

**CONCEPTS SYSTEMS AND TOOLS FOR
GLOBAL SECURITY**

CSOSG

2010 edition

Deadline for call for projects
MAY 7 2010 at 1:00pm

Call for projects web page
<http://www.agence-nationale-recherche.fr/AAP-305-CSOSG2010.html>

The implementation of the call for projects is dealt with by the University of Technology of Troyes (UTT), which has been commissioned by the ANR to carry out operations of evaluating and managing grant applications

KEY WORDS

Global security, biometrics, protection of the citizen, vital infrastructures, networks, systems, organisation modes, technologies, human and social sciences, risk analysis, vulnerabilities, pandemic, criminality, terrorism.

THEME AXES

1- TRANSVERSE AXIS

A transverse axis to global security themes is introduced this year. The objective will be to encourage proposals with very innovative subjects and which represent risk-taking where the objectives of the research are concerned. The rules of eligibility and acceptability are different from those of the other theme axes. (cf.§3).

According to the global security perimeter, these projects could broach these subjects with a new scientific approach, in a structure which is not necessarily in collaboration (at least a unit belonging to the research body category) and using research of a fundamental nature. All scientific disciplines are likely to be able to contribute.

2- PROTECTION OF THE CITIZEN

Protecting the citizen involves apprehending and preventing risks and threats as early as possible (know, legislate, deter, reassure, protect, inform, intervene and prevent) and if necessary manage their consequences (assist, negotiate, neutralise, communicate, control, investigate, restore...)

Sub-theme 2.1. PROSPECTIVE ANALYSIS OF THREATS AND RISKS, ASSESSMENT OF THE PROCESS

The prospective analysis of threats and risks – taking into account organisational and technical aspects and means of contact between the various participants and also the ethical and society stakes – is the keystone for any efficient prevention and anticipation policy.

It covers notably:

- the analysis of the vulnerability of systems and the analysis of the impact on the systems when these vulnerabilities are exploited;
- impact on the environment (political, demographic, social economic stakes)
- the methodology to take into account complex scenarios ;
- the analysis of the behaviour of different people involved (victims, security people, petty crime and more serious crime, organised crime, terrorism;
- Methods and means enabling prevention of acts of petty and serious crime and also the reduction of the effects of such acts.

The projects can deal with the assessment of processes, conditions/plans and existing practices in order to measure their efficiency and know what the new solutions could bring, but also to list good practice in order to help public and private security decision-makers.

These research themes are particularly designed to elicit projects as a partnership with both operators and users in the field and also Human and Social Science research bodies.

SUB-THEME 2.2. TOOLS

Projects will deal with :

- **firefighters' future equipment** designed within the framework of a systems
 - approach looking towards effects to obtain when on the job, and based on the
 - generalisation of exchanging numerical data on the spot;
- **equipment to be distributed to everyone** or used by non-specialists, enabling
 - national and local police to ensure public security and public order better on an everyday basis, designed within the framework of a systems approach looking towards effects to obtain for a team , an intervention team or a basic unit;
 - monitoring tools, research, data indexation and exploitation tools with issues linked to:
 - evidence preservation
 - validation of data processing algorithms (vide protection)
 - better visual presentation synthesis of results;
- **risk analysis tools and abnormal and suspicious behaviour characterisation tools**, associated research stakes could be on new signature recognition methods (gait, identikit portrait, audio processing...) and behaviours in complex environment;
- **new capacities for detection and identification of agents R,C and E** in order to develop new capacities for on the spot sample collection (captors, evidence preservation, classification, comparison) and labelling of substances for identification (cases C and E).
- **tools, methods and procedures used by forensics** such as crime scene analysis and removing samples for analysis from the scene of an offence, a crime or bomb attack (biometrics ,DNA, body odours.., but also traces without any direct link with humans).

Beyond technological solutions, it is compulsory that projects should deal with ethical, social, and legal aspects linked to the use of this type of information.

3. PROTECTION OF INFRASTRUCTURES AND NETWORKS

Research projects dealing with this theme axis will have to define precisely the potential solutions according to a systems analysis angle taking into account technological advances but also the constraints linked to organisational means, doctrine of use and cooperation of the various public and private participants involved in the protection of the infrastructures.

Research projects can seek to find models and tools capable of giving prospective cost-efficient analysis so that after a major accident or widespread (even national or international) disruption it is possible to estimate the costs involved, finalise scenario studies and help decision-making.

