**SSN/VMS synergies pilot project**

**Kick off meeting Rome 11 October 2011**

**Agenda item 5**

**Lisbon, 22 September 2011**

**Pilot project monitoring and evaluation**

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| *Executive summary* | The purpose of this paper is to describe the monitoring and evaluation methodology to be used during the VMS/SSN pilot project. |
| *Action to be taken* | As per paragraph 5. |
| *Related documents* | 1. Minutes of Directors meeting (FR, IT, SP) on maritime surveillance pilot projects (Lisbon, 10 March 2010) 2. Minutes of SSN High Level Steering Group 5 on “SSN/VMS pilot project” |

**1. INTRODUCTION**

As previously defined, the major objectives of the SSN/VMS synergies pilot project are to evaluate the synergies between SSN and VMS functionalities and, in particular:

* The provision of free of charge AIS information on fishing vessels’ positions to the flag/coastal FMC when operating within the range of shore-based AIS coverage (integrated coverage of the entire EU).
* The assessment of the level of potential cost reductions and possible improvements in performance.
* The testing and evaluation of communications between FMCs through SSN.
* Identification of the added value that SSN can bring to the VMS sector.

The purpose of this paper is to describe the monitoring and evaluation methodology related to the “SSN/VMS synergies”.

The assessment criteria take into account the technical, operational and legal aspects of the SSN/VMS pilot project, and propose the means to collect the necessary data to measure the output of the pilot project.

The overall evaluation will assess the pilot project’s utility and effectiveness in light of the objectives and may lead to policy conclusions for future procedures and technical adaptations for the monitoring systems (SSN and VMS). These recommendations will be based on the results of the pilot project and on feedback from the project’s stakeholders. The pilot project monitoring and evaluation will be undertaken by EMSA and the participating Member States and aims to highlight the outcomes of the pilot project. The project monitoring plan aims to define:

* The kind of data to be analysed (quantitative and qualitative);
* How and when the data should be provided;
* The indicators to be used in order measure the success of the project;
* The structure of the final evaluation report.

**2. STAKEHOLDERS**

The stakeholders of the SSN/VMS pilot project are expected to play an active role in analysing and collecting information about the implementation of the project, as well as identifying areas that can be improved, and proposing additional functionalities for technical monitoring, if appropriate. The stakeholders that will be involved in collecting information and providing feedback are:

* FMCs of participating MSs (for technical and operational issues);
* EMSA (for project management, the technical issues and helpdesk);
* NCAs (as AIS providers).

The contact details of the pilot project stakeholders are indicated in the attached Annex 1.

**3. MONITORING AND EVALUATION METHODOLOGY**

The project evaluation will be based on the results of project monitoring, system functionalities testing and the feedback received from the participants and related analysis. The evaluation includes:

* Evaluation of how the major project objectives were achieved, by comparing the contributions with the benefits which were observed (or expected to be achieved);
* Assessment to what extent the combined AIS/VMS information has been timely, reliable and useful for the participating FMCs;
* Evaluation of the overall impression of the pilot project and if the outcomes met the expectations of the stakeholders;
* Analysis of comments/proposals received and impacts reported;
* Analysis of the added value, and possible further steps.

The pilot project results will be compared with the participants’ evaluation of their needs (safety, financial, technical, and operational and the policy related).

Monitoring would consider both the technical and the operational aspects of the pilot project. Means of collecting the necessary data to measure the impact of the whole project are proposed.

Stakeholders will be invited to provide their feedback on the on going project on a case-by-case basis. Stakeholders may also manage specific operational tests in order to monitor how the objectives are being satisfied.

The proposed methodology is expected to be user-friendly and capable to retrieve meaningful information on the overall project. Impact on the FMCs day-by-day activities will be kept to a minimum.

In parallel, EMSA may collect further technical information through the Maritime Support Services and through system testing. An open-ended questionnaire (see Annex 2) lists the information which should be collected from stakeholders in order to monitor their satisfaction with the performance of the project from a technical perspective. Questions are mainly related to the data quality, the evaluation on how the combined AIS/VMS data are delivered, and the reliability of the data streams.

Annex 3 indicates some of the information which will be required related to the management of the SSN/VMS data. The information listed in Annex 3 should be considered as indicative, based on the current understanding of potential benefits. This does not mean that all the information of Annex 3 is complete, or that there are no other benefits or disadvantages. It is provided only as a preliminary guide to assist the stakeholders in the observation and documentation of the potential impacts from the operational perspective.

The information of Annex 3 should be submitted during the operational phase, which aims to collect comments and considerations from the stakeholders on the results achieved. Any report on real cases or good practice in the scope of the project would be particularly useful for the subsequent assessment process.

