

Cross-Forest Project: CROSS Harmonization & HPC modelization of FOREST Datasets

Global approach and main results

N.º do tópico temático: 4. Publicación y compartición e intercambio de datos

Abstract

Cross-Forest project (CROSS Harmonization & HPC modelization of FOREST Datasets), funded by Connecting Europe Facility (CEF) 2014-2020 program and coordinated by Tragsa, has developed a Digital Services Infrastructure (DSI) for open forest data and a cross-border data model (ontology) shared between Portugal and Spain, for the publication of forest inventories and maps in Linked Open Data (LOD) format. Two use cases were developed, centred on: (i) estimating the evolution of forest stands and wood quality in Spain (CAMBRIC) and (ii) evaluating forest fire behaviour to support forest fire control (FRAME). In both cases, the complexity of the models and the need to carry out numerous simulations with varied configurations (geographic, environmental, ...) make it necessary to use High Performance Computing (HPC) resources. An application, Forest Explorer, which allows to view and browse forest information from Spain and Portugal published in Linked Open Data (LOD) format was also developed.

The project partners include *Universidad de Valladolid (UVA)*, *Fundación General de la Universidad de Valladolid (FUNGE)*, *Scayle - Supercomputación Castilla y León* and the Portuguese *Direção-Geral do Território (DGT)*.

This communication aims to provide a global and integrated perspective of the project and its results, starting with the considered data from both countries until reaching the publication, processing and visualization of the results.

The data from the two countries are diverse, both in terms of formats and used classifications, having been analysed with the aim of creating the necessary ontologies for its publication as LOD.

The ontologies created allow the transformation of the data into RDF (Resource Description Framework). Data in LOD has a great potential, as users can choose what data they are interested in, and develop the



applications they need, linking with other LOD data, to visualize, analyse, perform calculations and support decision-making.

The project's RDF are available in *Sistema Nacional de Informação Geográfica* (SNIG) from Portugal and in *Inventario Español del Patrimonio Natural y la Biodiversidad* (IEPNB) from Spain and being a CEF project, they are published in the open data portals of both countries and consequently in the European Data Portal.

Moreover, to achieve the project's objectives, two *Virtuoso* end-points were prepared at Scayle's Supercomputers, to store and process large amounts of data - one with project data in LOD and other with Forest Explorer data viewer, for exploration of forest data from Portugal and Spain.

The publication and subsequent use and exploitation of data with HPC is performed both in terms of visualizing the data from the two countries as in its exploitation for processing by the two pilots, both built on forest geographic datasets published as LOD and optimized for HPC resources use in simulations that require quality, accessible, integrated, and linked data.

To finalize, the products, principles and main benefits of the project are systematized in an integrated way. References are made to what is required to guarantee the maintenance of the services provided after the project has ended, as well as to project's future developments.

Keywords

Digital Services Infrastructure, Linked Open Data, High Performance Computing, evolution of forest stands, forest fires behaviour.

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