A GIS framework for evaluation of spatial factors that affect the quarantine station selection.

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Objective. The General Administration of Quality Supervision, Inspection and Quarantine of China (AQSIQ), is responsible for the identification of quarantine station. With a view to improve the framework for the evaluation of the quarantine station performance, AQSIQ, together with the Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe), has developed a specific system based on a webGIS tool and a data analysis component. The present paper presents the technical solutions adopted for the system development and the results obtained.

Materials and method The webGIS tool is based on a PostGreSQL version 9.1 (with the spatial extension POSTGIS 2.0) as database server, GeoServer 2.4.4 as application server and PHP 5.3 as developing language. Javascripts with AJAX technology and OpenLayers 2.12 is used for the webGIS application. OpenStreetMap, showed through RESTful API version 0.6, is used as base map. The data analysis component, is based on a protocol founded on the Simple Additive Weighted method (SAW) combined with the Analytical Hierarchical Process (AHP). The Expert Choice software was used for the AHP exercise.

Results A specific protocol, based on the webGIS functionalities, was developed. The protocol allows the local AQSIQ functionaries to georeference and characterised the relevant spatial features surrounding the quarantine stations. At central level, a dedicated GIS project automatically acquires the spatial information and calculates the spatial index of the quarantine station performance under evaluation.

Conclusion. The proposed system designed to support import-export veterinary inspection and quarantine activities was a breakthrough in terms of functionality and decision-making, since it redeployed functional priorities and lead to a revision of AQSIQ conventional approaches.