

# Surveying Cross-Forest Platform: modelization of wildfires and growth in Iberian forest stands.

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Cross-Forest project aims to develop Digital Service Infrastructures (DSI) services oriented towards forestry and GIS datasets that come from Portugal and Spain, covering forestry evolution models and forest fires control through precise information on combustible materials, forestry maps and propagation models that need High Performance Computing (HPC) resources to run properly.

Two advanced demonstrators working on HPC environments, the pilots FRAME and CAMBRIC are being developed and deployed to evaluate the Cross-Forest Platform: HPC infrastructure and Cross-Forest datasets.

The pilot FRAME (Forest fiRes Advanced ModElization) focus on simulation of forest fires behaviour and spreading according to high spatial and time resolution data available or enhanced from public open data infrastructures. The System considers both fire spread parameters and performance of firefighting measures. The propagation model, as the base model for FRAME simulations, derived from ERVIN (Virtual Trainer for Wildfires) developed by TRAGSA. This approach involves the need of high calculation capacities, need Supercomputing (HPC) capabilities to allow segregating heavy calculations and speeding up the performance of simultaneous simulations, to provided the Graphical User Interface outputs based on EMERCARTO (Emergencies and wildfire management system) emergency management system, developed by TRAGSA as well. Selected datasets will benefit from open data sources of Public Spatial Data infrastructures of Spain and Portugal, as some of the specific data sources to be used within FRAME are shared datasets from Spanish IDE, Spanish Forestry Map, Portuguese IDE SNIG, SIGN II or OTALEX. FRAME intends to take advantage of both HPC computing and Linked Open Data technology to predicting forest fires behaviour and spreading.

The pilot CAMBRIC (CALidad de la Madera en Bosques mIxtos) focus on simulation of different management scenarios to generate a database on wood quality in pure and mixed forests to forecast wood quality in Spain. Using Big Data as source information provided by Spanish National Forest Inventory, and Spanish National Forest Map, and other data, a set of Yield Models adequate for each species composition and different management scenarios, will develop a dynamic information platform with wood yield as raw material for each different lumber industry. CAMBRIC intends to take advantage of both HPC computing and Linked Open Data technology to calculate wood stocks and simulate future status. Models will be performed with SIMANFOR (Support system for simulating Sustainable Forest Management Alternatives), developed by Valladolid University and adapted to the HPC environment.

Cross-Forest will provide a public endpoint exposing Forest Data according to the produced models.

## **PALAVRAS-CHAVE**

Cross-Forest, Portugal, Spain.

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