Forest Roads for Civil Protection,GA No. ECHO/SUB/2015/718661/PREP20
is a cooperation european project co-funded by the ECHO European Comission Unit
DIRECTORATE-GENERAL FOR EUROPEAN CIVIL PROTECTION AND HUMANITARIAN AID OPERATIONS
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Editor's note

Dear friends and colleagues,

Welcome to the new issue of the Forcip+ Project (Forcip+ Forest Roads for Civil Protection)-a European cooperation project co-funded by the ECHO European Commission Unit. This is the third of a total of three newsletters over the course of the Forcip+ project. The 3rd issue presents a brief outline of the rapid progress that has been achieved over the last six months of the project, in the development of methods and tools for improving the use of the rural road network in case of emergency and especially forest fires.

Since the official start of the Forcip+ almost one and a half year ago, there has been significant advances on the homogenization of forest road and firefighting data models across the Mediterranean countries participating in the Forcip+ project, as well as in ICT tools development for time- and cost-efficient forest roads inventory, public information system, optimal resources routing, and fire fighting vehicles fleet management. Moreover, all these achievements have been subject to real-world test and evaluation over the past 6 months, in each participating country.

I believe that this brief review of technical progress included in our 3rd newsletter, is a good opportunity for us to present our activities and results, exchange information with you, and create awareness on fire management, as well as to underline the great potential for efficient forest fire prevention and suppression through geomatics and ICT applications.

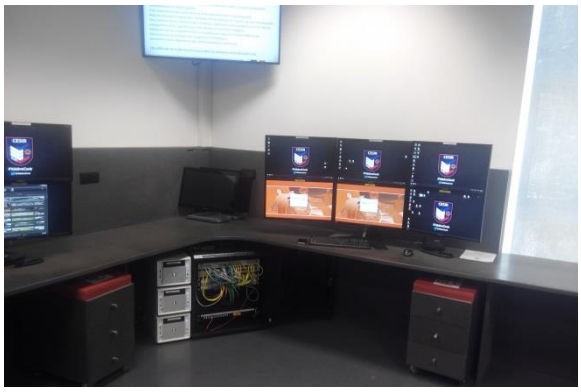
Please do not hesitate to send your suggestions on this publication as well as on project activities.

Petros PATIAS
Forcip+ Coordinator.
Head of AUTH's Laboratory of Photogrammetry and Remote Sensing

The Forcip+ Project

Fire is an integral component but also a major disturbance factor in the Euro-Mediterranean region. Despite the decreasing trend of both fire number and burned area observed recently, efficient and improved fire prevention and suppression measures are needed for protecting lives, the environment and natural and cultural heritage, especially under foreseen alterations in fire regime due to climate and socioeconomic changes.

Please visit www.forcip.eu for detailed project's information.



4th Technical Meeting, Aix an Provenze (France)

The 4th technical meeting was held in Aux en Provence from 3rd to 5th April 2017. The Office National des Forêts, partner of Forcip+ project who manages nearly 5 million hectares of public forests belonging to the French State or to local authorities hosted the event in ENTENTE POUR LA PROTECTION DE LA FORET MEDITERRANEENNE à VALABRE facilities.

After the presentation of Entente and local French partners, GNSS impedance attribute study (firefighting vehicle speed) was showed by ONF and Cesefor. Preliminary results showed similar results for this kind of vehicles even when study approaches were different. Subsequently, the Forcip+ Public Information System application was presented by Cesefor. Besides the project website a new tool has been implemented for knowledge sharing: a map viewer with some functionalities which allows general public to use georeferenced information from the field data collection or from external sources its combination. Next day was time to check network analyst results. A complete description of the processes used for access time analysis was set out by SFI.

All partners agreed to contribute in the implementation report, which includes a summary of all project outcomes. The meeting completed with a field trip, where vehicle and GNSS demonstrations took place. Besides, a big fire site was visited and explained by ONF partners.

