Guidelines for the

COMMON MINIMUM STANDARDS

for Border Surveillance
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About the European Border and Coast Guard Agency

The European Border and Coast Guard Agency is an essential part of Europe’s efforts to safeguard the area of freedom, security, and justice. The support of the European Border and Coast Guard Agency at the external borders helps guarantee free movement without internal borders checks.

The European Border and Coast Guard Agency has three strategic objectives: reduce vulnerability of the external borders based on comprehensive situational awareness; guarantee safe, secure, and well-functioning EU borders; and plan and maintain European Border and Coast Guard capabilities.

Effective border control and migration management require cooperation. The European Border and Coast Guard Agency is the guardian and the driving force for integrated border management (IBM) at Europe’s external borders. Unified rules and standards are essential to manage the external borders, address migratory challenges and contribute to Europe’s security. Together with National Authorities, EU institutions and other agencies and organisations, the European Border and Coast Guard Agency will implement the IBM strategy at the European and national levels.

In the area of research and innovation, the European Border and Coast Guard Agency is continuously developing its capabilities related to border security technologies, providing and supporting research, promoting and delivering innovation, as well as standardisation and harmonisation of border management capabilities. Research and Innovation activities follow the Capabilities Development Plan, which includes the capabilities of the Member States and of the European Border and Coast Guard Agency itself.

A core objective of the European Border and Coast Guard Agency’s Research and Innovation activities is to drive the process of harmonisation and standardisation, among other things, by defining and supporting the development of Common Minimum Standards for border surveillance.\(^1\)

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Acknowledgements

This document was prepared as a compilation of the work done by the three Working Groups created for the Common Minimum Standards for air, land and maritime border surveillance, respectively, with the support of the European Border and Coast Guard Agency and the European Commission.

The European Border and Coast Guard Agency would like to acknowledge the work of experts from the following Member States participating in the Working Groups focused on the development of:

- Guidelines for the Common Minimum Standards for air border surveillance, from Belgium, Czechia, Finland, France, Italy, Lithuania, and the Netherlands;

- Guidelines for the Common Minimum Standards for land border surveillance, from Estonia, Finland, Latvia, Lithuania, and Poland;

- Guidelines for the Common Minimum Standards for maritime border surveillance, from Bulgaria, Croatia, Cyprus, Finland, Germany, Italy, Latvia, Lithuania, Malta, Poland, and Portugal.

Several staff from across the European Commission and the European Border and Coast Guard Agency contributed their experience to this document, and their assistance is hereby acknowledged with gratitude.

In addition, the European Border and Coast Guard Agency is also grateful to all other stakeholders who contributed to the review process.
Contents

Acronyms and abbreviations ................................................................. 6
Terms and definitions ........................................................................... 8
Executive Summary ............................................................................. 13

1. Introduction ....................................................................................... 16
  1.1 Background .................................................................................. 16
  1.2 Purpose and audience ................................................................... 16
  1.3 Scope and limitations ................................................................... 17
  1.4 Border surveillance ...................................................................... 17
    1.4.1 About the air border surveillance .......................................... 18
    1.4.2 Multipurpose approach and Search and Rescue in the context of maritime border surveillance .............................................. 22
  1.5 Methodology and organisation of work ....................................... 23

2. Guidelines for the Common Minimum Standards ........................... 26
  2.1 National border surveillance strategy Principles and mechanisms .... 26
  2.2 Intra service, inter-agency and international cooperation ............... 33
  2.3 National operational model ............................................................ 36
    2.3.1 Principles and mechanisms ..................................................... 37
    2.3.2 Data management .................................................................. 39
    2.3.3 Risk Analysis ......................................................................... 40
    2.3.4 Crisis management ................................................................. 42
    2.3.5 Security ................................................................................ 42
    2.3.6 Asset management ................................................................. 43
    2.3.7 Patrolling ............................................................................... 44
    2.3.8 Air border surveillance principles ......................................... 47
  2.4 Border surveillance capabilities .................................................... 50
    2.4.1 Operational principles for the national border surveillance capabilities 51
    2.4.2 Factors for the selection of the surveillance solutions .............. 54
    2.4.3 Technical equipment and integrated solutions .......................... 58
    2.4.4 Staffing ............................................................................... 61
    2.4.5 Training ............................................................................... 62
    2.4.6 Communication .................................................................... 64

3. Reference documentation ................................................................. 69
## Acronyms and abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC</td>
<td>Common Core Curriculum</td>
</tr>
<tr>
<td>CIRAM</td>
<td>Common Integrated Risk Analysis Methodology</td>
</tr>
<tr>
<td>CMS</td>
<td>Common Minimum Standards</td>
</tr>
<tr>
<td>CVAM</td>
<td>Common Vulnerability Assessment Methodology</td>
</tr>
<tr>
<td>C2</td>
<td>Command and Control</td>
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<td>DMR</td>
<td>Digital Mobile Radio</td>
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<tr>
<td>EBCG</td>
<td>European Border and Coast Guard Agency</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EIBM</td>
<td>European Integrated Border Management</td>
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<td>EU</td>
<td>European Union</td>
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<td>EUMSS</td>
<td>EU Maritime Security Strategy</td>
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<tr>
<td>FTE</td>
<td>Full Time Equivalent</td>
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<td>GDPR</td>
<td>General Data Protection Regulation</td>
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<td>GNSS</td>
<td>Global Navigation Satellite System</td>
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<td>HALE</td>
<td>High-Altitude Long Endurance</td>
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<td>HUMINT</td>
<td>Human Intelligence</td>
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<td>IBM</td>
<td>Integrated Border Management</td>
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<td>IFT</td>
<td>Integrated Fixed Tower</td>
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<td>IMP</td>
<td>Integrated Maritime Policy</td>
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<td>JORA</td>
<td>Joint Operations Reporting Application</td>
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<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>LFO</td>
<td>Low-Flying Object</td>
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<tr>
<td>LTE</td>
<td>Long Term Evolution</td>
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<tr>
<td>MALE</td>
<td>Medium-Altitude Long Endurance</td>
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<td>MS</td>
<td>Member State</td>
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<td>NCC</td>
<td>National Coordination Centre</td>
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<td>OSINT</td>
<td>Open-Source Intelligence</td>
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<td>PMR</td>
<td>Private Mobile Radio</td>
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<td>RPA</td>
<td>Remotely Piloted Aircraft</td>
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<td>SAC</td>
<td>Schengen Associated Countries</td>
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<td>SAR</td>
<td>Search and Rescue</td>
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<td>SBC</td>
<td>Schengen Borders Code</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea</td>
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<td>TEDS</td>
<td>Transducer Electronic Datasheet</td>
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<tr>
<td>TETRA</td>
<td>Terrestrial Trunked Radio</td>
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<tr>
<td>TOCC</td>
<td>Convention against Transnational Organised Crime</td>
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<tr>
<td>UAS</td>
<td>Unmanned Aerial System</td>
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<tr>
<td>UMTS</td>
<td>Universal Mobile Telecommunications System</td>
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<tr>
<td>UNCLOS</td>
<td>United National Convention on the Law of the Sea</td>
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<tr>
<td>UWB</td>
<td>Ultra-wideband</td>
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<tr>
<td>VTMS</td>
<td>Vessel Tracking and Monitoring System</td>
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<td>WG</td>
<td>Working Group</td>
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<td>WIMAX</td>
<td>Worldwide Interoperability for Microwave Access</td>
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<td>WSN</td>
<td>Wireless Sensor Network</td>
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# Terms and definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Source</th>
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<tbody>
<tr>
<td>Air border / external air border</td>
<td>Any portion of airspace under the responsibility of the Member States that is relevant for border management purposes that is overlaying external borders as defined in point 2 of Article 2 of Regulation (EU) 2016/399</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td>Air border surveillance</td>
<td>The surveillance of any flight of a manned or unmanned aircraft and its passengers or cargo to or from the territory of the Member States which is not an internal flight as defined in point 3 of Article 2 of Regulation (EU) 2016/399 or that is crossing the external air borders</td>
<td>REGULATION (EU) 2019/1896 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624</td>
</tr>
<tr>
<td>Assets</td>
<td>The mobile or stationary equipment and human resources at the disposal of a Member State or the European Border and Coast Guard Agency used to monitor and patrol the external borders</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td>Border surveillance</td>
<td>The surveillance of borders between border crossing points and the surveillance of border crossing points outside the fixed opening hours, in order to prevent persons from circumventing border checks, to counter cross-border criminality and to take measures against persons who have crossed the border illegally</td>
<td>REGULATION (EU) 2016/399 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on a Union Code on the rules governing the movement of persons across borders (Schengen Borders Code) Articles 2 and 13</td>
</tr>
<tr>
<td>Deployable</td>
<td>Equipment ready to be moved strategically or appropriately; refers to equipment which can be transferred by any other means than humans.</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
</tr>
<tr>
<td>Detection</td>
<td>Becoming aware of an object of interest’s presence and location within the established range.</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
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<tr>
<td><strong>Event or Incident</strong></td>
<td>A situation, which is likely to have an impact on the external borders either as regards migration, cross-border crime, or the protection and saving of the lives of migrants, including border incidents, or that may affect the functioning of EUROSUR, including any of its technical components. 'Event' refers to a situation reported in the EUROSUR system, while 'Incident' refers to a situation submitted to the JORA system.</td>
<td>Commission Implementing Regulation (EU) 2021/581 of 9 April 2021 on the situational pictures of the European Border Surveillance System (EUROSUR)</td>
</tr>
<tr>
<td><strong>External border</strong></td>
<td>The Member States’ land borders, including river and lake borders, sea borders and their airports, river ports, sea ports and lake ports, provided that they are not internal borders. Specifically for air borders or external air borders please consult the specific definition adopted for this document.</td>
<td>REGULATION (EU) 2016/399 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on a Union Code on the rules governing the movement of persons across borders (Schengen Borders Code)</td>
</tr>
<tr>
<td><strong>External border section</strong></td>
<td>The whole or a part of the external border of a Member State, as defined by national law or as determined by the national coordination centre or any other responsible national authority.</td>
<td>REGULATION (EU) 2019/1896 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624</td>
</tr>
<tr>
<td><strong>Hand-held equipment</strong></td>
<td>Small and light enough to be used or operated while being held in the hand or hands. This type of equipment is usually lightweight, powerful and easy to use, offering those responsible for land border surveillance more agility and short response time</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
</tr>
<tr>
<td><strong>Identification</strong></td>
<td>A specific object can be discerned, a woman versus a man, the specific car / establishing the unique identity or specific characteristics of the object of interest</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
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<tr>
<td><strong>Impact</strong></td>
<td>The effects of a threat on the internal security and on the security of the external borders. Impacts can also be analysed in terms of the effects on the optimum flow of passengers at the borders, and in terms of their humanitarian consequences</td>
<td>CIRAM 2.1 adopted by Management Board Decision 50/2021.</td>
</tr>
<tr>
<td><strong>Incident or Event</strong></td>
<td>A situation relating to illegal immigration, cross-border crime, or a risk to the lives of migrants at, along or in the proximity of, the external borders. 'Event' refers to a situation reported in the EUROSUR system, while 'Incident' refers to a situation submitted to the JORA system</td>
<td>REGULATION (EU) 2019/1896 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td>Unevaluated material of every description, including from observations, reports, allegations and rumour, photographs and other sources which, when processed, may produce intelligence</td>
<td>CIRAM 2.1 adopted by Management Board Decision 50/2021.</td>
</tr>
<tr>
<td><strong>Interception</strong></td>
<td>Measures taken to prevent the object of interest from proceeding further</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td><strong>Mobile</strong></td>
<td>Equipment capable of moving or being moved readily</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
</tr>
<tr>
<td><strong>National authorities</strong></td>
<td>All authorities with responsibility for surveillance of the external land and sea borders in accordance with national law and, if applicable, with responsibility for border checks and air border surveillance</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td><strong>National Border surveillance system</strong></td>
<td>A single structure or a combination of surveillance and monitoring systems which brings together surveillance activities at the external borders of a Member State, under the coordination of the national coordination centre in accordance with national law, and supports the exchange of information between all national authorities with responsibility for external border surveillance</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td><strong>Neighbouring third country</strong></td>
<td>A third country which has either a land or sea border or a common sea basin with a Member State</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
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<tr>
<td><strong>Personal data</strong></td>
<td>Any information relating to an identified or identifiable natural person ('data subject'); an identifiable person is one who can be identified directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity</td>
<td>EU’s General Data Protection Regulation (GDPR)</td>
</tr>
<tr>
<td><strong>Portable</strong></td>
<td>The equipment has the capability of being transported or conveyed; to be more specific is referring to technical devises used for land border surveillance by one or more border police officers</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
</tr>
<tr>
<td><strong>Prevention</strong></td>
<td>Activities that hinder or prevent an action from taking place</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td><strong>Reaction capability</strong></td>
<td>The ability to perform actions aimed at countering illegal cross-border activities at, along or in the proximity of the external borders, including the means and timelines to react adequately</td>
<td>REGULATION (EU) 2019/1896 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624</td>
</tr>
<tr>
<td><strong>Recognition</strong></td>
<td>The type of object can be discerned: - For air border surveillance: a small-sized drone versus a bird - For land and maritime border surveillance: a person versus a car</td>
<td>European Border and Coast Guard Agency / Member State Working Groups</td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td>The magnitude and likelihood of a threat occurring at the external borders, given the measures in place at the borders and within the EU, which will impact on the EU internal security, the security of the external borders, on the optimal flow of regular passengers or which will have humanitarian consequence</td>
<td>CIRAM 2.1 adopted by Management Board Decision 50/2021.</td>
</tr>
<tr>
<td><strong>Sensor</strong></td>
<td>A sensor is a mechanical device sensitive to a physical stimulus (light, heat, radiation level, pressure, motion) or like, that transmits a signal to a measuring or control instrument. The sensor responds to a physical stimulus and converts the stimulus into a signal conveyed to another device</td>
<td>Technical Standards for Land Border Surveillance Equipment</td>
</tr>
<tr>
<td><strong>Situational awareness</strong></td>
<td>The ability to monitor, detect, identify, track and understand illegal cross-border activities in order to find reasoned grounds for reaction measures on the basis of combining new information with existing knowledge, and to be better able to reduce the loss of lives of migrants at, along or in the proximity of the external borders.</td>
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<tr>
<td><strong>Stationary</strong></td>
<td>Having a fixed position; not movable</td>
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<td><strong>Threat</strong></td>
<td>A force or pressure acting on the external borders. It is to be characterised by its magnitude and likelihood. The analyst should describe which processes or factors both inside and outside the EU affect the magnitude and the likelihood of the threat.</td>
<td></td>
</tr>
<tr>
<td><strong>Tracking</strong></td>
<td>To follow or pursue the track/traces / determining the past, current and future locations of an object of interest</td>
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<tr>
<td><strong>Unauthorised border crossings</strong></td>
<td>Any act of crossing the border at or outside border crossing points which is not in compliance with the rules for crossing the external borders set out in the Schengen Borders Code.</td>
<td></td>
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**CIRAM 2.1 adopted by Management Board Decision 50/2021.**

