

Application of Modern Technology for Migration Management

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Abstract

The traditional methods of migratory management alone cannot withstand the challenges the migration authorities are facing today, therefore the state-of-art solutions have become indispensable for situation monitoring. This paper gives a brief overview of the surveillance tools – Eurosur Fusion Services (EFS) applied by Frontex under the EUROSUR framework. Special attention was paid to optical and radar imagery, airborne aerial surveillance technologies, maritime surveillance tools enabling detection and tracking of the vessels of interest, geographical information system (GIS) technology for data integration and dissemination. The paper provides valuable insights into the full EFS lifecycle – from service design integration to transition and implementation, and stresses the importance of the customer-oriented approach and continuous service improvement to better respond to the situation monitoring needs of Member States.

Keywords: migration management, border surveillance, surveillance tools, aerial surveillance, state-of-the-art technology

Introduction

The migratory pressure that Europe has been experiencing for couple of years now is a hot topic in the public and social media. It is however even hotter topic for actors who are directly engaged in dealing with migration management on a day-to-day basis. The traditional methods of migratory management alone cannot withstand the wide scope of issues the migration authorities are facing today. Thus the use of modern technology has been one of the viable solutions used by most of the notable actors on the stage of the European migration management.

One of the actors that highly values and makes the best use of the state-of-art technologies is Frontex, the European Border and Coast Guard Agency. As per the Council Regulation (EC) 2007/2004 of 26 October 2004 the European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union (Frontex) was established and repealed by Regulation (EU) 2016/1624 of 14 September 2016, as Frontex, the European Border and Coast Guard Agency. The core mission of Frontex is to promote, coordinate and develop European border management in line with the Charter of Fundamental

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Rights of the European Union and the concept of Integrated Border Management².

Frontex takes an active role in variety of migratory matters, helping to identify migratory patterns, as well as trends in cross-border criminal activities by monitoring the situation at the borders and supporting border authorities in sharing information. The Agency also carries out vulnerability assessments, coordinates and organises joint operations and rapid border interventions, as well as assists EU Member States in forced returns of people and organises return operations.

In addition, Frontex supports the cooperation between law enforcement authorities, EU agencies and customs and works closely with European Fisheries Control Agency (EFCA) and European Maritime Safety Agency (EMSA) to implement multipurpose operations. In these operations, vessels and aircraft deployed for border surveillance can also be used for fishing and environmental monitoring.

In all of the aforementioned activities Frontex focuses on preventing smuggling, human trafficking and terrorism as well as many other cross-border crimes, sharing gathered intelligence with relevant entities. In doing so, the Agency acts as the centre of expertise in the area of border control by developing training curricula and specialised courses in a variety of areas. In all of these matters, Frontex encourages the use to the newest technologies available to match the latest challenges that the wide scope of migratory issues entails. In particular, the state-of-art solutions available have been indispensable and crucial for the situation monitoring purposes.

The Agency strives to become the leading source of balanced assistance to the European Commission and Member States in relation to the long-term EU Research Framework Programmes, which are relevant to border security. The Agency plays a key role in analysing existing and future capacity needs and feeding them into the planning and implementation of the EU Research Programmes. The Agency also serves as a technical advisor and support to Member States and the European Commission as well as other stakeholders. It facilitates

information exchange by organising demonstrations, pilot projects, workshops and conferences.

Common application of surveillance tools - the legislative framework

The situation monitoring assignment stems largely from the Agency's tasks entrusted by the Eurosur Regulation No 1052/2013 of the European Parliament and of the Council of 22 October 2013 establishing the European Border Surveillance System (Eurosur). Under Eurosur, Frontex maintains a European situational picture and common pre-frontier intelligence picture that contain information on the situation at European borders and the pre-frontier area.

Frontex is also responsible for coordinating the so-called common application of surveillance tools, i.e. Eurosur Fusion Services. At the strategic level, the EFS implementation relies on the legislative framework for the provision of the high quality Eurosur Fusion Services (EFS) – the common application of surveillance tools as per Art. 12 of Eurosur regulation (EU) No 1052/2013, the Regulation (EU) 2016/1624 on the European Border and Coast Guard and the Copernicus Regulation (EU) No 377/2014.

In addition, the EFS provision in 2018 will also be based on the Copernicus Delegation Agreement, signed on November 11, 2015 between the European Commission and Frontex, which provides for the implementation of the border surveillance component of the Copernicus Security Service. This allows Frontex to access resources both financial and technical provided by this Programme, including privileged use of Copernicus Space Component Data Access (Copernicus Data Warehouse).

State-of-the-art technology in the field of border surveillance

The vision of the Eurosur Fusion Services is to support and add value to operational activities, as well as to provide essential components to compile the European Situational Picture (ESP) and the Common Pre-frontier Intelligence Picture (CPIP) from a variety of sources, including platforms deployed under the Common Application of Surveillance Tools. In practice this means that a number of information services and data

² See Article 77 TFEU (ex-Article 62 TEC), Article 4 of Regulation (EU) No 2016/1624, Council Conclusions of 4-5 December 2006 on Integrated Border Management (2768th Justice and Home Affairs Council meeting in Brussels).

sources (external: institutional, commercial providers; internal: Frontex systems) are bundled together into customised and integrated services. These customised services are delivered to EU Member States authorities and other partners via different communication channels, including the Eurosur network. These services are defined based on user needs in Member States and Frontex, and contribute to achieving the strategic and operational objectives of border surveillance. Frontex Fusion Services currently include 13 services with three new services still in pipeline.

