SafeShore

System for detection of Threat Agents in Maritime Border Environment

What is the SAFESHORE project about?

Recent years have seen a dramatic rise in the use of Unmanned Aerial Systems (UAS), also commonly called 'drones', which are enjoyed by private consumers, but which also find very useful application in the professional world, e.g. by governments, by companies, by various organisations, by professional media, etc. UASs are deployed in a wide range of sectors, e.g. for policing, in the construction industry, for environmental monitoring and in broadcasting, to name but a few.

Unfortunately, this latest technology is also being exploited for far less desirable, illegal, or even criminal activities which can pose a threat to the general public. Perpetrators include terrorist groups, smugglers and traffickers who misuse unmanned aerial robotic vehicles or drones for operations such as illegal observation and surveillance, drugs trafficking, or even as attack vector. While current law-making bodies are moving fast to catch up with this development by putting in place protective legislation and regulations, it still remains very difficult for law enforcement and border management authorities to police described illegal activities due to a lack of adequate UAS detection methods (the Radar Cross Section of most drones is too small to be detected by regular and commonly used radar systems).

The European Commission has taken action accordingly, by investing in **research** aimed at the design of solutions that deal with this new type of threat. The EC funded H2020 SAFESHORE research project effectively addressed the problem by engineering a prototype system capable of covering existing gaps in coastal border surveillance. With a novel approach, the SAFESHORE prototype system combines different detection technologies (LIDAR, Acoustic Sensing, Radio Sensing, Thermal Sensing and Visual sensing) into one detector, and deploys newly developed advanced data fusion methodologies, in order to maximize the detection ratio. The SAFESHORE detector is designed to be integrated with existing systems and create a continuous detection line along any coastal border. Moreover, the SAFESHORE prototype system is also capable of sensing small vessels or individuals near the shore line, which typically would previously have gone unnoticed.

What will be tested / validated / demonstrated in Belgium?

The SAFESHORE Team is excited to introduce their solution to interested stakeholders, such as border police, protection agencies and coast guards. The Belgian North Sea trial is in fact the first in a series of 3 evaluation events where the SAFESHORE detector prototype will be put to the test in realistic operational conditions in a maritime environment. Future test campaigns are scheduled in June in Israel (Mediterranean trial) and in September in Romania (Black sea trial).

In Belgium, we will test the performance of the SAFESHORE detector to detect a multitude of threat agents (drones, small vessels, …). The detector will be installed on the beach and a series of real-life use case scenarios (drugs smuggling, human trafficking, …) , defined by the SAFESHORE end users, will be organized. During these scenarios, a number of threat agents (fixed wing and rotary wing small drones, but also small marine vessels) will be performing activities, in order to put the detector to the test.

The detector will be tested in Belgium during a 2 – week period (14-25/05/2018). On 24/05/2018, we invite you (a formal invitation is included in section 6 of this document for those who need this) to attend a demonstration of SAFESHORE detection capabilities. The SAFESHORE demonstration will aim to cover as many of the detection modalities as possible. However, do note that the specific scenarios that will be shown are also partly weather-dependent.

Who is involved?

The SAFESHORE consortium consists of a varied mix of **12 partners** from all over Europe. The consortium is led by the Belgian Royal Military Academy and consists of members from industry, research centres and academia, supplemented with **4 end-user organisations** that work as partners in the consortium to the common goal of developing an affordable and commercially viable drone detection system. The table and figure below give a detailed overview of all SAFESHORE partners.

Participant organization name	Acronym	Type	Country
Royal Military Academy	RMA	Academia	Belgium
Dr. Frucht Systems Ltd.	DFSL	SME	Israel
UTI Grup	UTI	Industry	Romania
University of Salento	UNILE	Academia	Italy
TG Drives	TGD	SME	Czech Republic
Institute of Optoelectronics	IOEL	Research Institute	Romania
Queen Mary University	QMUL	Academia	United Kingdom
Optix	OPTX	Industry	Bulgaria
Protection and Guard Service	SPP	End-User	Romania
Ministry of Public Security	INP	End-User	Israel
Police Region West Coast	LPW	End-User	Belgium
Romanian Border Police	IGPF	End-User	Romania

Curriculum Vitae

Majoor van het Vliegwezen Rob Haelterman

Hoofd van de leerstoel Theoretische Wiskunde

Koninklijke Militaire School

Majoor van het Vliegwezen Rob Haelterman studeerde af als Polytechnieker (Burgerlijk Ingenieur) aan de Koninklijke Militaire School (KMS) in 1998. Tussen 1999 en 2001 was hij Flight Commandant van de Flight Lijn en Bewapening in de 1 Wing in Beauvechain, waarna hij repetitor werd aan de leerstoel Theoretische Wiskunde van de KMS. In 2005 behaalde hij een extra diploma in de fluïdum mechanica aan het Von Karman Instituut en in 2009 verkreeg hij de titel van doctor in de ingenieurswetenschappen in co-tutelle tussen de UGent en de KMS.

