

MEETING REPORT

Frontex Industry Days 6-10 December 2021

Responsible staff:	Research and Innovation Unit (RIU)
Place of meeting:	Online through Webex meetings and b2match platforms

Background

The Frontex Industry Days are meetings held with industry representatives where the latest developments in technology and solutions applicable for border management are showcased and discussed. The event comprised a week of direct meetings with industry and an online exhibition, which was held over the entire month, offering technology innovators, solution providers, and start-ups the opportunity to showcase their technologies and innovative solutions.

Following our [announcement](#), 73 relevant applications were received via a harmonized online form, from which 23 were invited to panel discussions on the Webex meetings platform to further explore in-depth technical aspects of their proposed solutions. All 73 applicants were invited to share technical and practical aspects of the proposed innovative technological solutions on a tailored b2match online platform and engage in live discussions with attendants based on their interests and availability. The live Webex meetings were not recorded, and the data on the b2match platform was not saved to protect the industry's proprietary, intellectual, and company confidential data. Some companies' representatives expressed their interest to share their leaflets and brochures, available for consultation below.

Meetings were attended by Frontex internal business units, Member States' representatives, European bodies, and Agencies.

Frontex I-Days offered an opportunity for attendees to gain valuable insights on innovative technology potentially applicable for border management and receive feedback from the EBCG community on areas of interest to be considered for the future I-Days and demonstration events.

The following border management capabilities were of particular interest and focus:

- Innovative, cost-efficient, long-endurance, Remotely Piloted Aircraft Systems capable of take-off and landing in constrained spaces i.e., VTOL.
- Deployable, autonomous solutions for border surveillance.
- Solutions for law enforcement: portable and mobile equipment used in field mission operations, Evidence Data Recording, data storage and data streaming capabilities i.e., body-worn equipment, land terrain vehicle and maritime vessel cameras etc.
- Solutions for safe detection and identification of hidden persons or illicit goods inside vehicles, ships, or containers.

Industry presentations

The 23 companies' representatives were offered a 25-minute slot each for their solution presentation, including the Q&A session as follows:

uAvionics Technologies Sp. z o. o. presented a solution based on Unmanned Aerial Vehicles (fixed wing 3rd gen S-380 Barracuda and Fixed wing 4th gen S-410 Tigrar) and multirotor (Inspector and Geomapper) for various purposes such as S&R and inspections, equipped with software support for processing and archiving data gathered by UAVs, and offering engineering and consulting services. S-410 Tigrar is a fully integrated unmanned system with high endurance (20h flight time), safe and modular system that can be deployed for aerial inspection, monitoring and surveillance missions.

Laxton Group presented end-to-end solutions in the identity verification and document security fields. Offering products for secure document authentication through its proprietary infra-red (IR) and ultra-violet (UV) technologies that allow the verification of a document's security feature to ensure its validity. Standard and tailored development of Front-End Applications, hardware (Biometric Registration Kits, Self-Service Enrolment Kiosks), and Back-end Systems.

Hexagon Geospatial is operating in the field of Smart perimeter and border security. Integrating legacy sensors and existing systems with hardware and software for video analytics, geo-analytics, and real-time situational awareness. Offering end-to-end solutions from sensors to screen, integrated with automated data leverage. Serving Border Security cases such as sensor placement, drone and human detection, image analysis, object detection and real-time analysis. Using artificial intelligence and real-time analytics to develop systems capable of motion detection and pattern recognition. Offering the Common Operation Picture system to provide comprehensive insight into all the information systems for border surveillance.

ICEYE OY is operating in the field of SAR (Synthetic Aperture Radar) Satellite Data. It uses radar satellites with active sensing that can penetrate through cloud cover and can operate day and night. Satellites can capture many areas in a single pass, with multiple sites clustered near each other. Optimising to deliver persistent monitoring worldwide with different imaging modes (Stripmap, Spotlight and Scansar). Airport, Maritime and Border monitoring. Offering a daily coherent Ground Track Repeat that enables extracting information about ground changes (Coherent Change Detection).

Rohde & Schwarz GmbH & Co KG is delivering solutions for cellular network and mobile phone monitoring from strategic to tactical level. Passive mobile phone monitoring for border control and arrival monitoring. Active mobile phone monitoring, location and Search & Rescue. Wideband passive GSM monitoring for detecting events, localization based on passive information with Multi-Sensor and Multi-Operator usage.

