BORDER MANAGEMENT TODAY

Issue 010 | October 2023

IBMATA IN AFRICA:
THE NEW CONTINENT OF DIGITAL GOVERNMENT?

GDRFA:
DUBAI BORDERS JUST KEEP GETTING SMARTER

UK BORDER VISION:
LATEST ON ETA AND SEAMLESS BORDER TRIALS

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A LEAP TOWARDS INTEGRATED BORDER MANAGEMENT

LOOK AHEAD:
AN INSIGHT INTO THE CZECH BORDER PAST, PRESENT AND FUTURE

BORDER MANAGEMENT TODAY

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Message from the Chairman

It's hard to believe that I find myself introducing the tenth edition of IBMATA's "Border Management Today", which is rapidly becoming the on-line publication of choice for border management enthusiasts around the world. Our core mission here at IBMATA – to promote communication and collaboration between public and private sector entities on best use of new and emerging technologies to support future borders – continues to gain traction, as we recover from the COVID period and return to normal levels of international trade and travel.

In this edition we cover our first forays into the continent of Africa, which has been a fascinating journey of discovery for the IBMATA family. We have a feature on our hugely successful Africa Summit in Johannesburg in May – including a Ministerial address supporting our mission, as well as significant coverage in national media there. Sharon and I also returned to Africa recently to attend the first ever Digital Government Africa Summit in Zambia. There we met Ministers from across the continent who are all driving ahead with digital innovations for identity management and access to government services including digital visas, border and customs systems - all close to our heart here at IBMATA. We have also resurrected our long-held collaboration agreement with the World Travel and Tourism Council (WTTC) and joined their first Africa Summit in Rwanda. It is clear to us that there is a huge amount of activity underway on digital platforms across the continent which is beginning to yield socio-economic development in many African countries, including opening up much needed trade routes and tourism opportunities. We shall certainly monitor developments there closely, with a view to returning there in future.

Meanwhile things are moving ahead quickly elsewhere, including the UK and the USA. We were delighted to be able to participate in "drive through" border trials with the UK Border Vision Advisory Group earlier this year; and in this edition we have the very latest updates from the UK Home Office on the roll out of the UK Digital Borders Programme (including the new electronic travel authority which launched this month for selected countries and will roll out globally next year). Many of our private sector members are pressing ahead with innovative solutions for ETA and risk assessment systems, some of which also feature here. We continue to enjoy fantastic support from our friends at US Customs and Border Protection, who recently heralded the arrival on the mobile global entry app to add to their ever-increasing suite of mobile border applications. We are really looking forward to our return to Dubai shortly for our Middle-East Summit; and we have a fascinating curtain raiser in this edition from GDFRA setting out details of their new "Smart Command and Control Centre". The shift towards seamless borders is relentless, with Dubai now admitting returning non visa visitors through e gates using facial recognition alone as the primary identifier at entry and exit.

Which reminds me that the long-awaited EU Smart Borders system is now slated for introduction next year, which will require non-EU nationals visiting EU countries to submit biometrics for entry / exit (EES); and to obtain an advanced authority to travel (ETIAS). The Three Million group reminds us all that airlines and border agencies will have to make some adjustments to systems to cater for dual nationals; as with all new border systems there will always be risks of failure somewhere down the line. The best way to mitigate these is to benchmark risks and issues with other countries who have passed down this road before – something that we at IBMATA are well placed to support.

Looking ahead to 2024 Martyn and I recently visited the lovely city of Prague, where the Ministry of the Interior has agreed to host our next European Summit on 27-29 February. Whilst we expect a rather different climate to Dubai, we know we will receive a very warm welcome there. As a taster, we have a fascinating article on the history of the Czech border to close out this edition. Then it will be back to warmer climes in Miami on 4 – 6 June; so mark your diaries now.

Finally, a big thank you to all our contributors to this tenth edition of BMT – and I look forward to seeing you all again soon.

Tony Smith

Tony Smith CBE,
Chairperson *at* International Border Management and Technologies Association

EVENT REPORT

IBMATA GOES TO AFRICA

From May 9 to May 11, 2023, IBMATA's first-ever Africa Summit unfolded as scheduled in Johannesburg, South Africa. This milestone event was graciously hosted by Dr. Nakampe Michael Masiapoto, Head of South Africa's newly established Border Management Authority. Welcoming representatives from immigration, customs, and border control agencies across the African continent, the summit proved to be a significant step towards collaborative regional progress.

