AT A GLANCE

Requested by the PECH committee

Study in Focus

European Parliament

Electronic technologies for fisheries: Transmitted positional data systems

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Transmitted positional data systems are used to **study fishing effort and effects** of fishing on marine habitats, but also to support marine spatial planning activities. Regarding **fisheries control**, it is imperative to know the **vessel's position** to understand **if**, **where** and **what** it is fishing and **whether** it is fishing in the areas for which it is **licensed**.

Main observations

Currently, **four global positional data systems exist**, which are owned by the United States, the European Union, Russia and China. They all indicate the **position of a vessel** with very high accuracy.

The study

reviews the state of the art of transmitted positional data systems, high resolution and synthetic aperture radar (SAR) for satellite image data used in fisheries control and fisheries research. It identifies the strengths and weaknesses of such systems and provides policy recommendations for a more effective fisheries control system based on currently applied electronic technologies (ET).

A second type of spaceborne sensors used for fisheries control are the **very high resolution sensors**. This technology is based on the inspection of the **visual spectrum** or on **synthetic aperture radars** using microwave

In the European Union, the compilation of satellite images for **fisheries control** is done by the **Copernicus Maritime Surveillance Service**. It is also used by the European Fisheries Control Agency **(EFCA)** in collaboration with the European Maritime Security Agency **(EMSA)**.

The system reporting positional data to authorities are the Vessel Monitoring System **(VMS)** and the Automatic Identification System **(AIS)**. Both are **mature technologies** whose **accuracy has improved** over time from the first only prevailing global positional data system to the current multisystem scenario.

VMS has a more **robust transmission technology** using satellite communications, which make it very difficult to loose data. Nevertheless, **long time-laps** between the emissions of data **create caveats** for control and fisheries research.

AIS is more precise, as it has a **higher transmission frequency** due to its purpose of preventing collisions at sea. However, it transmitting to land receivers proofs often to be difficult. In fisheries AIS data are used for ex-post analysis due to being a secondary use of generated data.

Very high resolution satellite images (VHR) and Synthetic Aperture Radar (SAR) provide very valuable information, which is even more useful when combined with **positional data.** However, its main weakness are the longer time-laps between images taken of the same ocean sector.

All the data sources present concerns and problems regarding current data privacy and personal privacy rules, which need to be addressed.

Conclusions and policy recommendations

It can be concluded that **none of the described electronic technologies** (VMS, AIS, VHR/SAR and combined solutions) currently used **are ideal**. However, there is **no technological obstacle that would prevent taking the best elements of each of the existing Electronic Technologies (ETs)** to develop a far better

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transmitted positional data system than the currently imposed **VMS.**

Available technology would allow to easily design a **VMS** that would collect data for position, speed and heading of fishing vessels with much greater precision and with a frequency similar to that of **AIS**.

Such data would be transmitted to control agencies by using the present satellite communications.The higher frequency of data collection would make it possible to receive evidence not only on the fishing vessels' positions, but also if and how often they were engaged in fishing operations.

Furthermore, processing of combined data would contain important information for fisheries control. A new **VMS** combined with **VHR** or **SAR** images would allow **EFCA** together with **EMSA**, to identify and document illegal fishing activities.

The study's **policy recommendations** are as follows:

- **Extent the obligation to use tracking devices** in commercial fishing vessels to the maximum possible consensus.
- **Increase the accuracy of VMS positional data** so it can be of a similar magnitude as the actual data provided by current Global Navigation Satellite System (GNSS systems)
- **Reduce the VMS emission time** of both data types to ten minutes (instant transmission) and one minute (stored data or delayed transmission), respectively.
- Take the necessary actions to **grant access to the generated data** to control bodies and scientific advisors for fisheries management while preserving the personal privacy of fishermen.
- **Follow-up on** the work started recently, by **combining VMS, AIS and VHR/SAR images** as complementary to the VMS data.

Key areas for EU action

- Extent the obligation to use tracking devices in commercial fishing vessels.

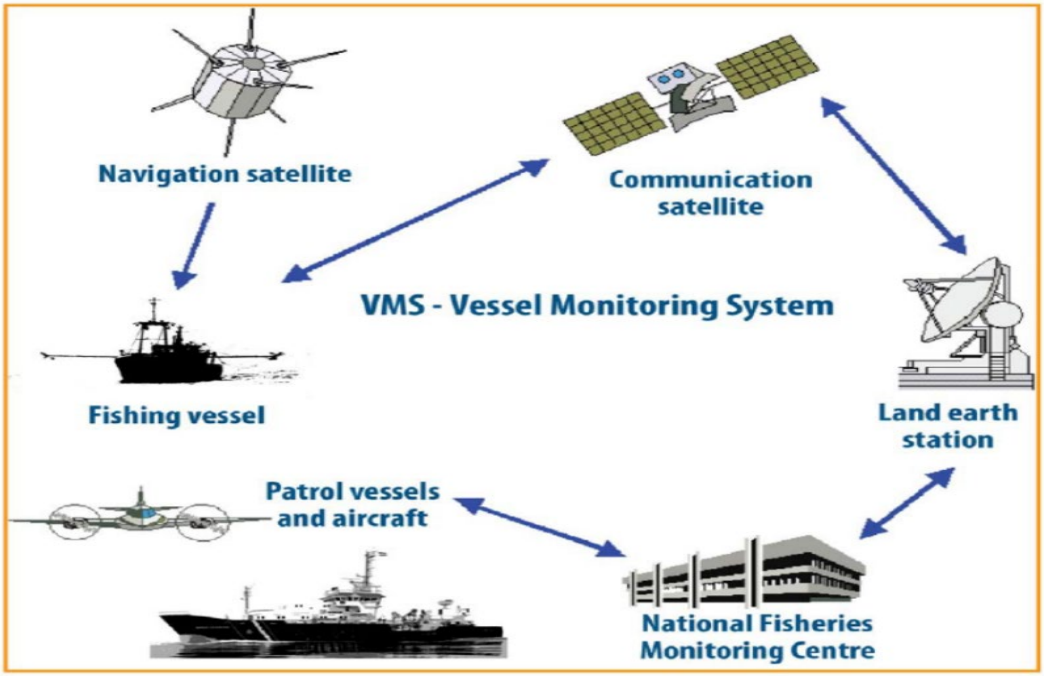
- Increase the accuracy of VMS positional data from 500 to 20 metres.

- Reduce the VMS emission time to ten minutes for instant transmission, and one minute to stored data on delayed transmission.

- Find the right balance to grant access to the generated data while preserving the personal privacy of fishermen.

- Follow-up on the work started, by combining VMS, AIS and VHR/SAR.

Figure : Data flow of the EU VMS system



Source: Special report - EU fisheries Controls: more efforts needed, ECA 2017

The present note is based on the study *Workshop on Electronic technologies for fisheries – Part I: Transmitted positional data systems* authored by: AZTI Marine Research Department: Iñaki QUINCOCES.
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