**Technical Standards for Land Border Surveillance Equipment**

**European Border and Coast Guard Agency**
Executive Summary

Considering “Regulation 2019/1896” on the European Border and Cost Guard, the European Border and Coast Guard Agency should be able to contribute to the development of Common Minimum Standards in line with the respective competences of the Member States and the European Commission. This document is the compilation of the Common Minimum Standards for Air², Land³ and Maritime⁴ Border Surveillance that was developed by Member States forming dedicated Working Groups with support of the European Border and Coast Guard Agency.

The main objective of this Guidance for the Common Minimum Standards (hereinafter “Common Minimum Standards” or “CMS”) is to serve as support for the harmonisation of border surveillance concepts and practices between the Member States, which are either Schengen Associated Countries⁵ or Schengen Candidate Countries⁶. Therefore, this document outlines a set of practices and identified commonalities concerning air, land and maritime border surveillance. It serves as a guidance for Common Minimum Standards that Member States could consider to be reflected in terms of national border surveillance strategies, cooperation, national operational models, and border surveillance capabilities.

The introduction section of this document provides an overview of the need of guidance for Common Minimum Standards for air, land and maritime border surveillance in the EU, its background, purpose, audience, scope, limitations and methodology. The second section provides the proposed guidance for Common Minimum Standards for national border surveillance strategy, Intra service, interagency, and international cooperation, national operational model, as well as border surveillance capabilities.

National operational model is grouped into principles and mechanisms, air border surveillance activities, data management, risk analysis, crisis management, patrolling, security, and asset management.

Border surveillance capabilities are grouped into operational principles for the national border surveillance capabilities, factors for the selection of the surveillance solutions, technical equipment and integrated solutions, staffing, training and communication. This document embodies the collective work of the three phases to develop the Common Minimum Standards for air, land and maritime border surveillance.

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² Member State Working Group for air border surveillance was composed of Belgium, Czechia, Finland, France, Italy, Lithuania, and the Netherlands.
³ Member State Working Group for land border surveillance was composed of Estonia, Finland, Lithuania, Latvia, and Poland.
⁴ Member State Working Group for maritime border surveillance was composed of Bulgaria, Croatia, Cyprus, Finland, Germany, Italy, Lithuania, Malta, Poland, and Portugal.
⁵ Schengen Associated Countries: Austria, Belgium, Czechia, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and Switzerland.
⁶ Schengen Candidate Countries: Romania, Bulgaria, and Cyprus.
This document also addresses the aspects of air border surveillance related to low-level airspace, such as the detection of low-flying objects, which are not yet fully developed in the Member States and essentially still lack common standards. In this specific case it is summarizing the main principles to be considered when establishing such standards.

Timeline overview

- **Publication of Regulation 2019/1896**
  Article 10(1)(c): “[Frontex] (...) support, as appropriate, the development of common minimum standards for external border surveillance, in line with the respective competences of the Member States and of the Commission (...)”

- **Request by Lithuania**
  Upon official request from Lithuania and following a needs analysis, Frontex commenced to work collectively with Member States on the definition and development of common minimum standards for surveillance of the EU external borders.

- **CMS for Land Border Surveillance**

- **CMS for Maritime Border Surveillance**

- **CMS for Air Border Surveillance**

- **Publication of the Guidance for the CMS for Air, Land and Maritime Border Surveillance**

Timeline:

- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- **Now**
- 2025
01 Introduction
1. Introduction

The unique identity of each border type is visually represented by the following colour-coding in the right margin of the document:

- dark blue for maritime;
- green for land;
- light blue for air.

The use of the colours serves as a visual aid, facilitating the identification of commonalities where the colours overlap. Conversely, a single colour represents a guideline exclusive to a specific domain of border surveillance, clearly indicating each domain’s unique standards.

1.1 Background

The mission of the European Border and Coast Guard Agency is to support the management of the EU’s external borders by reinforcing, assessing, and coordinating the actions of the Member States. Regulation (EU) 2019/1896 on the European Border and Coast Guard lays down the tasks and responsibilities of the European Border and Coast Guard Agency.

Article 10(1)(z) of the above-mentioned Regulation stipulates the task of the European Border and Coast Guard Agency to:

“Support the development of technical standards for equipment in the area of border control and return, including for the interconnection of systems and networks, and support, as appropriate, the development of common minimum standards for external border surveillance, in line with the respective competences of the Member States and of the Commission.”

1.2 Purpose and audience

The Common Minimum Standards (CMS) for EU Border Surveillance shall define the guidelines for minimum standards of border surveillance to be applied by Member States and Schengen Associated Countries performing surveillance of external EU borders. In contrast to technical standards or technical guides for the equipment, the Common Minimum Standards approach perceives external border surveillance harmonisation from a broader perspective encompassing strategic and operational level considerations and factors influencing the build-up of border surveillance capabilities within Member States and Schengen Associated Countries.
The target audience for this document is envisaged to be composed of the authorities of EU Member States and Schengen Associated Countries (hereinafter “Member States”) involved in external border surveillance activities at the national, regional, and local levels, as well as other institutions and bodies involved in the European Integrated Border Management such as the European Commission, and the European Border and Coast Guard Agency in accordance with their tasks.

