PROJECT DELOG-FLOOD IN DUNUBE STRATEGY OF ERDF

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ABSTRAKT

Hlavným cieľom a výstupom projektu je vytvorenie aplikovaného plánovacieho nástroja pre podporu národných autorít zodpovedných pre riešenie krízových situácií v súvislosti s povodňami na rieke Dunaj, pre plánovanie a harmonizáciu nutných logistických aktivít pre činnosť zložiek záchranného systému. Riešiteľský tím využije platformu predpovedného systému EFAS a spoluprácu identifikovaných partnerov z krajín v povodí rieky Dunaj.

Kľúčové slová:
Kríza, situácia, povodie, záchranný systém, GIS

ABSTRACT

The main objective and outcome of the project is to create a planning tool applied to support national authorities responsible for the resolution relating to the flooding of the Danube River, planning and harmonization of the necessary logistical activities for operation of the components of the rescue system. Our research team will use the platform forecasting EFAS and cooperation partners identified the countries in the Danube basin.

Key words:
Crisis, situation, basin, rescue system, GIS

1 INTRODUCTION

Floods are among the most frequent and costly natural disasters in terms of human and economic loss. Most floods are caused by storms in which a lot of precipitation falls in a short period of time, of both types of rainfall, convective and frontal storms. Intensity and duration of the rain are the most influencing factors for flood hazards. In the recent years, remote sensing and in the Slovak Republic. [1]

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Property damage caused by the floods increases every year. Problems related to flooding have greatly increased, and there is a need for an effective modelling to understand the problem and mitigate its disastrous effects.

1.1 PROBLEM DESCRIPTION

Efforts of specialists are generally focused on the finding solutions to crisis situations with emphasis on the protection of life and health of persons and property protection. We often forget the comprehensive protection of emergency workers during activities in emergency situations by identifying, analyzing and assessing risks that may endanger the lives of rescuers in the changing conditions of crisis. Modelling and simulation tools can be used for early risk assessment and management during rescue operations. An example might be in terms of tackling floods in a selected area of the river basin.

Despite the efforts that enhancing the accuracy of the flood forecasts (e.g. establishing the EFAS) there were serious flooding disasters happen in the recent past. In some cases Disaster Management Authorities and collaborator rescuing forces could not exploit the power of their capacities and making decisions without harmonizing the acts all of their disclaiming resources.

Actions to be addressed: “To extend the coverage of the EFAS system to the whole Danube river basin, to step up preparedness efforts at regional level (including better knowledge of each other's national systems) and to further promote joint responses to natural disasters and to flood events in particular, including early warning systems” or “To strengthen operational cooperation among the emergency response authorities in the Danube countries and to improve the interoperability of the available assets”

Outputs (e.g. maps of flood danger zones) of the existing forecasting systems of floods (e.g. EFAS) would mean valuable information for next steps to be taken at local level for supporting the rescue or defence activities. A common applied decision support system for planning and harmonising the necessary logistic activities on the base of the outlined outputs seems to be essential but it is still missing. The main aim of the DELOG-FLOOD project is establishing this planning tool.

The project activities planned to be conducted in the countries of the project partners. The georaphic area can be extended towards Central and Eastern Europe depending on the setup of the consortium to be built.

The project will be managed by a management structure that has the responsibility to supervise and delegate tasks, and to allocate resources in order to achieve the technical objectives within the time and cost constraints. The progress of the project will be documented through milestones, deliverables and reviews. Periodical reports will be produced. These reports represent intermediate results and an

assessment of the relation between the actual progress and the schedule for realised objectives and resource planning, providing a comprehensive overview of the course of action from different perspectives (e.g. financial, personnel, technological and accurately timed deliverables). Risks will be assessed and addressed.

Main milestones:

- State of art review of flood related logistic modeling
- Designing the decision support system architecture and its functions (platform, functionality, DB management, user interface)
- Defining the interfaces (regarding the setup of disaster management organizations of the Riparian countries)

Timeline of the START activities: start 04.04.2015, end 31.12.2015.

