

A4A / Alert for All

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Information

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261732

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€4,881,506

EU Contribution
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16/03/2011

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30 months

Coordinator

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Project objectives

The overall objective of A4A is to improve the effectiveness of alerts and communication to the population in crisis management.

To achieve this goal, A4A will provide an extensive and interdisciplinary alerting framework that integrates the key enablers to achieve significant improvements in terms of the level of alert penetration, cost-benefit ratio and intended vs. actual impact of alert strategies. With the project results, A4A aims at contributing to lay the foundations of an effective alert and communication paradigm that is scalable from the regional to pan-European range.

A4A will provide solutions to align alert procedures and processes in contemporary crises (natural or man-made) with available and emerging information management and communication technologies, emerging information sources and trends in social and human behaviour.

Description of the work

A4A builds its alerting concept on five research areas that are key enablers to achieve the aimed effectiveness improvements: authorities' and responders' operations, human behaviour, the role of new media, information management and communications technologies.

As a multi-disciplinary alerting framework, A4A will develop and exploit synergies among its research areas. In particular, the A4A work plan foresees the following research activities:

- » To develop a suitable communications protocol and a scalable alert message dispatcher that connects several mass market communications technologies to disseminate alerts in a multi-channel approach, including satellite components, to consumer devices, providing ubiquitous penetration of the alert system and resilience in the face of major disasters;
- » To develop a portal for efficient information management that enables the coordination and common situational awareness of involved authorities and responders, enhancing the (common) operational picture for optimizing the alert strategies;

- » Situational awareness and trends in social behaviour will be addressed from two different perspectives: (i) understanding the impact of alerts in the population and (ii) understanding the role of new media, such as social networks, during the crisis. The first aspect will be tackled by research and modelling of social behaviour in crisis. From this research, an alert impact simulation tool will be developed to support decision making processes in crisis management. The second aspect will be tackled by investigating the information flows and their timing during crisis to understand the role of new

media and by developing tools to efficiently monitor the information exchanges within new media to improve the situational awareness of authorities, especially on the perception of the society of the crisis situation;

- » The integration of these research activities will allow for defining recommendations for the improvement of operational concepts that make use of and benefit from the A4A tools. Furthermore, the development of training material for authorities and responders will contribute to the end user acceptance.

Investigations on organisational, institutional and funding aspects for the deployment of A4A and a final showcase will complete the A4A activities.

Expected results

Through its research activities A4A will provide an extensive and scalable alerting and communications concept that is capable of optimising the penetration and impact of alerts and can be incrementally deployed, both in terms of technologies/features and in terms of operating range, from a regional to a pan-European scope.

PARTNERS

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)
German Red Cross (DRK)
Avanti Communications Ltd. (AVA)
BAPCO LBG (BAPCO)
TECNOSYLVA S.L. (TSYL)
Empresa de Serviços e Desenvolvimento de Software, S.A. (EDISOFT)
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ACRIMAS /

Aftermath Crisis Management System-of-systems

Demonstration - Phase I



Information

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261669

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€1,666,022

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€1,109,381

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31/05/2012

Coordinator

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Project objectives

The Phase I project ACRIMAS, a 15-month Support Action with 15 partners from 10 European countries, elaborates a systematic integration process for crisis management (CM) systems, procedures and technologies in Europe, to be implemented within a Phase II demonstration programme. The process will allow for gradual evolution of CM capabilities through demonstration and experimentation (DE) activities, facilitating Europe wide collaboration, cooperation and communication in CM at different levels of decision making, and respecting the different CM approaches and ambitions of the EU Member States. This process will improve the transfer of related knowledge between stakeholders and promoting an environment for co-development of CM technology and methodology in R&D where users and providers work together.

ACRIMAS further emphasises community-building which will be considerably supported by the execution of the subsequent Phase II, bringing together the various key stakeholders and the available DE infrastructures in a case-by-case demonstration or experimentation activity.

Description of the work

Large-scale incidents (man made and natural) inside and outside the EU require a coordinated response from crisis managers and first responders across Europe and with resources from all levels of government. Among others, a common operational picture, well trained and equipped teams, secure communications, and mission flexibility are core assets for successful CM.

Currently, CM in the EU can be regarded as a highly diversified 'system-of-systems' integrating organisations and components with different cultures, policies and assets, and various stakeholders and procurement schemes. This 'system-of-systems' incorporates technology, procedures, organisational concepts, and human factors. To identify the relevant/critical/ urgent areas and topics within this current CM 'system-of-systems' which need to be addressed by the demonstration programme in Phase II, ACRIMAS follows a scenario-based and user-centric work approach.

ACRIMAS is scenario-based in the sense that characteristic CM scenarios will be identified, selected and developed to constitute a sound basis for ensuring the work of posing user needs and requirements, identifying current weaknesses and gaps in CM in Europe, looking at potential solutions and documenting corresponding demonstration topics and R&D needs to be integrated in a roadmap for Phase II. The scenario approach embraces an all-hazard view, including the EU external dimension.

ACRIMAS is user-driven in the sense that users and other stakeholders in terms of first responders, authorities and governmental bodies as well as the supply side are actively involved throughout the project process, some of them as full partners, most of them linked to the project through a supporting Expert Group and dedicated project workshops. They play a central part in complementing and validating the scenario analysis by expressing their needs and requirements regarding the identification of relevant CM topics, which should be addressed by DE activities in Phase II, and the demonstration concept to be elaborated.

Results

The results of the project are available on the CORDIS website <http://cordis.europa.eu/fp7/security>.

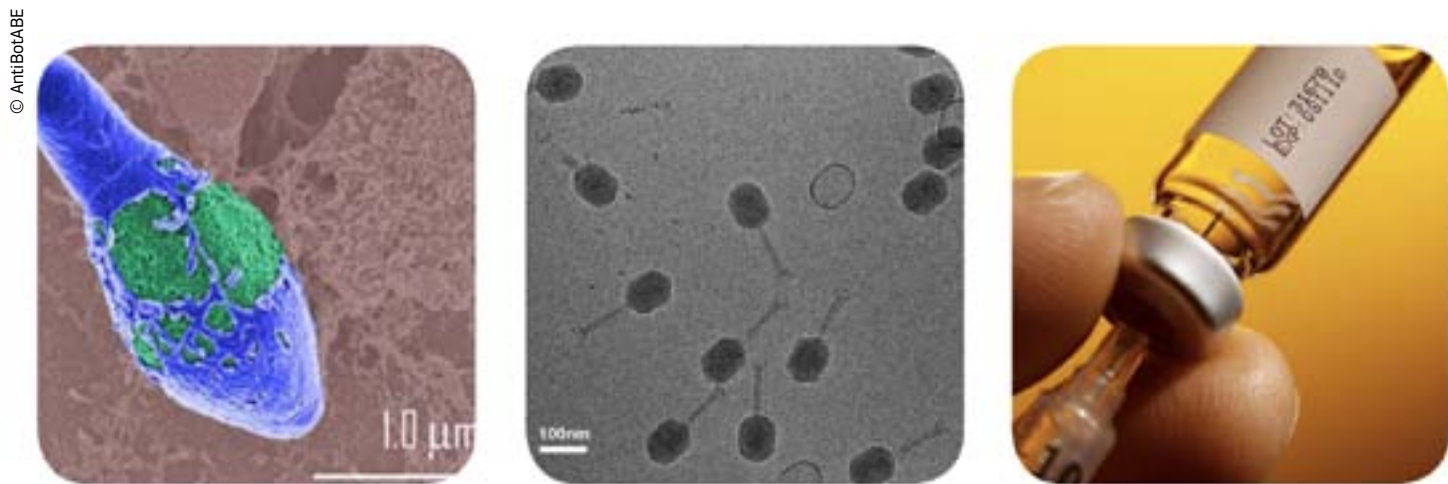
PARTNERS

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ANTIBOTABE / Isolation of recombinant antibodies neutralizing botulinum toxins A, B and E



Information

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241832
Total Cost
€3,896,416
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€2,966,386
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01/09/2010
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48 months

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Project objectives

Botulinum neurotoxins (BoNTs) are among the most toxic substances known, whether of biological or chemical origin, and they are part of the “dirty dozen” agents listed as possible bioweapons. Beside voluntarily contamination, naturally-occurring food intoxications, though rare but often severe, are still encountered and intoxication due to the cosmetic use of an unauthorized BoNT has also been reported. Despite extensive research, no small synthetic molecule has been validated for therapeutic use against BoNTs, and Europe relies on an old stockpile of horse polyclonal antibodies as the sole BoNTs-neutralizing medicines. Recombinant antibodies are a highly successful new class of therapeutic molecules, produced by biotechnologies, showing an exponential-like growth. The goal of AntiBotABE is to isolate recombinant antibodies neutralizing BoNT A, B and E as these types are lethal for humans. The heavy and light chains will be targeted for a synergistic effect, thus six recombinant antibodies have to be isolated. For this project, the strategy that allowed prior isolation of neutralizing antibodies against ricin and the lethal toxin of anthrax will be re-utilized.

Description of the work

This project will start with recombinant proteins, part of the light or heavy chains of BoNT A, B and E and utilized as immunogens. The lymphocytes of NHPs immunized up to a high titer with these immunogens, will be used for the construction of immune phage-displayed libraries. These libraries will be screened to isolate high-affinity antibody fragments (scFvs), which will be human-like due to the phylogenetic proximity between NHPs and humans. BoNTs present sub-types (A1 and A2, B1 and B2 for instance), and scFvs reacting with these various sub-types will be isolated with a specially-designed panning procedure. To test for neutralization capacities,

scFvs directed against heavy chains will be tested in *ex vivo* assays, and the scFvs directed against the heavy chains will be tested *in vitro*. At the end of these steps, the scFvs with best neutralizing profile will be selected and super-humanized.

The super-humanization of NHP antibodies has been described as an approach that allowed for obtaining a “better than human antibody”. In effect, due to the physiology of the immune system, human antibodies undergo affinity maturation processes, that bring mutations in antibody regions involved in tolerance. These mutations cause differences between the human germline encoded segments, part of the immunological self, and those of the immunoglobulins G (IgG). We have shown that “super-humanization” (also called “germline humanization”) of NHP antibodies is possible, by reversing most of these mutations while respecting the affinity. This process will be applied to the neutralizing scFvs isolated in the course of the project.

In the third part of the project, neutralizing, super-humanized scFvs will be expressed as full-sized IgGs and tested in a standardized protection model to verify their efficacy against several strains for each targeted serotype. At various steps of the project, our results will be communicated to the first responders more particularly involved against biothreats.

Expected results

The ideal result is an oligoclonal cocktail of 6 recombinant, super-humanized IgGs, neutralizing the neurotoxins secreted by all strains of *Clostridium botulinum* A, B and E. These IgGs will then be developed as medicine with the intent to be registered by the European Medicines Agency (EMA). This medicine is to become available for biodefense primarily, but also for natural cases of botulinum intoxications in Europe. This dual-use availability, and information given to practitioners in the course of the project, will ensure real improvement in botulism treatment and its perception by EU citizens.

PARTNERS

Centre de Recherche du Service de Santé des Armées (CRSSA)
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BOOSTER / Bio-dosimetric tools for triage to responders



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Information

Grant Agreement N°

242361

Total Cost

€4,583,559.24

EU Contribution

€3,284,291

Starting Date

01/07/2010

Duration

36 months

Coordinator

COMMISSARIAT**A L'ENERGIE ATOMIQUE****ET AUX ENERGIES****ALTERNATIVES**

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Project objectives

The effective management of an incident involving exposure of a large number of people to radioactive material, whether accidental or following malevolent use of radioactivity, requires a mechanism for rapid triage of exposed persons.

BOOSTER is a capability project designed to develop new bio-dosimetric tools and to integrate them into a toolbox in order to quickly evaluate the level of potential casualties and allow for an efficient triage of exposed people. A real exercise will be carried out to validate the toolbox and to train civil protection operators and define commercial exploitation potentialities.

Finally, the objectives of BOOSTER can be summarized as below:

» *Objective 1:* Rapid evaluation of radiological incidents by sensors and retrospective dosimetry;

» *Objective 2:* Development of novel, rapid bio-dosimetric capacities;

» *Objective 3:* To integrate all these sensors and methods in a portable toolbox usable by First Responders;

» *Objective 4:* To validate the tools and train the First Responders.

Description of the work

The project is divided into six workpackages:

» *Management;*

» *Systems Requirements & Design Concept*

A general methodology will be developed to identify

the needs of the different BOOSTER end user categories and to build the global design of the system;

» *Fast evaluation* This WP aims at using and adapting existing sensors together with newly developed ones (e.g. retrospective dosimetric systems) in order to estimate the level of radiation;

» *New bio-dosimetric tools* The work is to develop new biodosimetry systems and to integrate them with other procedures to determine radiation exposure. Two techniques will be investigated:

- γ -H2AX quantification; and
- Centrosome quantification.

The two approaches we propose here can detect radiation-induced cellular responses within short-term (hours) and medium-term (1-2 days) periods after exposure and lend themselves to automation and rapid turnaround.

» *Software development and integration of components* This WP has two major objectives. First the new bio-dosimetric sensors will be integrated into a hardware package which comprises the gamma camera, the biodosimetric tools and the front-end for the first responder. The software components to be developed support not only the first responder in applying the equipment but also the commander in chief responsible locally for optimising the strategy for the use of the devices. In this respect a decision-aiding component will be developed to help optimise the application of the biodosimetric sensors;

» *System Validation and Training* The operational efficiency of the toolbox will be assessed by performing a real field exercise and training the responders in several languages.

Expected results

The development of the proposed device will provide security personnel with a viable tool for taking fast, effective countermeasures against biological threats. This will drastically reduce the potential impact of terrorist attacks or accidental release of bio-agents from laboratories, as well as detecting the spreading of pathogenic microorganisms in the food producing industry or in hospitals.

This breakthrough would lead to technological advantage and favour leadership of European industry in this field.

PARTNERS

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Karlsruher Institut fuer technologie (KIT)
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Universidad politécnica de Valencia (UPVLC)
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COUNTRY

France
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Germany
Hungary
France
Spain
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BRIDGE / Bridging resources and agencies in large-scale emergency management



Information

Grant Agreement N°
261817

Total Cost
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EU Contribution
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01/04/2011

Duration
48 months

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Project objectives

The goal of BRIDGE is to increase the safety of citizens by developing technical and organisational solutions that significantly improve crisis and emergency management. A BRIDGE platform will provide technical support for multi-agency collaboration in large-scale emergency relief efforts. The key to this is to ensure interoperability, harmonization and cooperation among stakeholders on the technical and organisational level. The vision of the BRIDGE project is to:

- » facilitate cross-border and cross-agency collaboration;
- » allow the creation of a common, comprehensive, and reliable operational picture of the incident site;
- » enable integration of resources and technologies into workflow management;
- » enable active ad-hoc participation of third parties.

Social practices, ethical concerns and legal and bureaucratic demands must be taken into consideration during the realization of this vision. Therefore, BRIDGE will facilitate constructive deep integration of multi-dimensional social, legal and ethical analysis into ambitious interdisciplinary user-led socio-technical innovation.