5th Technical Meeting, Lubjiana (Slovenia)

The last technical meeting was useful to close final results, review deadlines and prepare the closure of the project.

We discussed on common definition, standardization of types of forest roads, especially on:

- Development of the database structure for descriptive information necessary to monitor forest roads
- Showcase that the standardization of forest roads as well as the structure/entries of the database is working in partner countries
- The developed ICT tools prove that real-time navigation and road monitoring/data acquisition is cost effective and enriches the process with a myriad of information useful at various stages of problem solving (e.g. Road mapping, speed archiving, condition of the trespassing etc.).

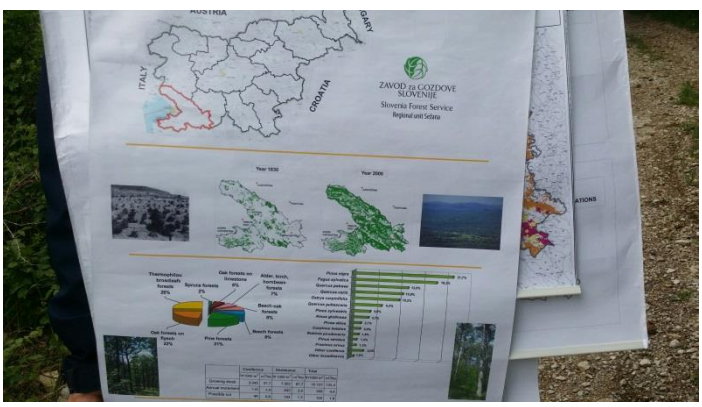
The consortium agreed to some Key aspects to be further capitalized:

1. Disseminate the standardization output and the related database structure to other interested countries/stakeholders

2. New technologies for data acquisition (Lidar, UAVs, Mobile Mapping Systems, new generation satellites, etc.) are available and can contribute to one degree or another to cost effectiveness and time efficiency FORCIP+ ECHO/SUB/2015/718661/PREP20 11 -12/02/2016

3. Integration of forest road data to National Spatial Information Systems (NSDIs) presents a major issue in many countries and involves problems like: format interoperability, compliance to INSPIRE Directive, geometric features conversion, descriptive information compliance etc. It is anticipated that the compliance of the developed database structure to standardized national geo-databases should be further pursued and capitalized upon

4. The estimation/prediction of the speed rate (either average or maximum) of firefighting vehicles has been another major issue for very practical reasons. It is anticipated that a solid methodology should be developed for estimating this speed limit, which presumably will lead to the development of standardized tables/nomographs to be used in various countries. This should be based to the parameters/entries collected in our database (i.e. condition of pavement, road type, slope, vegetation along the sides of the road, bottlenecks, etc.). Primary tests/studies contacted show promising results.



5. Another major issue is the update of the forest road monitoring data. This update should be done on a regular basis (e.g. Yearly), but this is prohibited by the high cost of data acquisition. Hence, it is anticipated that a methodology and practice should be developed for a rapid and cost effective tackling of this problem. The general idea of such a development is to combine the collected information (i.e. slope, road type, vegetation, etc.) with additional information (i.e. soil type, historical records, country-specific parameters, etc.) in order to develop a “smart tool” for forecasting and predicting the road segments most likely to suffer from changes (erosions, etc.) and drive the updating process in these segments per priority. Such a general model can be further “calibrated” by

country.

We celebrated a field trip in the Karst region of Slovenian, visiting a forest fires provincial command center unit, chainsaw training demonstration and forest management examples.

The final conference was defined, to be celebrated, with an open seminar, in Valladolid, Spain, in June 7th-9th.

Forcip+ Project closes its cycle with the organization of an open seminar in the PRAE of Valladolid (Spain)

On June 7, the Forcip+ Project held an open seminar on forest data acquisition and management in Valladolid (Spain), which presented the results of our project, implemented in the territories of Greece, France, Italy, Slovenia and Spain. This open seminar was the prelude to the Forcip+ Final Conference, held on June 8 with the participation of all project partners.