The event began with an expert workshop hosted by Cy Winter from the Regional Office for Southern Africa, International Organisation for Migration. The theme for the workshop was “Strengthening Migration Management Policy and Practice in Africa” and you can download a copy of the workshop report **HERE**. The key findings of the workshop included an agreement amongst delegates from across Africa to embrace the fundamental principles of border management wherever possible (exporting the border, integrated border management, and end-to-end identity) – recognising that in many countries,

budgets are limited. The work of the BMA was highlighted as an example of best practice, with a number of initiatives underway to improve the facilitation of people and goods across borders without compromising security and compliance.

On Day Two we were honoured by the presence of Deputy Minister Njabulo Nzuza together with representatives from South Africa television, with the Minister subsequently participating in a TV interview expressing a warm welcome to IBMATA, acknowledging

our presence there and recognising the benefits of technology in border security and border management. You can view the Ministers interview and associated media coverage HERE.

Dr. Nakampe Michael Masiapoto and Deputy Minister Njabulo Nzuza dedicated their time to personally visiting every exhibitor, expressing a keen interest in exploring and witnessing live demonstrations of the latest and most advanced technologies in the field of Border Management.

In addition to the numerous delegates from across the African continent, IBMATA had the honour of welcoming Diane Sabatino, Deputy Executive Assistant Commissioner from the US Department of Customs and Border Protection. She provided an up-to-date overview of the very latest developments on the US Border, offering some invaluable insights and lessons learned from the past on integrated border management – a valuable resource for our friends and colleagues in the Border Management Authority as they embark upon this journey.

IBMATA extends its heartfelt gratitude to Dr. Masiapato and the entire Border Management Agency for the warm reception in South Africa and for the invaluable support in organising our first Africa Summit. The event proved to be a resounding success, and we aspire to return to this remarkable country and continent in the future.

FEATURE

By John Mears,
VP, Tech Fellow,
Homeland Security Solutions,
Leidos

Digital Identity and Border Security

By 2050, airports are expected to offer a fully automated, contactless travel experience using an internationally recognized digital identity owned by and unique to individual passengers.[1] On the surface, this looks like a bold statement, but in reality, many of the technologies required are available today. The unknown factor is how soon governments will offer national digital identities to their citizens, and how long after that global entities will cooperate and collaborate to facilitate international travel using such identities at their borders.

WHAT IS A DIGITAL IDENTITY?

An identity is a "set of physical, psychological, and interpersonal characteristics that is not wholly shared with any other person."[2] A digital identity is "the unique representation of a subject engaged in an online transaction."[3] An electronic ID (eID) is a means for people to prove electronically that they are who they say they are to gain access to something – like boarding a plane or crossing a border.[4] This digital ID or eID is based on an identity that has been proofed (e.g. by a government) and can be verified digitally through factors linked to that person (examples might include a biometric and a token like a smart card, electronic wallet entry, or e-passport). A biometric is "a measurable biological (anatomical and physiological) and/or behavioural characteristic that can be used for automated recognition."[5] The technology to support digital electronic IDs and biometric verification is available today, but implementations are varied and rarely interoperable.

Of 198 countries surveyed, 161 already have some form of digital national ID.[6] Notable among the remaining 37 are the U.S. and UK, where slow adoption has some historical political roots. However, there is strong evidence that opinions of the world's citizens are changing toward digital national IDs. The Société Internationale de Télécommunications Aéronautiques (SITA) 2022 Passenger IT Insights survey found 87% of respondents had positive responses about using technology for identity control – up 11% since 2016.[7] In a supporting finding, the International Air Transport Association (IATA) 2022 Global Passenger Survey found that 83% of travellers are willing to share their immigration information (like passport data) to expedite airport processing.[8] It is probable that opinions were influenced by the pandemic experience, but it is doubtful that acceptance will decline in the future, even as the pandemic subsides. Uses of digital IDs and associated automated travel