Description of the work

The BRIDGE consortium consists of a well-balanced mix of cross-disciplinary academics, technology developers, domain experts and end-user representatives. An established End-User Advisory Board guarantees an active end-user involvement during the whole project. Participatory design and agile software development allow for a close collaboration with the targeted end-user groups. BRIDGE is also committed to an iterative user-centred approach incorporating and validating user/domain requirements.

Social, legal and ethical experts investigate the mutual dependence of technology, organisational dynamics, and human factors, and study existing and emergent future practices of managing opportunities, risks and difficulties. This steers the far-reaching synchronization between technical and social innovations as well as public life, most importantly in the areas of privacy, trust in technology, and inter-organisational collaboration.

BRIDGE elaborates solutions for the generation and distribution of 3D simulations of emergency situations for use in training and in case of an emergency. The visual presentation of threat scenarios and their consequences help bridge the differences in technical and operational backgrounds between the parties involved. In addition, BRIDGE develops technical solutions in three different areas:

- » Interoperability of data, systems & technology:

- Manage heterogeneous ad-hoc networks;
- Handle information in different formats & from different sources;
- Collect & manage context information.

- » Exploration of a common operational picture:

- Develop intelligent, adaptive & multimodal user interfaces;
- Obtain, filter, share, & annotate information;
- Provide a decision support tool for crisis management.

- » Runtime inter-agency & inter-agent collaboration:

- Allow the dynamic creation & composition of inter-agency workflows;
- Actor-agent networks & agent-based simulations;
- Facilitate a shared situational awareness.

Realistic scenarios in real-world environments lead to yearly demonstrations of the BRIDGE platform under different foci. BRIDGE's exploitation activities target three groups: emergency management end-user communities in different European countries, industrial BRIDGE partners, and non-BRIDGE technology and solution providers in Europe.

Expected results

BRIDGE will deliver socio-technical innovation in multi-agency emergency collaboration. Ethnographical work will construct a deep understanding of the first responders' domain, also in terms of social, legal and ethical issues. The technical platform will deliver:

- » methods and tools that support run-time intra- & inter-agency collaboration;
- » a middleware allowing data, system & network interoperability;
- » advanced human-computer interaction techniques for effortless exploration of high-quality information;
- » enhanced organizational workflows & communication processes.

PARTNERS

Stiftelsen SINTEF (SINTEF)
Almende B.V. (Almende)
CNet Svenska AB (CNET)
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer-FIT)
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Crisis Training AS (CTAS)
SAAB Training Systems (SAAB)
THALES Nederland BV (THALES NL)
Universität Klagenfurt (UNIKLU)
Paris-Lodron-Universität Salzburg (PLUS)
VSH Hagerbach Test Gallery LTD (VSH)
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CATO / CBRN crisis management: Architecture, Technologies and Operational procedures



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Information

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261693

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€14,148,292.23

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01/01/2012

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36 months

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Project objectives

» **To deliver a comprehensive Toolbox addressing the needs of all stakeholders:** Policy Makers, Incident Managers, Healthcare providers, the Population and Responders.

CATO addresses the entire disaster life cycle: preparedness, monitoring and detection (alerts and early assessment), response and recovery;

» **To develop a flexible, open, and innovative approach** to cope with the issue of fragmentation between current approaches, systems, and organisational set up.

The CATO Toolbox should provide the means to build a dedicated customised DSS (Decision Support System) adapted to local and national organisational, political and financial constraints as well as different levels of exposure to CBRN threats;

» **To create an Open DSS-Architecture for the CATO CBRN Toolbox** to be adaptable to the specific context of the CATO-DSS's owner;

» **To Focus on Users and Organisational Learning:**

CATO is to set up a **CATO Laboratory**, a simulation based environment where Policy Makers can see scenarios in action, evaluate their impact and develop strategies, and CBRN experts can validate and demonstrate new CBRN scenarios etc.

Description of the work

CATO is organised in 8 Sub-Projects (SPs):

» **SP 1 “Planning, Response & Ethics”** gathers the main effort from the “user partners” and provides requirements and feedback through validation & testing;

» **SP 2 “CBRN Expertise”** gathers the CBRN scientific experts together, to support the project with advice on hazardous materials, and systematically collect and provide best practice references;

» **SP 3 “CATO Core and Knowledge Base”** focuses on the central architecture of the CATO system;

» **SP 4 “Algorithms”** focuses on CBRN algorithms for data and information fusion, threat detection, propagation & evaluation, holistic situation assessment and decision support;

» **SP 5 “CATO Interfaces”** covers both the user and the system interfaces providing the basic infrastructure for interoperability with existing systems;

» **SP 6 “Integration”** puts together the CATO Laboratory to validate the CATO approach with users and the CATO Proof of Concept;

» **SP 7 “Dissemination”** aims to build a dedicated user and expert community, and establish a regular and deep dialogue with this community;

» **SP 8** is dedicated to **Management**.

CATO pursues several strands creating a virtuous learning process:

» Dialogue on CBRN crisis management between stakeholders and experts, leading to a deeper understanding of the issues at stake and influencing the developments. CATO, by design, will be open to collaboration with third parties on a mutual benefit basis. CATO expects progressively to have access to a broad range of results in return for access to the CATO Toolbox;

» Development of sub-systems of the CATO Toolbox;

Expected results

- » Research activities in exploiting written input from the population, correlating multiple data analysis of fuzzy data, and data and information fusion;
- » Implementation of a first prototype DSS which will serve several purposes:
 - Allow for the validation of the CATO approach with different CBRN scenarios;
 - The “field based proof of concept” will allow the CATO project to test the CATO approach for the entire life cycle and especially the debriefing and “feedback” added into the CATO knowledge base;
 - The CATO Laboratory will provide a strong basis for **validation, testing, dissemination** and future **exploitation of results**;
 - A continuous stream of dialogue with the stakeholder community.

- » Create a basis for the production of more effective operational CBRN toolboxes, by progressively incorporating results of tests and simulations;
- » Facilitate knowledge collection and sharing around a “simulation based” dialogue;
- » Improve the capability to manage the complexity of CBRN crises by fusing heterogeneous multi-source information into a common picture and offering alternatives for reaction;
- » Enable policy makers and managers to go through accelerated learning, and testing of response strategies for given scenarios and facilitate the exchange of best practices.

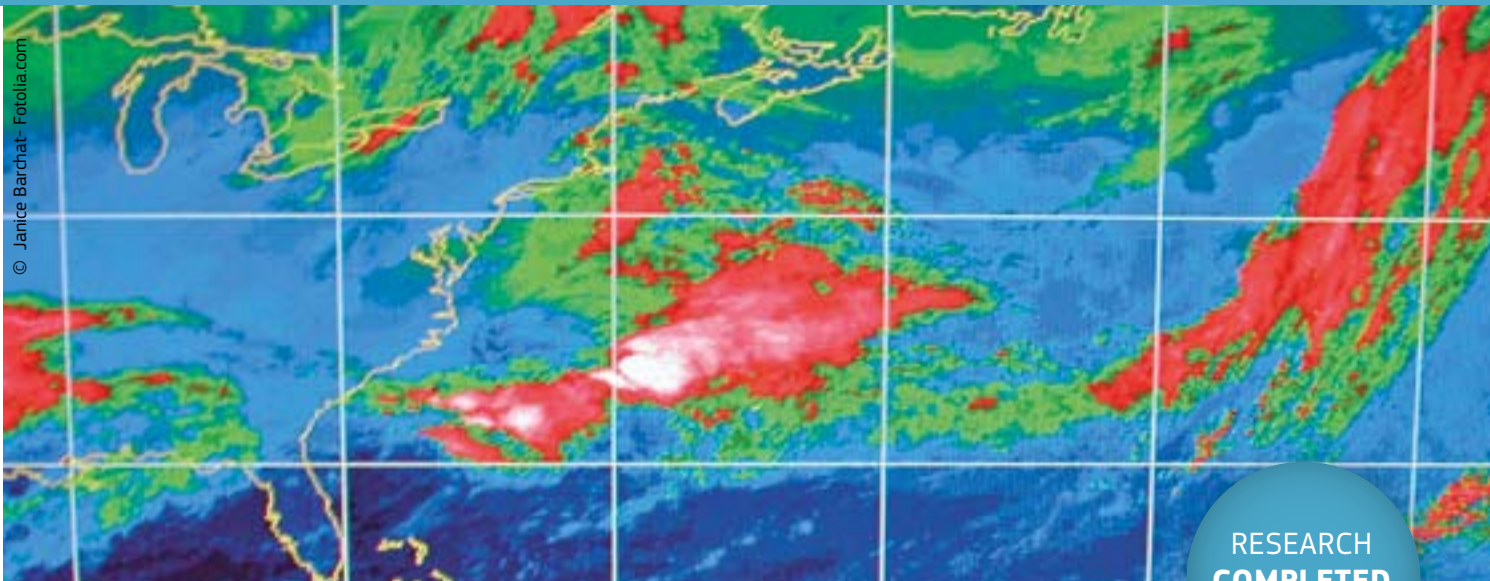
PARTNERS

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Norway

COPE / Common Operational Picture Exploitation



For example, COPE studied the use and benefits of wear-able displays, sensors and locational technologies to support first-responders. The advantages and disadvan-tages of such technologies were identified. According to feedback from first responders and external stakeholders, the system and its components produced “good” to “very good” levels of satisfaction. Though there were certain temporary failures and reductions in functionality, these did not undermine the validity of the project’s overall research results, according to the COPE consortium.

Information

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Project objectives

First responders are a heterogeneous group regarding their emergency environments, their roles, command structures, and organisational and national frameworks.

COPE's goal was to improve the performance reliability and cost of emergency response management “C2” (com-mand and control) systems by combining user-oriented human factors with technology development. A central aim was to strengthen information flow from and to first responders to boost situational awareness across agencies and at all levels of the C2 chain in emergency management situations.

A user-driven approach therefore drove COPE's devel-opment of new technologies that support information requirements at the scene of an event. The project ap-plied a wide range of human-factor methods – from functional task modelling to end-user simulations – to better understand individual agencies, and to ensure that new systems match requirements and can be integrated with legacy processes and technologies.

Results

COPE's obtained its results from its key work packages, which focused on:

- » a generic concept for a common operational picture (COP);
- » analysis of first responder activity (fire fighters, sec-tor commanders and incident commanders) in three countries;
- » technology mapping to align user requirements with hardware solutions;
- » definition of user-driven scenarios and key perform-ance indicators.

These led to two exercises: a live one involving first responders and actual fire and hazards events, and a tabletop one with end-users involved in additional C2 and decision-making tasks.

The culmination of COPE's work packages resulted in end-user assessment of technology-in-design using trials and questionnaires. Based on a set of criteria for modern and future COP systems derived from leading interna-tional projects, a detailed evaluation of the state of the art achieved was produced, which takes into account technological, operational, and end-user evaluations.

PARTNERS

TECHNICAL RESEARCH CENTRE OF FINLAND (VTT)
UTI SYSTEMS S.A. (UTI)
CESS GMBH CENTRE FOR EUROPEAN SECURITY STRATEGIES (CESS)
Pelastusopisto, Emergency Services College (ESC)
Ministry of Interior and Administration Reform (IGSU)
BAE Systems C-ITS (BAE Systems C-ITS)
THE PROVOST, FELLOWS AND SCHOLARS OF THE COLLEGE OF THE HOLY AND UNDIVIDED TRINITY COLLEGE DUBLIN (TCD)
BAE SYSTEMS (OPERATIONS) LIMITED (BAE Systems UK)
SKYSOFT PORTUGAL - SOFTWARE E TECNOLOGIAS DE INFORMAÇÃO SA (Skysoft)

COUNTRY

Finland
Romania
Germany
Finland
Romania
Sweden

Ireland
United Kingdom
Portugal

CRISIS /

Critical incident management training system using an interactive simulation environment



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Expected results

The expected impacts are:

To develop for airport crisis managers, a prototype simulation training system that will allow users across different organisations and nations to interactively experience and manage crisis and security threats in a simulated airport environment. This will enhance their operational readiness and preparedness to respond to hostile actions at airports. It will also allow users to train on demand, more frequently, and at different levels of the organisation.

Information

Grant Agreement N°
242474

Total Cost
€4,593,444.66

EU Contribution
€3,495,611.99

Starting Date
01/05/2010

Duration
36 months

Coordinator

**MIDDLESEX UNIVERSITY
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Project objectives

The goal of the CRISIS Collaborative Project is to research and develop in Europe:

- » A training and simulation environment focusing on real-time decision making and responses to simulated but realistic critical incidents, focusing on problem diagnosis, planning, re-planning, and acting, rather than just procedural training;
- » A distributed, secure, scalable, based on state of the art computer games technology, enabling collaborative and interactive simulation and on-demand training environment for crisis management training in airports, for individuals and team-based activities at command post levels;
- » A readily configurable software architecture that can be used at other critical sites such as nuclear power plants;
- » A flexible platform that functions as a test bed and evaluation tool for new and current operational procedures.

Description of the work

The project will be executed over a 36-month period in three stages:

- » *First stage* – spiral concept development cycle where mock-ups and existing prototypes will be used to illustrate the full CRISIS approach;
- » *Second stage* – the design and development of the CRISIS components will take place. The prototype will draw on insights derived from the research team covering crisis management decision support and advanced interaction technology. Early evaluation will be combined with training to give early feedback to the users. The components will then be adjusted during development and before final integration starts;
- » *Third stage* – The components will be integrated into a secure architecture together with supporting tools.

PARTNERS

Middlesex University Higher Education Corporation (MU)
SHELTERLAND ApS – 3D CONNECTION (CRI)
National Aerospace Laboratory (NLR)
ObjectSecurity Ltd (OS)
Space Applications Services (SAS)
VSL Systems AB (VSL)
Linkoping University (LiU)
Haskoli Island – University of Iceland (HI)
A E Solutions (BI) Ltd (AES)
Aeroportos de Portugal, SA (ANA)
British Transport Police Authority (BTP)
Flugstodir (ISAVIA)

COUNTRY

United Kingdom
Denmark
The Netherlands
United Kingdom
Belgium
Sweden
Sweden
Iceland
United Kingdom
Portugal
United Kingdom
Iceland

CRISMA / Modelling crisis management for improved action and preparedness



Information

Grant Agreement N°

284552

Total Cost

€14,397,298

EU Contribution

€10,107,160

Starting Date

01/03/2012

Duration

42 months

Coordinator

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Project objectives

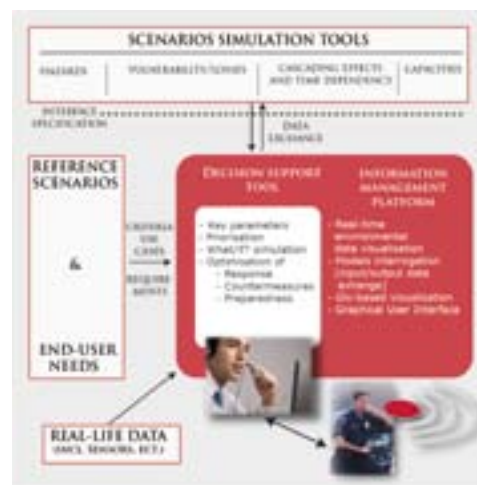
CRISMA IP focuses on large scale crisis scenarios with immediate and extended human, societal, structural and economic, often irreversible, consequences and impacts. These crisis scenarios cannot be managed alone with regular emergency and first responder resources, but require multi-organisational and multi-national cooperation including humanitarian aid.