The EFS makes extensive use of the satellite data with optical and radar imagery. Radar imagery is mostly used for the Vessel Detection Service where it helps to detect objects at sea. The service can be correlated with the collaborative ship reporting systems such as Automatic Identification System (AIS) and Long Range Identification and Tracking (LRIT) to identify uncooperative vessels or small boats not required to have such a transmitter. This allows operational planners to effectively allocate seaborne and airborne assets to investigate these detections and intercept vessels.

Optical data is mainly used over land to perform tasks such as verifying intelligence reports and applying change detections. This is useful to establish the man-made built ups and changes in the terrain potentially indicating departures. Both imageries data is best used complimentary to benefit from the advantages of both technologies. Over the course of last years the resolution of optical imagery has significantly increased from a few meters to 30-50 centimetres, allowing for the identification of even the smallest objects of interest. This is mainly due to military technology becoming available for civilian use and an increased number of satellite constellations becoming available to Frontex, helping further improve service capabilities.

Another area of activity where state of the art technology applies is anomaly detection. Special algorithms are applied to identify general patterns of behaviour of vessels. This allows operators to identify potentially suspicious behaviour for further analytical and decision making purposes.

The Maritime Simulation Module provides operators with a tool to compute and simulate the likely positions of vessels in distress and possible routes, taking into consideration the meteorological and oceanographic

information such as wave high, current, wind speed and water temperature.

The use of modern technology would not be complete without the use of real-time data. The incorporation of the real-time data is achieved by using airborne aerial surveillance technologies through the extended use of Fixed Wing Aircrafts (FASS) and Remotely Piloted Aircraft Systems (RPAS) under the Multipurpose Aerial surveillance (MAS) service. The streamed real-time data is received from the airplane to the European Monitoring Room at Frontex premises and other dedicated coordination centres. In case of a detection, EMT experts analyse the information and alert the responsible authorities or the responsible international coordination centre - who also have parallel access to the live video stream – to take over and coordinate the proper follow-up activity. The gathered information is inserted real-time into different information exchange platforms between the Frontex, Member States and other entities (e.g. EU Agencies) concerned (to create a real-time awareness picture). It is also combined with other available data sources.

To manage and process the variety of data collected (ship data, geospatial data, reporting data etc.), Frontex requires cutting edge geographical information system (GIS) technology for data integration, visualisation and dissemination³.

The Eurosur Fusion Services are delivered through the Frontex web-based information exchange systems adapted to fit the customer needs and reflect the user-friendly approach to service delivery. These systems are also continuously upgraded with features such as new search functionalities and more intuitive user interface.

The Eurosur Fusion Services (EFS) - service design and implementation

The Frontex Situation Centre (FSC), a unit within the Situational Awareness and Monitoring Division of Frontex, manages the design and delivery of these services. It is important to highlight that the services undergo a complete service lifecycle from service design inte-

³ Geographic Information Systems is a computer-based tool that allows to analyse and integrate geospatial data from a variety of sources and display multiple layers of information on a single map.

gration to transition and implementation. In all of these aspects continuous service improvement is the key process that ensures that the modern technologies are applied directly to the services delivered to customers.

The customer-oriented approach is achieved through the daily support of the Service Desk - Single point of contact for situational monitoring and information exchange services and products, and also through numerous user uptake activities, involving workshops, awareness sessions and other forms where valuable feedback stimulates the improvement of services.

In order to ensure that the technologies are applied in the best way to fit the operational environment the EFS Service Managers who are dealing with the direct service implementation in the Member States provide detailed hands-on trainings to the users. In order to make the best use of technologies for training purposes, Frontex also benefits from remote training options via video-conferences, video tutorials and e-Learning platform.

Services and their newest capabilities are tested and tried in the real operational environment during the EFS exercise campaigns to ascertain the service quality and possibilities of use cases through combination of different service combinations. During the recent years the exercises were organised and services tried in all major sea regions from Atlantic, through Mediterranean, Black and Baltic Sea, as well as in the external land border sections most affected by migration. All of these efforts demonstrate the intent to ensure that the technologies used are up-to-date and reflect the best use of services for purposes of the situational monitoring.

Conclusions

Frontex's vast experience demonstrates that the use of modern technology is indispensable for ensuring that migratory management is efficient and addresses contemporary challenges.

The Eurosur Fusion Services (EFS) are all about continuous expansion and enhancement of the existing capabilities with the state-of-the-art technology and

widening the range of information and data fused and provided to Frontex customers. In that respect, Frontex closely cooperates with other Agencies, making use of service contracts and products already available to avoid duplication and receive best value for money.

The continuous service improvement lifecycle is key to ensure that the modern technologies applied in the migratory management field are still valid and reflect the current technological achievements. The crucial part of this is the availability of information on the latest technology progress in the field.

Frontex plays an active role in exploring the newest innovations and tools offered and is a regular participant in the technology expositions and conferences related to its potential use for the border management purposes.

Ever since its launch in 2014, and full operationalisation in 2015, the EFS have facilitated situational awareness of Member States and other Frontex stakeholders. Over the last 4 years, the number of EFS service users has significantly increased.

The services offered to the Frontex stakeholders via EFS are dynamically evolving in response to users' needs, feedback and latest available technical solutions. For Frontex, the service evolution stands for the improvement of the existing service capabilities, e.g. infrastructure upgrade and decreased time of service delivery. Few years ago it was unimaginable to have a high resolution imagery detecting object of less than 1m, and now such imagery is delivered on a day-to-day basis.

Following the increased demand for higher resolution and better quality, Frontex motivates and drives commercial suppliers to strive for success in the field of research and innovation. In doing so, Frontex serves as a linkage between research (and development) community, end users and policy makers involved in border management issues to ensure that the challenges faced at the EU borders are duly tackled. Therefore, the Agency not only stays abreast of the latest border surveillance technology, but also constantly looks into the future to identify opportunities for further development.

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