



Advanced e-Infrastructures for Civil Protection applications: the CYCLOPS Project

P. Mazzetti (1,2), S. Nativi (1,2), M. Verlato (3), P.A. Ayral (4), P. Fiorucci (5), A. Pina (6), J. Oliveira (7), and R. Sorani (8)

(1) IMAA - CNR, Tito Scalo, Italy ({mazzetti,nativi}@imaa.cnr.it), (2) University of Florence, Prato, Italy ({paolo.mazzetti, stefano.nativi}@pin.unifi.it), (3) National Institute of Nuclear Physics, Padova, Italy (marco.verlato@pd.infn.it), (4) Ecole des Mines d'Alès, Alès, France (Pierre-Alain.Ayral@ema.fr), (5) CIMA Research Foundation, Savona, Italy (paolo.fiorucci@cimafoundation.org), (6) Universidade do Minho, Braga, Portugal (pina@di.uminho.pt), (7) Autoridade Nacional de Protecção Civil, Carnaxide, Portugal (Jose.Oliveira@prociv.pt), (8) Dipartimento della Protezione Civile, Roma, Italy (Roberto.Sorani@protezionecivile.it)

During the full cycle of the emergency management, Civil Protection operative procedures involve many actors belonging to several institutions (civil protection agencies, public administrations, research centers, etc.) playing different roles (decision-makers, data and service providers, emergency squads, etc.). In this context the sharing of information is a vital requirement to make correct and effective decisions. Therefore a European-wide technological infrastructure providing a distributed and coordinated access to different kinds of resources (data, information, services, expertise, etc.) could enhance existing Civil Protection applications and even enable new ones. Such European Civil Protection e-Infrastructure should be designed taking into account the specific requirements of Civil Protection applications and the state-of-the-art in the scientific and technological disciplines which could make the emergency management more effective.

In the recent years Grid technologies have reached a mature state providing a platform for secure and coordinated resource sharing between the participants collected in the so-called Virtual Organizations. Moreover the Earth and Space Sciences Informatics provide the conceptual tools for modeling the geospatial information shared in Civil Protection applications during its entire lifecycle. Therefore a European Civil Protection e-infrastructure might be based on a Grid platform enhanced with Earth Sciences services.

In the context of the 6th Framework Programme the EU co-funded Project CYCLOPS (CYber-infrastructure for Civil protection Operative ProcedureS), ended in December 2008, has addressed the problem of defining the requirements and identifying the research strategies and innovation guidelines towards an advanced e-Infrastructure for Civil Protection.

Starting from the requirement analysis CYCLOPS has proposed an architectural framework for a European Civil Protection e-Infrastructure. This architectural framework has been evaluated through the development of prototypes of two operative applications used by the Italian Civil Protection for Wild Fires Risk Assessment (RISICO) and by the French Civil Protection for Flash Flood Risk Management (SPC-GD). The results of these studies and proof-of-concepts have been used as the basis for the definition of research and innovation strategies aiming to the detailed design and implementation of the infrastructure. In particular the main research themes and topics to be addressed have been identified and detailed. Finally the obstacles to the innovation required for the adoption of this infrastructure and possible strategies to overcome them have been discussed.