A common set of criteria and performance indicators for crisis management simulation and optimisation provided by CRISMA modelling system shall enable decision makers and crisis managers to: (1) model possible multi-sectoral crisis scenarios and assess the consequences of an incident, (2) simulate possible impacts resulting from alternative actions, (3) support strategic decisions on capabilities, related investments, reserves and inventories, (4) optimise the deployment of resources dedicated to crisis response in line with the evolvement of a crisis, and (5) improve action plans for preparedness and response phases of the crisis management.

Description of the work

CRISMA builds upon the existing tools and facilities provided by its research, industry, SME and end-user partners, and takes into account the existing structures and practices as well as the research and development work done in the EU and its member states. The work is carried out in close cooperation with the end-user partners who have wide experience in crisis management in complex situations, including national disasters and global response activities.

The CRISMA work plan consists of several sub-projects (SP) that are divided into several work packages. Those SPs define Scenarios, Requirements and Criteria for Crisis Management Modelling for the development of CRISMA, and develop components for the Integrated Crisis Modelling System (ICMS) and Models for Multi-Sectoral Consequences. In the middle of the project, the first version of the CRISMA system components will be tested and validated by the end-user pilots. End-User pilots shall test and validate the CRISMA system and its components in two sequences, which provides feedback for the development work. The mid-term and final validation of CRISMA's results are performed in cooperation with the End-User Advisory Board.



© Crisma

Expected results

The CRISMA project shall develop a simulation-based decision support system for modelling crisis management, improved action and preparedness. The CRISMA system shall facilitate the simulation and modelling of realistic crisis scenarios, possible response actions, and the impacts of crisis depending on both the external factors driving the crisis development and the various actions of the crisis management team.

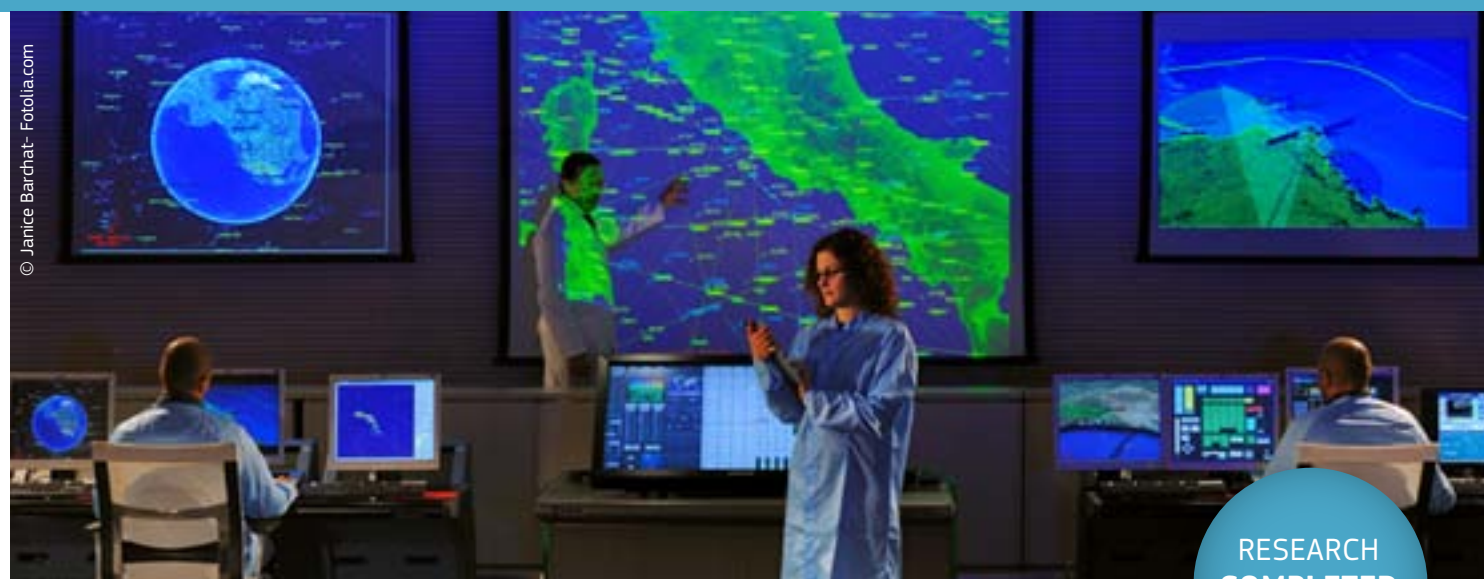
PARTNERS

Valtion Teknillinen Tutkimuskeskus (VTT)
 Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer)
 Analisi e Monitoraggio del Rischio Ambientale (AMRA)
 AIT Austrian Institute of Technology GmbH. (AIT)
 Association for the Development of Industrial Aerodynamics (ADAI)
 Tallinna Tehnikaülikool - Tallinn University of Technology (TTU)
 NICE Systems Ltd (NICE)
 European Aeronautics Defence and Space Company - CASSIDIAN Division (EADS)
 Insta DefSec (INS)
 Spacebel S.A (SpB)
 Cismet GmbH (CIS)
 Pelastusopisto - The Emergency Services College (ESC)
 Magen David Adom (MDA)
 Public Safety Communication Europe Forum (PSCE)
 Ilmatieteen laitos - Finnish Meteorological Institute (FMI)
 Deutsches Rotes Kreuz (DRK)
 ARTELIA Eau & Environnement (AEE)

COUNTRY

Finland
 Germany
 Italy
 Austria
 Portugal
 Estonia
 Israel
 Germany
 Finland
 Belgium
 Germany
 Finland
 Israel
 Belgium
 Finland
 Germany
 France

CRISYS / Critical Response in Security and Safety Emergencies



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Information

Grant Agreement N°

261682

Total Cost

€805,852

EU Contribution

€740,945

Starting Date

01/02/2011

End Date

31/05/2012

Coordinator

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Project objectives

To build in this Phase (Phase I) a roadmap capable of full implementation to show specific demonstration actions in Phase II, whilst establishing contacts and awareness with the main public and private stakeholders in the field of Crisis Management.

The work done in the actual phase is aimed at full understanding of the issues surrounding effective operational needs (e.g. interoperability of technical solutions, commonality of procedures, decision and crisis decision tools, the importance of languages; common training approaches; homogeneous risk assessment methodologies etc.) for the most significant demonstration actions.

Description of the work

It is imperative to understand how the civil protection sector operates. Firstly we need to review presently adopted solutions, procedures and the operational, legal, societal, political and, legacy environments in which those mechanisms are set. We can then establish parameters of operations, not simply scenarios but how to create wider capability and capacity.

Users and citizens are the critical success key for the project. Building a respected relationship is a vital part of the project. That requires the creation of a public-private dialogue with local, national and international users, first responders and national governments and citizens.

The role of CRISYS Partners is therefore to gather these requirements via specific MEETINGS with USERS and SUPPLIERS around Europe, thus establishing a sound network of contacts for Phase II whilst also gathering the key elements to develop the requirements for the Roadmap.

This process will be followed by a gap analysis activity of the collected results, in two steps, from a preliminary roadmap to a final roadmap which will be presented at a final conference.

Results

The results of the project are available on the CORDIS website <http://cordis.europa.eu/fp7/security>.

PARTNERS

European Organization for Security (EOS)
EDISOFT SA (EDI)
Center for Security Studies (KEMEA)
National Center for Scientific Research, "Demokritos" (NSCRD)
ALTRAN BV (ALTRAN)
International Association of Fire and Rescue Services (CTIF)
Teletron Euroricerche SRL (TLT)
Compania nationala de transport al energiei electrice Transelectrica SA (TRA)
Société Française de Medicine de Catastrophe (SFMC)
THALES Security Solution & Service SAS (T3S)
Indra Sistemas S.A (INDRA)
Istituto Affari Internazionali (IAI)
University of Central Lancashire (UCLAN)
Ministry of the Interior, Department for Rescue Services, SISAASIAINMINISTERIO (FMOI)
Zanasi Alessandro SLR (ZAN)

COUNTRY

Belgium
Portugal
Greece
Greece
The Netherlands
France
Italy
Romania
France
France
Spain
Italy
United Kingdom
Finland
Italy

DARIUS / Deployable SAR Integrated Chain with Unmanned Systems

(SAR = Search and Rescue)



Information

Grant Agreement N°
284851
Total Cost
€10,688,505
EU Contribution
€7,475,830
Starting Date
01/03/2012
Duration
36 months

Coordinator

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Project objectives

- » Interoperability of the unmanned platforms;
- » Seamlessly integrate the unmanned platforms in the command and control loop (i.e. C2/C4I platforms);
- » Provide the necessary communication structure without relying on existing infrastructure;
- » Support the interaction between humans and systems, i.e. FRs, victims, unmanned vehicles and payloads;
- » Develop a Generic Ground Station;
- » Define the capability, deployability and sustainability requirements for future SAR unmanned vehicles;
- » Define and evaluate operational performance improvements of current deployed solutions;
- » Reduce the cost of unmanned SAR solutions.

Description of the work

The DARIUS project is broken down into seven work packages (WPs).

WP1 deals with project management.

The other six work packages are designed around the development and testing in real conditions of a real interoperability capability of the unmanned systems, in terms of both sharing the utilisation in the same operation, and integrating them in the legacy command and control systems.

WP2 User Needs and Concept of Operations: This work package is responsible for the understanding of the user needs for the deployment and use of unmanned systems for search and rescue organisations.

WP3 Integration Design: This work package involves the generation of the requirements and interoperability standards for the DARIUS system based upon the outputs in WP2.

WP4 Components Development: This work package involves the adaptation of the existing unmanned platforms and ground system to meet the DARIUS requirements.

WP5 Integration: This work package involves the integration and testing of the DARIUS platforms and ground stations to prove the system prior to the evaluation and trials.

WP6 Evaluation and Trials: This work package involves the evaluation of the DARIUS solution in urban/indoor, forest fire and maritime SAR scenarios.

WP7 Exploitation: This work package involves the management of a User Advisory Board, the dissemination of project results, the exploitation issues and the final standards and legal recommendations emerging from DARIUS' results.

Expected results

DARIUS is expected to lead to improved citizen security and safety through enhanced capabilities and more extensive use of unmanned air, land and waterborne vehicles and payloads in search and rescue operations, with enhanced operational, procedural and technical interoperability.

PARTNERS

BAE Systems (Operations) Ltd (BAES)
Cassidian S.A.S. (CASS)
DFRC AG (DFRC)
SKYTEK LTD (SKY)
TELINT RTD Consultancy Services LTD (TEL)
FUTURE INTELLIGENCE EREVNA TILEPIKINONIAKON KE PLIROFORIAKON SYSTIMATON EPE (FINT)
OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES (ONE)
STIFTELSEN SINTEF (SIN)
ECA SA (ECA)
NATIONAL TECHNICAL UNIVERSITY OF ATHENS (NTUA)
CENTER FOR SECURITY STUDIES (KEM)
ECOMED bvba (ECO)
CORK INSTITUTE OF TECHNOLOGY (NMCI)

COUNTRY

United Kingdom
France
Switzerland
Ireland
United Kingdom
Greece
France
Norway
France
Greece
Greece
Belgium
Ireland

DECOTESSC1 /

DEmonstration of COunterTErrorism

System-of-Systems against CBRNE phase 1

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RESEARCH
COMPLETED

Information

Grant Agreement N°
242294

Total Cost
€1,587,642

EU Contribution
€1,001,627

Starting Date
01/04/2010

End Date
30/06/2011

Coordinator

NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK

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Project objectives

DECOTESSC1 – a so-called ‘phase one’ project – set out to provide a research road-map for priorities and structures for a subsequent ‘phase two’ large scale Demonstration Project project, which will test effective methods for countering chemical, biological, radiological, nuclear and explosive (CBRNE) terrorist threats.

The basic idea behind DECOTESSC1 was analysis and subsequent prioritization of CBRNE counter-measure security gaps, taken as a comparison between the current situation and a theoretical ideal situation.

An in-depth background study supported this analysis, including interviews and workshops to ascertain the current threat environment and technical state-of-the-art.

Results

As well as identifying relevant research actors, technology providers, end users and other stakeholders for consultation, the project created a comprehensive Multidimensional Taxonomy System (MTS) in order to aggregate common technical terminology for this study.

This fed into a gap analysis, which eventually produced a list of 150 potential gaps in current CBRNE counter-measures. Using a ranking system, these were narrowed down to just 25 “serious” gaps in European CBRNE counter-measures.

These gaps are subdivided into five categories to be prioritized in the ‘phase two’ Demonstration project:

- » Fusion of information and situational picture. This includes detection, identification and monitoring of actors, agents, means of delivery, targets and effects in the CBRNE field. The validity of the perceived threat and its consequences needs to be measured and verified;
- » Communication. In addition to general disaster management strategies, CBRNE awareness and resilience should be increased. Aspects such as education, the role of local, regional, national and European authorities and the passive and active use of (social) media should be covered by a dedicated communication strategy;
- » Cooperation. This requirement includes priorities to pool resources, share (classified) information and use best practices among separate C, B, RN and E actors;

- » Consequence management. Mostly post-incident activities (the response and recovery phases), but also the relationship between pre-incident activities and preparedness;
- » Realistic training and exercise. In particular, new techniques (such as the use of virtual reality and serious gaming) need to be further explored, developed and demonstrated to meet both needs and restrictions.

PARTNERS

Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO)
AIT Austrian Institute of Technology GmbH (AIT)
Commissariat à l'énergie atomique et aux énergies alternatives (CEA)
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer)
Totalförsvarets Forskningsinstitut (FOI)
European Commission – Joint Research Centre (JRC)
Valtion Teknillinen Tutkimuskeskus (VTT)
Fundación Tecnalia Research & Innovation (TEC)
Seibersdorf Labor GmbH (SLG)

COUNTRY

The Netherlands
Austria
France
Germany
Sweden
Europe
Finland
Spain
Austria

E-SPONDER /

A holistic approach towards the first responder of the future



© E-SPONDER

Information

Grant Agreement N°
242411
Total Cost
€12,922,363.40
EU Contribution
€8,790,044
Starting Date
01/07/2010
Duration
48 months

Coordinator

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Project objectives

The proposed system addresses the need for an integrated personal digital support system to support first responders in crises occurring in various types of critical infrastructures under all circumstances. E-SPONDER proposes modular terminal and overall open system architecture in order to facilitate the need for enhanced support provision in all cases. It deals with the study, design and implementation of a robust platform for the provision of specialized ad-hoc services, facilities and support for first responders that operate at crisis scenes located mainly within critical infrastructures. In order to address the diverse needs stemming from the complexity of operations, a three-layer approach is proposed. Modularity is a key issue to the overall system design whether it refers to the mobile/dispersed units of the first responders or the back-office applications, systems and services.

