



European-wide integrated border control system

On the 12th of March 2009, the European Commission organised a workshop on the Demonstration Programme on 'European-wide integrated border control system'. The goal of this workshop was to bring inputs from the stakeholders in order to help finalise the work programme text for the implementation of the second phase of the demonstration programme on this topic.

SEREN, the network of Security research NCPs, attended this workshop and proposes here a summary of the issues at stakes on this theme that is at the crossroad of many present EU initiatives and policies and that will be at the heart of the SEC-2010-1 call for proposals.

1. Background - Context

In line with the report of ESRAB (European Security Research Advisory Board) the demonstration projects foreseen in the Security are the flagships of this Theme. The scope of demonstration projects is three fold:

- . Focus research on complex security scenarios
- . Validation and demonstration of proposed new solutions
- . Involvement of end users

In the Security Theme of FP7, five domains have been identified for demonstration Projects among which European-wide integrated border control system.

The scope and outcome of such a programme is the following:

'In the fight against terrorism and organized crime the security of Europe's external borders is essential. An integrated border management system encompassing surveillance, monitoring, identity management, and advanced training methods/tools is required.

[...]

A comprehensive and integrated border management system capable of providing concentric layers of protection from pre-entry control measures to cooperation inside, and between, Member States. To be effective, widespread deployment is required, for which innovative business models will be needed.' (ESRAB report)

The nature of the technologies and infrastructure required controlling specific border crossing points (Border Checks), on the one hand, and to monitor the space between different border crossing points (Border Surveillance) is intrinsically different. A first demonstration project will primarily focus on the surveillance of the southern maritime external borders of the European Union. The reasons for this relative priority are:

1) Maritime border control (in particular surveillance) is intrinsically very complex. It requires continuity from territorial waters to open seas. Information systems existing in the various national organizations are structured in different ways, often they are not interoperable, and data is not always made available to others.

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II) In the medium/long term, the vision of the Commission is to have national systems interconnected, inter-agencies collaboration, and civil-military cooperation. The proposed demonstration programme is meant to possibly act as a catalyser for convergence, by progressively supporting and demonstrating the implementation of an integrated network of reporting and surveillance systems combined with shared applications of surveillance tools, able to provide the plurality of concerned authorities with information on a more frequent, reliable and cost-efficient basis so as to increase situational awareness and the effectiveness/rapidity of the law enforcement measures to be taken.

III) Considering the very significant role of container traffic in world trade and its possible elements of vulnerability, the demonstration is likely to address the integration/validation of improved container (freight) border security procedures and methodologies.

IV) The targeted scope of the demonstration project is expected to be fully coherent with the proposed implementation plan of European Border Surveillance System (EUROSUR) aimed at Targeting research and development to improve the performance of surveillance tools and at developing an Integrated network of reporting and surveillance systems for border control and internal security purposes covering the Mediterranean Sea, the southern Atlantic Ocean (Canary Islands) and the Black Sea.

V) The surveillance of the maritime external borders of the European Union is identified as the most suitable environment where to implement, in a Demonstration Programme, the 5 functions identified by ESRAB (Situational Awareness and Assessment, Information Management, Communication, Detection Identification & Authentication, Training & Exercise). Solutions should be validated as applicable to a variety of scenarios and geographic environments (mobile interoperability).

VI) The European Security and Innovation Forum (ESRIF) has identified maritime surveillance as one of the key areas in the field of border security. The most important challenges identified by ESRIF are detection of small craft, fusion of information in order to detect anomalies, interoperability, and affordability.

VII) The maritime domain is the only area of border control where the FP7 have already activated or planned a significant number of research projects. It should be possible to assemble around these projects a critical mass of further EU research, aimed at integration (and final demonstration) of a system of systems.

A key aspect of the implementation of Integrated Border Management is the development of a European Border Surveillance System (EUROSUR). The demonstrator project should provide demonstrations of "system of systems" solutions for border surveillance of the southern maritime external borders of the European Union.

The most important challenges identified by ESRIF in this context are the detection of small craft, fusion of information in order to detect anomalies, interoperability, and affordability.