1 The Evolution of Airports, a Flight Path to 2050, https://www.oliverwymanforum.com/content/dam/oliver-wyman/ow-forum/mobility/2023/Evolution_of_Airports-Report.pdf.
2 American Psychological Association. https://dictionary.apa.org/Identity.
3 Grassi, P. A., Garcia, M. E., & Fenton, J. L. (2020). NIST Special Publication 800-63-3 Digital Identity Guidelines. NIST. https://doi.org/https://doi.org/10.6028/NIST.SP.800-63-3.
4 European Commission. "Electronic Identities – a brief introduction."
5 U.S. National Science and Technology Council (NSTC).
6 https://www.worldprivacyforum.org/2021/10/national-ids-and-biometrics/
7 https://www.sita.aero/pressroom/news-releases/research-shows-pent-up-demand-for-air-travel-with-passengers-embracing-mobile-and-touchless-technologies/
8 https://www.iata.org/en/pressroom/2022-releases/2022-11-01-01/

processes will only increase between now and 2050.

In the U.S. earlier this year, the White House declined to include digital identity in its implementation plan for the National Cybersecurity Strategy.[9] In addition, the last three Congresses have failed to pass the Improving Digital Identity Act,[10] designed to address critical deficiencies in digital infrastructure and improve privacy, security, and inclusion.[11] However, according to Rep. Bill Foster (D-Illinois) in remarks at the 2023 FedID conference, there is reason for optimism as opinions in Congress are changing, perhaps due to an increased understanding of the costs of inaction.

In the UK, the Department for Science, Innovation and Technology has published guidance on enabling the use of digital identities in the UK. It states in part "The government is not making digital identities mandatory. This is not a step towards ID cards. Instead, we're setting robust standards to make sure innovative private-sector solutions protect privacy, boost security, and enable greater accessibility, all while growing the economy by saving people and businesses time and money."[12]

WHY IS THIS IMPORTANT TO BORDER SECURITY?

Perhaps a prerequisite question is 'why is a national digital ID important?' Among the countries that have provided national digital IDs to their citizens, border security was just one motivation. At the high end of the population range is India, where their digital ID provides equitable access to government benefits and services for their 1.4 billion citizens. At the lower end is Estonia, where their 1.3 million citizens have seen savings of about 2% of their GDP as a result of the country's e-identity initiative.[13] A McKinsey study estimated that effective digital identity in the U.S. could unlock the economic value of 4% of its GDP.[14] If the U.S. could save 4% of its annual GDP, that would amount to approximately $1.05 trillion annually.[15] For the UK, it would be about £122 billion if the same percentage holds.[16]

Specifically for border security, digital IDs enable more remote processing of travellers before they cross a border. This allows extra time for screening and analysis to identify threats, focus on high risks, and ensure proper application of complex regulations. This is often referred to as a 'push the borders out' feature. Additionally, this could yield time efficiencies for travellers when arriving at an international port since much of the immigration and customs processing can be done in advance. Digital IDs also lend themselves well to automated processes when used in conjunction with other factors like face biometrics. This results in quicker, smoother flow through ports, some reduction in human contact – which can provide a safer environment for travellers and officers – and more secure processing with less stress on border force personnel.

WHAT STEPS ARE WE TAKING TODAY?

There have already been significant efforts to 'push the borders out' and increase automation for people, their baggage, and border force officers. The U.S., for example, has a number

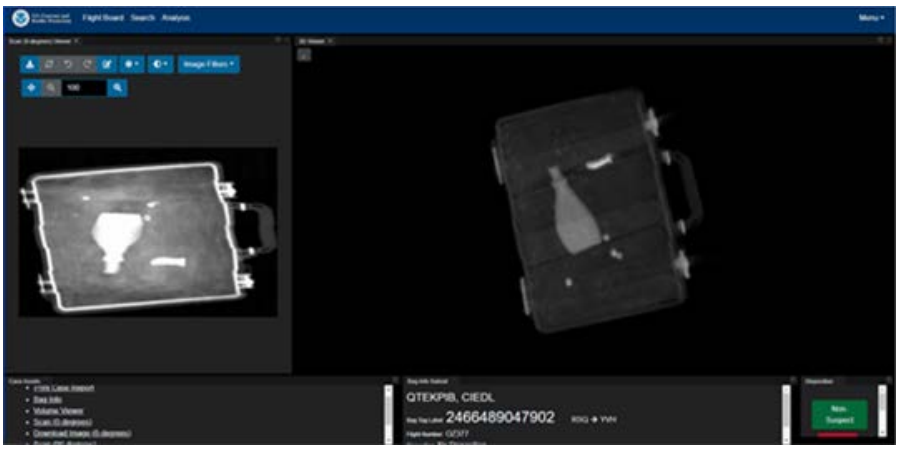


FIGURE 1: LEIDOS' MEZZO™ SYSTEM TRANSMITS A BAGGAGE IMAGE FROM INCHEON, SOUTH KOREA TO ATLANTA, GEORGIA, USA FOR ADVANCE CUSTOMS INSPECTION PRIOR TO ARRIVAL. CREDIT: LEIDOS