» *First Responder Units (FRU).* As far as the first responders' units are concerned, different operational needs have to be addressed according to the origin of the first responder. In other words, there are different functional, performance and specific requirements for different users including police officers, paramedics, rescuers and fire brigade crews;

» *Mobile Emergency Operations Centre (MEOC).* The Mobile Emergency Operations Centre is a vital part of the entire system. It provides a common operational picture of the situation as well as a communication bridge between the first responders that operate in the field and the main, remotely located Emergency Operations Centre (usually located at Civil Protection Headquarters);

» *Emergency Operations Centre (EOC).* The Emergency Operations Centre is the heart of the E-SPONDER platform. It contains the entire necessary infrastructure (communications, GIS, data processing modules, database) suitable and selected for crisis management purposes;

» *Training of First Responders.* The goal of the E-SPONDER platform is to provide, at both a state and local level, an up-to-date list of available trained personnel that can be identified and deployed quickly in the event of a crisis situation. In that sense, E-SPONDER will help the authorities to better define first responder job profiles and technical competencies. These profiles and competencies will then be managed by the e.Learn platform that will link individual competency gaps to learning and development, and create a central repository of resources and associated skill sets for proactive selection and succession planning;

» *Logistics of First Responders.* A full and comprehensive analysis and study of the current situation as well as the one derived from E-SPONDER outcomes will be performed in order to set up the conceptual design parameters of an Emergency Management Process based on ERS&LS (Emergency Resource Support & Logistics System) capable of providing comprehensive situational awareness to decision makers to ensure a timely, co-ordinated and effective response to large scale disasters.

Expected results

Measures	Metrics
Preparedness	
Percent of responders trained to respond to anticipated emergencies (e.g. 15 planning scenarios)	100%
Safety Officer(s) have the training and experience necessary to manage hazards associated with all potential planning scenarios	YES
Percent of responders capable of using E-SPONDER (e.g., responders are fitted and medically cleared to use necessary E-SPONDER components) so that they have the necessary health and safety training to perform their anticipated tasks (e.g. awareness level, technician level, etc.) in response to an incident	100%
Activate Response Safety and Health	
Percent of responders injured or falling ill in response to the incident	0%
Time in which Safety Officer is designated within the First Response structure (separate from MEOC, which may hold this role for a period of time)	W i t h i n 30 minutes of arrival of responders
Time in which deployment actions are initiated for Assistant Safety Officers or Safety Officers to provide technical assistance to incident safety official	Within 1 hour from arrival of responders

Identify safety needs	
Percent of hazards detected/identified and characterized	100%
Time in which an initial incident safety analysis is completed	Within 1 hour of responder arrival
Site/Incident Specific Safety and Health Training	
Percent of emergency workers responding to an incident who are provided on-site training prior to assignment to work at incident	100%
Ongoing Monitoring of Responder Safety and Health	
Time in which the medical unit is opened and operating within a MEOC structure	W i t h i n 30 minutes of arrival of responders on-site
Percent of personnel wearing the required E-SPONDER equipment for site entry and work	100%
Percent of workers who have their representative exposure to hazardous substances quantified and recorded	100%

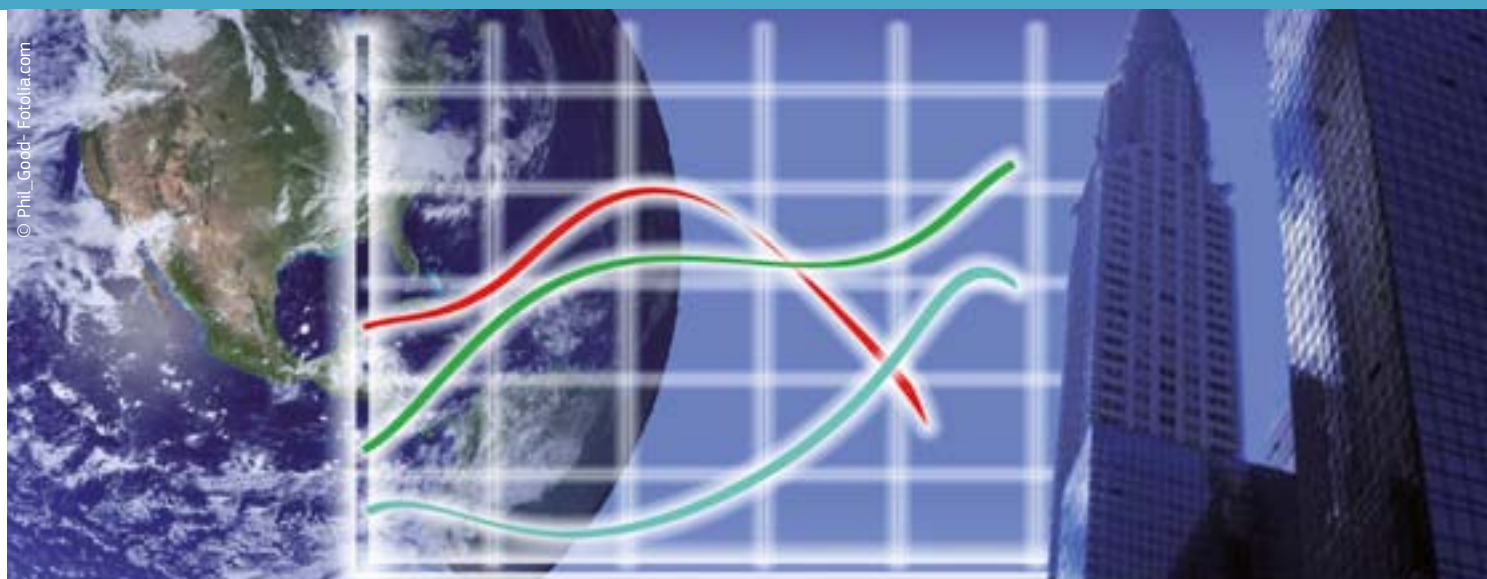
PARTNERS

Exodus S.A.(EXO)
University of Modena and Reggio Emilia (UNIMORE)
CrisisPlan B.V. (CPLAN)
Prosyst Software GmbH (PROS)
Immersion S.A. (IMM)
Rose Vision (ROSE)
Telcordia Poland Sp. z.o.o. (TARC-PL)
Centre Suisse d'Electronique et de Microtechnique S.A. (CSEM)
Smartex Srl (SMTX)
Technische Universität Dresden (TUD)
YellowMAP AG (YA)
PANOU S.A. (PANOU)
Telcordia Taiwan (TARC-TW)
Institute for Information Industry (III)
Entente pour la forêt Méditerranée (EPLFM)

COUNTRY

Greece
Italy
The Netherlands
Germany
France
Spain
Poland
Switzerland
Italy
Germany
Germany
Greece
Taiwan
Taiwan
France

ESS / Emergency support system



Information

Grant Agreement N°

217951

Total Cost

€14,025,624.80

EU Contribution

€9,142,126

Starting Date

01/06/2009

Duration

48 months

Coordinator

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Project objectives

The purpose of ESS is to enable improved control and management of major crisis events such as natural disasters, industrial accidents, terror attacks etc. The idea guiding the development of ESS is a portable, modular and autonomous system which fuses in real-time various forms of field-derived data including video, audio, weather measurements, location tracking, radioactivity, bio-chemical, telecom derived data, affected population reports and other information. The data is collected and communicated via both portable and fixed platforms, including wireless communication devices, Unmanned Aerial Vehicles (UAV), Unmanned Ground Systems (UGS), air-balloons and field-vehicles. The fusion of the data is handled within a central system which performs information analysis and provides decision support applications for web based command and control systems. This provides flexible, yet comprehensive coverage of the affected area.

Once available to the market, the ESS concept will offer real time synchronization and information sharing between first responders and support forces at the site of the incident. ESS will also enable the commanders to communicate with the affected on-site personnel by sending text (SMS) or recorded voice messages.

Description of the work

The ESS consortium intends to develop a revolutionary crisis communication system that will reliably transmit filtered and pre-organized information streams to the crisis command system, which will provide the relevant information that is actually needed to make critical decisions.

The information streams in ESS will be organized in such a way that they can be easily enhanced by and combined with other available applications and databases (thus enabling the coupling of the ESS system with crisis decision support systems currently under development). The ESS will provide an open API in order to allow any public authority, if needed, to add more applications customized to its particular needs. ESS interfaces are open as they are based on OGC standards. Each commercial application which will adopt OGC standards will be able to connect to ESS in a plug and play manner.

Any abnormal event may register as a sudden change or cumulative changes in one or several mediums which it interacts with (Telecom, Air, Spatial, Visual, Acoustic and more). Therefore, effective control of such an abnormal event means: monitoring each medium independently in real-time, activating an alarm when sudden or cumulative changes in one or more mediums are detected, and when necessary contacting the affected population and providing mass evacuation capabilities. ESS will integrate all these means to one central system which will enable crisis managers to respond to these challenges.

In order to validate the system it will be tested in three different test fields: a fire in a forested area, an event in a crowded stadium and a toxic waste dump accident. Operating ESS under different scenarios is needed in order to test the system's capabilities in different kinds of crises using a variety of collection tools.

The partners in the ESS project are at the forefront of technological development. Each of the partners brings important and complementary expertise to the project. Three partners represent the end users for ESS technologies, solutions and perspectives.

Expected results

First and foremost, ESS will aid in the development of novel tactical intelligence systems for crisis events. In addition, ESS will change the way data is gathered and handled during times of crisis. Other important advances that will be brought about by ESS will be the development of novel methods for decision support, and the use of web-portals as hubs for real-time, actionable information. Lastly, additional technological impacts that are expected from the development of the ESS system include, for example, the integration of road traffic information systems.

PARTNERS

VERINT SYSTEMS LTD (VRNT)
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International Geospatial Services Institute GMBH (IGSI)
Intergraph CS (ING)
GMV Sistemas S.A. (GMV)
CS Systèmes d'Information (CS)
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer-IAIS)
ITIS Holdings plc. (ITIS)
Algosystems SA (ALGO)
Alcatel-Lucent Italia (ALI)
APD Communications Ltd. (APD)
Anonymos Etaireia Antiprosopeion Emporion Kai Viomichanias (ANCO)
FAENZI srl. (FNZI)
CENTER FOR SECURITY STUDIES (KEMEA)
The Imego Institute (IMEGO)
Magen David Adom (MDA)
Ernst & Young (EY)
Aeronautics Defense Systems (AERO)
DIGINEXT SARL (DXT)
Entente pour la forêt méditerranéenne (CEREN)

COUNTRY

Israel
Italy
Germany
Czech Republic
Spain
France
Germany
United Kingdom
Greece
Italy
United Kingdom
Greece
Italy
Greece
Sweden
Israel
Israel
Israel
France
France

FASTID / Fast and efficient international disaster victim identification



Information

Grant Agreement N°

242339

Total Cost

€2,990,190

EU Contribution

€2,270,476

Starting Date

01/04/2010

Duration

36 months

Coordinator

THE INTERNATIONAL CRIMINAL POLICE

ORGANIZATION – I.C.P.O.

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Project objectives

» Development of an information management and decision support system for disaster victims and missing person identification satisfying end user requirements enabling the storing and comparison of different characteristics which may lead to the identification of any one individual;

» To develop an internationally acceptable format and training for accurate and repeatable data recording in the system;

» To test and evaluate the system;

» To develop exploitation strategies.

Description of the work

The project will start by collecting detailed end-user requirements.

It will be necessary to consider not only the performance of the system itself for international and national police work but also its interface with INTERPOL's present network and channels for uploading and distributing data and other identification software.

These requirements will feed into the design of the overall system and the specific specifications for system modules and interfaces.

A core system will be developed taking INTERPOL's paper Ante-Mortem (AM) Disaster Victim Identification (DVI) form and Post-Mortem (PM) DVI together with its Yellow Notice and Black Notice forms, which use the minimum

international standards agreed to date for the collection of data for identification of victims and present software as a basis and these will be extended with Rich Internet Application methods and further identification techniques.

An 'aide aside' will be designed to facilitate a commonality of reporting and understanding of the terms in the INTERPOL forms leading to a better understanding of the nature of the data being recorded and its true international translation. This will form the starting point for a full online training programme which will be developed utilising the most effective and efficient means of ensuring operational commonality between countries and organisations.

Research will be carried out into image retrieval methods for assisting forensic identification with respect to faces, body modifications (e.g. tattoos), decorations, property and clothing. 3D morphing and craniofacial reconstruction and superimposition approaches will be investigated for this application. The best results are planned to be implemented into the core system.

There will be extended testing and evaluation of the results and these will allow for some development reiteration. Exploitation strategies will be developed.

Expected results

A centralised worldwide system at INTERPOL's General Secretariat in Lyon with decentralised access applicable to disasters and everyday policing. The system will include its own search capabilities for some identifiers and will be interfaced with other software for further identifiers such as fingerprints. It should be possible for INTERPOL's General Secretariat and its member countries to use a fully operational system within a short time-to-market period.

PARTNERS

International Criminal Police Organization – I.C.P.O. (INTERPOL)
Bundeskriminalamt (BKA)
Plass Data Software A/S (Plass Data)
University of Dundee (UNIVDUN)
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer)
Crabbe Consulting Ltd (CCLD)

COUNTRY

France
Germany
Denmark
United Kingdom
Germany
United Kingdom

FRESP / Advanced first response respiratory protection



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Information

Grant Agreement N°

218138

Total Cost

€4,074,891.01

EU Contribution

€3,029,967

Starting Date

01/06/2008

End Date

31/05/2012

Coordinator

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fp7-fresp

Project objectives

Protection against terrorism is one of the major issues of this programme. If an incident occurs, despite precautions taken to prevent incidents at all, it is important to reduce the consequences, i.e. to minimise the effects of chemical, biological, radiological and nuclear (CBRN) attacks.

The objective of the project is to create the network of scientists and research institutions, who will develop a broad-spectrum, low-burden, tailor-made nanoporous adsorbent, with the aim to integrate the two main areas of protection (versus chemical warfare agents and versus toxic industrial chemicals) without a significant loss of capacity in either of them. It will also integrate features that are not at all (certainly not explicitly) available in the current state-of-the-art adsorbents: protection against radioactive gases and against biological threats.

This integration requires an in-depth study of mutual effects of impregnates and impregnation methods, as well as ways to diminish the deleterious effect of water vapour on the adsorption capacity. Moreover, the possibility of a commercialisation procedure for the new adsorbents will be investigated.

Description of the work

The primary goal of this project is the development of broad-spectrum low-burden respiratory protection systems for first responders. The first step in this process is developing novel nanoporous sorbents, combined with new or existing types of additives for chemisorption, possibly in combination with catalytic conversion, to neutralise weakly adsorbed components. The new nanoporous adsorbents and additives can be integrated or can be combined in mixtures or separate layers.

Specific tasks have been selected in order to meet project objectives:

» Nanoporous adsorbent development

- Development of nanoporous adsorbent materials with increased protection against toxic industrial chemicals (TIC) such as ammonia and highly volatile organics, chemical warfare agents, radiological and biological threats;
- Development of materials with low burden in weight and breathing resistance;
- Health and safety examination of the sorbents (flammability, ecotoxicity, mechanical resistance, etc.).

» Evaluation and optimisation of adsorbent performance

Establishment of the relation between the structural characteristics and interfacial properties of the adsorbent's performance. Application of Model Predictive Control (MPC) to optimise the preparation conditions in order to achieve the required optimum structure and performance.

» System development

Development of a new gas mask canister and protective hood, both based on the new nanoporous adsorbent.