1.3 Scope and limitations

Each Member State is responsible for the development of its border control strategy, including the development of the required national procedures and capabilities such as an integrated border surveillance concept based on risk analysis, coordination and cooperation, human resources, infrastructure and the use of modern technical means for border surveillance with the objective of providing constant situational awareness and sufficient reaction capabilities for safeguarding the EU’s external borders against various risks and adverse phenomena.

To ensure efficient and comprehensive border surveillance and situational awareness at the EU external borders, whilst protecting and saving lives, it is important to develop a guideline for a harmonised approach to air, land and maritime border surveillance in the Member States, acknowledging their individual operational needs and the particularities they encounter e.g., planning of the surveillance activities, their monitoring and assessment.

1.4 Border surveillance

According to the Schengen Borders Code, border surveillance refers to the surveillance of borders between border crossing points and the surveillance of border crossing points outside of fixed opening hours, to prevent persons from circumventing border checks.

The main purposes of the surveillance of external borders are:

- to **prevent and discourage** unauthorised border crossings and keep record of such;
- to **counter** and discourage cross-border criminality e.g., through routine patrolling;
- to **take measures** against persons who have crossed the border illegally;
- to maintain **reliable situational awareness** and reaction capability;
- to support detection, identification and enforcement of all relevant procedures, including registration of persons crossing borders in an unauthorised manner and refer them to the appropriate mechanism.

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In general, national border surveillance systems consist of a combination of surveillance activities, as well as the use of fixed and mobile technical equipment and surveillance capacities. Border surveillance activities and capabilities encompass various management levels: strategic, operational, tactical, specific procedures, risk analysis, sufficient number of specialised staff, communication systems, and different types of equipment (e.g., sensors and platforms) that are implemented and used to meet the objectives established at these various levels.

The Common Minimum Standards for Air, Land and Maritime Border Surveillance address the main process phases that make up border surveillance in the Member States:

- **preparedness**, i.e., the capabilities to anticipate and respond to changing operational situations at the external borders;
- **prevention**, i.e., the activities and measures that apply to prevent unauthorised border crossings, crisis and events from occurring at external borders.
- **reaction**, i.e., actions aimed at responding to unauthorised cross-border activities at, along or in the proximity of the external borders.

1.4.1 About the air border surveillance

Regarding the specific focus on the air border surveillance, the Schengen Borders Code does not distinguish between border surveillance performed in different border environments (i.e., air, land and sea) but provides a generic definition.

In contrast, the preface of Regulation 2019/1896 establishes that air border surveillance “should be an element of border management since both commercial and private flights and remotely piloted aircraft systems are used for illegal activities related to immigration and cross-border crime.” Moreover, the objective of air border surveillance is “to detect and monitor such suspicious flights crossing or intending to cross the external borders and to perform related risk analysis with a view to triggering reaction capabilities by the competent authorities of the Union and the Member States”.

Overall, Article 2 of Regulation 2019/1896 defines air border surveillance as “the surveillance of any flight of a manned or unmanned aircraft and its passengers or cargo to or from the territory of the Member States which is not an internal flight”.

This document recognises challenges associated with the present legal framework and the EBCG mandate and aims to overcome them firstly by narrowing the scope to air border surveillance at low-level airspace and approaching it from two perspectives (explained below). Secondly, a proposal for a wider definition of key terminology is made, serving also as a clarification for the scope of air border...
surveillance within the context of this document and a means to avoid different interpretations.

In this document, ‘air border surveillance’ refers to the surveillance of any flight of a manned or unmanned aircraft and its passengers or cargo to or from the territory of the Member States which is not an internal flight as defined in point 3 of Article 2 of Regulation 2016/399 or that is crossing the external air borders. Additionally, external ‘air borders’ mean any portion of airspace under the responsibility of the Member States that is relevant for border management purposes that is overlaying external borders as defined in point 2 of Article 2 of Regulation 2016/399.

This document approaches air border surveillance from two perspectives:

<table>
<thead>
<tr>
<th>Low-Level Airspace Surveillance Over External Borders:</th>
<th>Detection of Low-Flying Objects at Air Borders:</th>
</tr>
</thead>
<tbody>
<tr>
<td>border surveillance activities conducted over external land and maritime borders in low-level airspace. These operations are guided by operational models specifically designed and implemented for land and maritime environments.</td>
<td>air border surveillance in low-level airspace performed with the objective of detecting, tracking and identifying low-flying objects, such as remotely piloted aircraft systems, that cross EU borders.</td>
</tr>
</tbody>
</table>

The following definitions guide the scope of air border surveillance in the context of this document:

**External air border - definitions**

1. External air border refers to any portion of airspace under the responsibility of the Member States that is relevant for border management purposes that is overlaying external borders as defined in point 2 of Article 2 of Regulation (EU) 2016/399.

**Air border surveillance - definitions**

Air border surveillance refers to the surveillance of any flight of a manned or unmanned aircraft and its passengers or cargo to or from the territory of the Member States which is not an internal flight as defined in point 3 of Article 2 of Regulation (EU) 2016/399 or that is crossing the external air borders.

1. Air border surveillance addresses the identification of possible new trends and threats at the external borders performed by aerial means, in order to feed the European Situational Picture and to enhance the awareness of the European Border and Coast Guard Agency and Member States or Schengen
Associated Countries about specific situation(s) that may lead to a migratory pressure at the EU external border.

2. Air border surveillance encompasses the detection, identification and tracking of aircrafts and other forms of equipment being used for, or suspected of being used for, illegal immigration or cross-border crime.

Low level air space - definitions

1. National Authorities define the airspace under their jurisdiction for air border surveillance. This includes determining vertical airspace limits and relevant geographical boundaries.

2. National Authorities establish a review process for their airspace definitions. The aim is to gradually align with an EU-wide standard, adapting to advancements in technologies such as unmanned aircrafts and other potential aerial threats.

3. For National Authorities lacking a specific definition of surveillance airspace, an initial guideline suggests considering 120 meters for low-level airspace to assist in harmonisation efforts.

4. National Authorities identify Critical Points of Interest within their airspace where enhanced surveillance is advisable. These could include airports and high-traffic zones close to or at external land and maritime borders.

Low-flying objects - definitions

1. Low-flying objects refer for example to the following systems:

   a. Piloted aircraft:
      i. Rotary wing aircraft;
      ii. Fixed-wing aircraft.

   b. Unmanned Aircraft:
      i. Class I (<150 Kg):
         1. Micro;
         2. Mini;
      ii. Class II (150 kg - 600 kg);
      iii. Class III (>600 kg).
c. Other:
   i. Paragliders;
   ii. Hang gliders;
   iii. Other low-flying objects heavier than air;
   iv. Other low-flying objects lighter than air;
   v. Other.

2. The operational capabilities and performance of each design type differ for example in terms of range, speed, manoeuvrability, aerodynamics, payload and energy consumption.

3. National Authorities also need capabilities to detect, track, identify, and possibly mitigate suspicious and ill-intentioned activity performed by low-flying objects.

4. Low-flying objects have been used for example to interfere civilian flight operations by entering and flying within the restricted airspace of airports.

5. Low-flying objects have also been used for smuggling illicit and dangerous goods across borders and for surveillance and gathering of information from sensitive areas, facilities, and activities, such as border stations, border control points, military facilities, or military exercises.
1.4.2 Multipurpose approach and Search and Rescue in the context of maritime border surveillance

In the EU, maritime surveillance is a transnational and multidimensional issue, supporting safety, security, and environmental protection.

At EU level, the European cooperation on coast guard functions\(^9\) relies on the inter-agency cooperation of the European Border and Coast Guard Agency, EFCA and EMSA which are fostering their cooperation to support national authorities carrying out coast guard functions\(^10\), especially with the implementation of multipurpose maritime operations. Accordingly, maritime surveillance contributes to border control, maritime environmental protection, fisheries control, vessel traffic management, law enforcement, trade and economic interests, as well as search and rescue (SAR).

SAR is of significant importance and forms a crucial part of maritime surveillance operations. National authorities conducting maritime surveillance are either responsible for SAR at national level or cooperate with Competent National Authorities under the coordination of the latter. Furthermore, there is a need for high level cooperation between authorities conducting maritime surveillance and those responsible for SAR.

Therefore, activities within the domains of maritime surveillance as a whole and SAR can converge. In the context of Common Minimum Standards for Maritime Border Surveillance, SAR operations refer to situations that may arise during border surveillance operations at sea as according to Regulation (EU) 2019/1896\(^11\) and Regulation (EU) 656/2014\(^12\).

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\(^10\) List of coast guard functions are listed in the practical handbook on the European cooperation on coast guard functions established by COM Recommendation (EU) 2021/1222.


1.5 Methodology and organisation of work

The development of the Common Minimum Standards for border surveillance was triggered after an official request from Lithuania and publication of the legislative requirements reflected in the Regulation 2019/1896. Following the analysed needs for the development of the Common Minimum Standards for border surveillance, in the year 2021, the European Border and Coast Guard Agency launched an initial phase of the Common Minimum Standards development — that was the establishment of the draft Common Minimum Standards for land border surveillance together with pre-selected countries that share similar border characteristics.

In the second phase, the European Border and Coast Guard Agency continued the work by establishing the draft Common Minimum Standards for maritime border surveillance with another set of pre-selected EU Member States.

In the third and final phase, the European Border and Coast Guard Agency concluded the work by establishing the draft Common Minimum Standards for air border surveillance with the third set of pre-selected EU Member States. This document merges the outcomes of the three phases.

