

European-wide Integrated Border Control System MarBorSur Demonstration Testing and Validation

1. BACKGROUND

In its Communication on the Integrated Maritime Policy for the EU, the European Commission undertook to take steps towards more interoperable surveillance systems, bringing together existing monitoring and tracking systems used for different surveillance purposes, including the control of external borders and other law enforcement activities.¹

This approach towards further integration of maritime surveillance was confirmed in the roadmap for the development of the European Border Surveillance System (EUROSUR)², which shall be established gradually in the following three phases

- Reinforcing the border surveillance capacity of Member States, and fostering cooperation between them (Phase 1);
- Developing new tools and concepts at EU level to be put at the disposal of the Member States (Phase 2); and
- Integrating the needs and tools of all aspects of maritime surveillance in a common information sharing environment (Phase 3).

2. MARITIME BORDER SURVEILLANCE DEMONSTRATION

In line with this goal, a Demonstration Programme has been included in the Third Security Research Call, under Activity 10.3 titled "*Intelligent surveillance and enhancing border security*". This project should provide a demonstration of 'system of systems' solutions for border surveillance as outlined in all three phases of EUROSUR, with special emphasis on Phase 3, to be tested at selected parts of the maritime external border of the EU.

¹ COM (2007) 575 final of 10.10.2007.

² COM(2008) 68 final of 13.2.2008.

3. MARITIME SURVEILLANCE PROJECTS - COMMON ISSUES

Sharing Maritime Border information has two components: an **organisational part** in which the participants have to define *‘what information should be shared?’* and also *‘who should know it?’* and a **technical part** materialising the agreed interchange. The first part is difficult, because it involves operational arrangements based on a political and security dimension in the Member States and supra-national organisations.

Any demonstration of EU Maritime Surveillance should tackle both aspects of the problem and prevent the risk of focusing only on the second part of the problem, the technical part, which may result in having as many different technical solutions as projects executed but, possibly, without much practical use in them.

4. VALIDATION PARADIGM

The validation of the demonstration should measure to which extent the demonstrated system architecture satisfies end-user needs and enhances the capabilities identified by the end-users in the framework of the appropriate existing ‘organizational’ solution at the time of the demonstration execution.

Thus, the consortium is encouraged to build and test a prototype, which is enhancing and interconnecting existing surveillance structures, incorporating innovative sensors/platforms/signal processing, fusion capability at different levels, innovative assessment and decision tools, which would improve today’s capability to detect, identify and track small boats (smaller than 10 meters) and low flying aircraft approaching or crossing the maritime external border.

5. SYSTEM SCOPE

The demonstration should address the acquisition, fusion, exploitation and sharing of information relevant for Maritime Surveillance:

a. FUSION

The validation should assess improvements for sharing and fusing data and information between existing maritime surveillance systems in place. This may include an extensible common ontology, common data model, message model and a controllable, secure mechanism to share data and messages.

b. ACQUISITION

The validation should assess improvements in the capacity for all weather detection and tracking of small boats (smaller than 10 meters length) and of low flying aircraft approaching or crossing the maritime external border.

c. SHARING

The validation should assess identifiable improvements in the features of a common information sharing environment the National Coordination Centres for border surveillance (NCC), other concerned authorities and centres as well as relevant EU Agencies. Improvements in the procedure to login and register into this environment as provider/consumer of data/information. Improvements are also expected in the subscription procedure allowing for a controllable, selective, secure access to information within the system.

d. EXPLOITATION

The validation should assess the performance of innovative tools to be deployed in the nodes of the common information sharing environment, improving decision support tools to exploit the shared situational picture at different levels. The demonstration should also identify, propose, and test improvements into Video/Voice backup networks connecting existing Maritime Surveillance nodes.

6. CONCEPTS TO VALIDATE

The validation criteria will be based on the following principles/aspects: On the scope of the demonstration, which should include users and providers of Maritime Surveillance information, cover a relevant geographical area of the EU maritime border, and address the processes of information capture, exchange and exploitation. On operational value, an improved potential for operational capability to satisfy the user requirements in detection of small boats (smaller than 10m) and low flying aircraft. The incorporation of innovation in the system demonstrated. The persistency and extensibility of the system put in place for the demonstration. These advances should be constructed as much as possible on the principle of building on structures and systems already in place (or planned by the estimated termination date of this Demonstration Programme).

The demonstration should be tested/validated on the following criteria:

- 6.1. The “**Demonstration Scope**” is defined by the geographical area covered, which, for completeness, may include coastal waters, high seas, and port approaches. To ensure a well balanced participation in the definition of the demonstration scope, it might be necessary to include not only Member States' NCCs, but also other relevant national authorities, collaborative reporting centres, relevant EU agencies, and private users (e.g. shipping industry) in each of the participating States, which may include all of those States which are associated to FP7 and also possibly third countries, if appropriate. Also, the surveillance procedure demonstrated should cover the processes of data/information acquisition, exchange, and its exploitation at different levels (local, regional, multinational).
- 6.2. The system capability (“**Operational Value**”) will assess the degree in which the systems developed satisfy the end-user’s requirement for all weather detection and tracking of small boats (under 10 meters length) and of low flying aircraft approaching or crossing the maritime external border. The gains in detection and tracking capability should be supported by efficiency concepts including accuracy, reliability, and availability of the solutions proposed. Equally, other important factors which should accompany the improved detection capability are cost-related concepts like integrability, deployability, maintainability, scalability, harmonisation and standardisation.
- 6.3. The technological innovation (“**Technical Innovation**”) will assess the inclusion in the system of new ideas addressing the deployment of innovative combinations of platforms and sensors which could be tested within the live demonstration. Innovation in the area of novel processing technologies should address specific algorithms for under clutter detection and identification and tracking of small crafts as well as a robust information fusion mechanism. Innovation on the exploitation side will be expected by including enhanced decision support tools into the system, aiming at the automatic detection of anomalies.
- 6.4. Consideration should be given to the potential for re-use and the potential of extending the system, or parts of the system, developed (“**Reuse and Extensibility**”). The project should identify opportunities for the potential evolution of the industrial consortium (and its governmental component), as well as mechanisms for the integration of new users into the system under demonstration. The demonstration should incorporate available cooperation opportunities with other EU programmes.