EnviroInfo 2001: Sustainability in the Information Society

CLIFF - CLuster Initiative for Flood and Fire emergencies

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Abstract

CLIFF performs a critical analysis of past and on-going European flood and fire projects in which Earth Observation plays an important role to identify guidelines, recommendations and possible strategies to progress towards standardisation of different critical components of European Disaster Management (DM). This will contribute to improve efficiency and reliability of disaster management activities and as such to sustainability of the environment.

1. Introduction

For natural disaster management it is essential to have good communication between the different actors (e.g. civil protection, satellite data providers and modellers) involved to increase efficiency and thus to save lives and valuable goods. Especially now with current technological developments in computer utilization and earth observation via satellites in which the complexity of information and tools only increases it is essential to make agreements, e.g. on products, tools, data, information and terminology. This is valid not only on a national level, but since natural disasters often span numerous countries, certainly also on an international level. As such, standardisation should help improve communication between the different actors in the DM chain that could eventually share a common technical language.

The main objective of CLIFF is to generate recommendations for standardised flood and fire information handling, integration, and exchange by and between the

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involved actors. No standards are to be derived yet. The implementation of standards should be a next logical step in the process that should result in improvement of decision support strategies, decision support tools and the enhancement of the efficiency of public administrations towards the European citizens.

2. Sources of information

Current flood and fire projects are often dedicated to one specific aspect as telecommunications, generation of Value Added (VA) products, science (modelling, algorithms), potential use of GIS technology, a specific disaster phase (e.g., damage assessment), etc. CLIFF performs a horizontal review and analysis of some twenty pre-selected flood and fire projects, funded by the European Space Agency (ESA) and the European Commission (EC) and lists commonalties and differences in the selected projects and countries according to similar layouts, schemes etc.

CLIFF also organises different workshops where direct input from the user-community is collected.

2.1 The analysed projects and countries

The analysed projects are DECIDE, EMERG-SAT, FORFAIT, GENISIS, PATHEMA, PRIMAVERA, RAMSES, SIREN, VAMPIRE, DISMAN, FOREMMS, OSIRIS, FORMIDABLE, ANFAS, RIMS and EFFS. The projects are dedicated to development of decision support systems for disaster management, telecommunications and information-delivery for real-time disaster support activities, survey and establish the disaster management players and service providers in various countries, analyse organisational structures and procedures, develop a standard methodology for natural hazard management, telecommunications standards and services and study value added products.

The five European countries that are analysed are Belgium, France, Greece, Italy and Spain however for parts of the study this number has been extended to all countries in the EU.

2.2 Workshops

CLIFF workshops are an important source for input for the project. A first workshop was organised early 2001 and other workshops will be organised in order to involve up to a maximum extent the user community (a.o., Civil Protection Organisations).

The first workshop, "Users Meeting for CLIFF/FORMIDABLE Projects Workshop" was held in Frascati (RM), Italy on 28 February and 1 March 2001. It was

part of a three days meeting "A European Perspective on Disaster Management". About 150 people attended the workshop of which 40 representatives from the user community.

The first workshop provided the frame for the direct interaction of the disaster management user community with technologists, development and service industries. The aim was to exchange information on standard methodologies, systems, approaches, aggregated user needs, information handling and service and technological aspects associated with the accessibility of earth observation and other input data. In particular user requirements for flood and fire cases were discussed.

The following is a global overview of what was presented:

- Current initiatives/developments;
- Organisation overview and (emergency) plans in different countries;
- Individual project views;
- Users-needs in different European contexts;
- Past experiences in European scenarios;
- Expected benefits of a European Approach;
- Perspective of future plans and possible relations with GMES and other European initiatives, climate changes;
- DG-ENV vision of priorities for prevention, crisis, medicine and “information to public”;
- Social and communication dimension not only as research activity;
- Legislation and legal aspects to enforce use of technologies.

The following facts are filtered from the above:

- Europe considers disaster management as a priority at political, technical, science, … level;
- Disaster management applications are mature cases of various technologies integration (data, models, system, services …);
- The involvement of users in the process is limited (not trained, multiple institutions to interfaces in countries, limited communication / confidence…).

Based on these, the following seems essential for adequate DM:

- Efficient approach in information provision;
- Coherent systems and networks for use of data and knowledge;
- Training as a mean to involve and prepare user-technology dialogue;
- Process for integrating ICT in user operations to be lead by the users (technologists should speak “the user language”);
- Enlarge the user community to other actors (e.g., insurance companies, hydropower, …);

- Open source / free / wide access to data, information, results, ….

A second workshop will be held early 2002 and will deal with service aspects. An expert meeting will be organised late 2001. For both meetings will be invited a large group of representatives from the user community. Workshop related information, as well as other CLIFF project information, is available from the CLIFF web-site.

3. The three phases appoach

CLIFF is carried out in three different phases. Figure 1 shows these phases and the current state of the CLIFF project.

The division in three phases is based on logical relations between actors - their responsibilities and information-needs, supporting products - requirements, and the services that are provided and requested. Each of the identified phases generates recommendations that serve as input for the next phase(s).