Further feedback is also expected after specific tests are undertaken following agreement with the FMCs, on the basis that these can be arranged during the operational phase.

**4. FINAL REPORT**

The evaluation will be part of the final report, which will also include the conclusions and further recommendations. The final report will be based on:

* analysis of how the outcomes have met the expectations of the stakeholders (from the technical and the operational side);
* comments/proposals received;
* possible gaps raised by the stakeholders;
* conclusions and recommendations;
* future steps.

The report will be made available to the FMCs and NCAs of the participating countries and will be presented to the Commission, the SSN Workshop and the SSN HLSG.

**5. ACTIONS REQUIRED**

Participating MSs are invited to take note of the above mentioned information and to provide their feedback as appropriate.

**ANNEX 1**

**PILOT PROJECT STAKEHOLDERS**

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**ANNEX 2**

**Technical indicators**

1. **VMS proxy**

* Were the preliminary activities (as defined in the paper “work plan”) an easy task[[1]](#footnote-1)?
* What is your assessment about the interoperability achieved between the different systems? Do you think position information, derived either from VMS or AIS, was forwarded to the proper recipients successfully?
* Was the information provided useful to build-up a situational picture meeting the operational needs?
* Were the AIS data provided at the refresh rate of 6 minutes?

1. **Web interface**

* Was the explanatory material on the SafeSeaNet web-based graphical interface (SSN GI) functions useful and clear[[2]](#footnote-2)?
* Were any difficulties in accessing the SSN GI reported?
* Did you find the SSN GI as a reliable backup solution to the VMS proxy?
* Could you confirm that the SSN GI (implemented at SSN level) caused no negative impacts to the existing systems?
* Could you confirm that the SSN GI web functionalities such as search, zoom-in zoom out, plotting past positions, passage lines and areas, reports and statistics, were made available and worked properly?

1. **Temporary loss of connections**

* Did any incident occur during the data streaming from/to SSN (e.g. breakdown of communication, lack of integrity of AIS data)?
* If incidents occurred during the data streaming as a result of breakdown of communication, how long did it take to restore the normal operations? What actions have been taken? Has the NCA been informed?
* If incidents occurred during the data streaming (for reasons other than a breakdown of communication), how long did it take to restore the normal operations? What actions have been taken? Has the NCA been informed?
* What was the impact from a temporary loss of connection between the inter-connected systems?

1. **Access rights**

Was the VMS information provided according to the defined access rights and only to the specific fishing vessels participating in the pilot project?

1. **Security**

* Were any difficulties reported in installing the digital certificates issued by EMSA?
* Were any security problems reported with reference to the VMS proxy and/or SSN GI?

**ANNEX 3**

**Operational indicators**

**1. Monitoring capabilities of FMCs - Voyage history assessment**

Correlation of VMS and AIS data should increase the FMCs operational capabilities, and in particular their capabilities to monitor fishing activities in restricted areas and violations of the restrictions. Because of the higher AIS message update rate (every 6 min), the monitoring will be provided in more precise and continuous manner than with VMS alone. FMCs are expected to benefit from a more accurate voyage history (compared with VMS).

In addition, the higher update rate of AIS data should provide more speed and course information, assisting the FMC to monitor the activity of a vessel. For example a slow speed (less than 3 knots) may be an indicator of fishing operations in progress, and the way the vessel is moving (the sequence of movements) can indicate the type of fishing (e.g. long lining or trawling). The long lining operations may be indicated by multiple positions (at relatively higher speed) in one direction as the vessel sets its lines; then by movements back in the opposite direction for retrieving (i.e. hauling) the nets with the catch. Vessels trawling are supposed to manoeuvre within a relatively small area, with intersecting tracks. A fishing vessel entering a restricted area should be easy to detect using AIS data.

**2. Access to both SSN and VMS data**

The aim of the SSN/VMS synergies pilot project is to enable the FMCs to complement the VMS information with the AIS information available in SSN. Via the VMS proxy the FMCs will have the possibility to analyse the fishing vessel movements by using both VMS and AIS information. In addition, through the SSN GI, FMCs should be able to visualise on their screens the combined image resulting from the correlation between VMS and AIS data. The FMCs will also have the possibility to filter out the AIS information and visualise only the VMS data, should they wish.

**3. Polling commands**

According to the VMS rules the fishing vessel can also be “polled” by the FMC to determine its exact position at any given time. The option to poll the unit allows the FMC to request information on demand, including an updated position report or status of the equipment, and also to change the reporting interval. Every polling command is subject to an extra cost which usually is covered by the requesting FMC.