9 https://thehill.com/opinion/cybersecurity/4159108-why-is-our-government-taking-a-back-seat-on-digital-identity-issues/

10 https://www.cbo.gov/publication/59064

11 The Hill, op cit.

12 https://www.gov.uk/guidance/digital-identity

13 https://e-estonia.com/wp-content/uploads/2019sept-faq-a4-v02-e-identity-1.pdf

14 https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Digital%20identification%20A%20key%20to%20inclusive%20growth/MGI-Digital-identification-Report.ashx

15 https://www.statista.com/statistics/216985/forecast-of-us-gross-domestic-product/#:~:text=According%20to%20the%20CBO%2C%20the,trillion%20U.S.%20dollars%20in%202033.

16 https://tradingeconomics.com/united-kingdom/gdp#:~:text=GDP%20in%20the%20United%20Kingdom%20is%20expected%20to%20reach%203080.00,macro%20models%20and%20analysts%20expectations.

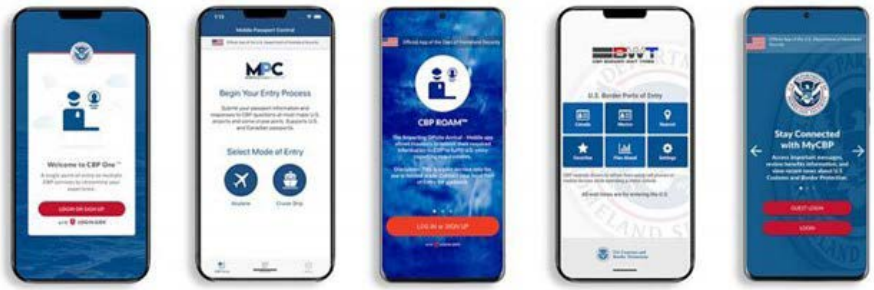


FIGURE 2: RANGE OF CBP MOBILE APPS INCLUDING, L-R, CBP ONE, MOBILE PASSPORT CONTROL, REPORTING OFFSITE ARRIVAL - MOBILE (ROAM), BORDER WAIT TIMES, AND MYCBP. CREDIT: CBP.

of pre-clearance facilities in foreign airports so that travellers can clear immigration and customs prior to boarding, and then simply walk off the plane upon arrival in the U.S. without further immigration or customs processing. As shown in Figure 1, this is also possible for pre-clearance of checked baggage so that a customs inspection can be done while the plane is enroute to the U.S.[17] This benefits both the Customs and Border Protection (CBP) officers as well as the Transportation Security Administration (TSA) officers when there are subsequent connecting flights since baggage may be checked through.

Traveler mobility is often enhanced by the availability of mobile applications designed for advance processing, especially when it comes to international travel. CBP offers a suite of mobile apps to help expedite the travel process when entering the United States, to aid customs brokers facilitate import inspections, and more.[18] These are shown in Figure 2.

These CBP mobile apps have recently been supplemented by Global Entry Mobile (GE Mobile).[19] GE Mobile is an app that allows GE members to clear immigration and customs while still in the plane on the ground proximate to the terminal by taking a selfie through the app.

The absence of a national digital identity in the United States has not stopped some states from implementing mobile digital driver's licenses to be stored in smart phone digital wallets. Figure 3 shows the author presenting his digital Maryland (MD) mobile driver's license (mDL) from his digital wallet to the TSA app.

Figure 4 shows the TSA Credential Authentication Technology type 2 (CAT-2) system to which travellers can present their digital license via near-field communications (NFC) for identification purposes to gain access to the security checkpoint in the airport.

The CAT-2 system does a local match of the image taken by the embedded camera to the picture from the traveller's mDL. If they match, the identity is verified, and the traveller can proceed into the checkpoint area. The system also has the capacity to scan and match pictures from traditional printed licenses and passports.