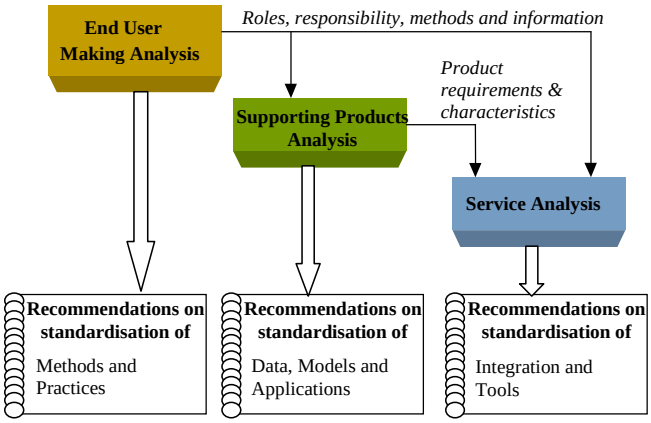

Figure 1: Phase 1 finished, phase 2 is reaching the end and phase 3 started. Public deliverables are already available from the CLIFF web-site.

3.1 End-user decision-making processes and related information needs

The aim of the first phase was to clarify DM authority responsibilities and practices in selected European countries to provide a picture of the roles and operational information that is handled at different levels by organisations involved during the different phases, i.e. prevention, crisis and post-crisis, in disaster management.

Actors in the five analysed countries have been identified on national, regional and local level. Their responsibilities are identified, put in process flow models, matrices and diagrams and common aspects between the different countries for the

two types of disasters are analysed. Based on this framework, an analysis was performed of operational information required by disaster management actors to face flood and fire events during the different phases of a disaster. Both, information/products currently used as well as that/those not yet available (e.g., because of technological constraints) are considered together with the different approaches to produce relevant information in the analysed countries.

This result allowed cross-country and cross-event comparisons of the information-needs, that have put in evidence those classes of information presenting degree of peculiarity or common aspects, and therefore, have allowed to identify information classes suitable to be taken into consideration within any standardisation process.

3.2 Existing products, applications and related technical characteristic

During this phase a detailed analysis is done of DM support from the point of view of existing products, applications and related technical characteristics according to a bottom-up approach. Starting from the selected projects, specific operational product requirements are identified which will be mapped on information-needs identified in the previous phase. Also the technical characteristics of products are analysed with the objective to identify potential fields for product standardisation.

Part of this phase is a study to explore the requirements for meteorological support in relation to flood and fire emergencies. For this purpose a comprehensive questionnaire was issued, asking for information on the requirements for meteorological data, products and services for the abatement of flood and fire emergencies involving Civil Protection and operational DM units. The recipients of this questionnaire included Civil Protection authorities and experts as well as the National Hydrological Offices of the EU countries and also representatives of the preselected flood and fire projects referred to above.

Another comprehensive questionnaire was elaborated with the primary objective to acquire information on the capabilities and readiness of various meteorological offices to provide support for the abatement of flood and fire emergencies, with Civil Protection authorities as the primary target group for such support. The questionnaire was distributed to all National Meteorological Services within the European Union, and also to a number of private sector meteorological offices.

Furthermore, recommendations on meteo modelling practices for flood and fire DM will be generated on the basis of the responses to the second questionnaire referred to above and other exploratory efforts, as well as recommendations on standards for the representation of atmospheric observations in flood and fire DM Projects following consultations with experts from the World Meteorological Organization (WMO) and other agencies.

3.3 An Architectural Synthesis of Previous Results

The objective of the third phase is to do an architectural synthesis of previous results. This synthesis will be aimed at identifying ways for generation and exchange of optimal operational support to Disaster Management actors (end-users, value-added providers, baseline data providers, etc.).

The results of this phase will be a Disaster Management Information service model and communication requirements for integrated use of Earth Observation in the field of flood and fire disaster management.

4. Intermediate Results

Since the CLIFF project still has nine months to go (half of its lifetime), only some preliminary results in the form of recommendations can be given here. These are however seen as quit important:

1. Update/extend:
   - VADEMECUM of Civil Protection (EC - DG Environment);
   - DISMAN database (ESA - project).
2. Agree on “standard” terminology and development of glossary.
   - Within analyzed countries various terms are given different meaning and different interpretations.
3. Extend analyses to more countries and more disaster types.
   - Methodology is generic enough to be used for other cases.

5. Project Information

CLIFF is an EC project carried out within the 5th Framework Program of the IST. Its key action is Systems and Services for the Citizen, its research area is Environment and its action line is "Environmental Risk and Emergency Management systems”. The key output of CLIFF will be a set of documents providing the framework for the standardisation of critical components for flood and fire Disaster Management (DM) activities in Europe. All CLIFF deliverables are public and can be downloaded from the CLIFF web-site at: http://tempest.esrin.esa.it/~cliff

The CLIFF project principal contractors are:

European Space Agency - INT	SEMA Group SAE - E
Datamat Ingeneria dei sistemi S.p.A. - IT	Faculte de Scienes Agronomiques de Gembloux - B
INDRA Espacio SA - E	
Matra Systemes & Information S.A. - F	Vitrociset S.p.A. - IT
Services et Conception de Systemes Observation de la Terre (SCOT) - F	FORECA Ltd - Fin