2. Some of the key topics that would need to be addressed

Detection of small craft

One of the main challenges is detecting small craft in vast areas of open seas as well as in closed waters of archipelagos. Different sensor solutions need to be demonstrated and integrated to provide adequate performance.

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Fusion of information and establishment of a situational picture

Information coming from real time sensors needs to be integrated with intelligence information coming from tracking ship movements and container movements, intelligence coming from a pre-border situational picture, and information from human sources. This should serve to detect anomalies and to assess different threat levels.

Presentation of the information

Measures to present the fused information in order to provide decision support to the operators need to be presented.

Interoperability

The demonstrated solutions need to provide interoperability between different organizations in different states. Furthermore, integration of some legacy systems will have to be demonstrated.

3. Demo Workshop

On the 12th of March 2009 in Brussels a workshop named "European-wide integrated border control system" was held with more than 140 participants. The aim of the workshop was to provide inputs for the preparation of the next FP7 Security Research Work Program. In particular, the workshop was meant to stimulate the debate in order to define the structure and the content to be covered by Demonstration Program (phase 2) in the area of the European-wide Integrated Border Control System in accordance to the issues clarified in the "non paper" prepared for this purpose by the EC.

Presentations given during workshop and the organisations of the speakers:

- . Situation and future needs for research and technological developments by DG Enterprise
- . Needs identified by Frontex: Frontex presented its objectives "coordination of intelligence", "cooperation at EU level" and "facilitator of better effective application of existing and future EU measures on borders" and the goal of the EUROSUR project. In this respect, FRONTEX summarized its three main functions as operations' coordination and support, training to Member States and R&D related issues to border security. FRONTEX identified interoperability/ integration/ detection of small vessels as key issues for their success. FRONTEX also introduced the Integrated Management Policy which includes: border control (checks, surveillance and risk analysis); detection and investigation of cross border crime; a 4 tier access control and an interagency for cooperation purposes.
- . Latest developments in the field of border control- DG Justice, Freedom and Security European Commission, especially in the context of EUROSUR.
- . The European Defence Agency then presented an overview of MARSUR (Maritime Surveillance networking) and its future needs. EDA stressed the need to have an overall interconnected system of systems which could fulfil key issues such as interoperability, adaptability and information security.
- . EU pilot projects in maritime surveillance- DG MARE.
- . DG JRC R&D activities related to border surveillance -DG JRC.

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- . LIMES Experience in Border Surveillance –Telespazio
- . GLOBE: Phase 1 of the Demonstration Project for the Integrated Border Management System-TELVENT: though not yet completed, GLOBE presented the main challenges facing phase 2 of the DP: political/legal/organisational issues, end-users involvement, information and resources sharing, integration and interoperability. GLOBE also stressed the need to involve southern EU countries and the necessity of having a FRONTEX implication.
- . OPERAMAR: An interoperable approach to the EU maritime security management -THALES
- . Research priorities in border control as identified by ESRIF -Finmeccanica

3 parallel sessions were devoted to the following issues:

a) Future Needs

Requirements for joint operations: demand perspective over 4-5 years, including threat analysis and societal aspects.

b) Future Technology Developments

Scope for system integration - supply perspective over 4-5 years

c) Innovations / Validation Strategies

Policy perspective, conditions for successfully linking research to innovation and future implementation including user involvement, testing, certification, validation

4. Links

The Agenda of the day and presentations can be seen at

http://ec.europa.eu/enterprise/security/events/border_control_workshop.htm



Annex

1. EC non paper 'Towards a R&D demonstration programme on European-wide Integrated border control system'

TOWARDS A R&D DEMONSTRATION PROGRAMME ON European-wide Integrated border control system

A 'non-paper' by European Commission, DG ENTR/H4
(Contact point: Paolo Salieri - February 2009)

1.) Scope:

This 'Non-Paper' is to help structure the discussions at the workshop that will be organised on 12 March 2009 by the Commission in preparation of the 2009 call for proposals for this demonstration programme. As explained in detail in Section 6, in order to maximize its impact, it is proposed that a first demonstration project should primarily focus on the surveillance of the maritime external borders of the European Union. Further demonstration projects could be initiated at a later stage.

