SIXTH FRAMEWORK PROGRAMME

Project Acronym: **RESCUER**
Project Reference: **IST-2002-511492**
Contract Type: **Specific Targeted Research Project (STREP)**
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RESCUER

IMPROVEMENT OF THE EMERGENCY RISK MANAGEMENT THROUGH SECURE MOBILE MECHATRONIC SUPPORT TO BOMB DISPOSAL

The **RESCUER** project focuses on both (a) the development of an intelligent mechatronic Emergency Risk Management tool and (b) on the associated Information and Communication Technology. Testing will be performed in Explosive Ordnance Disposal (EOD), Improvised Explosive Device Disposal (IEDD), and Civil Protection Rescue Mission scenarios.

RESCUER outputs will include guidance for risk management, which will extend the possible range of interventions beyond current limitations.

More Information:
http://www.rescuer-ist.org
(from 1/1/2005)

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Objectives

RESCUER will include **multifunctional tools**, **two simultaneously working robot arms** with **dextrous grippers**, **smart sensors** for ordnance search and identification, for human detection and for the assessment of the environment. It will be mounted on an **autonomous vehicle**. **Advanced information and communication facilities** will lead to an improvement of emergency risk management.

The detailed objectives are:

- To **develop an interface tool** between the Emergency Risk Management Monitoring and Advising System and the existing data base systems for IEDD/EOD and Emergency Risk Management.
- To improve risk management by using **new mechatronic & intelligent methods** for bomb disposal and rescue operations & IT techniques for the management of rescue missions.
- To propose, develop and improve the risk management of IEDD/EOD and rescue operations through an **Emergency Risk Management Monitoring and Advising System**.
- To apply and combine **advanced and intelligent sensing techniques** for the detection of explosives, chemical, biological and radioactive materials, and human bodies.
- To develop advanced rescue planning methods and human-machine interface techniques for secure IEDD/EOD and rescue operations.
- To **design, build, and test a two arm intelligent mechatronic system**, **called** *RESCUER,* for secure mobile support to IEDD/EOD, rescue operations and emergency risk management.
- To **promote the acceptance of *RESCUER*** for improved risk management in anti-terrorist and rescue operations **among civil protection authorities**.

Description of the work

The research is structured into 8 work packages:

- **WP1**: *RESCUER* technology and methodology: functional, technical and user requirements.
- **WP2**: Emergency Risk Management Monitoring and Advising System. ERMMAS works to develop information and communication technology solutions that dynamically capture and store data relevant to risk management in real time, analyses these data in real time, interprets them and disseminates the resulting information in form of advice to the decision makers.
- **WP3**: Design and development of the *RESCUER* system. The work will develop the mechatronic disposal and the mitigation of various threats, based on shared control (both autonomous operation and direct remote control).
- **WP4**: Prototype of *RESCUER* – systems integration.
- **WP5**: Prototype validation - performed by SACP, authorised to work with IED and EOD and certifier of bomb disposal and rescue specialists.
- **WP6**: Assessment and Evaluation
- **WP7**: Exploitation and Dissemination.
- The work plan also includes a demonstration work package: **WP8**: Demonstration of the mobile platform for bomb disposal and rescue operations

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