Via the SSN/VMS synergies pilot project the FMCs are expected to benefit from the possibility of having continuous and uninterrupted access to AIS positioning data of the fishing vessel without sending any polling command. Instead of sending a polling request to the shipborne VMS device, a FMC should have the option to obtain, through SSN, all the AIS information available for a specific vessel which operates under the AIS coverage in an automatic and continuous way. This information is provided free of charge and should reduce the need of sending polling commands and the consequent communication cost.

**4. Monitoring back-up solution**

The SSN/VMS synergies pilot project should provide the FMCs with the possibility to get access to the AIS and VMS data via two interfaces: the VMS proxy and the web.

Through the web-based graphical interface (SSN GI) the FMCs should be able to access the relevant AIS and VMS data. This interface could be used as a monitoring back-up solution for FMCs in case of malfunctions (e.g. due to technical failure) in their VMS systems. This additional web-based graphical interface is expected to allow the continuous monitoring of identity and position of the fishing vessels even if a VMS device ceases transmission. This should increase the business continuation capabilities within the AIS covered areas, keeping into account that substantial areas of the European seas are covered by AIS. For this purpose, SSN GI should provide the data integration image through a high quality free of charge electronic nautical chart.

The SSN web-based interface should display the composite traffic image for the vessels involved in the pilot project. The users are expected to query the SSN database to receive the whole set of information available to SSN for a fishing vessel displayed in the web-interface (SSN GI).

The most important tools available in the SSN GI application (e.g. search, zoom-in zoom out, plotting past positions, passage lines and areas, reports and statistics) should be available for use on the web-based graphical interface and should work properly.

**5. Pilot project cost/benefit ratio**

The SSN/VMS synergies pilot project will be operational for the FMCs and the SSN NCA without requiring them to make any technical intervention to the national applications. The pilot project only required some technical developments on the SSN central application (technical development cost: less than 200.000€) and a few technical meetings with the participating Member States. EMSA coordinated these meetings and provided overall management of the pilot project, including the MSS 24/7 support. The fishing vessels AIS information was provided to the FMCs without any additional costs.

The technical solution implemented at SSN central level should allow the FMCs to benefit from the possibility of getting AIS data already converted in NAF format without any impact at national level. The outcomes resulting from the pilot project will be used to assess the cost/benefit analysis of the investment.

**6. Simplify communication among FMCs (via SSN)**

Legislation related to the common fisheries policy (Council Regulation n. 1224/2009) requires that each MS should ensure automatic transmission of the data concerning a fishing vessel flying its flag to the FMC of a coastal Member State when the vessel concerned is in the water of that coastal State.

The VMS information is also available to the Commission.

The SSN/VMS synergies pilot project aims to support the above functionality and should allow the sharing of the data via the SSN network. The transmission of data via the SSN proxy solution should be provided automatically to the FMCs concerned following the established access rights. To ensure proper access rights management (in line with the agreements signed by the participants in the pilot project and the applicable legal documents), a new distinct role was created in SSN for FMCs. In addition, new tasks were added in the SSN access management to allow the configuration of the access to VMS data.

To ensure a high level of information security and data confidentiality the communication links for the system-to-system implementation were based on 2-way SSL protocols. The digital certificates were issued by EMSA following the procedure applicable in SSN.

**7. Improving VTMIS functionalities**

The AIS and VMS data integration is supposed to increase not only the capabilities of the FMCs but also shipping safety especially in areas outside AIS coverage (where monitoring of the vessels positions can be based only on the VMS transmissions).

The pilot project is expected to provide effective tools to the competent authorities for enhancing the safety and the efficiency of maritime traffic.

**8. Assist Member States to comply with legal obligations in a uniform way**

The pilot project should stimulate participating Member States to adopt AIS for the purposes of cross-checking with VMS data, and provide the tool for MSs to meet the requirements of Article 10.3 of the Regulation 1224/2009, establishing a Community control system whereby: *“Member States may use the automatic identification system (AIS) data when such data are available for the purpose of cross-checking with other available data... For that purpose Member States shall ensure that data from the automatic identification system for fishing vessels flying their flag are available to their national fisheries control authorities.”*

The implementation of a single SSN/VMS monitoring tool at EU central level instead of implementing similar tools individually by each of MSs is expected to ensure uniformity in the way data is cross-checked. In addition, it may contribute in the further development of common and uniform data processing and evaluation methods.

Following the provisions of common information sharing policy of the “Communication on the Integrated Maritime Policy for the European Union”, the pilot project is expected to show how to share maritime surveillance information. To this end AIS and VMS data should be exchanged between two different user communities in a cost effective manner.

**9. Further proposals/recommendations**

The stakeholders are invited to provide further ideas for future improvements.

1. The preliminary activities are fully defined in the paper “Work plan” at paragraph 2 [↑](#footnote-ref-1)
2. The document is available at the EMSA website, as reported in the paper “Status of the Central System” [↑](#footnote-ref-2)