A Working Group was established for each of the border environments (i.e., air, land and maritime) to support the drafting of the Common Minimum Standards. The main objective of the creation of the Working Groups was to identify and assess commonalities with regards to border surveillance between the Member States involved. To ensure objectivity and procedural validity, the following methodological approach was adopted for each phase of the Common Minimum Standards development process:

- identification of the basic factors that should guide the development of minimum standards;
- development of harmonised definitions of categories and classifications to serve as a conceptual framework;
- review of operational environments and strategic contexts in relation to the border surveillance;
- consideration of information on the deployment of border surveillance models to offer an objective basis for assessing needs.
Together with contributions received from the Working Group participants through interviews, workshops, survey responses and other communications, the drafting of the Common Minimum Standards was supported with desk research. The objective of the desk research was to complement, cross-compare, elaborate and harmonise the Common Minimum Standards for border surveillance with available information on the broad range of topics addressed by the standards. The information retrieval and analysis focused on national, European, and international level guidelines, legislation, operating procedures, policies, recommendations, standards, strategies, study reports and other publications.

The three documents prepared across the three phases underwent several rounds of review within the Working Groups and was presented during three plenary meetings to Member States outside the Working Group.

**Working Groups**

**Air Borders**
- Belgium
- Czechia
- Finland
- France
- Italy
- Lithuania
- Netherlands

**Land Borders**
- Estonia
- Finland
- Latvia
- Lithuania
- Poland

**Maritime Borders**
- Bulgaria
- Croatia
- Cyprus
- Finland
- Germany
- Italy
- Latvia
- Lithuania
- Malta
- Poland
- Portugal

*Figure 1 - Member States Working Groups establishment for border surveillance*
02 Guidelines for the Common Minimum Standards
2. **Guidelines for the Common Minimum Standards**

2.1 **National border surveillance strategy**

Principles and mechanisms
2.1 National border surveillance strategy
   - Principles and mechanisms

1. National circumstances (national legal framework, geography, orography, weather, threats, etc.) and the results of the strategic and operational risk analysis determine the establishment of the national border surveillance strategy\textsuperscript{13}, i.e., the long-term approach to the surveillance of external borders within a Member State.

2. The national border surveillance strategy is compliant with the national IBM strategy and EU IBM Strategy.

3. The national border surveillance strategy is compliant with the requirements expressed in the Progress report on the Implementation of the European Agenda on Migration\textsuperscript{14}, the Technical and operational strategy for European integrated border management, and the Schengen Strategy.

4. Member States use Common Vulnerability Assessment Methodology (CVAM), when available, to contribute to and support the European Border and Coast Guard Agency in assessing their capacities to face present and upcoming challenges, as well as immediate consequences at the external border and subsequent implications for functioning of the Schengen area.

5. Member States prepare and adopt their contingency plans concerning border management, which describe all the necessary measures and resources for the possible reinforcement of their capabilities. The contingency plans shall be based on scenarios that are derived from risk analysis. Where possible Member States are assisted by the European Border and Coast Guard Agency Liaison Officers in preparing their contingency plans.

6. Member States use the Border Permeability Indexation Methodology, when approved, following the Common Vulnerability Assessment Methodology (CVAM) quantification project.

\textsuperscript{13} The air, land and maritime border surveillance strategy documents the objectives, priorities, and Key Performance Indicators that will be used by National Authorities to set up their border surveillance operation model (or border surveillance concept) and achieve the policy objectives of the country and of the EU. Depending on the Member State, such strategy could be a standalone document or defined in the various existing documentation.

7. Member States make use of the European Border Surveillance System (EUROSUR), that is a framework for information exchange and cooperation between Member States and the European Border and Coast Guard Agency to improve situational awareness and increase reaction capability at the external borders.

8. The national capability development plans for border management and return are aligned with the contingency plans and national IBM strategy and are describing the medium-to long-term evolution of the national capabilities for border management and return and address border surveillance as an integral component of border control.

9. The national border surveillance strategy refers to the fundamental rights as an overarching legal obligation of stakeholders involved in EIBM. Consequently, migratory challenges at the EU’s external borders are addressed in compliance with fundamental rights as contained in international law, with the right to seek asylum, regardless of where the persons are detected or apprehended or whether they express a wish to seek asylum.

10. It is advised that the national border surveillance strategy considers relevant policy areas of the European Green Deal. It includes objectives related to the identification and implementation, where possible, of environmental protection procedures and solutions with the goal of reducing the National Authorities’ environmental footprint. Furthermore, the national border surveillance strategy supports the fight against environmental crimes such as trafficking of hazardous materials, trafficking of illicit waste and wildlife, etc.

11. The national border surveillance strategy is documented and revised at least every five years to ensure that the objectives are aligned with national and EU policy objectives.

12. The national border surveillance strategy considers the pillars of impact, i.e., the pressure on a border section; permeability, i.e., the ease of passing a border section; and capacity, i.e., the border authority interventions to prevent the illegal activities at the border area. As according to Regulation (EU) No 2019/1896, external border sections shall consist of land, sea if applicable and, where a Member State so decides, air border sections.

13. National Authorities consider the impact on the border area/line as a criterium when establishing and evaluating their border surveillance.
14. The impact on the border area/line for maritime border surveillance is determined by the frequency and perception of the following threats:

a. Illegal border crossings and migration pressure;
b. Suspicious ships and/or movements at the border;
c. Drugs and/or firearms smuggling;
d. Intelligence activities (e.g., gathering of information on the activities of law enforcement agencies);
e. Criminal activities utilising unmanned aircrafts;
f. Illegal, unreported and unregulated (IUU) fishing;
g. Marine pollution;
h. Organised crime (e.g., human trafficking);
i. Terrorism;
j. Other(s).

15. The national border surveillance strategy refers to the relevant international laws, conventions and EU legislation, including:

a. United National Convention on the Law of the Sea (UNCLOS);
b. International Convention on Maritime Search and Rescue;
c. International Convention for the Safety of Life at Sea (SOLAS);
d. United Nations Convention against Transnational Organised Crime (TOCC);
e. Protocol Against the Smuggling of Migrants by Land, Sea and Air Supplementing the United Nations Convention Against Transnational Organised Crime;
f. Regulation EU 656/2014 on Surveillance of External Sea Borders;
g. Regulation (EU) 2016/399 The Schengen Borders Code (SBC);
h. Regulation (EU) 2019/1896 on the European Border and Coast Guard;
i. Commission implementing Regulation (EU) 2021/581 of 9 April 2021 on the situational pictures of the European Border Surveillance System (EUROSUR);
j. Other(s).

16. The implementation of the national border surveillance strategy at the national, regional, and local levels is monitored and measured with appropriate Key Performance Indicators (KPIs). The list of KPIs identified below is non-exhaustive and additional KPIs can be included. The acceptable range of values or target values for the KPIs are set nationally, and updated when needed, based on e.g., risk analysis, availability of surveillance systems and equipment, the continuity of operations and annual/multi-annual budgeting:
a. Reaction time measured from the moment a patrol receives a task or alert to the moment when the patrol is at the incident location. Such reaction time could be measured at national, regional and/or local levels. Separate targets could be used during months with adverse weather conditions and in case of difficult or remote areas (e.g., maximum time to reach a border section within the responsibility area of the patrol on duty);

b. Proportion of the border section that are covered by stationary/non-stationary means. Considered surveillance equipment comprises for example:

   i. Stationary surveillance systems (e.g., cameras, radars);
   ii. Mobile surveillance systems (e.g., patrol vehicles, coastal or offshore patrol vessels, various aircraft).

c. Personnel assigned to border surveillance duties and tasks, measured by Full-Time Equivalent (FTE) by year calculated by dividing total hours worked during a year with total working hours by year. Distribution of personnel according to national, regional and local levels can be implemented;

d. Number of equipment used for surveillance (e.g., vehicles, vessels, aircrafts);

e. Availability of equipment at any given time, required to border surveillance (e.g., aircrafts, vessels, surveillance systems);

f. Duration of patrolling measured in patrolling hours (h) or flight hours (h) per year;

g. Frequency of patrolling measured in dispatched patrols (no) or flight times (no) per year;

h. Patrolled area measured in patrolled kilometres (km) or nautical miles (nm);

i. State border offences measured in number of offences detected:

   i. The number of crimes and offences;
   ii. Number of police checks.

j. Number of specialised training sessions delivered to the staff performing border surveillance.

17. The acceptable range of values or target values for the KPIs are set, and updated when needed, nationally based on e.g., risk analysis, availability of surveillance systems and equipment, the continuity of operations and annual/multi-annual budgeting.
18. National border surveillance strategy involves all national authorities involved in this activity, and a coordination body (i.e., National Coordination Centres as stipulated in Regulation (EU) 2019/1896 on the European Border and Coast Guard) is established to ensure coherent implementation, follow-up, monitoring and evaluation, as well as lessons learnt for the next revision.

19. Inter-agency arrangements and cooperation models for border surveillance are integrated in the national border surveillance strategy.

20. National Authorities use the level of permeability as a criterium when establishing and evaluating their border surveillance.

   a. **For air border surveillance** performed over layers corresponding to the open sea, coastal areas and extension of the coastline:

      i. Physical distance to the neighbouring Third Country;
      ii. Density of maritime traffic;
      iii. Sea conditions (wave height, water temperature);
      iv. Slope of coastline;
      v. Climate characteristics;
      vi. Type of coastal line / shore;
      vii. Geographical type of land (island, peninsula).

   b. **For air border surveillance** performed over layers corresponding to land border layers:

      i. Land coverage;
      ii. Slope;
      iii. Network density;
      iv. Population density;
      v. Climate characteristics.

   c. **For land border surveillance** performed at:

      i. Border line;
      ii. Up to 1 km from the border line where technical means are deployed;
      iii. Up to 30 km where also patrolling is organised.
d. **For maritime border surveillance** performed at layers corresponding to the open sea:

   i. Physical distance to the neighbouring Third Country;
   ii. Density of maritime traffic;
   iii. Sea conditions (wave height, water temperature).

e. **For maritime border surveillance** performed at layers corresponding to the coastal area and inland:

   i. Land border layers (to be applied to the land close to the coastline)
      1. Land coverage;
      2. Slope of coastline;
      3. Geographical type of land (island, peninsula, mainland);
      4. Network density behind coastline;
      5. Population density;
      6. Climate characteristics.

21. **For air border surveillance**, as low-flying objects constitute a significant threat to external borders, the national border surveillance strategy refers to their monitoring.

