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From Civil Protection Plan to Disaster Management. PETer evolution from GIS tool to multi-area Emergency Management System

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PETer (Protection and Emergency of the Territory) has been developed since 2006 as a tool to manage all the information available to perform a wide range of Civil Protection activities. Based on MapObjects spatial support, it was relied on capacity to manage data from different sources and at different scale, offering practical GIS-tools for a technical and practical use during crisis state. At the first stages of the development, after different assessment, critical on-field analysis and a direct proof on test area, the approach came into sight like a valid database management for the entire dataset, but quite static, not full-blown for every emergency necessity, too complicate and not enough user-friendly, considering people in charge during emergency management, the quick change of state with many parameters involved and also uncertainty, hesitation, confusion or general panic among decision makers. As a second step of research, a more down-to-earth methodology targeted to cope with the aftermath of critical events is presented here. It takes advantage of Geographical Information Systems (GIS), Decision Support Systems (DSS), and Information and Communication Technology (ICT) to prepare, apply and coordinate Civil Protection plans. The main aim was to set up and manage contingency plans in advance; that is, to identify and prepare people in charge to take action to define the activities to be performed, to be aware of available resources and to optimize the communication system among the people involved, in order to efficiently face a prospective crisis phase. A disaster preparedness plan should anticipate the demands for a disaster relief operation and indicate the most effective way of joining those requirements. Through scientific and technical co-operation between public and private research groups, a new platform was planned and set up, in order to test the aims of the project. The application was based on a cooperative organizational structure by which information was managed at different levels, linking all people in decision-making roles: crews in the field, the mobile command post and the control room. The tool automatically performs organizational and operational activities within a Civil Protection plan, in line with enforceable regulations. It couples: data processing capabilities by GIS; workflow management modules by DSS and communication systems by the ICT. More specifically, the work presents the overall concept and the system architecture of a generic decision-support system in progress of development, displaying the aims of emergency management and then shows a DSS first of all for Civil Protection Plan within Disaster Preparedness and Response framework in a Consortium of Mountain Municipalities (Valtellina di Tirano, Central Alps, Northern Italy). A multi-area approach (involving the management of disaster scenarios at the La Valette landslide in the Barcelonnette Basin, South French Alps) has been introduced to calibrate the platform, to compare available dataset, information details, laws in force in different countries, stakeholders' responsibility and end-users' background. Work in progress involves multi-task tools useful in emergency situation, to enforce open-communication devices (SMS automatic platform, SKYPE interface, visual video), integrate existing monitoring system and web-service to tailor open-sharing information with emergency management demand.