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## **SEREDONA: A WEB PLATFORM TO INTEGRATE HISTORICAL GEOGRAPHIC DATA INTO CURRENT GEOREFERENCED FRAMEWORKS.**

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### **BACKGROUND AND OBJECTIVES**

Over the last few years we have seen an increase in the use of historical geographic data. This phenomenon can easily be explained by looking at the useful information contained in this data which can not often be found in other sources, particularly in current data. Moreover, this information enables specialists to answer problems which arise in many fields of study and research. Indeed, historical data is of particular interest to ecologists (study of forest evolutions, comparison of ground occupation on various dates, etc.), archaeologists, historians, and also to research scientists who work in the field of simulation. To enable a better exploitation of historical data, this data has to be vectorised, then has to be integrated in current georeferenced frameworks. Unfortunately, easy access to data integration treatments are not yet available for users. Therefore, this paper aims to introduce a solution to solve this problem. This solution is based on the building and the development of a data integration web platform called SEREDONA, a French acronym for "SErvice de REcalage de DONnées Anciennes" which can be translated as follows: "Web service platform for the adjustment of historical data".

### **APPROACH AND METHODS**

The SEREDONA platform aims to suit the needs of users who want to georeference historical data, in providing tools to integrate easily historical geographic vector data into current georeferenced frameworks. This platform has been built around the main idea that the georeferencing process of historical data is maybe not necessarily easy for people dealing with historical data such as historians or archaeologists. Therefore, the choice is done to provide tools in a pedagogic way through a web platform.

To assure the best possible interoperability, the platform is based on a architecture of OGC (Open Geospatial Consortium) standard services such as Web Map Service, Web Feature Service and Web Processing Service. Indeed, these standards are now fully recognised and adopted by both the geomatics community and the institutions, such as in the European INSPIRE directive.

The platform is based on four main separate modules: a data management module, a data visualisation module (also allowing the co-visualisation of users data with both data produced by institutions or national mapping agencies), a

data integration module and a data analysis module. The separated conceptions of the modules enables to reuse these modules in other GI applications, as required in a Service Oriented Architecture.

### **RESULTS: THE SEREDONA ARCHITECTURE**

The SEREDONA platform is built on top of the Java-based Apache Struts 2 framework. The latter allows us to use a Model-View-Controller architecture which enables the reuse of the different SEREDONA modules in other contexts. Technically, the modules are built as follows:

The data management module is based on GeoServer and its RESTful extension. It allows users to manage online and dynamically their data through Web Map Services and Web Feature Services only. All data are stored in the database management system PostgreSQL/PostGIS.

The visualisation module allows users to visualise their data through OpenLayers, a web map displayer fully compatible with GeoServer. Users can choose one or several data to display. This displayer enables also to co-visualise institutional and users data. All data are displayed through WMS.

The integration module allows users to georeference their data through an adapted web interface. All the integration process are implemented using WPS in the 52°North platform. Moreover, to help users during this process, the module provides users all information they need to make the choice of the georeferencing transformation adapted to their need.

The data analysis module is mainly used to detect possible errors (e.g. topological or geometrical) in users' data. This module is also implemented as Web Processing Service. It enables to create dynamically web pages with the results of this analysis.

### **CONCLUSION AND FUTURE PLANS**

Based on an OGC Web services architecture, the SEREDONA web platform proposes a solution to the problem of historical geographic data integration. The main different modules and the technical choices of this platform have been presented. Due to the fact that the SEREDONA architecture is based on OGC Web Services, Open Source components and the principles of a service oriented architecture, it allows us to think that the SEREDONA platform could be integrate in a more global spatial data infrastructure or separately in other contexts. The platform is still under development and should be complete at the end of February 2011.