22. **For maritime border surveillance**, the national border surveillance strategy refers to Member State maritime surveillance activities conducted at maritime boundaries defined by baseline and internal waters, territorial seas (TS), contiguous zones (CZ) and exclusive economic zones (EEZ).

23. **For maritime border surveillance**, the national border surveillance strategy considers search and rescue (SAR) operations as a crucial element of maritime surveillance.
2.2 Intra service, inter-agency and international cooperation
2.2 Intra service, inter-agency and international cooperation

1. The efficient surveillance of external borders requires cooperation and coordination, as reflected in the IBM Strategy, between all actors involved in the management of borders (e.g., civilian authorities and military branches relevant for specific border surveillance domains) in particular through information exchange and mutual assistance at the following levels:

   a. Intra service (within a service or ministry);
   b. Inter-agency (between different ministries or border management agencies);
   c. International (with other countries and international organisations).

2. Each Member State determines the division of responsibilities between its National Authorities responsible for the surveillance of external borders.

3. Formalised agreements between the relevant National Authorities clarify the scope of and arrangements for cooperation, as well as the legal, operational, and financial obligations of each partner.

4. Agreements among agencies take into account the use of shared resources e.g.:

   a. use of joint mobile units to have sufficient competences and/or expertise within a single patrol unit;
   b. joint specialised training;
   c. sharing of technical equipment owned by one competent authority;
   d. supervision of activities conducted by an officer of one competent authority;
   e. use of available surveillance data shared on inter-agency level;
   f. use of integrated informational sources.

5. National Authorities’ IT systems should allow for efficient and secure information exchange across agencies by means of interoperability.

6. National Authorities have in place procedures to exchange information with other competent and relevant authorities when necessary. Furthermore, IT systems should allow for efficient and secure information exchange across agencies by means of interoperability.
7. When necessary or requested, National Authorities have in place procedures to direct and/or redirect cases to other relevant competent national authorities. Furthermore, the IT systems and/or communication systems should allow for the efficient and secure referral of cases. National Authorities have in place minimum requirements (e.g., technical, procedural and informational) for cooperation with other actors when providing search and rescue during border surveillance operations or upon request.

8. At EU level, the inter-agency cooperation works between:

a. **For air border surveillance**, the Network Manager of the European Air Traffic Management Network (EATMN) and the European Union Aviation Safety Agency (EASA) and the European Border and Coast Guard Agency relying on working arrangements support an enhanced cooperation on 5 main areas: information sharing, surveillance services, risk analysis, capacity building and capacity sharing to enhance the support provided to Member State’s administration carrying out air border surveillance.

b. **For maritime border surveillance**, the European Fisheries Control Agency (EFCA), European Maritime Safety Agency (EMSA) and the European Border and Coast Guard Agency relying on an indefinite tripartite working arrangement support an enhanced cooperation on 5 main areas, information sharing, surveillance services, risk analysis, capacity building and capacity sharing to enhance the support provided to Member State’s administration carrying out coast guard functions activities.
2.3 National operational model
2.3 National operational model

2.3.1 Principles and mechanisms

The national operational model is the medium-term approach for strengthening national capacities and developing technical systems for maritime border surveillance.

The Common Minimum Standards for Maritime Border Surveillance addresses the main process phases that make up maritime border surveillance in the Member States.

The maritime border surveillance operational model is documented and revised regularly and if needed, updated taking into account changes.

Each Member State ensures a direct, effective, and adequate response to changes in the situation at the EU's external border at national level.

The national operational model is set up and implemented in a manner that is respectful of human rights as defined in the EU Charter of Fundamental Rights, and takes into account the work on the subject of the EU Agency for Fundamental Rights.

Member States have the right to prevent illegal border crossing of territorial waters and to prevent the infringement of the customs, fiscal, immigration or sanitary laws.

Figure 2 - Summary of the Principles of national operation model

1. The national operational model\(^\text{15}\) is the medium-term approach for strengthening national capacities and developing technical systems for border

\(^{15}\) National Operational Model or Concept is the operationalisation of the national strategy for securing the external borders.
surveillance. It implements the national border surveillance strategy and is based on the following pillars:

a. Risk analysis, performed according to established methodologies at the EU level (i.e., Common Integrated Risk Analysis Model - CIRAM) including the risk level and impact levels for individual border sections;

b. Situational awareness based on combining data from relevant sources with existing knowledge (e.g., EUROSUR Fusion Services including impact levels, criminal intelligence, border surveillance equipment).

2. The Common Minimum Standards for border surveillance address the main process phases that make up border surveillance in the Member States:

a. preparedness: the capabilities of Member States to anticipate and respond to changing operational situations at the external borders;

b. prevention: activities and measures that Member States apply in order to prevent any unauthorised border crossings, as well as crisis and events from occurring at external borders;

c. reaction: Member States’ actions aimed at prevention and suppression of trafficking and smuggling and other illegal activities at, along or in the proximity of the external borders.

3. The border surveillance operational model is documented and revised regularly (e.g., on a yearly basis), and if needed, updated taking into account changes in national and international operational environment, technological development, legal framework, situational awareness and risk analysis.

4. Each Member State ensures a direct, effective, and adequate response to changes in the situation at the EU’s external border at national level.

5. The national operational model is set up and implemented in a manner that is respectful of human rights as defined in the EU Charter of Fundamental Rights\textsuperscript{16}, and takes into account the work on the subject of the EU Agency for Fundamental Rights\textsuperscript{17}.

6. **For maritime border surveillance**, Member States have the right as stipulated in Regulation (EU) 656/2014, Regulation (EU) 2016/399, UNCLOS Article 21:

   a. to prevent illegal border crossing of territorial waters;
   b. to prevent the infringement of the customs, fiscal, immigration or sanitary laws by taking legal measures related to the violation of the right of innocent passage.

2.3.2 **Data management**

1. All data at rest and on the move is protected by proper means, and access shall be granted to authorised authorities/users only. In addition to this, data management is in accordance with the EU’s General Data Protection Regulation (GDPR)\(^\text{18}\) and/or national laws regulating the processing of personal data by National Authorities. Proper means of data protection include but are not limited to:

   a. authentication and authorisation;
   b. Virtual Private Networks (VPNs);
   c. encryption;
   d. backups;
   e. firewalls;
   f. disaster recovery.

2. National Authorities have clearly established data management policies and data management systems, based on common principles, standards and regulations, for personal and/or other types of data collected, generated, transmitted, logged, processed, analysed and stored by the border surveillance solutions and systems they use.

3. Data management policies and data management systems are periodically revised (e.g., at least on a five-year basis).

4. Documents related to border surveillance are stored in secured locations depending on the classification and dissemination level(s) assigned to them.

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\(^{18}\) Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation).
5. Data access is specified by the responsible authority in a dedicated document (e.g., rules of procedures/manuals/regulations) and granted by the administrators to:
   a. the operators working directly with the system at the control centre of a border control unit;
   b. the users involved in border surveillance operation(s) that are connected remotely to the system via internal communication networks.

6. National Authorities process personal data in accordance with applicable national provisions.

7. Every National Authority that processes any personal data is responsible for the security of this data, appropriate training of staff and compliance with EU and national data protection rules and requirements.

8. Adequate measures are in place to monitor the implementation of the data management policy.

9. National Authorities make sure that personal data is deleted or anonymised upon expiry of the data retention period set under applicable EU and national laws.

10. The technical equipment and integrated solutions mentioned in section 2.4.3 paragraph 1 have the following capabilities in terms of data management:
   a. enabling the automatic and autonomous storage, processing as well as collection of different types of data in order to condense and refine the information for the purpose of decision making;
   b. integrating the surveillance data gathered from the equipment and solutions into data pools to enhance situational awareness;
   c. generating target data from observation data.

2.3.3 Risk Analysis
1. For border surveillance in the Member States the risk analysis is used to:
   a. support optimal allocation of resources for border surveillance;
   b. support efficient, uniform level of control along the borders;
   c. support agreed standards for information gathering and processing for risk analysis purposes in border management.
2. Risk analysis in Member States has a centralised structure and is carried out at the national, regional, and/or local levels.

3. Risk analysis is defined as systematic examination of:
   a. Threat - defined by magnitude and likelihood;
   b. Vulnerability - level and efficiency of response to threat;
   c. Impact - the effects of a threat on the EU’s internal security or the functioning or security of the external borders. It can also be analysed in terms of humanitarian consequences.

4. Risk analysis in Member States is based on Common Integrated Risk Analysis Model and can be complemented by national rules and procedures.

5. Member States Border and Coast Guards shall take results of the risk analysis into account when planning their operations and activities at the external borders and their activities with regards to return.

6. Member States have a structured process in place that comprises the elements of collecting, processing, analysing applicable information that is used for the assessment of identified threats, vulnerabilities, and impact and distribution of the analytical results.

7. Member States compile regular, comprehensive and up-to-date risk analysis products, and disseminate them to relevant stakeholders.

8. Member States develop new risk-analysis products based on a needs basis.

9. Current risk analysis is used to mitigate risks and vulnerabilities and counter threats also through initiated joint operations and rapid border interventions between the European Border and Coast Guard Agency and Member States at the external borders.
2.3.4 Crisis management

1. National Authorities formulate a crisis management plan.

2. The plan aligns with international best practices and standards, such as ISO 22361:2022 Security and resilience - Crisis management, providing guidance on how to address crisis management within organisations.

3. The plan for example:
   
   a. includes detailed procedures to anticipate, assess, prevent and mitigate potential crises that threaten the organisation;
   b. defines organisational responsibilities during crisis;
   c. describes implemented crisis communication;
   d. includes training plans.

4. National Authorities regularly monitor and review the crisis management plan and processes.

2.3.5 Security

1. The security of the entire border surveillance system is ensured by the National Authority to which it belongs.

2. Security measures are in place to ensure the confidentiality and integrity of the data and information stored and processed.

3. The surveillance system ensures the confidentiality of the data, following applicable EU and national regulations.

4. National Authorities adopt and implement IT security best practices (e.g., ISO/IEC 27000 series on information security standards) and perform regular security risk assessments of their surveillance systems and information systems in order to identify the necessary security measures to deploy.