Access to the seminar -which took place in the PRAE building in Valladolid- was free and involved more than 40 professionals (technicians and representatives of public administrations, universities and private forestry companies) and with the intervention of 16 speakers from six European countries. The developed program is available here. The Junta de Castilla y León and the Institute for Research in Sustainable Forest Management, iuFOR (University of Valladolid) collaborated with the development of this meeting.

Forcip+ Final Conference

Our project comes to the end, and on June 8, all the partners met in Valladolid to celebrate the Final Conference, to put in common our results and to verify the fulfillment of the objectives.
The Forcip+ Coordinator, Prof. Petros PATIAS (Head of AUTH's Laboratory of Photogrammetry and Remote Sensing), made a presentation of the results to all the attendees and showed the conclusions that have been drawn from the collaborative work of the last 18 months.

Our project has been structured in five lines of tasks:

- Project management
- Data model definition and information collection
- Good practices and knowledge sharing
- ICT applications
- Communications and dissemination

With the exception of the first line of tasks (dedicated exclusively to the management and operation of the project) the rest of them have been the ones that have generated the most practical results to be extrapolated to other similar territories. We have developed **3 pieces of software**, and our work has spread through 3 newsletters and the project website, the Facebook fan page and several press releases. **More than 10 deliverables** have been generated to be shared with all technicians, agents involved and stakeholders, and are available on our website to be consulted and downloaded:

Data model definition and information collection deliverables:
Report of the study about different methodologies, pros and cons
Analysis of fire forest emergencies requirements
Data model schema report
Report of the methodology chosen. Ground for and objectives of the proposal
A cartographic base. Report on sources used
Selection of the solution. Report of device, software and architecture decision
Spatial Database

Good practices and knowledge sharing deliverables:
Good Practice Report: building and maintenance
Access time analysis
FORCIP+ Implementation

ICT applications deliverables:
Procedures GIS Update System report
Cartography Pilot Areas
GNSS Impedance attributes
Public Information System
Satellite Navigation System

Communications and dissemination deliverables:
FORCIP+ Brochure
FORCIP+ poster
Newsletters
Layman report

Finally, note that the major **project achievements and its outcomes** have been:

- Common definition, standardization of types of forest roads
- Development of the database structure for descriptive information necessary to monitor forest roads
- Showcase that the standardization of forest roads as well as the structure/entries of the database is working in partner countries
- The developed ICT tools prove that real-time navigation and road monitoring/data acquisition is cost effective and enriches the process with a myriad of information useful at various stages of problem solving (e.g. Road mapping, speed archiving, condition of the trespassing etc.).

On the other hand, the key **aspects to be** further **capitalized** from the Forcip+ project are:

- Disseminate the standardization and the related database structure to other interested countries
- New technologies for data acquisition (Lidar, UAVs, Mobile Mapping Systems, new generation satellites, etc.) are available and can contribute to cost and time efficiency
- Integration of forest road data to National Spatial Information Systems (NSDIs) presents a major issue in many countries and involves problems like: format interoperability, compliance to INSPIRE Directive, geometric features conversion, descriptive information compliance etc.

- A solid methodology should be developed for estimating firefighting vehicles' speed, which presumably will lead to the development of standardized tables/nomographs to be used in various countries, This should be based to the parameters collected in our database (i.e. condition of pavement, road type, slope, vegetation along the sides of the road, bottlenecks, etc.). Primary tests/studies contacted show promising results.
- The update of the forest road monitoring data should be done on a regular basis but this is prohibited by the high cost of data acquisition. A methodology and practice should be developed for a rapid and cost effective data update. The general idea of such a development is to combine the collected information (i.e. slope, road type, vegetation, etc.) with additional information (i.e. soil type, historical records, country-specific parameters, etc.) in order to develop a "smart tool" for forecasting and predicting the road segments most likely to suffer from changes (i.e. erosions, etc.) and drive the updating process in these segments per priority. Such a general model can be further "calibrated" by country.

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