RESHAPING BORDER OPERATIONS

Stuart Large explains how emerging digital technologies are giving the edge

Imagine a world in which people can travel effortlessly between countries and states. One in which physical barriers are a thing of the past. Where security is delivered by technology – passports with biometric chips and borderlines that are protected by intelligent fibre optic cables.

For security experts, this represents the future of border management. With cutting-edge technologies reshaping outdated processes, collecting reams of data and delivering operational efficiencies.

The last decade has borne witness to a number of extraordinary changes driven by digitalisation. Some of the world's oldest industries and largest organisations have been altered beyond recognition – revamped entirely as legacy processes are replaced and business models transformed.

The rise of digital technologies and the rate of change has been rapid and unprecedented. In the face of such innovation, the only option is to evolve. Adapt or die. Either keep pace with progress or be left trailing in its wake.

DAS TECHNOLOGY CAN DELIVER UNRIVALLED DETECTION OF DIFFERENT THREATENING ACTIVITIES

There are few, if any, legacy industries that have been left untouched by digital disruption. And border security is no exception. For governments, state-of-the-art software represents a huge opportunity – and challenge – when it comes to border operations.

A recent report by Accenture, entitled *Crossing Boundaries: Emerging Technologies At The Border*, explored how emerging technologies could help agencies tackle not only their near-term challenges, but also help lay the foundation for a sustainable future

It surveyed almost 100 leaders in border agencies across nine countries, including the UK and US, and found that 92 percent of respondents were willing to adopt next-generation technologies in order to enhance operations, despite the challenges involved.

The research also revealed that more than two-thirds believe that the introduction of new digital technologies will help to both reduce risk and improve security.

Border management is a complex operational process, which poses a unique set of challenges.

Agents are faced with record volumes of traffic, from both trade and travel. And they constantly have to monitor new and evolving security threats, keep abreast of legislative changes and deal with cutbacks and budgetary restraints. All while managing a complex and variable mix of opportunities, threats and risks.

So, the focus for governments has been on investing, adopting and integrating technologies such as artificial intelligence (AI), biometrics and distributed acoustic sensing (DAS) to improve management and security.

LAYERING TECHNOLOGIES

The principle question operators face when it comes to integrating new technologies is: how do you layer them for operational efficiency? Different countries face different threats, they have different laws and procedures. Also, as technology solutions advance so too does criminal activity. Meaning that to create a watertight security network, agencies need to keep abreast of the latest developments and innovate as quickly – preferably quicker – as the threats that they face.

What Accenture's report makes clear is that border agencies understand how vital innovation is to improving operations, and how technology can enhance management protocols and help officials overcome the unique challenges involved.

Two countries that demonstrate the different challenges facing defence and security officials when it comes to border management are the UK and US. In the UK, the imminent departure from the EU has brought about a particular kind of pressure, as agencies look to reform and restructure their systems to support post-Brexit immigration and security measures.

This has led to the involvement of EU-funded technology projects, such as PROTECT, which is developing a biometrics-based personal ID system for border surveillance. With the idea being that biometrics will reduce the need for passport control, while at the same time enhancing security and contributing to free-flowing and faster border control.

In regard to physical border operations – where the issues faced by agencies are more complicated than those at passport control points – biometrics has yet to identify an effective measure for scanning people in vehicles. The current view is that the process would be quite similar to the current protocols and would not be quite so seamless.

For the management of physical borders, the situation has evolved beyond the capabilities of stop-and-search measures, traditional perimeter patrols

and official manned checkpoints at borders, seaports and airports. The needs vary from country to country, but the measures taken range from increasing the level of vetting of new arrivals, capping the number of new arrivals, rising security checks and processes at official entry points and expanding border patrols across the entire length of their borderline.

This problem is particularly pronounced in the United States, whose only two land borders include the more than 5,500 miles it shares with Canada (the world's longest border length) and the 1,954 miles it shares with Mexico. Both of which run through remote regions that are largely desolate and difficult to police. And that's before you factor in the country's 15,000 airports, 95,000-plus miles of shoreline and 328 ports of entry.