2.) What is this Demonstration Programme about?

The definition of a demonstration programme to be financed through FP7 – Theme 10 – Security research is found in the ESRAB report, page 20¹. There the idea of demonstrating a 'system of systems' integration based on the results of other (smaller) integrated projects and capability projects, is discussed.

The same ESRAB report (see page 52, attached in the Appendix of this note) specifically elaborates on the scope and on the areas to be demonstrated for a '*European-wide integrated border control system*'.

The expected overall FP7 funding level for a Demonstration Programme (one or a number of individual projects) in the area of Border Control is expected to be of the order of up to about 30 Mio Euro.

The demonstration programme should be able to integrate its relationship with the other two demonstration programmes, in particular those planned in the field of Supply Chain Security and of CBRNE.

Other related projects:

A series of ongoing / completed projects are relevant to the work to be done in the '*European-wide integrated border control system*' demonstration project: the Appendix to this note attempts to list the currently EU funded research projects via the PASR and Theme 10 of FP7 (Security Research) (*non-exhaustive*).

3) What is 'European-wide Integrated Border Control'?

The political objective to be supported by this demonstration programme is the setting up and implementation of an integrated management ensuring a uniform and high level of control and surveillance of the EU external borders and facilitating the application of Community legislation and measures, by ensuring the coordination of operational cooperation among the services of Member States.

¹ See: http://ec.europa.eu/enterprise/security/doc/esrab_report_en.pdf

Member States are responsible for controlling the EU external borders and for combating cross-border crime. Likewise, FP7 associated countries are responsible for managing their national borders. However, a cross-sectoral and cross-national mechanism supporting the operational cooperation between border control and other law enforcement authorities between national authorities from Member States, as well as with neighbouring third countries which are associated to the FP7 would contribute to reducing the risks of illegal immigrants, terrorists, or of unlawful goods/substances such as weapons, illicit substances or dangerous goods, entering the EU from the outside. It would be a valuable tool for fighting cross-border crime.

The Schengen Borders Code, defines border control as consisting of checks carried out at border crossing points (**Border Checks**) and between border crossing points (**Border Surveillance**).

The Commission presented in February three communications², one in particular relevant to the development of a European Border Surveillance System (EUROSUR). This communication envisages a common technical framework to support Member States' authorities to act at local level, command at national level, coordinate at European level and cooperate with neighbouring third countries, with the identification in a roadmap of the main parameters to be developed in the long-term.

4) Who are the likely users / what impact from the research?

The task to counter threats at the external borders of the European Union is first and foremost for the border guards, police forces and intelligence services of the Member States concerned: the results of the programme will need to be of added value for and directly implementable by them.

The following "major" institutional users/stakeholders can be identified from a European perspective:

FRONTEX

FRONTEX is the European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union (established by Council Regulation (EC) [2007/2004 of 26.10.2004, OJ L 349/25.11.2004](#)).

FRONTEX coordinates the operational cooperation between Member States in the field of management of external borders; assists Member States in the training of national border guards, including the establishment of common training standards; carries out risk analyses; follows up the development of research relevant for the control and surveillance of external borders; assists Member States in circumstances requiring increased technical and operational assistance at external borders; and provides Member States with the necessary support in organising joint return operations.

FRONTEX liaises closely with other Community and EU partners responsible for the security of the external borders, such as [EUROPOL](#).

FRONTEX strengthens border security by ensuring the coordination of Member States' actions in the implementation of Community measures relating to the management of the external borders.

The activities of FRONTEX relate to the control of *persons*.

FRONTEX has an important role for ensuring a two-way communication at the European level between research providers and end users. The experience of border guards participating in joint operations is of high value for the definition of what would be needed from a common European operational perspective.

² http://ec.europa.eu/justice_home/news/information_dossiers/borders_08/proposals_en.htm

NATIONAL COMPETENT AUTHORITIES

Nationally, a wide variety of authorities are typically involved in border control. Surveillance of the maritime borders is a particularly complex issue, with different authorities having responsibilities for surveillance and migration control of the contiguous zones, the territorial waters and the coastlines; sometimes with parallel competencies, but also with different reporting lines.

