The project CROSS-Fire aims to develop a grid-based risk management decision support system for civil protection (CP) using forest fires as the main case study and FireStation (FS) as the standalone CAD application that simulates the fire spread over complex topography. The previous work focused on (i) parallelisation of the fire propagation execution model and (ii) integration on the EGEE infrastructure to support higher processing/storage capabilities, improved I/O data resolution, faster multi-simulation execution and wider simulation areas.

To give decision makers access to the spatial data infrastructure, to launch simulations on the grid and visualize the fire propagation, we developed GWS-FS, a grid user interface SDI based client, which complies with OGC and EU INSPIRE directives.

The present work stresses the relevance of standards adoption: OGC-WS WCS/WFS/WMS/WPS, to exploit/enable geospatial services for data access processing, and OGC-SWE SOS to address other CP data sources, such as meteorological station networks (MSN) or satellites.

Cross-Fire Goals

– to scale from the desktop towards a service-oriented information system
– to benefit from Grid Infrastructure
– to provide decision-makers with a persistent set of independent high-level services
– to share geospatial information.

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FireStation on the grid

– SDI client complying OGC/ EU INSPIRE
  • to launch fire/wind/FWI simulation
  • Fire spread/Winf field visualization
  • WPS client access to CROSS-Fire facilities
  • GIS and CAD capabilities

FS - System

Wind field calculation

• Canadian FWI
• daily fire danger rating
• Fire propagation
• over a complex topography

Demands

– high computing power
– large data set

FS - Simulation

Meteorology

• Wind speed & direction
• Temperature
• Relative humidity
• Fuel moisture

Topography

• Slope
• Orientation
• Altitude

Fuels

• Canion and Nuatmos models

Primary Outputs

• Wind (i) Canion and Nuatmos models
• daily fire danger rating
• Fire propagation

Secondary Outputs

• high computing power
• large data set

Demands

– high computing power
– large data set

OGC-SDI Integration

Exploitation of Geospatial Services

– to provide FS with static data
– to publish data for further processing
– standard-based SDI layer
– Geo-server based

Access to Meteorological Stations

– to provide FS with dynamic data
– to integrate remote sensor data into SDI
– OGC-SWE compatible layer
– 52° N’s implementation