1.2 METHODOLOGY OF DELOG-FLOOD PROJECT

The methodology of the DELOG-FLOOD project is based on the methodology last project FLOODLOG (2013_2014) in the basin of Bodva river [2]. The overall goal of the project is to support the Disaster Management Directorate / Crisis management Authorities by providing them with a toolset for flood modelling, forecasting the size and location of the affected area and the affected population, identifying relevant objects and human infrastructure in risk, or objects needed for handling the crisis, and to develop the logistics framework to better manage the human and natural resources for the crisis management. The specific goals are: Development of a framework and a pilot database for flood modelling in support of the crisis management authority. The project DELOG-FLOOD has a total of 2 partners and leading partner is University of Miskolc.

2 RESULTS OF PREVIOUS FLOODLOG PROJECT

Project was divided into 7 activities:

Specification of the model details: Specification of the model details based on the needs and requirements of the Crisis management authority and on the feasibility of the planned system. This activity will result a framework criteria system that the model outputs has to fulfill for both the flood modelling description and forecasting and the logistics modelling. Based on the targeted outputs of the models the input data need for supporting the flood modelling and logistics activities have to be specified as well. This will result the list of data layers and their specification by content, scale and informatic standards. The layers needed for the operational work of the crisis management and its logistical planning are defined by the Crisis management authorities and the Lead partner of the two sides.

Specification of the input data need: The result is the list of data layers and their specification by content, scale and informatic standards. Partners: lead partner and the Technical university Kosice (TUKE) and the Crisis management authorities.

Development of the data layers: The results of these activities will be the complete set of harmonized data layers covering the whole Bodva catchment. Bilateral scientific teams for all thematic layers will be set up to survey the available national data and develop the harmonization strategy for the common, harmonized database,

covering the two sides. The results of these activity will be the complete set of harmonized data layers covering the whole Bodva catchment.

The modification and completion of existing cross-border databases for testing the tools and models: The modification and completion of existing cross-border databases to provide the information for testing the tools and models. There are two cross-border data sets developed by the partners. The first one covers the whole Bodrogköz area and having several physical and human geographical layers in a harmonized, consistent content representation, organized into a GIS database. The second dataset covers the whole Ipoly catchment of the two sides. The major partners will be the University of Miskolc and the Cholnoky.

Development of an integrated, operational WEB-based, and desktop-based GIS database: Development of an integrated, operational GIS database having all three datasets in the same data structure, and a WEB based data dissemination system, where the users can discover, view the data layers and the model results. A specific workstation based system will be set up to support the Crisis Management Authority with more, not necessarily public data and models. The output of this activity will be a WEB portal with a map server and interactive modelling tools. The responsible partner is the Cholnoky kft.

Environmental Impact and Risk Assessment of the floods: Environmental Impact and Risk Assessment of the floods. The major partners will be the Lead partner and TUKE. This activity will study the impact of the flooding water on the soil quality and on the groundwater system. An environmental and flood based landscape classification will be developed and the potential risk types are going to be testes and summarized.

Logistical modelling: The responsible partners are the Lead partner and the Univesrity of Security Management. A logistical pilot framework will be developed and tested on the Bodva catchment supporting the flood crisis management activities lead by the Crisis Management Authorities.

The interested area is the area of Bodva River. Bodva River is a 116 km long river in Slovakia and Hungary. In Slovakia part is situated in SW part, 20 km from Košice city. The river flows through seven villages, through populated parts, where makes each year property damage by floods. Near area of Hosťovce river Bodva leaving the Slovak territory of and continues to Hungary. [3]

Flood modelling (dr. Cholnoky kft.)