Customs are also important national authorities, particularly concerning the trafficking of illicit goods.

While the majority of the results of this 'European-wide integrated border control system' demonstration programme are expected to be implemented in the medium term (5 to 10 years) time frame, some longer term aspects may also be tackled. This initiative of technological nature could pave the way towards a more pro-active approach in future cooperation mechanisms.

5) What kind of security solutions should be demonstrated?

For border security, controls of the flow of people and of illicit goods must be efficient against all kinds of security threats. The number of border guards and customs inspectors is not likely to be substantially increased in the near future: equipment is needed offering more powerful capabilities and real time support in decision making.

The demonstration programme should significantly improve operational capabilities with respect to the state of the art of technology, particularly in terms of integration, bringing a 'cohesion' effect. It should be coherent with legislative and operational European initiatives (such as SafeSeaNet and including those arising from other EU funding schemes, such as the external Borders fund or pilot projects).

In this non paper the key challenge for this demonstration programme is identified in the ability to coherently embrace novel technological solutions/systems in an extensive, consistent, interoperable and proportionate way, identifying synergies and demonstrating effectiveness for operation at the European level. Therefore, it is important to underline that the 'system of systems' integration should be **only up to the level where such synergies are possible and beneficial**.

The programme should duly target the specific interests/requirements of those bodies that operate in border control: proposed solutions should eventually be **tested and validated** in cooperation with relevant users, including in particular Member States' authorities. Interoperability of equipment/systems between countries is seen as a major issue of such test-beds. The integration and interoperability with already existing national, European and international systems should be encouraged.

The European dimension of this programme and its significant funding level are expected to serve as a leverage to enhance the take-up of solutions, also in view of the need of economies of scale.

The programme should provide momentum for the development in the appropriate fora of the standards needed for interoperability (in a wider perspective, input into global standardization should also be considered, where, and if, appropriate). Relevant users (e.g. national authorities) should be actively involved in the demonstration, testing and validation of new security solutions. Ideally such users should include potential future buyers, so as to provide a more solid basis for technology developers to invest efforts in research.

6) Identification of the priority scope of a first demonstration project on the surveillance of the maritime external borders within the wider scope of the Demonstration Programme

The nature of the technologies and infrastructure required to control specific border crossing points (*Border Checks*), on the one hand, and to monitor the space between different border crossing points

(Border Surveillance) is intrinsically different. The variety of specific modalities/issues in the implementation of border control is such that a single programme is unlikely to cover all relevant environments and types of control.

In order to maximize its impact, a first demonstration project should primarily focus on the surveillance of the southern maritime external borders of the European Union. Further demonstration projects, covering other areas within the wider scope of “Integrated Border Management” could be initiated at a later stage.

The reasons for this relative priority are as many-fold:

I) Maritime border control (in particular surveillance) is intrinsically very complex. It requires continuity from territorial waters to open seas. Mandatory information obtained from ships (e.g. SafeSeaNet) is to be complemented by additional external information, i.e. for the monitoring of small boats and of non-cooperative vessels.

No single technological solution exists which is capable to meet the variety of possible operational requirements. The legal aspects of information exchange (provided by systems historically developed for different purposes such as AIS, LRIT...), the acquisition and exchange of information on a 24/7 basis, the sharing and fusion of information to obtain a common situational picture; the regulations for priorities for delivery (or denial) of access: all of these elements add complexity at the integration level.

Information systems existing in the various national organizations are structured in different ways, often they are not interoperable, and data is not always made available to others. The primary issues to be tackled are of organizational and political rather than technological nature (sensitivities around intelligence sharing, protection of sources etc.); however a degree of convergence can be anticipated to progressively take place during the time of implementation of this demonstration project (completion estimated not earlier than end of 2014).