Figure 5 depicts what may be one of the most difficult traveller identification scenarios – vehicle lanes at land border crossings, assuming everyone stays in their vehicles. The application shown here is for single passenger vehicles (drivers only) and uses RFID cards

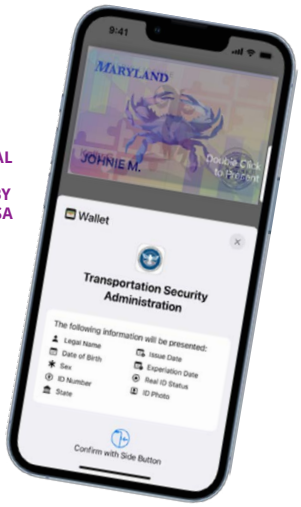


FIGURE 3: MARYLAND DIGITAL DRIVER'S LICENSE BEING ACCESSED BY TSA APP. CREDIT TSA AND JOHN MEARS

FIGURE 4: TSA CREDENTIAL AUTHENTICATION TECHNOLOGY TYPE 2 (CAT-2) SYSTEM TO WHICH TRAVELLERS CAN PRESENT THEIR DIGITAL LICENSE VIA NEAR-FIELD COMMUNICATIONS (NFC) FOR IDENTIFICATION PURPOSES TO GAIN ACCESS TO THE SECURITY CHECKPOINT IN THE AIRPORT.

17 https://www.dhs.gov/science-and-technology/news/2021/05/21/news-release-dhs-partners-south-korea-aviation-security

18 https://www.cbp.gov/about/mobile-apps-directory

19 https://www.cbp.gov/newsroom/national-media-release/cbp-announces-new-global-entry-mobile-app

FIGURE 5: FACILITY VEHICLE ENTRANCE WITH MULTIFACTOR AUTHENTICATION OF DRIVERS ON THE FLY. CREDIT: LEIDOS.

in conjunction with face recognition. The drivers' faces are captured through windscreens, and RFID cards are read as the vehicles slowly drive through. If this multi-factor authentication is successful for a given traveller/vehicle, the light on the guard shack turns green and/or the security gate opens to allow the vehicle to pass through.

SUMMARY

These nascent steps using digital identities, mobile processing, and advanced automation illustrate at a high level how the technology can be applied and expanded. With further maturation, better integration, new branding, consumer education and international cooperation, not just airports, but all port types can present a fully automated, contactless experience using an internationally recognized digital identity owned by travellers. Will we achieve this vision by 2050? Based on technology alone, the answer is "yes". However, the uncertainty is around how soon governments will all offer national digital identities to their citizens, and how soon they'll all cooperate to facilitate international travel using digital identities at their borders.

John C. Mears is a Leidos Vice President, Technical Fellow and Master Solutions Architect, with current focus on border and port security, biometric traveler verification, national-scale biometric systems, and pandemic-related travel transformation. He has testified before the House Committee on Science, Space and Technology on the "Current and Future Applications of Biometric Technologies," and served on Congressional panels addressing uses of biometrics technologies. Previously, Mr. Mears was Director of Biometrics and Identity Management for Lockheed Martin Information Systems and Global Solutions, which merged with Leidos in 2016.

Mr. Mears holds B.S.E.E. and M.S.E.E. degrees from the University of Florida and is certified as a Project Management Professional. He is an Associate Member of the American Academy of Forensic Sciences, and a member of the Biometrics Institute. He has served on a number of Boards of Directors, and is currently Chairman of the Board of the International Biometrics and Identity Association (IBIA).

REPORT

By Sharon Ayley,
CEO, IBMATA

Enhancing Border Security: Insights from the Digital Africa Summit

INTRODUCTION

The Digital Africa Summit held recently in Zambia was a groundbreaking event that brought together leaders, innovators, and experts from various fields to promote digital development across the continent. As the CEO of the International Border Management and Technologies Association (IBMATA), I had the privilege of attending this event, which focused on advancing digital infrastructure, identity management, public services, and the overall well-being of African citizens. The summit provided a unique platform to engage with ministers from African ministries, and it was inspiring to witness their commitment to driving digital transformation in Africa. It proved to be a crucial platform for discussing the future of border security in Africa. The summit enabled us to meet with various ministers representing African ministries, and it was heartening to witness their enthusiasm for IBMATA's mission and the work we do. This article delves into the significant insights gained during the summit, focusing on the importance of cross-border collaboration, technological innovation, and the mutual commitment of government agencies and industries to enhance international border security.