» System evaluation and optimisation of the performance

- Determination of the optimum characteristics for the advanced respiratory protection systems;
- Optimisation of the filter and hood systems.

» Economic feasibility and manufacturability, exploitation and dissemination, IPR policy

Examination of viability of a full scale production of the nanoporous adsorbent, the filter canister and the hood.

Results

The results of the project are available on the CORDIS website <http://cordis.europa.eu/fp7/security>.

PARTNERS

Ecole Royale Militaire – Koninklijke Militaire School (RMA)
Budapest University of Technology and Economics (BME)
University of Brighton (UoB)
University of Alicante (UALI)
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO)
High Technology Filters s.a. (HTF)
MAST Carbon (MAST)
NORIT Nederland B.V (NORIT)
Laser Optical Engineering Ltd. (LOE)
ProQares BV (ProQares)

COUNTRY

Belgium
Hungary
United Kingdom
Spain
The Netherlands
Greece
United Kingdom
The Netherlands
United Kingdom
The Netherlands

ICARUS / Integrated Components for Assisted Rescue and Unmanned Search operations



Information

Grant Agreement N°
285417
Total Cost
€17,554,528.49
EU Contribution
€12,584,933.45
Starting Date
01/02/2012
Duration
48 months

Coordinator

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Project objectives

- » Development of a light sensor capable of detecting human beings;
- » Development of cooperative Unmanned Aerial System (UAS) tools for unmanned SAR;
- » Development of cooperative Unmanned Ground Vehicle (UGV) tools for unmanned SAR;
- » Development of cooperative Unmanned Surface Vehicle (USV) tools for unmanned SAR;
- » Heterogeneous robot collaboration between Unmanned Search And Rescue devices;
- » Development of a self-organising cognitive wireless communication network, ensuring network interoperability;
- » Integration of Unmanned Search And Rescue tools in the C4I systems of the Human Search And Rescue forces;
- » Development of a training and support system for the developed Unmanned Search And Rescue tools for the Human Search And Rescue teams;
- » Communication and dissemination of project results.

Description of the work

In the event of a large crisis, a primordial task of the fire and rescue services is the search for human survivors on the incident site. This is a complex and dangerous task, which often leads to loss of lives. The introduction of unmanned search and rescue devices can offer a valuable tool for saving human lives and speeding

up the search and rescue process. Therefore, ICARUS concentrates on the development of unmanned search and rescue technologies for detecting, locating and rescuing humans. In this context, there is vast literature on research efforts towards the development of unmanned search and rescue (SAR) tools. However, in the field, unmanned SAR tools still have great difficulty finding their way to the end-users.

The ICARUS project addresses these issues, aiming to bridge the gap between the research community and end-users, by developing a toolbox of integrated components for unmanned search and rescue. The objective of the ICARUS project is to develop robots which have the primary task of gathering data. The unmanned SAR devices are foreseen to be the first explorers of the area, as well as in situ supporters to act as safeguards for human personnel. In order not to increase the cognitive load of the human crisis managers, the unmanned SAR devices will be designed to navigate individually or cooperatively and to follow high-level instructions from the base station. The robots connect wirelessly to the base station and to each other, using a wireless self-organising cognitive network of mobile communication nodes which adapts to the terrain. The unmanned SAR devices are equipped with sensors that detect the presence of humans. At the base station, the data is processed and combined with geographical information, thus enhancing the situational awareness of the personnel leading the operation with in-situ processed data that can improve decision-making. The Haitian experience has shown the importance acquired by the geographic component in the management of human and technical resources in crisis situations. Similarly, it has highlighted that a suitable distribution of thematic maps allows optimisation and interoperability of these resources and accelerates the access to victims. All this information will be integrated in existing C4I systems, used by the forces involved in the operations.

Expected results

The overall purpose of the ICARUS project is to apply its innovations for improving the management of a crisis and by doing so to reduce the risk and impact of the crisis on citizens. The use of unmanned search and rescue devices embedded in an appropriate information architecture and integrated into existing infrastructures will help crisis personnel by providing detailed and easy to understand information about the situation. The proposed system will inform crisis personnel about real dangers present on the ground, and will thus increase their performance in resolving the situation.

PARTNERS

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Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer-IZM)
INSTYTUT MASZYN MATEMATYCZNYCH (IMM)
JMDTHEQUE SARL (JTH)
TECHNISCHE UNIVERSITAET WIEN (TUV)
INTEGRASYS, S.A. (ISYS)
Skybotix AG (SBX)
QUOBIS NETWORKS SL (QUOBIS)
INESC PORTO - INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES DO PORTO (INESC)
ALLEN-VANGUARD LIMITED (AV)
UNIVERSITE DE NEUCHATEL (UNINE)
Eidgenössische Technische Hochschule Zürich (ETH)
ATOS SPAIN SA (ATOS)
TECHNISCHE UNIVERSITAET KAISERSLAUTERN (UKL)
NATO Undersea Research Centre (NURC)
CALZONI SRL (CAL)
METALLIANCE SA (META)
ESRI PORTUGAL - SISTEMAS E INFORMACAO GEOGRAFICA SA (ESRI)
SPACETEC PARTNERS SPRL (STP)
ESCOLA NAVAL (CINAV)
Federale overheidsdienst Buitenlandse Zaken, Buitenlandse Handel en Ontwikkelingssamenwerking (BFAST)

COUNTRY

Belgium
Belgium
Spain
Spain
Germany
Poland
France
Austria
Spain
Switzerland
Spain
Portugal
United Kingdom
Switzerland
Switzerland
Spain
Germany
Italy
Italy
France
Portugal
Belgium
Portugal
Belgium

IDIRA / Interoperability of data and procedures in large-scale multinational disaster response actions



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Information

Grant Agreement N°
261726

Total Cost
€10,925,164.35

EU Contribution
€8,032,971.06

Starting Date
01/05/2011

Duration
48 months

Coordinator

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Project objectives

There are currently no disaster management procedures, tools and systems in the EU which fully take into account the specific requirements of large-scale international cooperation in emergency situations. Those actions are distinguished by many diverse emergency response organisations that need to collaborate across technological systems, organisational borders and language and cultural barriers. Technologies and procedures used and researched so far have provided many solutions for single aspects, but there is no concept available yet which supports the entire process.

In IDIRA we follow the vision of providing a conceptual framework that allows for supporting and augmenting regionally available emergency management capacities (including the existing IT systems) with a flexibly deployable Mobile Integrated Command and Control Structure. This system of technologies and guidelines is designed to help in optimal resource planning and operations across national and organisational borders.

Description of the work

As part of the analysis of the state of the art, the workflow in multinational disaster response actions is being modelled, and based on that a high-level specification of supporting technological components and a system integration concept for interoperability and interfaces is being designed.

As interoperable communication is a prerequisite for successful disaster management, the Consortium works on the integration of communication protocols for data exchange and voice communication interoperability. Furthermore data models for tasks and resources and the quick integration of geographic and attribute data as well as sensor data are being improved.

A core step is the provision of a common operational picture, including structured text communication over language barriers and information interchange for the provision of early situational awareness to unit leaders before leaving their home country. Planning and optimisation tools for missing persons' tracing are being integrated.

In the field of interoperable response management, a decision support system for coordinated multinational response planning and optimisation is provided. This includes micro simulation as an up-to-date technology for decision support. Additional fields of work are improvements in international donation management and multinational resource management for disaster response.

For training and dissemination purposes, local and binational field training sessions are carried out. Finally, three multi-national and multi-organisational exercises are being planned, covering flood, large-scale fire and earthquake or pandemic events.

At the final stage, a description of successful rules and procedures, the Architectural Reference for the Mobile Integrated Command & Control Structure and recommendations for harmonization and standardization in the European Union are being presented.

Expected results

The set of tools, interfaces and procedures developed in IDIRA provides services for data integration, information exchange, resource planning and decision support to disaster response units and decision makers. It is an architectural framework and an exemplary implementation of a Mobile Integrated Command and Control Structure supporting co-ordinated large-scale disaster management. The IDIRA solutions are building on and are being integrated with existing infrastructure and response procedures.

PARTNERS

Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer-IVI)
Salzburg Research (SRFG)
Frequentis (FRQ)
Brimatech Services GmbH (BRI)
National and Kapodistrian University of Athens (NKUA)
Earthquake Planning and Protection Organization (EPPO)
German Red Cross (branch of the state of Saxony) (DRK-SN)
University of Greenwich (UOG)
IES Solutions (IES)
Flexit Systems (FLEXIT)
Austrian Red Cross Headquarters (ORK-HQ)
Hellenic Ministry of Defence (HMOD)
Department of Fire Brigade, Public Rescue and Civil Defence – Ministry of Interior (CNVVF)
Satways Ltd. (STWS)
TLP, spol. s r.o. (TLP)
World Agency of Planetary Monitoring & Earthquake Risk Reduction (WAPMERR)
Local Government of Achaia Prefecture (NEA)
Center for Security Studies (KEMEA)

COUNTRY

Germany
Austria
Austria
Austria
Greece
Greece
Germany
United Kingdom
Italy
Austria
Austria
Greece
Italy
Greece
Czech Republic
Switzerland
Greece
Greece

IFREACT / Improved First Responder Ensembles Against CBRN Terrorism



© IFREACT

Information

Grant Agreement N°

285034

Total Cost

€5,475,980.60

EU Contribution

€3,394,615.40

Starting Date

01/01/2012

Duration

36 months

Coordinator

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Project objectives

IFREACT aims to provide the next generation of protective clothing for first responders. Bringing together leading protective technology and blending it with some of the latest software, it will enhance the chemical, biological and radiological protection of European first responders. European major cities continue to face the threat of terrorism and, in the near future, may be subject to a serious chemical, biological or radiological terrorist attack. When the time comes it will be the brave men and women of the various emergency services who will answer the call – and they need to be adequately protected and prepared.

Description of the work

The consortium will deliver qualitative and quantitative evaluation of existing Personal Protective Equipment (PPE) by both a laboratory and end-users and will focus its research on the most emergent threats in order to best fulfil the needs of those end-users who are in the greatest need of protection from both terrorist and non-terrorist related crises. Once this preparatory work has been completed, it will be tempered by direct feedback from the user community, and the team will begin to work on prototype ensembles that:

- » address the real protection needs of conventional users, with regards to both the level of protection and its total capacity;
- » provide adequate protection, while keeping the burden of the system as low as possible;
- » include solutions for hand and foot protection, whilst taking safety, ergonomic and logistic aspects of the conventional user group into consideration;

The protective system will provide added functionality regarding the C4I needs of the first responder. Typical tactical needs such as communication, (indoor) localisation & situational awareness, will be enabled by affordable, robust and easy to use technology. Wearability, graceful degradation and logistics will dictate innovative approaches to the material as well as to the system level;

The suit will be configured as a platform that carries the energy and the connections to the components of the sensor subsystem. The sensors itself will be housed in the suit as well as in the respirator, depending on their function. The configuration of the system will enable other / new energy cells and sensors to be connected whenever required;

This platform will be interfaced with the external infrastructure to get extra capabilities/situation awareness without constraints and cost as regards the suit itself.

Moreover, the project will develop a platform that allows end-users and procurement staff to best select the PPE system needed for the mission of the first responder and the expected threat.

Expected results

The ensemble will incorporate next-generation skin protection, a head-up display, a biodosimeter, audio/voice technology, and a GPS self-localisation device; it will also incorporate three types of respiratory protection, heightened situational awareness and agility, as well as comfortable, yet safe, protection against CBRN threats. With injections of knowledge from the users themselves the suit will exceed their demands, in terms of both protection and usability. It will be a prêt-à-porter Personal Protective Equipment!

PARTNERS

Universite Paris XII- Val de Marne (SAMU)
 IB Consultancy BV (IBC)
 NBC-SYS SAS (NBC Sys)
 Blücher GmbH (Blücher)
 Astrium SAS (Astrium)
 Falcon Communications Limited (CBRNe World)
 Bertin Technologies SAS (Bertin)
 Statni Ustav Jaderne, Chemicke a Biologicke Ochrany vvi (SUJCHBO)
 Drzavna Uprava za Zastitu i Spasavanje (DUZS)
 Prometech BV (Prometech)
 Hotzone Solutions Benelux (Hotzone Solutions)

COUNTRY

France
 The Netherlands
 France
 Germany
 France
 United Kingdom
 France
 Czech Republic
 Croatia
 The Netherlands
 The Netherlands

IMSK / Integrated mobile security kit



Expected results

The project will employ legacy and novel sensor technologies, and design a demonstrable system (IMSK) that will integrate sensor information to provide a common operational picture where information is fused into intelligence. A Privacy Impact Assessment will be performed to ensure that both system design and utilisation guidelines take full account of privacy and related civil liberty issues. A field trial will be performed to validate the concept and demonstrate the functions of the system and the result of the research performed.



Information

Grant Agreement N°
218038

Total Cost
€23,485,135.25

EU Contribution
€14,864,308

Starting Date
01/03/2009

Duration
48 months

Coordinator

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Project objectives

The Integrated Mobile Security Kit (IMSK) project aims at increasing the security of citizens in the scope of events gathering a large number of people, such as medium to large scale sports events (from football games to the Olympic Games), political summits (G8 summit) etc. The security related to these types of events with intense mass media coverage has indeed become an increasing concern due to new threats of terrorism and criminal activities (such as suicide bombers, improvised explosive devices, increasingly credible CBRN threats).

To counter this situation, new systems are needed that can cover various security aspects and allow for cooperation between different stakeholders. The systems need to be mobile and adaptable in order to address situations of different kinds and different locations. The main objective of the proposed project is the study, development, assessment and promotion of such a system, the IMSK, providing emerging solutions for increased probability of rapid detection and response to threats.

Description of the work

The Integrated Mobile Security Kit (IMSK) project will combine technologies for area surveillance, checkpoint control, also CBRNE detection and support for VIP protection, into a mobile system for rapid deployment at venues and sites (hotels, sport/festival arenas, etc.) which temporarily need enhanced security. The IMSK accepts input from a wide range of sensor modules, either legacy systems or new devices brought in for a specific occasion. Sensor data will be integrated through a (secure) communication module and a data management module and output to a command & control centre.

IMSK will have an advanced man-machine interface using intuitive symbols and a simulation platform for training. End-users will define the overall system requirements, ensuring compatibility with pre-existing security systems and procedures. IMSK will be compatible with new sensors for threat detection and validation, including cameras (visual & infra-red), radar, acoustic and vibration, x-ray and gamma radiation and CBRNE.

Tracking of goods, vehicles and individuals will enhance situational awareness, and personal integrity will be maintained by the use of, for example non-intrusive terahertz sensors. To ensure the use of appropriate technologies, police and counter-terrorist operatives from several EU nations have been involved in defining the project in relevant areas.

Close cooperation with end-users will ensure compatibility with national requirements and appropriate interfaces with existing procedures. The effectiveness of IMSK will be verified through field trials. Through IMSK, security of the citizen will be enhanced even in asymmetric situations.