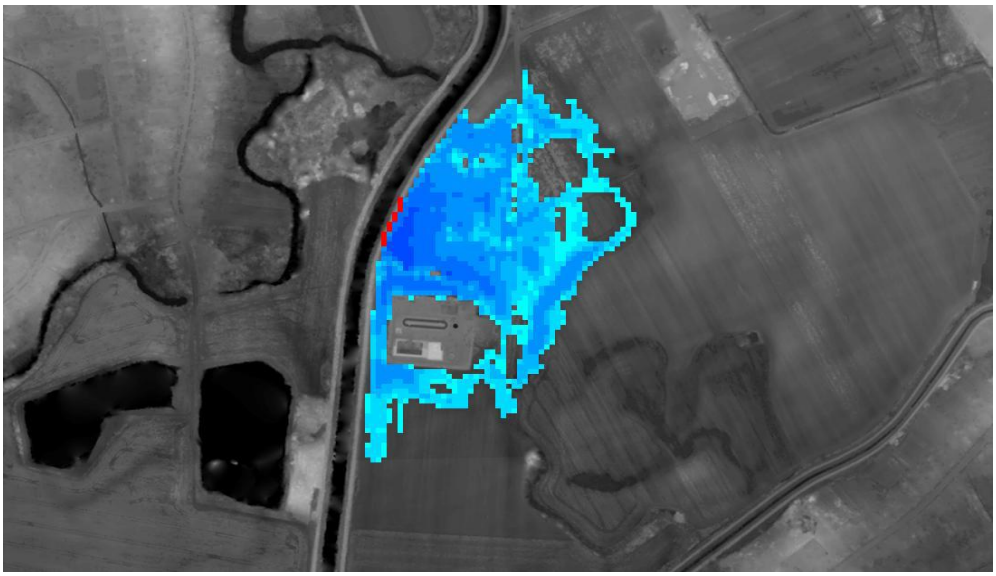

Fig. 1 Flood modeling Example of First hour [4]

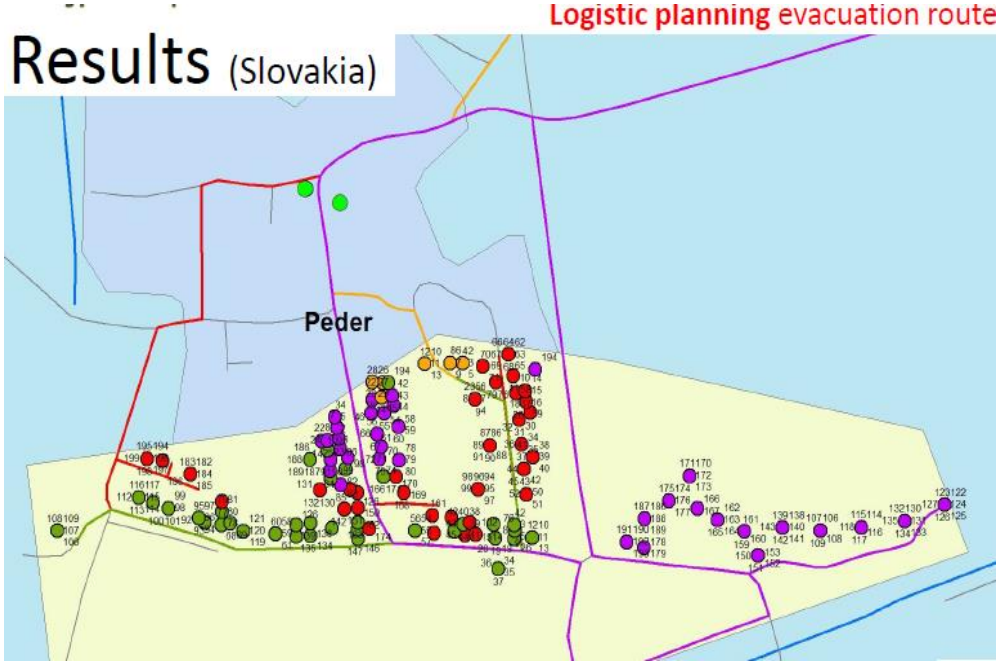

Fig.2 Logistic planning of evacuation routes [5]

3 CONCLUSION

Effective crisis management systems require precise planning in order to minimize the response time for rescue and protection of persons and property. This need for precision in planning becomes even more crucial when the emergency management system involves human lives, such as in situation of disruption to the usual function of services in organizations and the environment. Managers have to allocate the available resource to places or people in order of priority, considering disaster supply chain management and they need to much information at the right time.

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Článok recenzovali dvaja nezávislí recenzenti.