SUB-THEME 3.1 : GLOBAL PROTECTION OF INFRASTRUCTURES

The research projects which will offer solutions to implement when faced with threats or risks of any kind have at least to take into account threats and risks exogenous to these systems, in particular acts of malicious intent (sabotage, bomb attack, intrusion...)

Projects dealing with both endogenous and exogenous risks with a systems approach are encouraged.(14)

They will deal with the following types of infrastructure :

- sensitive and vital sites such as industrial complexes, institutions, airports, ports, railway stations, production, storage and distribution sites for energy, infrastructures linked to public health (hospitals...);
- complex outdoor places such as a crowded street, a public place, a shopping mall, an airport hall, the entrance to a port, a junction/hub for different forms of transport and how they fit into the urban environment...);
- planned outdoor events such as cultural, sporting events or an exceptional event (such as a G8 meeting);
- digital communication infrastructures capable of dealing with, transmitting or archiving exchanges and sensitive data.

SUB-THEME 3.2: NEW TOOLS FOR MONITORING AND PROTECTING SITES

With the objective of equipping sites with systems of detection and surveillance (industrial sites, large unmonitored areas...), both for safety and security, projects can be on simulation work so as to use the characteristics of a site and model the effects engendered by:

- accidental or induced technical failure
- highly intense climate changes (storm, very heavy rainfall, flooding);
- natural catastrophes;
- NRBC-E type acts of terrorism

This specific data linked to a critical infrastructure can be crossed with effect-forecasting models so as to examine how the alerts surface and to what extent the surveillance technologies and the network of associated captors help.

SUB-THEME 3.3. PROTECTION OF NETWORKS

Research projects will deal with:

- the use in the logistics circuit of **biological, chemical and radiological captors embedded in the containers** and their association with technologies which allow safe traceability with no contact;
- the analysis of vulnerabilities and setting up of solutions to **make the food chain and pharmaceutical chain secure** against acts of malicious intent, be they of criminal or terrorist origin (blackmail or linked to counterfeiting)

- the surveillance and detection of abnormal events along railway line infrastructures (planting of explosives, disruption of smooth running, theft of critical elements);
- the analysis of the weaknesses and vulnerabilities of computer networks, flaw detection,
- deployment of systems of attack and defence against malevolent codes.

4. CRISIS MANAGEMENT

Knowing how to manage a crisis is preparing how to manage something unforeseen. In an emergency, men and operational means must be able to cope with the multiple effects produced by multiple causes. We therefore will want to look into the management of a crisis, whether intentional or accidental¹, which gives rise to a catastrophe or a series of catastrophes and see all the phases.

SUB-THEME 4.1. PREPARING THOSE WHO PARTICIPATE. WHAT IS AT STAKE?

The methods and means used to simulate an emergency and train everyone concerned are indispensable to prepare missions and plan operations. Projects must therefore look into:

- how the crisis is perceived and analysed by different participants,
- needs and means for knowledge and information production management conditions in non-adapted situations, with imperfect information and uncertainties,
- behavioural simulation analysis (of participants and population affected) to understand better , processes and organisations at a time of crisis; the projects can look into the analysis of motivation and individual/collective actions (for example how violence is controlled in a crowd) in order to prepare recommendations, methods and tools;
- using these models in innovative simulation tools to train and assess the participants in planning, intervention, follow-up and decision-making.

The taking into account of this knowledge and these models in the simulation tools to train the different participants are also eligible.

SUB-THEME 4.2. OPERATIONAL MANAGEMENT DURING A CRISIS WHAT IS AT STAKE?

Research projects will deal with :

- the tools enabling the anticipation of how a slow kinetic incident will evolve, with the help of dangerous phenomena models (scope, nature, dynamics), hypotheses of how civil protection will act and the consequences (victims, damage, availability of resources) in order to make the right decisions during a long crisis;
- **New methods and tools to help decision-making** and orders operationally and tactically. Research projects may base their work on simulation resources but also take into account human factors in the

¹ that is to say either with malicious intent or of technological or natural origin

process of information exchange and decision-making; in terms of tools and specification, projects must look into modularity and interfacing with existing information systems;