5. The surveillance solutions are authorised with a defined access control.

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19 https://www.iso.org/standard/iso-iec-27000-family
6. National Authorities manage the accreditation and verification process of the surveillance equipment according to applicable national procedures.

7. Information owners are responsible and accountable for attributing, updating and downgrading classification levels of information.

8. National Authorities define which tasks require staff members to have personal security clearance and require it accordingly.

9. National Authorities set up adequate technical and organisational security measures to ensure the management and protection of data, taking into account the state of the art, the costs of implementation, the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for the rights and freedoms of natural persons.

10. The use and access to the data is granted to authorised staff only, based on a need-to-know principle, therefore ensuring protection against unauthorised connection, control or reconfiguration.

11. Any sign suggesting that a security incident has occurred or could be occurring is immediately reported to and analysed by responsible security officers. If their analysis confirms that the risk is high, they must immediately report the incident in line with the rules and accreditation processes managed by the National Authorities and set out in the national accreditation documentation.

12. The communication between different border surveillance solutions and equipment is secured.

2.3.6 Asset management

1. Each Member State has a system in place to collect up-to-date information on the use, storage and maintenance needs of the solutions used for border surveillance.

2. There is a system in place that enables the position of all assets and border guard patrols involved in border surveillance at external borders to be known at the national level at all times, but only to competent authorities and through secured systems.

   a. The participating patrolling assets have a knowledge of the positioning of the other assets operating in the same area.
b. The sharing of the patrolling plans and the real time positioning of the participating assets shall be based on a national operational concept.

c. The centralised command and control mechanism has a real time knowledge of the availability of stand by assets and their readiness to be mobilized in case of emergency.

3. The positions of the assets and patrols of the border control units may be shared nationally and internationally on a need-to-know basis in order to enlarge knowledge on assets that are used in different situations and in this way improve the level of situational awareness.

4. Deployed technical equipment is listed and includes:

   a. the type of the equipment;
   b. the purpose of the equipment;
   c. the period of deployment;
   d. the date of the latest revision or maintenance;

   e. For maritime border surveillance, the type and purpose of the vessels.

2.3.7 Patrolling

1. National Authorities plan the frequency and duration of patrolling according to:

   a. border area characteristics;
   b. the equipment deployed and/or installed;
   c. risk analysis (indicators and profiles);
   d. impact level;
   e. situational awareness;
   f. staff available and reserve.

2. National Authorities deploy the appropriate number of staff for achieving comprehensive border surveillance, in particular ensuring that:

   a. A mobile border patrol unit is continuously available for the border section under the responsibility of a border control unit;
   b. A mobile border patrol unit is able to rapidly respond, without any need of external reinforcement, to border incidents at different points in the area of operation of a border control unit.
3. Regular patrols are supported by additional on duty patrols in case of operational need, defined in accordance with risk analysis.

4. The number of patrolling hours is documented by National Authorities on a yearly basis.

5. Each border patrol shift assigned for the same border section with similar conditions has access to the same technical equipment and integrated solutions.

6. At the low risk level, border guard patrol units are equipped and manned in such a way as to optimise detection of irregular migration in the vicinity of the border area.

7. The technical equipment for the patrols is transportable and deployable by a single border patrol unit during their time shift, for set-up in remote locations and is capable of withstanding transport.

8. Each border surveillance patrol has the capabilities to:
   
   a. create and maintain the situational picture covering their relevant area of operations (patrolling area);
   b. reach any location within the area of responsibility within a specified time and depending on local conditions;
   c. detect, at their detection range, all incidents endangering border security and to eliminate the threat and/or to reduce the risk and to ensure subsequent actions;
   d. communicate with other patrols and the operational centres, through the communication means as stated in chapter 2.4.6, paragraph 7;
   e. know their precise location and sufficiently the conditions in their territory;
   f. be able to transport themselves to the locations of the incidents/alerts, during all seasons and in all weather conditions;
   g. be able from the field of operation to consult national and international databases;
   h. provide life-saving first aid;
   i. protect own operational capability from both kinetic and electronic attacks;
   j. secure all evidence from the scene of incidents at the border;
k. detect, at their detection range, people, vehicles and vessels both in daylight and night, as well as in all regular regional weather conditions;
l. classify and identify at their respective range any objects of interest;
m. collect and report information about any vessel suspected of being engaged in illegal activities at sea.

9. Crews deployed for the patrol at borders are equipped with the equipment adjusted to the duties as well as the foreseen problems/threats which may occur during a shift and to the national law. Such equipment may include:

a. on foot day patrol: service weapon(s) both lethal and non-lethal, radio unit (communication means), protection gear, tactical vest or backpacks, handcuffs, and binoculars;
b. on foot night patrol: service weapon(s), radio unit (communication means), protection gear, tactical vest or backpacks, handcuffs, flashlight, and binoculars / night vision goggles / infra-red camera;
c. vehicle patrol: car (or other vehicle), service weapon(s), radio unit (communication means), protection gear, tactical best or backpack, bulletproof vest, protection personal equipment (PPE) (e.g. face mask and latex gloves), first aid kit, reflective vest (when on the road), handcuffs, flashlight, binoculars / night vision goggles / infrared camera, hand-held unit for passport control and spike strips, according to national restrictions.
d. vessel crew: service weapon(s), radio unit (communication means), operational bulletproof vest, including reflective vest (when at sea), protection gear, handcuffs, hand-held search and rescue equipment (e.g. flare pistol, torches, rope).
For land border surveillance, if patrol dogs are used for border surveillance purposes, the minimum operational standards at frontier stations ensures the capability to:

- e. adapt the dog profile to the operational situation of the risk analysis;
- f. provide a sufficient number of trained canine units;
- g. safely host the dogs;
- h. safely transport the dogs;
- i. report on activities that have included the use of dogs;
- j. perform appropriate training (e.g. elements such as barriers, hideouts, etc.).

2.3.8 Air border surveillance principles

The Common Minimum Standards in this document related to air border surveillance are approached from two concepts:

Concept 1. Border surveillance performed over external land and maritime borders at low-level airspace guided by operational models designed and implemented for land and maritime environments (hereinafter “Border surveillance performed over external land and maritime borders”);

Concept 2. Air border surveillance at low-level airspace performed with the objective of detecting, tracking, and identifying low-flying objects (LFO), such as remotely piloted aircraft systems, crossing EU borders (hereinafter “Air border surveillance at low-level airspace”).

This document provides:

1. Common Minimum Standards that are applicable to both concepts (i.e., Shared principles);
2. Common Minimum Standards that are specific to one concept (i.e., Dedicated principles).

Shared principles

1. National Authorities plan the frequency and duration of air border surveillance activities according to:

- a. border area characteristics (see section 2.6.2 paragraph 2);
- b. the equipment deployed and/or installed;
- c. risk analysis (indicators and profiles);
- d. impact level;
- e. situational awareness;
- f. staff available and reserve.
2. National Authorities deploy appropriate number of staff for achieving comprehensive air border surveillance at low-level airspace.

Dedicated principles

**Concept 1:** Border surveillance performed over external land and maritime borders

3. The number of surveillance hours using low flying objects is documented by National Authorities on a yearly basis.

4. **With regards to border surveillance performed over external land and maritime borders at low-level airspace,** National Authorities have the following capabilities at Critical Points of Interest:

   a. create and maintain the situational awareness covering their relevant area of operations;
   b. detect, at their detection range, all incidents endangering border security both in daylight and night, as well in all regionally regular weather conditions;
   c. classify and identify at their respective range any objects of interest;
   d. collect and report information about any activities associated with illegal activities;
   e. communicate with patrols and the operational centres, through the communication means as stated in section 2.7.6;
   f. be able from the field of operation to consult national and international databases;
   g. protect own operational capability from both kinetic and electronic attacks;
   h. secure all evidence from the scene of incidents at the border.

**Concept 2:** Air border surveillance at low-level airspace

5. **With regards to air border surveillance at low-level airspace to detect, track, and identify low-flying objects,** although solutions are not widely adopted in Member States, the following capabilities may be considered as important for National Authorities at Critical Points of Interest:

   a. detect and locate low-flying object;
   b. track low-flying object (e.g., real-time or near real-time flight route);
   c. identify low-flying object (e.g., model);
   d. identify the location of the pilot of the low-flying object;
To mitigate and counteract threats, the following actions can be tailored based on the type of low-flying object, especially considering whether it is manned or unmanned:

i. intercept low-flying object (e.g., taking control, forcing landing, jamming the positioning system of the low-flying object);

ii. interfere with the remote or automated operation of the low-flying object;

iii. destroy low-flying object.
2.4 Border surveillance capabilities
2.4 Border surveillance capabilities

2.4.1 Operational principles for the national border surveillance capabilities

1. National Authorities along their external borders have the capabilities for:

   a. preparedness:

      i. maintaining situational awareness on changing operational situations at national and EU external borders;
      ii. ensuring that there is adequate number of resources (equipment and staff) to respond in case of need;
      iii. maintaining situational awareness and operational readiness on the status and condition of staff, own assets and infrastructure;
      iv. maintaining operativity in case of crisis, disaster or other incidents;
      v. ensuring that all staff receive appropriate training and are competent for the tasks assigned to them;
      vi. ensuring that the communication with or between deployed surveillance solutions is effective, efficient and secure;
      vii. ensuring that the staff can work safely in conducting the tasks assigned to them;
      viii. preparing and adopting a contingency plan concerning border management as stated in chapter 2.1 paragraph 5.