II) As regards maritime policy, including surveillance, the Commission has provided an overview in October 2008 in its “*Non-paper on maritime surveillance*”³. Three initiatives (of non R&D nature) are being planned to start in 2009 to assess the present practical difficulties for an effective use of information collected by different tools and systems:

- a. Preparatory Action – to assess usefulness of *space-based* surveillance in the Baltic, Mediterranean and Horn of Africa;
- b. Pilot Project - Cross-border cross-sector collaboration in Mediterranean;
- c. Pilot Project - Cross-border cross-sector collaboration in another basin.

In the medium/long term, the vision of the Commission is to have national systems interconnected, inter-agencies collaboration, and civil-military cooperation.

The proposed demonstration programme is meant to possibly act as a catalyser for convergence, by progressively supporting and demonstrating the implementation of an integrated network of reporting and surveillance systems combined with shared applications of surveillance tools, able to provide the plurality of concerned authorities with information on a more frequent, reliable and cost-efficient basis (about the EU external borders and the pre-frontier area) , so as to increase situational awareness and the effectiveness/rapidity of the law enforcement measures to be taken.

IV) The targeted scope of the demonstration project is expected to be fully coherent with the proposed implementation plan of EUROSUR aimed at “*Targeting research and development to improve the performance of surveillance tools (Step 4 of EUROSUR)*” and at developing an “*Integrated network of*

³ http://ec.europa.eu/maritimeaffairs/pdf/maritime_surveillance_non_paper.pdf

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reporting and surveillance systems for border control and internal security purposes covering the Mediterranean Sea, the southern Atlantic Ocean (Canary Islands) and the Black Sea (Step 7 of EUROSUR)".

V) The surveillance of the maritime external borders of the European Union is identified as the most suitable environment where to implement, in a Demonstration Programme, the 5 functions identified by ESRAB (Situational Awareness and Assessment, Information Management, Communication, Detection Identification & Authentication, Training & Exercise). Solutions should be validated as applicable to a variety of scenarios and geographic environments (mobile interoperability).

VI) The European Security and Innovation Forum (ESRIF) has identified maritime surveillance as one of the key areas in the field of border security. The most important challenges identified by ESRIF are detection of small craft, fusion of information in order to detect anomalies, interoperability, and affordability.

VII) The maritime domain is the only area of border control where the PASR and FP7 have already activated or planned a significant number of research projects (AMASS, BS-UAV, SECCONDD, SOBCAH, WMAAS, SECTRONIC, LIMES, etc). It should be possible to assemble around these projects a critical mass of further EU research, aimed at integration (and final demonstration) of a system of systems.

The planning of activities in this demonstration project should draw on the recommendations of ongoing research projects like OPERAMAR and GLOBE (Phase 1 of this demonstration programme), and of those to be obtained following the publication of the "*Continuity, coverage, performance (incl. UAV), secure data link (SEC-2009.3.4.1)*". Coherently with the definition of the research paths identified by ESRAB for a demonstration programme, important inputs are also expected to be derived also from the integrated project(s) to be activated following the publication of the topics "*Main port area security system (SEC-2009.3.2.1)*", and "*Sea border surveillance system (SEC-2009.3.2.2)*".

7) How to structure a proposal

As indicated above, a key aspect of the implementation of Integrated Border Management is the development of a European Border Surveillance System (EUROSUR).

The demonstrator project should provide demonstrations of "system of systems" solutions for border surveillance of the southern maritime external borders of the European Union.

As already mentioned above, the most important challenges identified by ESRIF in this context are the detection of small craft, fusion of information in order to detect anomalies, interoperability, and affordability.

Some of the key topics that would need to be addressed are therefore mentioned below.

Detection of small craft

One of the main challenges is detecting small craft in vast areas of open seas as well as in closed waters of archipelagos. Different sensor solutions need to be demonstrated and integrated to provide adequate performance.

Fusion of information and establishment of a situational picture

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Information coming from real time sensors needs to be integrated with intelligence information coming from tracking ship movements and container movements, intelligence coming from a pre-border situational picture, and information from human sources. This should serve to detect anomalies and to assess different threat levels.

Presentation of the information

Measures to present the fused information in order to provide decision support to the operators need to be presented.

Interoperability

The demonstrated solutions need to provide interoperability between different organisations in different states. Furthermore, integration of some legacy systems will have to be demonstrated.