Sinds 2011 is hij militair docent aan de faculteit Polytechniek van de KMS waar hij algebra, analyse en numerieke analyse doceert aan de Bachelor jaren en sinds 2018 is hij hoofd van de leerstoel Theoretische Wiskunde.

Zijn onderzoeksprojecten omvatten meerdere domeinen, maar zijn hoofdzakelijk gericht op het verhogen van de veiligheid. Een eerste studie is er op gericht om aan de hand van hyperspectrale camera's gevaarlijke gassen te detecteren in *near real-time*. Een andere studie wil aan de hand van *smartglasses* de *situational awareness* en *crisis response* van patrouillerende militairen verhogen, maar zal eveneens een ondersteuning zijn bij ontmijningsopdrachten of herstellingen van materiaal op verplaatsing. In nog een andere studie worden *high intensity* bewegingen van personen geanalyseerd om na te gaan op welke manier men de ergonomie kan verbeteren om letsels bij deze handelingen te vermijden. In het project SAFESHORE wordt een passief systeem ontwikkeld om drones en kleine vaartuigen te detecteren die kunnen gebruikt worden bij malafide praktijken (terreuraanslagen, smokkelactiviteiten, e.d.).

Curriculum Vitae

Research Engineer / Project Coordinator

Koninklijke Militaire School

Geert De Cubber werkt voor de Koninklijke Militaire School (KMS) als onderzoeker in het domein van de mobiele robots. Hij is afgestudeerd als burgerlijk ingenieur aan de Vrije Universiteit Brussel en behaalde ook aan deze universiteit en de KMS een doctoraat in de Toegepaste Wetenschappen in het domein van de robotica en computervisie. Geert is werkzaam binnen het "Unmanned Vehicle Centre" van het departement Mechanica van de KMS. Deze onderzoeksgroep spitst zich toe op de vraagstukken die gerelateerd zijn met de introductie van nieuwe onbemande toestellen in onze dagdagelijkse leefwereld. Zo was hij voorheen de projectleider van het Europese onderzoeksproject ICARUS rond de ontwikkeling van robots voor rampenbestrijding. Thans is Geert vooral actief als projectleider van het Europese project SafeShore dat zich focust op de ontwikkeling van detectie-methodes voor kleine drones en scheepvaartuigjes.

Curriculum Vitae

Korpschef

Politiezone Westkust

Voorzitter VCLP (Vaste Commissie van de Lokale Politie)

As a chief commissioner Korpschef Nicholas Paelinck has been for almost 20 years Chief of Police of the Local Police Westcoast where he is responsible for the implementation of the local police policy, and more specifically, for the implementation of the zonal security plan; i.e. the implementation of a local oriented and locally embedded policing as reflected in the concept of Community Oriented Policing (COP). Due to the evolution of criminality in a global context and due to a greater mobilization, he orientated recently his police-force to an Technological and Information Led Policing. (He implemented as first police chief a nodal orientation with controls of borders, main axes, harbors).

Currently he is also President of the Standing Committee of Local Police (Belgium Chiefs of Police from the local police forces) which is hosted by the Ministry of Home Affairs. He has been appointed to carry responsibility for the 'Internationalization of Belgium Local Police'. He represents the Standing Committee within the International Committee of IACP (International Association of Chiefs of Police) in Washington. He represent the Belgium Local Police within the Strategic Committee between Belgium and France. He is member of the taskforce 'keytasks Belgium Police', Minister of Home Office and security.

He started his career in 1983 as an aspirant-officer at the age of 21 in the Brussels Police Force to become an officer by attending the Police Academy in Brussels. He followed the School for Criminology and Criminalistics in Brussel. He followed the European Police Summer Course in Holland and various other relevant courses (management and operational). He followed the management track at the Antwerp Management School. He joined the Koksijde Police in 1991 as head of the Investigation/detective squad. In 1996 he was appointed as chief of police of the city of Koksijde. In 2001 he was appointed as the chief of police of the Westcoast police-force.

He was decorated with the 'Médaille de la Défense nationale à titre exeptionelle' by the French Gendarmerie for his contribution to the fight of French-Belgium boarder criminality.