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ICT for Environmental Management and Energy Efficiency

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ABSTRACT

This deliverable provides a concise summary of the IRMA project, including all the key data. This document is intended to use to publicise the IRMA project activities towards the IST community, projects, persons and organisations that we will collaborate with, and the public.

KEYWORDS

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Integrated Risk Management for Africa

Vision

Demonstrate the capacity of standardised low cost interoperable ICT solutions to effectively mitigate disaster risk by addressing all phases of disaster risk management from risk assessment to recovery paving the way to improved risk governance and contributing to sustainable development.

Abstract

Disaster risk reduction policies and institutional mechanism exist at various degrees of completeness in the African countries members of the IRMA consortium and beyond. Their effectiveness is however limited when having to deal with major disasters and complex emergencies, in both national as well as cross-border scenarios. Risk management is often limited to isolate monitoring of specific hazards without considering the full spectrum of vulnerability of the area at risk. Possible dangerous domino effects remain unexplored or underestimated as a systematic approach of risk assessment and management is missing. Thus, even smaller hazards may transform to major disasters due to serious gaps in the analysis and decision chain.
It is nowadays largely recognized that an efficient response to these situations must rely upon Information and Communications Systems, which will offer the stakeholders reliable, comprehensive information to anticipate risks and to respond to emergencies.

In this context, the IRMA project intends to build a reference platform suitable for the management of natural and environmental risks in Africa. The platform must allow the stakeholders in risk management to develop and use tailored risk management models and tools; therefore, the platform will be build upon the achievements of former EU projects such as WIN, ORCHESTRA, SSE, SANY and u-2010, as there are interoperable components, information infrastructure architectures and solutions, as well as clients and management tools and frameworks that allow to set up an efficient and sustainable multi-risks management.

The platform will feature two major technical components:
- services for the exploration, acquisition, processing, decision-support, and dissemination of information as well as an efficient storage of all relevant information so that the stakeholders can analyse afterwards the sequence of events and adapt operational procedures consequently, and
- a multi-purpose solution for the communications based on IPv6 either to federate legacy communications or to provide native IPv6 solutions

The project intends to deliver a pre-operational open infrastructure and access-platform, assessed by end-users in operational scenarios. Those scenarios serve as references for a future larger scale deployment of the platform and its components. Further on, the platform provides the facilities for prototyping risk management systems and for supporting a rapid development of applications services. Specific applications (Bushfire, Flood, Desertification and urban risks) will populate this platform during the project.

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Collaborative Research Project

Objectives

The purpose of the project is to build a reference infrastructure and access-platform suitable for the management of natural and environmental risks in Africa. The measurable and verifiable objectives of the IRMA project are:

- To enhance the availability of communication services by use of all existing networks and by exploiting research results in the area of wireless ad-hoc networks

- To integrate a wide range of information sources and services by deploying standardized geo-information infrastructure in support of several risk-management scenarios in Africa

Technical Approach

The IRMA concept proposes an integrated approach to disaster risk reduction, covering in a coherent way most of the issues in the Risk Management Cycle. The project will focus on phases where ICT plays a major role. By addressing vulnerabilities to various hazards, the project will pave the way to a genuine multi-risk approach.

The IRMA project intends to offer a technical solution for multi-risks management in Africa, which will have the following major characteristics.

(1) Provide Tools, Standards and Processes benefiting from the latest development in IT for Environment and Risk Management, in order to:
   a. build generic platforms and infrastructures serving multiple purpose, beyond the initial scope of risk management;
   b. support the easy and cost effective development and implementation of risk management applications;
   c. provide innovative user interface features adapted to African culture.

(2) Implement Data Communications over existing or easy-to-deploy communications facilities, which comprise:
   a. Internet
   b. Satellite links
   c. Terrestrial Wireless links

(3) Take into account all possible sources of information that are available at economically affordable conditions, in order to:
   a. Avoid duplication of efforts and costs
   b. Compensate for limited data acquisition capabilities

IRMA will analyse the value of IPv6 to support public safety communication requirements.

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IRMA

Contract n°:
224353

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Collaborative project

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36 months

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531

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Keywords:
Civil Protection, Emergency services, Africa, IPv6, Risk management

Collaboration with other FP6 and FP7 projects:
AÏDA
u-2010
WIN
SANY
OASIS
OSIRIS

Expected Achievements

The IRMA project intends to deliver the following results:

- A coherent suite of architectural concepts and methodologies applicable to multi-risks management situations in Africa, including advanced multiple vulnerability assessment to cope with complex emergencies.
- An integrated set of tools, compliant with the above mentioned concepts and methodologies and with current and emerging international standards.
- A pre-operational infrastructure and access-platform, assessed by end-users through operational scenarios serving as reference for future larger scale deployment and providing the facilities for prototyping risk management systems and for supporting a rapid development of applications services.
- Specific applications (bushfire, flood, desertification and urban risks) dedicated to the demonstration of multi-risks management in Africa.
- A versatile communications system enabling high and/or low rates Internet transfer.
- A reliable, low cost communications system enabling alert messages and possibly emergency communications in any location of Africa (i.e. even where no electricity is supplied)
- A management concept to monitor and automatically control the functions of services and networks shown as critical through the dependability and vulnerability analysis.
- A solution to the limitations of Internet Protocol IPv4 in Africa by providing a timely transition to IPv6.

The IRMA project should contribute to the EU policies on the following points:

- DG Development: the EU strategy for Disaster Risk Reduction (DRR) in Developing Countries, whose objective is to contribute to sustainable development by reducing the burden of disaster in the most vulnerable countries and by the integration of DRR into development and humanitarian policies and into crisis response.
- DG Environment: to contribute to the creation of a Single Environment Information Space and to INSPIRE
- DG Information and Society: advancing the Internet by deploying IPv6, especially in Africa
- DG Research: to contribute to the validation of the SICA approach to international cooperation with developing countries
- DG Enterprise: to integrate upcoming GMES downstream services

Dissemination

The overall goal of the dissemination activity is to provide an initial technical overview to support advanced technologies developed by other EU initiatives selected by the project, by coordinating the exploitations plans and disseminating on any relevant activities within the standardisation bodies.

A key strategy is to organise train-the-trainer workshops to ensure that appropriate skills are available to build on recent R&D results and to maintain and operate new equipment deemed necessary for application development and demonstration.

The status of the research will be published as widely as possible through journal papers, conferences, presentations, press releases, and other communication channels.

ICT for Environmental Management and Energy Efficiency

Collaborative Project

On behalf of the IRMA Consortium, we would like to thank you for your continued support and commitment to this effort.