In the US, the continued reliance upon physical barriers and security checkpoints alone is impractical. Customer and Border Protection (CBP) officials are under strain to not only investigate criminals and trafficking rings, but also apprehend unauthorised entries and confiscate contraband – all while maintaining the lawful movement of travellers and goods.

It's nearly impossible to physically secure the thousands of miles of borders and shoreline. But smart technologies,

A continued reliance upon physical barriers and security checkpoints alone is impractical

especially those that can analyse and interpret deep data pools, enable agencies to construct a virtual net that is less vulnerable and more difficult to penetrate.

TIGHTENING THE GAPS

The idea is that by employing a combination of different digital technologies that interconnect and complement one another, border agencies can streamline processes for lawful border crossings and while tightening the systemic gaps available to be exploited by bad actors.

A result of the need to innovate and integrate cutting-edge technologies to make operations more efficient while maintaining border integrity has been the initiative between the Department for Homeland Security and Silicon Valley (DHS Silicon Valley Innovation Program).

The partnership – which includes DHS Science & Technology (S&T) and CBP – has been working to implement technologies that enhance the situational awareness of border patrol agents, taking into consideration tough terrain. But maintaining efficiency and integrity across the entire length of a border can be difficult to achieve, especially with different teams operating at different locations.

In combating the problem, the program has seen some big success with the introduction of IoT-based small unmanned aerial vehicles (SUAVs). But for the US Department of Defense (DOD) the priority remains on improving the security of imperfect environments. With government officials looking to move toward intelligent sensors that can make use of the assets already in place and provide intelligent and actionable insights.

Distributed Acoustic Sensing (DAS) is one of the most advanced, state-of-the-art sensing technologies that can be deployed to monitor borderlines and unite

TO CREATE A WATERTIGHT NETWORK AGENCIES NEED TO KEEP ABREAST OF THE LATEST DEVELOPMENTS

the various agencies and departments in security operations. DAS technology can deliver unrivalled detection of threatening activities, including people walking, excavation and tunnelling activity, fence climbing and cutting or even potential failures of existing security infrastructure.

DAS works by converting fibre optic cables into an ecosystem of highly sensitive, individual vibrational sensors. By harnessing cutting-edge photonics, advanced artificial intelligence and edge computing, DAS solutions can detect, classify and inform on range of events and activities with confidence. It can provide clear, confident discrimination between the different threats that might occur on a border and give operatives specific alarms to enable quick straightforward decision making.

DAS solutions can cover borders of any distance, creating a 'smart barrier', relaying data, detecting disturbances and providing alerts across the entire length along which it's deployed. For agents, continuous, round-the-clock monitoring enables greater level of detection and smoother direction of responses in real-time.

JOINED-UP THINKING

By mapping out the entire border — and having access to a continuous stream of information regarding the perimeter's security — agencies can optimise management processes, increase cooperation between border personnel and vastly improve coordination with the officials of neighbouring countries.

When it comes to physical border security, smart technologies are becoming a necessity — revolutionising management processes and providing officials with a far more complete picture of their operations than has previously been available.

By giving border agencies access to intelligent and actionable insights, officials are better coordinated and in a stronger position to respond to potential threats in the shortest amount of time. But governments need to equip agencies with technologies that work together and facilitate a systems approach to surveillance and intelligence. This should include access to SUAVs, drones, unattended sensors such as DAS, and other systems that are capable of machine learning and remote surveillance advancements.

Given the emergence of such technologies, and the pressing issues facing border agencies — including restricted budgets, shifting security threats and demands for secure and seamless movement — the implementation of point solutions will not be enough. What's needed is a combination of different, interconnected technologies that can address the unique operational challenges inherent in border management. This is the only way to ensure agents can stay ahead of the many complicated and diverse threats they face ●

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Maintaining efficiency and integrity across the entire length of a border can be very difficult to achieve

Picture credit: Fotech Solutions