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Figure 3 – Summary of the capabilities of National Authorities along their external borders
b. prevention:

i. ensuring constant real-time or near-real time monitoring of the border line and border areas or sections;

ii. detecting, identifying, and recognising the relevant critical objects (e.g., persons, vehicles, boats and ships, low-flying objects) during daylight, night as well as in various weather conditions;

iii. monitoring the positioning and tracking the movements of patrol units (e.g., from a border control unit);

iv. communicating with and commanding the activities of used assets and resources.

c. reaction:

i. intercepting the critical objects:
   1. stopping suspected critical objects/targets (e.g. persons who crossed the border illegally and/or persons/vessels/vehicles who are carrying illicit objects - in line with applicable laws);
   2. checking the identity and necessary documentation of persons and also e.g., personal belongings and means of transportation for illicit goods;
   3. in case of vehicles and vessels, e.g., checking the documentation to verify if the vehicle is stolen and/or crossing the border illegally;
   4. apprehension of the persons, with a possible check of their identity in relevant database, in accordance with national laws;
   5. examination of the scene of the event;
   6. transporting suspected persons to respective locations for further processing according to national requirements;
   7. collecting evidence.

ii. providing protection of lives and integrity to people following the fundamental rights principle, e.g.:
   1. providing first aid assistance and access to medical assistance if and when needed;
   2. efficiently applying the referral mechanisms on migration;
3. providing protection especially to vulnerable migrants.
   iii. ensuring actions to access relevant targets on high seas in the border domain applicable (as defined in UNCLOS\(^{20}\)).

2. National Authorities perform border surveillance activities with the use of patrolling, border control units and ground-based surveillance systems.

3. Border surveillance is supported by integrated, mobile and portable technical surveillance systems and equipment (e.g., cameras, radars, sensors, boats, unmanned and manned aircrafts, vessels).

4. National Authorities make use of the EUROSUR Fusion Services to enhance their surveillance capabilities if needed.

5. National Authorities have access to aerial assets, patrol boats and/or vessels and terrain vehicles to enhance their surveillance capabilities.

6. National Authorities use external data sources to support effective surveillance of their borders, such as:
   a. geographic information;
   b. satellite imagery;
   c. weather information;
   d. land-use;
   e. international and EU databases relevant for border control (e.g., CISE, EUROSUR);
   f. automatic identification system data (Base AIS, Terrestrial AIS, SAT AIS);
   g. Vessel Traffic and Monitoring System (VTMS);
   h. flight plans for manned aircraft and, where applicable, flight authorisations or other relevant clearances for unmanned aircraft;
   i. tracking systems;
   j. information exchange with National Coordination Centres as stipulated in Regulation (EU) 2019/1896 on the European Border and Coast Guard.
   k. information exchange with third countries;

l. human intelligence (HUMINT);
m. open-source intelligence (OSINT);
n. signals intelligence (SIGINT);
o. Radar Base Stations;
p. long range identification and tracking data (LRIT);
q. Cospas Sarsat;
r. other.

7. National Authorities have the following basic capabilities for conducting search and rescue following their national plans:

a. to rescue and accommodate on ship (short term accommodation);
b. to rescue and accommodate persons in distress stranded in remote coastal areas;
c. to accommodate on land (short term accommodation);
d. to evacuate persons in distress;
e. the ability to provide medical assistance to persons in distress.

8. For land border surveillance, the need for using patrol dogs for specific border surveillance purposes is decided by National Authorities and deployed during patrolling when needed.

2.4.2 Factors for the selection of the surveillance solutions

1. Each National Authority selects and deploys border surveillance solutions in line with the identified needs of the concerned border area, including its purpose, permeability, threats impacting the border area and EUROSUR Impact Levels.

2. The selection and application of border surveillance solutions is tailored according to:

a. Threats and risks existing at external border zones, classified as per EUROSUR Impact Levels from low to critical, and which may include:
   i. illegal border crossings;
   ii. drugs and/or weapons smuggling;
   iii. organised crime (e.g. human trafficking);
   iv. facilitation of human beings;
   v. smuggling of goods (drugs, tobacco, firearms, alcohol, etc.);
   vi. illegal, unreported and unregulated (IUU) fishing;
   vii. marine pollution;
   viii. terrorism;
   ix. hybrid warfare;
Specific meteorological conditions at external border zones, including seasonal changes and temporal fluctuations in various climate elements and their impact on environmental conditions.

Ability to detect, recognise and/or identify objects. For instance, these solutions should allow to:

i. detect and track, e.g., the position, course and speed of the objects in the surveillance zone;

ii. recognise, e.g., transportation means and their characteristics, such as colour, construction, type and equipment on board, the group of persons and its composition (number, equipage, etc.);

iii. identify, e.g., the license plates and registration numbers and any other relevant information.

Ability to enhance fusion and analysis of data from multiple sources, decision-making, taking action and navigation. For instance, these solutions when combined should allow to:

i. correlate, e.g., potential patterns of suspicious movements;

ii. take decisions based on the good assessment coming from the data acquired by the equipment;

iii. perform search and rescue with the best suitable means;

iv. navigate, e.g., in any relevant areas and in all conditions within the border area.

For air border surveillance, operational needs dictated by type of mission of the low flying objects used for border surveillance (if chosen by the national authorities):

i. payload;

ii. speed;

iii. duration/endurance (e.g., maximum flight time);

iv. range;

v. altitude;

vi. functionalities (e.g., surveillance, mapping, imaging, object detection, classification);

vii. weight;

viii. cost;

ix. maintenance;

x. deployment complexity.
e. **For maritime and air border surveillance**, the type of characteristics of external border zones, including:

i. climate characteristics;
ii. landforms and low-level ground obstacles;
iii. proximity of critical infrastructure;
iv. type of coastline;
v. coastal landforms;
vi. population density;
vii. sea conditions (e.g., water levels, tide, waves);
viii. maritime traffic;
ix. inland traffic network density;
x. nature of the target to be detected;
xi. communication network coverage;
xii. type of mission (covert);
xiii. distance to third countries;
xiv. relevant water areas and in all conditions within the border area.

f. **For land border surveillance**, border permeability, which is estimated following the Land Border Permeability Indexation Methodology\(^\text{21}\). The methodology features the following layers:

i. terrain slope;
ii. land cover;
iii. transport network density;
iv. building density;
v. climate characteristics:
   1. ice days;
   2. heavy precipitation days;
   3. snow depth.

3. **For air border surveillance** at low-level airspace to detect, track and identify low-flying objects, the selection and application of border surveillance solutions is tailored according to: 

\(^{21}\) Methodology developed within the Common Vulnerability Assessment Model (CVAM). The concept of border permeability for the purpose of Common Vulnerability Assessment Model (CVAM) quantification was developed on the assumption that migratory flows signify a function of the geographical permeability of the respective borders, the effectiveness/capacity to control them by relevant Member States’ authorities, and function of the driving force defined by the people’s willingness to cross the border.
a. Range of detection and/or classification;
b. Detection environment (urban, rural, sea);
c. Expected illumination conditions (daylight vs night-time operations);
d. Specific meteorological conditions at external border zones and their impact on environmental conditions (e.g., fog, rain);
e. Quantity of detected targets (single unmanned aerial system (UAS) vs a swarm of UAS);
f. Speed of target;
g. Distance to target;
h. Mobility;
i. Weight;
j. Processing power;
k. Cost;
l. Maintenance;
m. Installation complexity.
2.4.3 **Technical equipment and integrated solutions**

1. The acquired technical equipment and integrated solutions for border surveillance should be compliant with relevant requirements specified in the Technical Standards for Maritime Equipment (TS - 2021 - 001), the Technical Standards for Aerial Equipment (TS - 2021 - 002) and the Technical Standards for Land Border Surveillance (TS - 2021 - 003). For fixed border surveillance systems, technical standards are applicable to the extent that the technical project of the system allows.

2. The technical specifications of the equipment and relevant manuals are available to the authorised users as defined and documented by the National Authority.

3. To acquire the relevant capabilities, National Authorities can use a range of solutions such as:

   a. long-range and short-range radars (i.e., utilisation of backscattering based on electromagnetic waves);
   b. lidar (i.e., utilisation electromagnetic radiation at the optical and infrared wavelengths);
   c. image sensors (e.g., cameras);
   d. electro-optical / infrared imaging (i.e., detecting electromagnetic waves in different frequencies);
   e. radio frequency analysis (i.e., analysing communication and data transfer based on radio frequency transmissions);
   f. acoustic analysis (i.e., analysing ambient sound generated e.g., by aircraft engine and propellers system);
   g. motion sensors;
   h. searchlights;
   i. loudspeakers;
   j. the above equipment can be combined with and mounted to platforms such as:
      i. aerial systems: helicopters, plans, aerostats, small, fixed wing and rotary wing remotely piloted aircraft;

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ii. vehicles and maritime vessels used for border surveillance (mobile surveillance systems);

iii. deployable assets such as trailers, towers and containers.

k. Countermeasures against unmanned aircraft, including:

   i. nets, birds of prey, projectiles;
   ii. jamming (e.g., radio frequency, GNSS);
   iii. GPS spoofing;
   iv. hacking;
   v. high-energy radiation bursts;
   vi. high-energy laser.

4. For maritime border surveillance, to acquire the relevant SAR capabilities, National Authorities can use a range of boat and vessel equipment for search and rescue equipment such as:

   a. vessels with the relevant SAR equipment;
   b. life-saving equipment to rescue persons in distress at sea including inflatable life rafts, survival suits, life jackets, lifeboats, fire-fighting equipment, supplies and survival equipment, stretchers, line-throwing apparatus, boat and grappling hooks, life buoys;
   c. navigation and communication equipment to position and communicate with persons in distress at sea including GNSS receivers, binoculars, cameras, portable VHF radios, air band VHF radios;
   d. signalling equipment to assist persons in distress at sea including searchlights, flare pistols, torches, signalling lamps, flame and smoke floats, buoyant VHF/UHF marker beacons and copies of the international code of conduct of signals;
   e. medical equipment to help the rescued persons including blankets, food, stretchers, medical supplies and medicines, first aid kit, shelter and clothing;
   f. equipment to connect and tow boats and/or vessels including line-throwing apparatus to connect one boat to another, ladders and manropes, floodlights for recovery at night, life boats ready for use as a boarding station and a crane/lifting equipment.

2.4.3.1 Availability and reliability

1. National Authorities ensure adequate capacities to provide continuous comprehensive situational awareness and reaction capacity during unexpected
events at external borders or in case of degradation of border surveillance solutions.

2. The reliability (frequency and impact of failures) of the surveillance systems and solutions is analysed and documented by the relevant national authority on a regular basis (e.g. annually).