Sopra Steria are developers of the Entry/Exit System Programme on account of the French Ministry of Interior. Flexible open-source modular end-to-end solution. Decoupled hardware & software for better maintainability and evolutions. Wider solution for ID checks within Schengen Area (IOP). Proof of Concept demonstrated at Milipol 2021 Conference (ID document check, EES check, Sanitary Pass check). Offering hand-held Check Device & Enrolment Tablet with OCR reader for passport or ID card, IR reader for QR code, FP reader, RFID chip reader and Camera for face matching. Offering a configurable and customisable back-end dashboard for visualisation and analysis.

SARUAV Ltd. are developers of SARUAV (S&R UAV) software for supporting searches of missing persons through the automated processing of aerial images taken by drones. Capable of detecting humans in RGB aerial images (land and water) with the help of a mobility model of a walking person. Works offline and on efficient laptops. Already on the market and operative. Facilitates and speeds up the detection of persons in open terrain. Near-real-time human detection in aerial images acquired by drones.

Hozint - Horizon Intelligence is operating in the fields of threat awareness services. Offering real-time risk intelligence combining human and artificial intelligence (AI) to deliver highly relevant and timely threat alerts for travel risk, situational awareness & business continuity. Automatic crawling of information from social media, news, and governmental websites and automated translation. AI software selects relevant information and classifies it by topic and locations while also doing an impact assessment. Human analysis verifies the information provided by the AI and enriches it with qualitative data, relevancy, and source credibility checks. First alert is made within 6 minutes while a consolidated report within 20 minutes. Over 15,000 alerts per day capability.

IAS International GmbH's IAS Optical Radar is an airborne wide-area search system that autonomously detects objects on the ocean's surface, presenting aircraft operators with a series of small images of each object found alongside its location coordinate on a map. IAS OR uses a specially configured array of day and night optical sensors that continuously observe the ocean in a 180° arc in front of the aircraft. IAS OR consists of day and night optical array, onboard Processor Line Replacement Unit (LRU) with Wide Area Search software and a Mission system. IAS Optical Systems are capable of autonomous detection of objects, classification, Persistent Tracking, and cross cue. ORCA Optical Radar is an optical pod that can be mounted to a range of fixed and vertical wing aircraft. HeliSAR Helicopter Optical Radar Search & Rescue is an optical camera array integrated into the side of the cockpit.

ECA Robotics is offering Robotics and Security solutions for the Defence and Aeronautics sectors. Its range of naval robotics in house is suitable for civil (Hydro/oceano, O&G, Search & Rescue), like Remotely Operated Vehicles, Autonomous Underwater Vehicles, Unmanned Surface Vehicles. ECA Robotics' range of land robotics, suitable for harsh environments. UAV solution capable of covert surveillance even in turbulent weather condition. Offering a wide range of simulations in all the domains (air/sea/land).

Schiebel Aircraft GmbH's CAMCOPTER S-100 Unmanned Air System (UAS) is an Autonomous Vertical Take-off and Landing (VTOL), rotary UAS operated from more than forty classes of ships ranging from a small patrol vessel to a carrier. Production facility in Wiener Neustadt, Austria. Designed to manned aviation standards for use on both land

and at sea. Typical system setup consists of two S-100 air vehicles with multiple payloads, a ground control system with two workstations and data link, a design optimised to ensure minimal footprint and 24/7 availability. Encrypted data link provides secure, real-time connectivity with various range options out to 200 km (108 nm). A Satellite Communication (SATCOM) module is available for operations beyond topographic line of sight. STANAG 4586-compatible, interoperability allows interaction and direct control from land-based stations, vessels, land vehicles and aircraft.

UAVision- Engenharia de Sistema presented the OGASSA OGS42. Their latest generation of UAVision Unmanned Air Systems. It was specially designed for long endurance maritime operations. It has proved to be a reliable platform with hundreds of hours of testing and operations. The OGASSA can be deployed in multiple scenarios and missions. It has the capability of mounting several different types of payloads and gimbals. The standard version of the OGASSA is equipped with high-performance electro-optical Gimbal, strong and reliable communication link using UAVision StormCOMM IP communication system which is capable of reaching 100km LOS radius on top of the sea. All systems are designed and produced in Portugal.

Nordic Unmanned AS presented the Lockheed Martin Indago platform, used for rapid response missions, land or vessel based with minimum logistical footprint and available space for take-off and landing used in Maritime border surveillance, controlling, and monitoring of fishing activities, pollution monitoring, SAR. The Camcopter S-100 rotary wing platform used for emissions monitoring and general maritime surveillance. Also the Textron Aerosonde, which is a tactical UAS that has matured through military and civilian operations with 500 000 flight hours. The platform can be equipped with a variety of configurations and is also available in a VTOL configuration like EO, IR, SAR, AIS, AI with automatic object detection, mobile phone detectors, EPIRP.