PARTNERS

Saab AB
Selex Sensors and Airborne Systems Limited
Selex Communications S.p.A.
Telespazio S.p.A.
Cilas
Diehl BGT Defence GmbH & CO KG
Thales Security Systems SA
Bruker Daltonik GmbH
Totalförsvarets Forskningsinstitut (FOI)
Valtion Teknillinen Tutkimuskeskus (VTT)
Commissariat à l'énergie atomique et aux énergies alternatives (CEA)
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)
Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer)
Ministère de l'intérieur- STSI
Universita Degli Studi Di Catania
Thyia Tehnologije d.o.o.
AS Regio
EPPRA S.A.S
Qascom S.r.l
Rikskriminalpolisen - Swedish National Police Board
Regione Lombardia
Thales Research and Technology Ltd
TriVision ApS
Joint Research Centre (JRC)
Deutscher Fußball-Bund e.V.
AirshipVision International S.A
University of Reading
The Chancellor, Masters and Scholars of the University of Oxford

COUNTRY

Sweden
United Kingdom
Italy
Italy
France
Germany
France
Germany
Sweden
Finland
France
Germany
Germany
France
Italy
Slovenia
Estonia
France
Italy
Sweden
Italy
United Kingdom
Denmark
Belgium
Germany
France
United Kingdom
United Kingdom

INDIGO / Crisis management solutions



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Information

Grant Agreement N°

242341

Total Cost

€3,835,727

EU Contribution

€2,787,672

Starting date

01/05/2010

Duration

36 months

Coordinator

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Project objectives

The INDIGO project aims to research, develop and validate an innovative system integrating the latest advances in Virtual Reality and Simulation in order to enhance both the effectiveness of operational preparedness and the management of an actual crisis or disaster.

The proposed system will prove an essential and integrated tool for training personnel, planning operations, and facilitating crisis management and co-operation across organisations and nations. It will enable users to:

» display and manipulate an operational visual representation of the situation that is as complete and as easy to understand as possible, for indoor and outdoor situations;

» simulate different evolving scenarios for planning, training, and anticipating future states and impending developments during operations, and analyse events after the crisis;

» involve first responders and emergency field units in simulated exercises;

» enhance the work across organisational boundaries and decision levels.

Description of the work

The INDIGO consortium provides the world-class and complementary competencies required to tackle the following scientific and technological challenges:

» The 3D interactive and realistic visualisation of the complete crisis environment, including data coming from the field, simulation results, and building interiors;

» The intuitive authoring and simulation of different evolving scenarios for planning, training, and anticipating future states and impending developments during operations, and analysing events after the crisis;

» The involvement of multiple participants (field units as well as decision makers and commanders), thanks to its distributed architecture, while offering a unique pictorial way of sharing and communicating complex knowledge across organisation boundaries;

» The preparation of a standard proposition for a European 2D/3D emergency symbology (symbols, indicators, colours) on 2D and 3D maps.

Expected results

The main results of the project will be tightly integrated into the INDIGO system and include:

» The INDIGO distributed framework enabling:

• The involvement of multiple users in crisis exercises;

• The intuitive authoring and control of crisis scenarios;

• The visualization of a 2D/3D interactive Common Operational Picture;

• The visual command and control of field units;

• The development of additional modules with the INDIGO SDK.

» The mobile INDIGO system that enables first responders and other field units to participate in INDIGO crisis exercises;

» The Environment Service that hosts and delivers, in interactive time, all the information related to the situation, including massive geographic, cartographic and architectural data about the environment;

» The Real-time Simulation Services that can simulate the scenario or be used to support decisions during real crises;

» The portable map table that will offer an extremely innovative and intuitive means to interact with the Common Operational Picture in mobile crisis centers;

» The standard proposition for a European 2D/3D emergency symbology.

PARTNERS

Diginext SARL

Consiglio Nazionale delle Ricerche

Centre for Advanced Studies, Research and Development in Sardinia

Immersion SAS

European Committee for Standardization

Crisisplan

Swedish National Defence College

Entente pour la forêt méditerranéenne

COUNTRY

France

Italy

Italy

France

Belgium

The Netherlands

Sweden

France

L4S / Learning for security project



RESEARCH
COMPLETED

Information

Grant Agreement N°

225634

Total Cost

€3,471,413.41

EU Contribution

€2,415,768

Starting Date

01/07/2009

End date

31/07/2011

Coordinator

DELOITTE BUSINESS

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Project objectives

The L4S project sought to develop an easily deployable life-long learning service to improve the crisis management skills and competencies of security personnel (notably top management). L4S simulation-based crisis management exercises focused particularly on air and sea transport disaster scenarios.

The project's target audience for improved crisis management skills comprised European corporate personnel, decision-makers and academic learners, with an eye to strengthening the resilience of private and public organisations in Europe. Three types of crisis management-relevant competencies were addressed: cognitive abilities, affective and normative aspects of learning, and the ability to perform an action.

Results

The project designed and developed the "L4S learning experiences service" consisting of advanced simulation games and learning/networking applications. The L4S portfolio includes the following air and sea transport crisis management simulation exercises:

» "IMPACT: The Crisis Readiness Online Simulation Experience";

» "RECKON&CHOOSE! Air Simulation";

» "CRISIS TEAM".

Apart from simulation games, the L4S portfolio also contains a WEB 2.0 advanced networking and sharing tool named "CRISIS TUBE Leadership Learning Network", as well as a supportive online workshop tool known as "OWL4S".

The individual exploitation plans of the partners explored the potential use of three different types of L4S applications:

» **Internal:** organisations that integrate the L4S applications portfolio in their internal executive training programs, offering employees and executives the opportunity to take part in this type of learning experience;

» **External:** commercial entities that distribute the L4S applications portfolio to their customers in various industries, with possibilities for learning experiences to be bundled with existing business products or services;

» **Academic:** educational and academic institutions that integrate L4S training applications in their curricula. The L4S portfolio could also serve as basis for executive and vocational training.

The consortium believes that L4S simulation games and applications can provide impact and visibility, along with the generation of a strong stream of revenue for those organisations choosing to implement them. The long-term strategy is to set up an efficient Europe-wide B2B Channel for the diffusion of similar game-based learning experiences.

PARTNERS

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COUNTRY

Greece
Austria
France
Germany
Greece
Italy
Italy
Greece
Spain
Austria
Germany

MULTIBIODOSE /

Multi-disciplinary biodosimetric tools to manage high scale radiological casualties



Information

Grant Agreement N°
241536
Total Cost
€4,580,243.01
EU Contribution
€3,493,199
Starting Date
01/05/2010
Duration
36 months

Coordinator

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Project objectives

In the event of a large scale radiological emergency, biological dosimetry is an essential tool that can provide timely assessment of radiation exposure to the general population and enable the identification of those exposed people who should receive immediate medical treatment. A number of biodosimetric tools are potentially available, but they must be adapted and tested for a large-scale emergency scenario. These methods differ in their specificity and sensitivity to radiation, the stability of signal and the speed of performance. A large scale radiological emergency can take different forms. Based on the emergency scenario different biodosimetric tools should be applied so that the dosimetric information can be made available with optimal speed and precision.

Description of the work

One work package (WP) will be devoted to each tool. Starting with the state of the art, each tool will be validated and adapted to the conditions of a mass casualty situation. A training programme will be carried out where appropriate and automation as well as commercial exploitation of the tools will be investigated and pursued. Towards the end of the project, a comparative analysis of the tools will be carried out with respect to their sensitivity, specificity and speed of performance. Future training programmes will be developed. Two additional WPs will deal with: (1) the development of an integrated statistical software tool that will allow fast interpretation of results, and (2) the development of a guidance document, based on the TMT handbook, regarding the logistics of biodosimetric triage in a large scale accident and decision making regarding the methods best suitable for a given accident scenario. Moreover, a programme of disseminating the results among European emergency preparedness and radiation protection authorities will be carried out, so that the functional laboratories and networks can be easily contacted in the case of an emergency.

The project beneficiaries will be supported by an advisory committee that will include experts in bio-dosimetric tools and management of radiation accidents.

Expected results

The project will lead to the development and validation of biodosimetric tools used in mass casualty radiation accidents. The final result will be the establishment of a biodosimetric network that is fully functional and ready to respond in case of a mass casualty situation. Thus, the project will strengthen the European security capabilities by achieving tangible technical and operational results.

PARTNERS

Stockholm University Centre For Radiation Protection Research (SU)
Bundesamt für Strahlenschutz (BfS)
Universiteit Gent (UGent)
Health Protection Agency (HPA)
Institut de Radioprotection et de Sûreté Nucléaire (IRSN)
Istituto Superiore di Sanità (ISS)
Norwegian Radiation Protection Authority (NRPA)
Radiation and Nuclear Safety Authority (STUK)
Westlakes Scientific Consulting (WSC)
Universitat Autònoma de Barcelona (UAB)
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EURADOS (EURADOS)

COUNTRY

Sweden
Germany
Belgium
United Kingdom
France
Italy
Norway
Finland
United Kingdom
Spain
Poland
Germany
Germany
United Kingdom
Germany

MULTISENSE CHIP/

The lab-free CBRN detection device for the identification of biological pathogens on nucleic acid and immunological level as lab-on-a-chip system applying multisensor technologies

© Multisense Chip

Lab-on-a-Chip system for a fully integrated nucleic acid analysis based on continuous flow PCR for the detection of B-Agents



Information

Grant Agreement N°
261810
Total Cost
€8,986,775.00
EU Contribution
€6,619,399.50
Starting Date
01/06/2011
Duration
48 months

Coordinator

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Project objectives

The goal of Multisense Chip is the development of a detection and identification system for biological pathogens, which shall include both the sample preparation stage, during which target molecules are extracted directly, and the nucleic-acid-based and/or immunological detection and identification steps.

The chosen technologies offer several advantages: on the one hand, a small, portable, and easy-to-use device can be realized due to miniaturization; on the other, the so-called lab-on-chip technology enables operation outside of lab settings, meaning that the complete analysis including sample preparation, extraction of target molecules, etc. will be carried out in a small device the size of a microtiter plate with all necessary reagents on board. This includes dry reagent storage of lysis reagents, master mixes for the PCR, antibodies, and liquid storage of buffers. The overall target is a "sample in, result out"-type handling procedure.

Description of the work

The overall goal is the realization of a complete analysing system for biological pathogens consisting of a micro-nano-based consumable chip with integrated sensor technology, an innovative instrument to run the chip, as well as the respective biological assays themselves. Finally this will be embedded in advanced information and communication technologies. To cope with this multidisciplinary work from the technical and application side and to ensure full compliance with ethical aspects connected to the intended use of the system, the work will be arranged in thirteen work packages. A detailed requirement specification combined with regular design reviews will guide the way to a proper project run. The technical work packages are grouped around the biological assay, the sensor technology and

micro- and nanofabrication technologies. The system and integration tasks will be covered within the microfluidics, software, communication and instrumentation work packages. An important aspect within the project is the validation and demonstration task for ensuring a proper performance and usability of the system. The training aspect in particular of future users to get them in touch with lab-on-a-chip technology as early as possible is an important aspect as well. To guarantee the awareness and proper handling of ethical issues an independent work package was installed.

To realize the integrated system, the following latest enabling technologies will be applied:

- » **Sample enrichment: Novel air sampling technologies** and sampling procedures easily combinable with a chip;
- » The target material for the biological assays and tests will be extracted on-chip via **novel micro-nanotechnological devices** combined with advanced biochemistry;
- » **Microfluidics** allows for fast and efficient hybridization of the PCR products on the capture microarray, implementing **3D-nanotechnology**;
- » **Electrochemiluminescence-based detection or electrochemical sensors** ensure ultrasensitive detection.

Expected results

The aim is to produce a portable analytical instrument for the detection and identification of biological pathogens on the molecular and immunological levels. This system will be based on a portable instrument and a lab-on-a-chip as a consumable. It will combine sample enrichment, extraction of the target molecules from the sample, the biological reaction and finally the carrying out of the detection reaction via innovative sensor technologies.

PARTNERS

Microfluidic ChipShop GmbH (MFCS)
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Friedrich Loeffler Institut (FLI)
Integrated Microsystems for quality of Life SL (iMicroQ)
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Institute of Physical Biology (IFB)
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COUNTRY

Germany
France
Germany
Spain
Germany
Spain
Slovenia
France

OPTI-ALERT / Enhancing the efficiency of alerting systems through personalized, culturally sensitive multi-channel communication



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Information

Grant Agreement N°

261699

Total Cost

€3,543,462

EU Contribution

€2,531,122

Starting Date

01/01/2011

Duration

36 months

Coordinator

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Project objectives

The Opti-Alert project strives to improve the alerting of the general public in crisis situations through personalized, culturally sensitive multi-channel communication. The objective of this project is to develop an alerting suite that:

» allows for a rapid simulation of the impact of different alerting strategies (depending on the selected media-mix and current availability of communication media);

» supports the composition of the optimal mix of communication channels (individualized alerting channels and mass media);

» improves alert compliance through social and cultural adaptation and personalization of alert messages and communication channels;

» supports the rapid and automated implementation of a selected alert strategy;

» can simultaneously address a large variety of communication channels to facilitate efficient high-throughput alerting; and

» can be integrated with existing tools and legacy systems via well-defined interfaces.

Description of the work

The objectives of the Opti-Alert project are supported by the following key research activities:

» an in-depth analysis of the impact that social and cultural and regional factors have on risk perception and risk communication;

» an analysis of the influence which the observed socio-cultural differences have on regional alerting strategies;

» an analysis of the impact of individualized alerting (via SMS, E-Mail, etc.) and alerting via the mass media;

» the identification of best-practices in alerting via mass media;

» a definition of appropriate algorithms for the simulation of alert propagation within the population (in general, but also inside critical infrastructures such as metro stations), depending on the selected mix of communication channels and communication patterns between humans.

One goal of Opti-Alert is to improve the impact of alerts by developing alerting strategies that take socio-cultural characteristics of the message recipients into account. This can refer to both differences in risk perceptions and different usage patterns with respect to media and communication channels. Based upon the situational and socio-cultural context of an alert situation, the authorities will be able to simulate different alerting strategies (in terms of communication channels and media mix). This will allow authorities to re-assess alert procedures and processes and to improve impact and coverage of alerts. Another goal of Opti-Alert is the adaptation of alert content to the socio-cultural milieu of the message recipients. This refers, e.g., to the wording of the messages, or layout and design. The idea is to improve the compliance of alert recipients with the proposed protective actions by creating trust and, if necessary, a sense of urgency (or calm) among those who have been warned.

Expected results

In addition to in-depth and interdisciplinary studies of sociologists and media scientists on the perception of crisis communication, Opti-Alert will develop a demonstrator to test the proposed socio-culturally adaptive alerting tool and the corresponding alert simulation component in practice. Furthermore, an interface definition will be specified so that existing as well as new and emerging communication channels can be connected to the Opti-Alert toolsuite. The goal is to provide an alerting platform that can later be used internationally in order to efficiently address the information needs of the population in times of crisis.

PARTNERS

Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer-FHSS)
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UBIMET GmbH (UBIMET)
Proteo S. p. A. (PROTEO)
UNIQA Versicherungen AG (UNI)
Göteborgs Universitet (UGOT)
Süddeutsches Institut für empirische Sozialforschung e.V. (SINE)
Regione Sicilia (SIC)
Nederlands Instituut Fysieke Veiligheid (NIFV)
Università degli Studi di Perugia (UNIPG)
THALES Services SAS (THALES)

COUNTRY

Germany
Germany
Austria
Italy
Austria
Sweden
Germany
Italy
The Netherlands
Italy
France

PANDORA / Advanced training environment for crisis scenarios



Information

Grant Agreement N°
225387

Total Cost
€3,997,166.21

EU Contribution
€2,930,000

Starting Date
01/01/2010

End Date
31/03/2012

Coordinator

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Project objectives

PANDORA is a crisis management project developing a training toolset and environment, which aims to bridge the gap between tabletop exercises and real world simulation exercises. The project proposes a global approach to crises management, providing a near-real training environment at an affordable cost.