3. The required level of performance of the deployed assets is maintained until their disposal.

4. National Authorities assess the recovery capabilities of each technical equipment and integrated solution, adapt the capabilities against their business needs and document the capability requirements.

5. Exercises (e.g., tests, drills, simulations) are conducted regularly, e.g., at least every five years, to assess the recovery capabilities of the technical equipment and integrated solutions and to identify potential weaknesses and lessons learned. The exercises are documented and aligned to the business continuity plan/disaster recovery plan of the relevant National Authorities.

6. Diagnostic information related to the technical equipment and integrated solutions are accessible to the authorised users of the solutions in real time.

### 2.4.3.2 Maintenance and business continuity

1. National authorities establish and maintain the appropriate infrastructure in order to conduct preventive and corrective maintenance of the surveillance equipment, and therefore, ensure maximum operability. Maintenance may be executed by the National Authorities’ own means (workshops), and/or outsourcing.

2. The maximum downtime of the technical equipment and integrated solutions does not compromise the provision of comprehensive situational awareness and reaction capacity of National Authorities at external air borders.

3. National Authorities have an up-to-date maintenance plan for the technical equipment and integrated solutions to ensure the maximum operational availability.

4. National Authorities are able to monitor the status of the technical equipment and integrated solutions in real time and remotely if not intended to operate fully as standalone.
2.4.4 Staffing

1. The number of staff and associated equipment allocated to border surveillance is documented (e.g., in an Annual Plan) and revised regularly (e.g., on a yearly basis).

2. National Authorities deploy the appropriate number of staff for achieving comprehensive border surveillance, in particular ensuring that each border control unit has operative staff on continuous active duty.

3. The network of border control units at borders are revised periodically assessing the necessity to change the current number of border control units actively used. Regular patrols are supported by additional, on-duty patrols in case of operational need, defined in accordance with risk analysis.

4. National Authorities deploy the appropriate number of staff to lead, develop, maintain and operate the technical equipment and integrated solutions deployed, in particular to ensure that:
   a. the solutions can be used safely (e.g., the surveillance systems comply with the relevant Occupational Safety and Health related legislation);
   b. the solutions can be used securely;
   c. the solutions can be used effectively;
   d. the solutions can be used by competent operators;
   e. the solutions can be used as legally required;
   f. decision-making on the solution use can be done by competent operators;
   
   g. **For air border surveillance**, there is an organisational contact point and leader for operations that implement unmanned aerial systems.

5. National Authorities deploy the necessary number of staff and associated equipment, e.g., ground-based sensors, UAS, vehicles, dogs, boats, vessels and/or vessel equipment, based on:
   a. border area characteristics;
   b. risk analysis;
   c. equipment and infrastructure deployed at the border area;
   d. budgetary framework;
2.4.5 Training

1. Border surveillance-related tasks are performed by trained staff.

2. The list of mandatory and optional training sessions is provided to staff upon onboarding, and the delivery of such training is monitored on a regular basis.

3. All border guards participating in border surveillance-related tasks have received mandatory basic training.

4. Together with basic training, the staff are provided with additional training or continuous/refresher training based on identified training needs at the European, national, regional, and local levels.

5. The training material and manuals are checked for relevance on a regular basis.

6. Training constitutes an inseparable element of the development of staff throughout their careers (refresher, specialisation, and new skills/information training) and is based on updated curricula and manuals.

7. The delivery and effectiveness of such training is monitored on a regular basis.

8. Training does not refer only to operators or crews, but also for support staff, such as staff responsible for managing preventive and corrective maintenance, data management, etc.

9. The training of border and coast guards is aligned with the Common Studies (i.e., generic studies, law enforcement, practical skills) and the Border Modules of the Common Core Curriculum (CCC) for Border Guard Basic Training in the EU.

   a. For land border surveillance, the Land Border Module completes the Common Studies of the CCC for border guards to be deployed to posts at land borders and concentrates on specific legislation and practices necessary for border guards to perform their basic level border
surveillance service at different types of land border crossing points, in both normal and special circumstances.23

b. **For maritime border surveillance**, the Sea Border Module supplements EU border and coast guards’ existing expertise by providing relevant knowledge on the necessary legalities for maritime operations including border crossing management, migratory challenges, threats through a cross-border dimension, focusing on search and rescue capacities to save persons in distress. National and international operational cooperation is regarded as a means to enhance situational awareness and the relevant support action.

10. **For air border surveillance:**

| National Authorities ensure that the pilot(s) of low-flying objects has conducted practical training: | a. (self-study, organised within a training facility or by other means) in the operating conditions within which the low-flying object will be flown |
| | b. that supports the practical skills and competencies of the pilot(s) |
| | c. may include for example flying exercises regarding take-off or launch and landing or recovery, precision flight manoeuvres remaining in a given airspace volume, hovering in all orientations or loitering around positions when applicable |
| | d. may cover contingency procedures for abnormal situations (e.g., a return-to-home function, if available) |

11. **For air border surveillance**, depending on the aircraft class and competence requirements associated with that class, National Authorities may provide dedicated training course(s) for operators, covering for example the following subjects:

a. aviation safety;

23 https://op.europa.eu/en/publication-detail/-/publication/75e38de7-87ef-11e7-b5c6-01aa75ed71a1
b. airspace restrictions;
c. aviation regulations;
d. human performance limitations;
e. operational procedures;
f. aircraft general knowledge;
g. privacy and data protection;
h. insurance;
i. security.

12. For land border surveillance, border guards working with dogs receive specialised training, depending on the objective and type of dog. The basic training for dog-handlers can include the following:

a. manageability/obedience;
b. use of force;
c. tracking;
d. person search;
e. object search (e.g. detection of money, firearms, explosives, drugs, etc.).

2.4.6 Communication

1. Appropriate communication infrastructure is implemented for the technical equipment and integrated solutions to ensure that:

a. the solutions can be operated when needed (i.e., the communication infrastructure is available);
b. the solutions can be operated in the planned areas of use (e.g., the communication infrastructure covers areas of interest or areas where border guards patrol and need to communicate with border control units, other units and/or systems);
c. the latency provided by the communication infrastructure is sufficient for the specific use purpose of the solutions;
d. the data transmission capacity provided by the communications infrastructure is sufficient for the specific use purpose of the solutions;
e. the data transmission is sufficiently secured against critical threats, which include for example eavesdropping, interception, hijacking and physical attacks.

2. The communication means are interoperable when necessary.
3. Communication means are used to distribute the sensors’ acquired data (alarms, events, images, videos, target data, etc.) to the different elements in the system.

4. Sensor-acquired data is accessible remotely through a communication/information system.

5. Communication means are used for managing the resources (sending commands and required data for control and coordination) and allowing communication between these.

6. Technical capacity of the existing communication network takes into account:
   a. Encrypted wireless broadband communication (e.g., TETRA);
   b. Backup communication system (e.g. satellite phone);
   c. Public mobile network coverage in different border environments.

7. For the purposes of border surveillance, National Authorities have the following types of communication available:
   a. Personal ground communications, including wireless technologies specially aimed at providing broadband data and voice links for short and medium range topologies;
   b. System-level communications devoted to creating a broadband link between the mobile or deployable assets and the Mobile C2 station or to send locally gathered data to the command centre.
   c. For land border surveillance, wireless short-range communication means, which are particularly suitable to be used in wireless sensor networks (WSN).
   d. For maritime border surveillance, global maritime distress and safety system telecommunication equipment.
   e. For maritime and air border surveillance:
      i. Very-high frequency air-band transceivers;
      ii. Automatic identification systems;
      iii. Wireless short-range communication means.

8. Communication means are analysed and selected by the National Authorities considering the following factors:
a. the cost of the equipment;
b. real-time requirements or maximum acceptable latency;
c. required bandwidth of the devices;
d. mobility of the devices: whether they are steady or not, and in the latter case what is their expected speed and moving patterns;
e. topology and range - the routing path to get to the receiver, the main characteristics of the routing nodes.

f. For maritime and air border surveillance, communication coverage capacity.

g. For maritime and land border surveillance, the location of the mounted and on personnel devices (ground, air, water, underwater, etc.).

9. An indicative list of the communication means for border surveillance systems depending on the needs is provided below:

a. very-high frequency air-band transceivers:
   i. VHF radio communication.

b. automatic identification systems:
   i. transponder to receive and emit signals.

c. Personal Ground Communication:
   i. Mobile radios (e.g., TETRA, TEDS, TETRAPOL, DMR);
   ii. UHF/VHF Radio Communication;
   iii. cellular mobile networks (GPRS/GSM, UMTS, LTE);
   iv. LTE trunking systems;
   v. mobile ad hoc networks.

d. Wireless short-range communication:
   i. IEEE 802.15.4;
   ii. ZigBee;
   iii. Bluetooth.

e. System-Level Communication:
   i. satellite communication;
   ii. ground-based communication (e.g., Wi-Fi (IEEE 802.11), ultra-wide band (UWB), WIMAX);
   iii. fibre-optic communication.
f. For maritime border surveillance, global maritime distress and safety system telecommunication equipment:
   i. VHF radio communication.

10. The technical equipment and integrated solutions have open interfaces for the import and export of data to other solutions.

11. Communication through an open interface is secured with a firewall and a virtual private network (VPN).
03
Reference documentation
3. **Reference documentation**

1. Charter of Fundamental Rights of the European Union

2. Common Integrated Risk Analysis Model (CIRAM 2.1) adopted by Management Board Decision 50/2021

3. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the REGIONS the European Green Deal, COM/2019/640 final


8. Common Vulnerability Assessment Methodology - currently being drafted

**For air border surveillance:**


**For land and maritime border surveillance:**

For maritime border surveillance:


15. International Convention on Maritime Search and Rescue


17. Protocol Against the Smuggling of Migrants by Land, Sea and Air Supplementing the United Nations Convention Against Transnational Organised Crime

18. Enhancement Of Safety of Life at Sea by The Prevention and Suppression of Unsafe Practices Associated with Alien Smuggling by Ships


20. International Convention for the Prevention of Pollution from Ships (MARPOL)