composed of open-source components. It integrates PostGIS for database, GeoServer and GeoWebCache for application servers and finally GeoExt and OpenLayers for user interface. Users will be able to attribute quantitative (like roads and railway type and closure consequences) and qualitative (like section unavailability duration, season, etc.) data to the different roads and railways sections based on their user rights. They will also be able to evaluate different track closures consequences in terms of different scenarios.

Once finalized, the goal of this project including natural hazards, traffic and geomatic thematic is to propose a decision support tool for public authorities firstly and for specialists secondly so that they can evaluate easily and accurately as much as possible to highlight the weakpoints of the transportation network in the case track closures due to natural hazards.