- **management of means and networks** of communication in a closed environment (buildings deep into the ground, subterranean places...) or from a point of view of their interoperability;
- **management of the new forms of hostage-taking**: massive hostage-taking, in a multiple 'Bombay' style or high-sea pirating;
- **The improvement of the protective clothing of those public and civil security people first on the scene**, especially where extra protection is concerned, ease of communication when wearing the outfit, ergonomics and if the wearer can use all of his/her 5 senses when clothed. Two types of project are expected:
 - projects on innovative materials and captors and on the protection of those first on the scene;
 - evaluation platform projects on these technologies with regard to operational conditions and interfacing with the assistance systems already in place;
- **The systems and means of search and victim rescue** in particular means to :
 - manage the follow-up of huge numbers of victims of a bomb attack or a major catastrophe;
 - characterize the type of injuries (how serious) of victims of an attack and to define how contaminating the substances used are;
 - improve a thorough emergency decontaminating process of the victims and its techniques.
- project aiming at having and using technologies useful for **the identification and forecasting of the evolution of harmful substances at sea** in order to:
 - track down and follow the pollution or rejected waste material
 - forecast their evolution (movement and dilution)
 - determine how to fight against the identified pollution
 - manage the evidence issues and report the offenders

SUB-THEME 4.3. ORGANISATIONAL AND HUMAN RESILIENCE AND BRINGING THE SITUATION BACK TO NORMAL

Research projects will deal with:

- the definition and the assessment methods of society and human
- resilience
- the systems, means and methods which enable life to continue in a degraded environment then the return to normal for State action, for society and for economic activity;
- means to restore and decontaminate zones (buildings, public places) after a bomb attack and/or NRBCE incident. In particular research projects

targeting better knowledge of contamination limits (methodology and metrology) and means to check the efficiency and harmlessness of procedures;

- continuing health checks and after-the-crisis checks.

5. BIOMETRICS AND SECURITY

The collaboration with German teams which can be financed by the BMBF is **compulsory** for the complete list of subjects described under this theme, and according to conditions described in Appendix 2 (separate document available on the same site as this call).

SUB-THEME 5.1. : BIOMETRICS AND APPLICATION CONTEXT

Biometrics can contribute towards satisfying several needs in different contexts such as access checking, transaction security, identity checking, judicial enquiries²... However, multiple technological and common practice-linked safety nets, do not always show biometric solutions to be efficient in the eyes of users in terms of cost/profit, of adaptation to systems in place, of guarantees of public liberties etc.

In close link with the end-users and according to precise application contexts, the projects must deal with:

- the relationship between technologies used (captors, algorithms) performance sought and the ethical character of means and ends envisaged;
- the technological issues such as enrolment and acquisition of data, creation, use and securing of biometric data respecting privacy laws (for example crypto-biometrics) biometrics in the context of mobility, the ? of biometric data ;
- The issues linked to common practice from a legal, sociological and economic point of view (notion of proportionality, right to oversight, cost-profit analysis...)

SUB-THEME 5.2 NEW BIOMETRIC TECHNOLOGIES

Certain technologies present a potential for change, that is to say that they could radically improve the performances of biometric identification, reduce costs, the constraints of admittance while preserving citizens' rights. The projects could deal with:

- New biometric technologies³
- Multi-modal biometrics:
- Capacity to admit different biometrics (both classical and new) and to deal with multi-biometric queries in order to improve their performance (rapidity and precision);

² Applications linked to forensics are not within the scope of this theme and are dealt with in sub-theme 2.2.

³ DNA analysis technologies are not within the scope of this theme and are dealt with in sub-theme 2.2.

- Work on the combining of heterogeneous data (from biometric traces of different natures, of differing levels of quality, with other types of data).

SUB-THEME 5.3: EVALUATION AND CERTIFICATION OF BIOMETRIC TECHNOLOGIES

The preparation of technical norms in the field of biometrics and declensions in the form of "technical norms " of fundamental principles of public liberties (proportionality, right to oversight, legitimacy, ends ...) will be necessary for the spread of biometric techniques.

It is even more necessary to establish evaluation criteria for biometric technologies with a view to qualify/quantify their strength when confronted with decoys of any kind.

This type of project can define evaluation scenarios including proposals for methodology and associated means.

Also to be dealt with:

- new evaluation methods and tools for the technologies in view of operational constraints;
- design methods of biometric solutions ensuring the respect of privacy ('privacy by design');
- security of the processing chain (query captors and data bases...)
- co-normative approach with future standards in mind

SUB-THEME 5.4 : BIOMETRICS AND ETHICS

The projects will deal with what is generally at stake when linked to legal , ethical and privacy demands with a historic and legal (norm and law, comparative law), sociological (perception and acceptability) approach etc.

According to these angles they can also broach issues involved by the possibility of dishonest compromise and usurpation of biometric data and the discrepancy with public liberties in relation to the development of biometric products.

End of the document