The project will create an environment that can provide appropriate metrics on the performance of a crisis manager actively engaged in the management of a crisis, with the environment providing:

- » A realistic and complete scenario with near real-time action, coherent with that expected in a real-world situation;
- » Realistic emotional status, through affective inputs and stress factors;
- » The potential to include different crisis managers belonging to different sectors.

PANDORA offers a focus on the emotional status of the crisis manager because such knowledge, in all phases of emergency management, is critical to the development of effective emergency policies, plans and training programs.

Description of the work

To achieve the aims of the PANDORA project, the workload has been broken down into 9 work packages:

- » **WP1:** User Requirements Analysis and design of PANDORA functional specifications – will provide a definition of both data and workflows needed to specify the proposed system and to clearly identify the processes that are the basis of the system services;
- » **WP2:** Behaviour simulation and modelling – split into 5 tasks: the first two consolidate the basic preconditions for the behavioural planner, the third designs the general architecture of the planner, the remaining two provide proactive reasoning services to the planner;
- » **WP3:** Crisis simulation and modelling – focused on three main modules: (1) the crisis knowledge base, (2) the crisis planner that generates the conceptual high level network of events that constitutes the plot for the scenario, and (3) the crisis modeller that tracks the evolution in real time of the scenario;
- » **WP4:** Environment and Emotion Simulation Engine – seeks to integrate emotional human factors within training programs for crisis managers, taking into account several research topics:
 - Relevant human factors in crisis decision-making;
 - Neuro-physiological testing and measures;
 - Personalised and flexible training strategies.
- » **WP5:** Environment design and building – seeks to authentically recreate the dynamic elements of the entire disaster environment, i.e. emulating a complete crisis room with realistic visuals and audio to create an immersive, chaotic and stressful environment;

» **WP6:** Development, integration and testing – will deliver the PANDORA software product that can be considered as a system composed of software subsystems/components implemented in different environments;

» **WP7:** Training testing, evaluation and assessment – will support the development of a robust evaluation methodology that complements the work done to build the PANDORA advanced training environment;

» **WP8:** Dissemination and exploitation;

» **WP9:** Project management.

Results

The results of the project are available on the CORDIS website <http://cordis.europa.eu/fp7/security>.

PARTNERS

University of Greenwich (UoG)
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Razvoj programske opreme in svetovanje d.o.o. (XLAB)
Fondazione Ugo Bordonì (FUB)
ORT FRANCE (ORT)
University of East London (UEL)
Business Flow Consulting (BFC)
Emergency Planning College (EPC)

COUNTRY

United Kingdom
Italy
Italy
Slovenia
Italy
France
United Kingdom
France
United Kingdom

PEP / Public Empowerment Policies for Crisis Management

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Information

Grant Agreement N°

284927

Total Cost

€1,065,206

EU Contribution

€950,023

Starting Date

01/01/2012

Duration

36 months

Coordinator

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Project objectives

The purpose is to investigate how the crisis response abilities of the public can be enhanced and identify what public empowerment policies can be utilised for this purpose. The project has the following objectives.

» To identify potential key enablers for public empowerment for crisis management, by 3 studies:

- providing an overview of best practices showing strategies and tools used by authorities to enhance individual, family and community crisis response;
- clarifying in depth how community approaches, involving social groups in crisis preparedness and response, are used, including success factors in how to connect with community needs;
- assessing how and what technologies can enhance human resilience in crisis situations taking perceptions and social acceptance of the technologies and mobile services into account.

» To construct a Road Map charting promising areas for future R&D and implementation, supporting human resilience;

» To ensure dissemination of the project results in order to raise awareness of the importance of public resilience, and how this can be achieved.

Description of the work

In work package 1 the aim is to provide *best practices* in how authorities currently enhance human resilience and what strategies and tools are used to promote individual and community crisis response. A desk study will be conducted and an online questionnaire sent to international experts.

In work package 2 the focus is on *community approaches* involving social groups in crisis preparedness and response. An analysis of quantitative data and in-depth interviews will be done in Sweden, focusing on remote areas where storms may cause long power cuts and isolation. Interviews with members of the International Expert Panel will also be conducted to scrutinise international applicability.

In work package 3 the aim is to assess how and what *technologies* can enhance human resilience in crisis situations, taking into account technology acceptance models and inclusion requirements (diversity of publics). In Finland focus group interviews will be organised to clarify what kind of communication technology citizens prefer for this purpose. The applicability of the conclusions will be scrutinized in interviews with members of the International Expert Panel.

In work package 4 the focus is on constructing a *Road Map* charting directions for further research and implementation supporting human resilience. A preparation workshop will be organised at the International Disaster and Risk Conference (IDRC) 2012. In addition, a web platform will be used to expose the preliminary conclusions for review. During an *international symposium* within the framework of IDRC Davos 2014 the future orientation of the Road Map will be discussed.

In work package 5 the dissemination gets attention. An online toolbox will be produced with the *guides* about key enablers for public empowerment in crisis situations, concentrating on a) best practices, b) community approach and c) human technology. Furthermore, a *theme issue* of the open access journal 'Human Technology' will be prepared to disseminate the project results to crisis managers and communication experts working for public authorities and non-governmental organizations, as well as European policymakers in the security area.

Expected results

The project will address future directions for research to enhance public resilience and bring a European 'enabled public' closer. It will clarify how a community approach can be effective in strengthening abilities and social structures for resilience and what technologies strongly contribute to public resilience.

The project will develop policies from the perspective of coproducing safety with citizens and communities. Furthermore, through the Road Map the project will produce innovative ways to increase cooperation with and by citizens.

PARTNERS

University of Jyväskylä (JyU)
Mid Sweden University (MIUN)
Global Risk Forum (GRF)
Inconnect (Inconnect)
Emergency Services College Finland (ESC)

COUNTRY

Finland
Sweden
Switzerland
Netherlands
Finland

PLANTFOODSEC / Plant and food biosecurity



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Information

Grant Agreement N°
261752

Total Cost
€5,609,529.69

EU Contribution
€4,624,499.00

Starting Date
01/02/2011

Duration
60 months

Coordinator

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Project objectives

PLANTFOODSEC is a Network of Excellence aiming to enhance preparedness for preventing, responding and recovering from the possible use of plant pathogens as biological weapons against crops, and the microbiological contamination of feed and food in the European agrifood system.

PLANTFOODSEC pursues the following specific objectives:

- » obtaining scientific knowledge on plant disease epidemiology;
- » enhancing the prevention, recognition, response and recovery from foodborne illness due to the contamination of fresh produce;
- » improving planning of effective and efficient national and regional responses to agro-terrorism acts;
- » improving disease surveillance and detection systems by facilitating international laboratory cooperation and by developing diagnostic tools;
- » preventing the establishment and spread of deliberately-introduced pathogens;
- » building a strong culture of awareness and compliance with plant and food biosecurity for those with responsibilities in all sectors of agriculture and food production;
- » improving awareness among stakeholders and the general public on biosecurity issues;
- » overcoming the fragmentation of partners' research.

Description of the work

This project will focus on biological threats having the capacity to affect and damage agriculture, infect plants and ultimately affect food and feed at any stage in the food supply chain. These threats are multifaceted, interrelated, complex and increasingly transnational in their impact.

Recent trends in biosecurity recommend a shift from a largely national approach towards greater international cooperation.

The Network of Excellence will renew and reinforce already established partnerships and enlarge them by including new countries, institutions and topics to establish a virtual Centre of Competence. It will be able to deal with issues of crop and food biosecurity and become a Centre of reference at the European level.

The project strategy is based on the bio-preparedness approach to prevent, respond and recover from a biological incident or deliberate criminal activity threatening European agrifood systems, thus including:

- » actions to identify and update the biology, epidemiology and impacts of high priority pathogens also through the optimization of detection and diagnostic tools;
- » actions to develop effective responder strategies by defining specific protocols on emergent pest and disease management;
- » actions to enhance knowledge of target groups and to inform relevant stakeholders taking into account the balance between confidentiality and public access;
- » actions to overcome the fragmentation of partners' research and to facilitate and coordinate responder networks.

Expected results

A more risk-based approach will move biosecurity from a reactive towards a proactive position which focuses more on prevention and better anticipates emergences of entirely new threats.

By following this strategy, PLANTFOODSEC will increase the quality and impact of plant and food biosecurity training and research in Europe thus providing timely scientific inputs to respond to biosecurity threats posed to the European agriculture, farming and agrifood industry.

PARTNERS

Università degli Studi di Torino (UNITO-AGROINNOVA)
National Institute of Agricultural Botany
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Rheinische Friedrich-Wilhelms-Universitaet Bonn
Institut National de la Recherche Agronomique
Regional Environmental Center for Central and Eastern Europe
Imperial College of Science, Technology and Medicine
Middle East Technical University
SPIN-TO Srl
United Nations Interregional Crime and Justice Research Institute
The Agricultural Research Organisation of Israel – The Volcani Centre
Oklahoma State University
Kansas State University

COUNTRY

Italy
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United Kingdom
Germany
France
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United Kingdom
Turkey
Italy
Italy
Israel
United States
United States

PRACTICE / Preparedness and Resilience against CBRN Terrorism using Integrated Concepts and Equipment PRACTICE



Information

Grant Agreement N°
261728
Total Cost
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EU Contribution
€8,424,029
Starting Date
01/05/2011
Duration
42 months

Coordinator

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Project objectives

The objective of the PRACTICE project is to improve the preparedness and resilience of the Member States and Associated Countries countries to an attack from a terrorist group using non-conventional weapons such as CBRN (Chemical, Biological, Radiological and/or Nuclear agents) materials. This will be done with the help of a newly developed integrated CBRN incident management toolbox.

Description of the work

- The development of a new toolbox will be based on:
- » identification, organization and establishment of knowledge of critical elements in the event structure through studies of a wide selection of scenarios, real incidents and exercises;
 - » analysis and identification of gaps in the current response situation and organization and integration of the allocated response capabilities or functions in a toolbox of equipment, procedures and methods; and
 - » an allocated system or kit for public information, decision-support, first-responder training and exercises.

These response capabilities functions are to a great extent universal in character and independent of national organizational structures. Particular attention will be given to integration and understanding of human factors and societal aspects in all the parts of the project. The final concept and integrated response system (toolbox) and subsystems will be tested and validated. A whole system demonstrator will be shown and tested in the final phases of the project.

Expected results

The concept and developed system will provide the EU and its Member States with a flexible and integrated system for a coordinated response to a CBRN terrorist attack, which is easy to adapt to various national organizations and regulations.

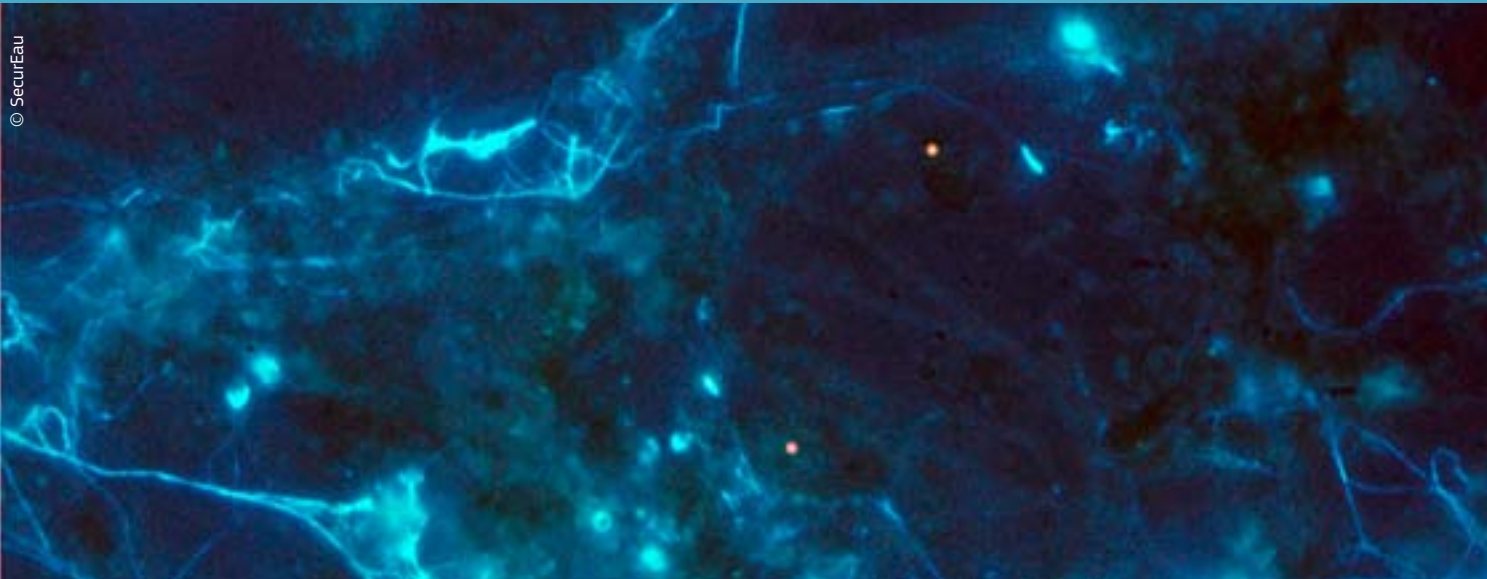
PARTNERS

Umea University (UmU)
Forsvarets forskningsinstitut (FFI)
ASTRIUM S.A.S. (AST)
Cassidian S.A.S. (EADS)
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO)
KING'S COLLEGE LONDON (KCL)
IB Consultancy BV (IBC)
CBRNE Ltd (CBRNEltd)
NATIONAL CENTER FOR SCIENTIFIC RESEARCH "DEMOKRITOS" (NCSR)
Totalförsvarets Forskningsinstitut (FOI)
UNIVERSITE CATHOLIQUE DE LOUVAIN (UCL)
Netherlands Forensic Institute (NFI)
STATNI USTAV JADERNE, CHEMICKÉ A BIOLOGICKÉ OCHRANY v.v.i (SUJCHBO)
SELEX SISTEMI INTEGRATI SPA (SSI)
SELEX GALILEO LTD (SELEX)
ASTRI POLSKA SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA (AstriPL)
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Szkola Główna Służby Pożarniczej (SGSP)
MITTUNIVERSITETET (MIUN)
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COUNTRY

Sweden
Norway
France
France
The Netherlands
United Kingdom
The Netherlands
United Kingdom
Greece
Sweden
Belgium
The Netherlands
Czech Republic
Italy
United Kingdom
Poland
Belgium
Poland
Sweden
The Netherlands
Denmark
United Kingdom
Sweden

SECUREAU / Security and decontamination of drinking water distribution systems following a deliberate contamination



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Expected results

As a result of this research and methodological effort the consortium plans to develop and validate adapted technologies, analytical tools, sensors and new software, which should reinforce the competitiveness of the European Union. These tools and technologies are planned to give results quickly at affordable costs. Case studies will give the chance for the practitioners to apply on site in real conditions the selected sensors, software and remediation technologies.