UAV Factory presented the Penguin C MIL VTOL small tactical unmanned aircraft with vertical take-off and landing capability. The aircraft is using patented boom design with retractable covers to hide the vertical lift propellers in level flight. Such technology allows 20% drag reduction with significantly longer endurance compared to existing systems in the market. Its flight endurance of 14+ hours (payload dependent) and 180 km range meets the requirements of various missions. Moreover, the Penguin C VTOL excels as a multi-mission surveillance system. This aircraft is optimized for gyro-stabilized day and night ISR payloads of 4 kg weight and a radio link range of up to 180 km. The aircraft is available in both Group 2 and Group 3 configurations. It also has a secondary payload bay.

MARTIN UAV designs and produces the V-BAT “128” Unmanned Aerial System (UAS). It is the latest in UAS technology and evolution and is a unique VTOL UAS that transitions to winged flight for long endurance. The V-BAT is ideally suited for deployed, low footprint ISR operations and has demonstrated operational land and maritime capability requiring high mobility, including autonomous landings in remote confined areas such as forests, dirt roads, grass fields, from a moving truck, day, and night operations, in adverse weather, and so on. The V-BAT is fitted with industry-leading Electro-Optic (EO) and/or Infrared (IR) sensors, though a variety of other sensors are available. It is powered by a gas-oil mix high efficiency engine and controlled through the latest technology in Ground Control Station (GCS) software.

Advanced Protection Systems SA designs and manufactures systems and electronic products for security and defence markets. HQ/R&D in Poland. Focus on critical infrastructure, law enforcement, and military. Conducting R&D activities - 100% intellectual property rights in 3D MIMO radar technology and jammers technology.

Veridos GmbH Employs various levels of checks to determine authenticity. Portfolio features include document verification, person and identity verification, entitlement verification, passenger automation at airports gates. Development of vehicle checkpoints at land and sea borders. Supervision of automated self-service processes. Identification solution based on the biometrics of human DNA.

BE1 Defense Technologies and Solutions Ltd. presented a security system for protection of sites against unwelcomed drones/UAV/UAS preventing them from entering, flying above, or landing inside any given perimeter. Provides a solution against drones, built on a four layers system: Detection, Acquiring, Neutralization, Destruction.

Skynovation AS presented solutions for border and offshore use cases with 100 kg lifting capacity, 6 hours flight time without any load and 5 hours and 15 minutes flight time with 20 kg surveillance equipment. Surveillance with image recognition, infra-red camera, etc. 4 hours and 30 min flight time with 2 kW floodlight. Preprogramed (GPS) flight route. Manual control for short range operation shore patrol hybrid RPAS.

BlueBird Aero Systems presented the ThunderB-VTOL, a UAS for long-range covert, real-time day and cooled-IR stabilized payloads for Intelligence, Surveillance, Object Acquisition and Reconnaissance (ISTAR) operations. It features extended-endurance and greater take-off weight, making it suitable for large area coverage, even in harsh weather conditions. With high-performance sensors, comms, and software algorithms, it provides rapid GPS-marked high-definition (HD) video, photogrammetric tactical mapping on demand (TMOD) and other intelligence assets. WanderB-VTOL combines the extended endurance, high-speed operation, and large-area coverage of a fixed-wing UAS

with the ability of a multi-copter to take-off and land in confined areas such as ships at sea. Small clearings and urban rooftops.

HENSOLDT presented Security, Analytics, Avionics and Airborne Solutions from its portfolio for Border Protection based on the “Holistic Hensoldt approach”, Integrated solutions ranging from RPAS to Data analytics.

C.S.T. - Crime Science Technology presented its O.V.M®, an Optical Variable Material Technology Combining chemical properties & optical effects for: authentication of official documents (ID/ Banknotes) and Identification of people (for forensic applications).

M4Com System GmbH presented its MAuS or Multi-INT Data Exploitation System. MAuS is a cross-sectional evaluation tool which is used for the analysis and processing of multi-sensor data (electro-optical/infrared, SAR radar, ground moving target indicator (GMTI) and signal intelligence (SIGINT)). Generated data for MAuS is generally derived from sensors onboard either manned or unmanned air reconnaissance systems. VIDIS (Video Image and Data Distribution Service) is a typical Back-end System which ingests streaming video data from a variety of sensors, transcodes the data if required and makes it available to different users.