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The Potential of UAS for European Border Surveillance

Our lives in the globalised world depend increasingly on efficient, convenient and secure world-wide mobility of persons and goods. To this end, the European Union has abolished the internal borders in the Schengen area and started to develop a common policy on Integrated Border Management. The objectives of this policy are to keep the external borders of the EU open for trade and movement of persons, to facilitate regional cooperation with neighbouring non-EU states, and to keep the borders closed for criminal activities such as smuggling, illegal migration, and terrorism.

The abolishment of the internal borders of the European Union has underlined the need for the Member States to collaborate to maintain security at the external border. As a part of the Integrated Border Management policy, Frontex has been created as a European agency tasked to coordinate such collaboration¹.

This co-operation is carried out in the context of the EU Four Tier Border Management concept establishes that border control-related activities begin in the countries of origin or transit, continue through cross-border co-operation across the external borders, are followed by measures implemented at the external borders, and include measures taken inside the territory of the EU Member States.

Frontex (within the scope of its mandate) aims at ensuring more effective implementation of this Community policy and is under constant development in terms of operational capacities and capabilities.

The application of three elements: assessing threats and risks, managing joint operations at the external borders of Member States, and building intellectual, operational and physical capacity, makes it possible for the Agency to become the keystone of the European concept of Integrated Border Management. By providing EU border guards with specialised training, up-to-date knowledge of the latest technology, enabling them to work in joint operations and sharing real-time information about the latest *modus operandi* used by criminals, Frontex aims to make the EU's borders not only more secure but also more traveller-friendly.

The European Commission has recently issued a communication on the creation of a European Border Surveillance System (EUROSUR). EUROSUR is a long-term initiative to create a «system of systems» enhancing the situational awareness and the reaction capabilities to secure the EU's external border. The development of EUROSUR will focus on maritime surveillance covering initially the areas from the western coast of Africa to the Black Sea. However, the eastern land borders will also be included. While the areas to be covered by EUROSUR are very wide, the objects of interest can be very small, ranging from normal ships to small wooden or inflatable craft to improvised craft such as tires. Furthermore, EUROSUR will need to cover the wide areas with sufficient continuity and detection capability to ensure that action can be taken against suspicious vessels. To meet the requirements for surveillance in conditions ranging from the open Atlantic to the Greek archipelago, requires a multitude of systems using sensors mounted on space and airborne platforms, as well as on ships

and on land. In this context, unmanned aircraft systems (UAS) offer an interesting potential and have already been employed for border surveillance by some countries, including the United States and Israel.

The EU has a coastline, which is 65,993 kilometers long². The sea presents a huge economic benefit for EU and affects all its Member States. However illegal activities such as transportation of illegal migrants, terrorism, organized crime, drug and contraband smuggling, theft and cargo fraud are an every day issue at EU ports, inland, territorial and international waters. Aerial capabilities are a very important factor to strengthen the surveillance of the EU's external «blue border», but also towards the areas where these illegal activities start.

UAVs can contribute in improving capacities of detection at longer distances, providing real- and near real- time operational data, detection of smaller vessels, fast vessels (speedboats) and reconnaissance missions to areas of preparation of illegal immigration. UAS should operate efficiently in all weather and day/night conditions with long endurance, speed and altitude adaptability. For efficient operations, UAS platforms will have to be integrated with other existing surveillance networks, such as: coastal radars, satellite coverage and other surveillance equipment (aircraft, ships...). Because of the huge size of the surveillance area, coastal MS could share/operate UAS in order to synthesise operational information, efficiency and costs of the systems. The sea surveillance mission that could be performed by UAS include wide area surveillance under most weather conditions, which calls for radar sensors, as well as identification of suspicious targets, which calls for optical sensors or possibly imaging radar. As the mission has to be performed continuously over wide areas, UAS are useful because they can patrol a far-off area for as much as 24 hours before returning to base.

The eastern land border also presents various challenges. With the enlargement of the European Union to 27 Member States, the structure of land borders of the EU have also changed. The border spans thousands of kilometers and ten European countries. Additionally the landscape of the borders varies from country to country; some are isolated/uninhabited and therefore difficult to access; others are more populated (near villages, towns, farms...) making it difficult to distinguish illegal activities from legitimate ones.

Aerial technologies for surveillance can support land border services too along the external border European Union. Currently border guards are using helicopters or smaller fixed-wing aircrafts for surveillance purposes. UAS technology could contribute to meeting the main challenges in «green border surveillance»³ via the efficient detection of human presence and cars at the borders which calls for optical sensors. The Eastern EU border presents a variety of challenges; firstly Member States have very different lengths of the border to deal with, for example Finland with 1,324 km of border with Russia or Slovakia with just a 97 km border with Ukraine. This would mean that different sizes of UAS

¹ Council Regulation (EC) 2007/2004/ 26.10.2004 (OJ L 349/25.11.2004).

² <http://www.answers.com/topic/european-union>

³ It refers to the border area between border crossing points at the Land border

would need to be used, together with a different number of relays for the coverage of the operational area. Secondly, different topographical / climate characteristics (terrain includes forests, mountains, and rivers, while the climate ranges from subarctic to Mediterranean) will require UAS to be operated at different altitudes and speeds. Thirdly, the extreme differences in weather conditions will demand UAS to be very reliable and safe to prevent collateral damage in case of failure while providing all-weather detection capacity. Fourthly, to provide added value to current surveillance equipment, UAS should detect any threat in day/night condition.

The further development of the EUROSUR concept will include several studies carried out by Frontex and by industry. These studies will seek to find a proper balance between the different components of the surveillance system and to define the needs for further technological developments. The research on space and security funded by the European Commission through the 7th Framework Programme for research and development will also contribute to the development of EUROSUR. To be of interest, the UAS will need to prove their value in purely economical terms. The life cycle costs for using UAS have to be lower than for alternative systems.

Although the development of UAS certainly poses technological challenges, the critical issue is the question of operating unmanned vehicles in normal airspace. To resolve this issue, there are many activities going on, ranging from technologies to legal aspects. Just like satellites, although to a lesser extent, UAS offer an economy of scale. They can cover large areas far from base and the information can be readily distributed to multiple users. This indicates that it would make sense to operate UAS at a European

level. To provide this added value, Frontex could very well have its mission expanded to include acquisition of information from satellites and UAS for use by cooperating MS.

In summary, the European Union is giving increased priority to security at the EU's external borders. UAS have the potential to play a major role in providing surveillance of European border areas. However, to realise their potential and in order for end-users to consider the use of unmanned vehicles, the critical issue of operating UAS in normal airspace urgently needs to be resolved as well as a cost-effective manner is needed.



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