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Information

Grant Agreement N°
217976
Total Cost
€7,481,418.73
EU Contribution
€5,266,871
Starting Date
01/02/2009
Duration
48 months

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Project objectives

The main objective of this proposal is to launch an appropriate response for rapidly restoring the use of the drinking water network after a deliberate contamination and by way of consequence to limit the impact on the population of safe water privation because of contaminated networks. Five main topics will be addressed:

- » Detection of unexpected changes in water quality;
- » Adaptation of analytical methods to rapidly detect specific CBRN contaminants;
- » Localization of the point source(s) of contamination;
- » Decontamination procedures of the distribution system;
- » Controlling the efficacy of the corrective actions.

Description of the work

SecurEau will implement an effective and timely response to a CBRN attack. Questions that will be addressed for successful coordinated response of water utilities and regulatory agencies to contamination include:

- » Detection of unexpected changes in water quality which could be in relation to a deliberate contamination event, by applying commercially available or recently developed generic sensors placed throughout the distribution systems;
- » Adaptation of known analytical methods to rapidly detect specific CBRN contaminants in water and especially in biofilms and on pipe walls;

- » Localization of the point source(s) of contamination and subsequently the contaminated area (via modelling reactive transport) allowing delimitation of the corrective actions;
- » Decontamination procedures (efficient and realistic) of the distribution system, i.e. adapted to size, age, architecture of the network, including the treatment of water extracted from the system and used for washing the pipe wall;
- » Controlling the efficacy of the corrective actions by analysing the water bulk and especially the pipe walls' surface and the deposits;
- » The case studies will give the chance for the practitioners to apply on site in realistic conditions the selected sensors, software and remediation technologies. It is a unique occasion to test an emergency procedure on a complicated, quasi directly inaccessible, and relatively fragile system, to evaluate its feasibility at field scale, and to evaluate the difficulty in applying corrective treatments to the huge water bulk generated by the neutralisation/extraction of contaminants.

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SECURENV /

Assessment of environmental accidents from a security perspective



RESEARCH
COMPLETED

Information

Grant Agreement N°
218152

Total Cost
€1,205,870

EU Contribution
€850,596.50

Starting Date
01/05/2009

End Date
30/04/2011

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Project objectives

SECURENV aimed to develop a knowledge base and research agenda for future threats associated with possible deliberate attacks on the environment – including ‘environmental terrorism’ or attempts to amplify the damage inflicted on environmental elements by conventional security incidents.

The ultimate goal of the project was to catalogue and prioritise potential threats in this area, support the development of appropriate policy counter measures and mitigation strategies.

Results

The initial project output was a review and assessment of past environmental accidents, catastrophes and examples of deliberate attacks on the environment. This created a database of 330 entries. Though this database catalogued substantial anecdotal evidence of deliberate environmental destruction throughout history, the actual number of incidents described as direct ‘environmental terrorism’ is limited.

However, environmental damage as the result of organised crime appears to be an emerging phenomenon, whilst increasingly strict environmental regulations are generating larger numbers of notable incidents: ie., the threshold of tolerance for incidents has been lowered, with a corresponding decrease in investment for causing such an incident.

Several examples of environmental warfare were also identified, with special attention being given to incidents such as the potential release of invasive species by a would-be attacker. These findings have been integrated to a ‘foresight model’, through which the inherent risk and likelihood of an incident manifesting can be calculated.

These models were used to develop a systematic security foresight approach. The resulting methodology is a combination of assessment methods including input and expertise from a survey addressing more than 600 experts in Europe and beyond, as well as scenario-building workshops involving 15–20 consortia experts.

The policy recommendations and mitigations strategies related to these findings, due to the sensitive nature of this topic area, are largely classified.



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SGL FOR USAR /

Second generation locator for urban search and rescue operations



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Information

Grant Agreement N°

217967

Total Cost

€6,218,278

EU Contribution

€4,859,026

Starting Date

01/10/2008

Duration

48 months

Coordinator

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Project objectives

SGL for USaR is mission oriented towards solving critical problems following large scale structural collapses in urban locations. The devotion, courage and expertise of rescuers need to be matched by procedures and technology that will enable safe and effective responses.

This project will combine chemical and physical sensors integration with the development of an open ICT platform for addressing mobility and time-critical requirements of USaR Operations. The project will also focus on medical issues and on the relevant ethical dilemmas.

Description of the work

» To use video images (image analysis), sound (sound signatures), field chemical analysis (marker compounds), optical sensors (spectral analysis), data fusion and wireless communication in order to develop integrated, stand-alone early location devices for entrapped people and dead bodies, and to employ the same kind of devices for monitoring and identifying hazardous conditions in voids of collapsed buildings due to the construction's physical damage, flaming or smoldering fires and gases released;

» To develop integrated remote early location and monitoring systems for localization purposes based on the deployment of networks of probes. Such systems will also be capable of receiving other types of data (e.g. sonar);

» To integrate early location and monitoring systems with communication and information management applications that can provide multi-level processing and data fusion and will support relevant USaR services and logistics (medical support, mobilization, tools,

transportations, communications). The SGL for USaR project will use multidisciplinary approaches, optimize existing cutting-edge technologies and make the best use of available resources.

The project is targeted at delivering next generation systems for USaR operations.

For that purpose, relevant technical, scientific and operational issues will be addressed.

The project focuses on rapid location of entrapped or buried victims (alive or deceased) and the continuous monitoring of the air conditions in the voids of damaged and partially collapsed structures. Entrapped people and voids are associated with characteristic visual, sound and chemical profiles, due to specific images or spectral emissions, and to acoustic signatures and chemical markers.

The adaptation of crisis management USaR services (logistics) with the early location and monitoring systems in a mobile command and control operational center is employed.

The project is formed by eight sub-projects (work packages) running in parallel. These WPs address: the development of simulation environments; the development and validation of portable devices for location operations; the development and validation of a smart sensors environment for monitoring the situation under the ruins; the management of medical information, including privacy and bioethics; and finally the development of an ICT platform that will integrate all the previous data, ensure interoperability and control the flow of the information from the field to the operational center.

Expected results

SGL for USaR will deliver methods and guidelines, as well as tangible prototypes: a stand-alone FIRST responder device that integrates five different location methods; a networked rapid casualty location system (REDS) equipped with wireless sensor probes; an advanced environmental simulator for training and testing search and rescue units, including canine teams; and a prototype mobile operational command and control platform.



© SGL for usar

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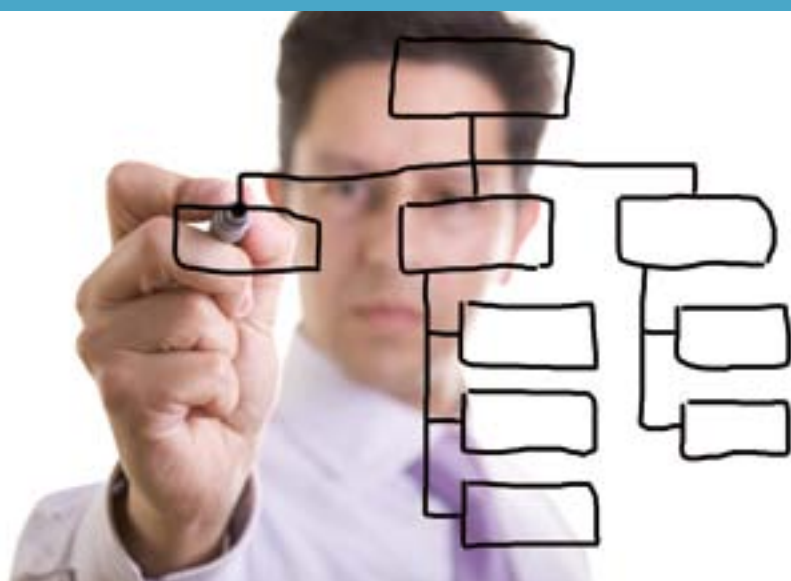
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SICMA / Simulation of crisis management activities

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RESEARCH
COMPLETED

Grant Agreement N°
217855

Total Cost
€3,902,633.33

EU Contribution
€2,566,330

Starting Date
01/03/2008

End Date
31/08/2010

Project objectives

The SICMA project was a 30 months capability project focused on computer assisted decision making for Health Service crisis managers. It aimed at improving decision-making capabilities through an integrated suite of modelling and analysis tools providing insights into the collective behaviour of the whole organisation in response to crisis scenarios.

Description of the work

The response to the crisis is the result of the activities of:

- » Different services (e.g. police, medical care, rescue forces, fire fighting, etc);
- » interacting vertically (i.e. with components of the same organization) and horizontally (i.e. with components of other organizations);
- » in a complex environment characterized by both "predictable" factors (e.g. the crisis responders' behaviour according to procedures) and "unpredictable" ones (e.g. human/crowd behaviour).

As a consequence, the decision making process both in the preparedness and in the response phase is hard and complex due to the impossibility to estimate the effects of alternative decisions. Within this context, decision making support was provided addressing the following key aspects:

- » "bottom-up" modelling approach building independent model components and then combining them,
- » unpredictable factors modelling (e.g. human/ crowd behaviour),
- » procedure support to provide the user with the correct procedures to solve the problem, and
- » computation of the "distribution" of the effectiveness of a certain "decision" rather than the effectiveness of that solution deterministically dependant on the preconceived scenario.

The combined effects of the above points allowed a documentation of both the unexpected bad and good things in the organization(s) thus leading to better responses, fewer unintended consequences and greater consensus on important decisions.



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Application scenarios

The following scenarios were selected:

Conventional weapons terrorist attack: being the most common and hence the most likely threat in the future. This scenario was used to evaluate the decision support achievable with the SICMA prototype in the management of casualties. The focus was on the management of the most likely category of casualties that can be generated by a large number of different types of disasters that is: trauma casualties.

Chemical weapons terrorist attack: specific types of disasters may result in additional decision making activities to be carried out by the crisis manager. This scenario

was used to highlight the additional support that can be provided to decision making activities specifically related to the kind of accident. The decontamination-station deployment and hazard estimate/update was used as case study in the chemical attack Scenario.

Results

The results of the project are available on the CORDIS website <http://cordis.europa.eu/fp7/security>.

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Website: <http://www.sicma-project.eu/SicmaProject-Site2008/index.html>

Site2008/index.html

S(P)EEDKITS / Rapid deployable kits as seeds for self-recovery

© s(p)eedkits



Information

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284931

Total Cost
€9,021,302

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€6,117,066

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01/03/2012

Duration
48 months

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Project objectives

The main objective of S(P)EEDKITS is to develop kits for emergency response units, i.e. *SPEEDKITS*. Following best practice guidelines from humanitarian organisations, these solutions will also be *SEEDKITS*, i.e. kits that form the seeds for the long term self-recovery process after a disaster strikes.

Humanitarian organisations like the Red Cross or MSF have sleeping emergency response units which start acting immediately after disaster strikes. Each unit has a specific function, e.g. medical care, sanitation, energy provision, or water supply.

S(P)EEDKITS targets a smart (re-)design of existing / novel kits via smart packaging and via introduction of the latest technological developments from a wide range of domains like coated textile materials, ICT, material development, tensile structures and construction.

Some examples: lightweight, durable and thermally isolating tent materials, novel concepts for energy supply (biogas from sanitation), smart packaging (matryoshka doll principle), kits for debris recuperation, and rapidly deployable container solutions for a mobile hospital or command centre.

Description of the work

S(P)EEDKITS will design, develop, test and demonstrate units for emergency response in the following four domains:

Shelters:

Design and development of novel shelter kits for four different basic shelters:

» *ultra lightweight safe house unit*, a short term solution for the very first hours, to be deployed by the affected communities;

» *collective unit*, an emergency shelter which could be removed or re-used for other purposes later;

» *family house unit*, the first version of a real house, to be used in the transitional period and later;

» *multipurpose unit* for the humanitarian organizations, to be used for storage, offices and medical centres.

Water and Sanitation:

Research, development and testing of prototypes of flexible sanitation systems and low tech, low cost, small scale potable water kits, based on the use of "add-ons" for tuning to local needs and future application.

Sustainable infrastructure:

Develop container-based command, communication and medical centre units, based on existing prototypes. The units can be reused or handed over to the local medical authorities.

Design and testing of a biogas system for energy for ca.200 people based on faeces and household kitchen waste collection.

Development of mobile debris recycling kit for producing easily usable building materials from the existing debris.

Deployment and Tracking:

Development of a deployment decision tool (DDT) to determine immediately which kits and support have to be deployed. As well as the development of a tracking system, tagging the individual transported packages – suitable for central operational planning & for local assessment of the situation.

For the different kits, the goal is to (re-)design existing and novel emergency response kits using the Matryoshka doll principle; this nesting principle will inspire the packaging optimization of smaller robust packages in large ones, allowing splitting up according to the transportation means available.

Three different levels of packaging are anticipated within S(P)EEDKITS: container-level, pallet-level and bag-level based as much as possible on the use of flexible textile materials.

We aim mostly at the bag-level, i.e. solutions for where more conventional transport means fail.

Expected results

The expected outcomes are novel emergency kits that are modular and adaptable, low-cost, and high-tech in their conceptions yet low-tech in their use. The planned kits have the potential to improve the lives of millions of people during the first hours, days and weeks after a major disaster.

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SPIRIT / Safety and Protection of built Infrastructure to Resist Integral Threats



Information

Grant Agreement N°
242319

Total Cost
€4,885,951.00

EU Contribution
€3,497,684.50

Starting Date
01/08/2010

Duration
36 months

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Project objectives

The project SPIRIT (Safety and Protection of built Infrastructure to Resist Integral Threats) is a capability project. The aim of this project is to provide the technology and know-how for the protection of buildings and people against terrorist threats and to minimize the consequences of a terrorist attack in terms of number of casualties/injuries, damage and loss of functionality and services, by providing:

- » tools to quantify the vulnerability of built infrastructure;
- » a portfolio of protective products;
- » a guidance tool for safety based engineering to realize a required built infrastructure protection and resilience level;
- » a proposal on how to take a CBRE-threat into account in the building guidelines.

Description of the work

Terrorist attacks with explosives (E) or chemical, biological or radiological (CBR) agents are threats with a low probability but with disastrous consequences. People, critical infrastructures and utilities have to be protected. The societal community should not be disrupted by acts of terrorism.

SPIRIT works on solutions to realize sufficient resilience of the urban infrastructure for rare occasions with minimum effect on normality. Hitherto, normal regulations and building guidelines do not take into account the CBRE threat.

The required specialist knowledge on explosion dynamics, response of structures, dispersions of toxic agents and injuries is available within the SPIRIT Consortium. Making this knowledge available and finding solutions that can be integrated into normal planning and building procedures is part of the work to be carried out.

Expected results

The project will contribute to people safety and increase the resilience of built infrastructure against a terrorist threat by providing an integrated approach to counter CBRE-threats, including proposed guidelines for an EU Regulatory Framework. With this approach, government, end users of buildings and designers can define and achieve a desired level of protection.



© Spirit

PARTNERS

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European Commission - Joint Research Centre (JRC)

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