FOSTERING COLLABORATION

The cornerstone of any successful border management strategy is collaboration. Borders are porous by nature, and security challenges often transcend national boundaries. Hence, the need for international cooperation and collaboration is paramount. At the Digital Africa Summit, it was evident that ministers from various African ministries shared this perspective.

IBMATA'S ROLE IN BUILDING COLLABORATION

IBMATA, in its mission to enhance border management, plays a pivotal role in building bridges between government agencies on an international scale. Our organisation has been

instrumental in fostering cross-border collaboration by facilitating knowledge-sharing, training, and fostering dialogue between border management professionals. The ministers we met at the summit expressed their eagerness to work closely with IBMATA, recognising the immense potential of our platform in strengthening their border security efforts.

By connecting governments, IBMATA enables a unified front against threats that transcend national borders. These may include the smuggling of illicit goods, human trafficking, terrorism, and disease outbreaks. The value of cross-border collaboration cannot be overstated, and it was evident at the summit that Africa is poised to embrace this approach for a safer and more secure continent.

TECHNOLOGICAL ADVANCEMENTS

Technology has become an indispensable tool in modern border management. Its role is multifaceted, enhancing not only security but also the efficiency of border operations. This includes but is not limited to:

- **Biometric Systems:** The adoption of biometric systems, including facial recognition, fingerprint scanning, and iris recognition, is transforming border management. These technologies offer a more robust method of identity verification and are being widely considered by African nations to improve their border security measures.
- **Drones and UAVs:** Unmanned aerial vehicles (UAVs) have proven invaluable for border surveillance. They provide a cost-effective way to monitor remote and rugged border regions, enhancing situational awareness and enabling rapid response to potential threats.
- **Blockchain:** Blockchain technology has the potential to revolutionise supply chain security. It can be used to track and verify the movement of goods across borders, reducing the risk of smuggling and counterfeiting.
- **Artificial Intelligence (AI):** AI-powered systems can analyse large volumes of data in real-time, helping border security personnel to detect unusual patterns and anomalies. This technology enhances the ability to predict and respond to potential security breaches.

The African ministers we met at the summit were keen on embracing these technological advancements. They recognised the potential of technology not only to secure borders but also to facilitate legitimate trade and travel, promoting economic growth and development across the continent.

GOVERNMENT-INDUSTRY COLLABORATION

The synergy between government agencies and industries is vital to harness the full potential of technology for border security. Collaborations between these two entities can drive innovation, research, and development, resulting in solutions that are both effective and practical. At the Digital Africa Summit, the importance of government-industry collaboration was emphasised.

- **Public-Private Partnerships:** Governments are increasingly partnering with private sector companies to fund and develop border security technologies. These partnerships allow the integration of commercial expertise and resources into the public sector, leading to more comprehensive and efficient solutions.
- **Information Sharing:** Governments and industries need to share information about emerging threats, vulnerabilities, and best practices. This collaboration helps develop proactive strategies for border security and keeps both parties informed about the latest developments in the field.
- **Research and Development:** Collaborations can result in joint research and development projects, leading to the creation of cutting-edge border security technologies. This synergy can significantly expedite the deployment of innovative solutions.

The ministers we met expressed their commitment to foster collaboration with the private sector. They acknowledged that, by working together, they could address the unique challenges facing African borders more effectively, particularly in the context of emerging threats.

SUPPORTING EMERGING TECHNOLOGIES

The Digital Africa Summit provided an opportunity for IBMATA to emphasise the importance of supporting the development of emerging technologies to enhance international border security. The ministers we engaged with were receptive to the idea, recognising the significant impact these technologies could have on their nations' security.

- **Investment in Research and Development:** Encouraging government investments in research and development of border security technologies is essential. Governments should allocate resources to support innovative ideas and solutions that can revolutionise border management.
- **Training and Capacity Building:** The effective utilisation of emerging technologies requires well-trained personnel.
- **Legislation and Regulation:** Governments must establish clear legislation and regulations concerning the deployment of emerging technologies for border security. These frameworks ensure that the technology is used ethically, respecting individual rights and privacy.
- **International Collaboration:** Collaboration between African nations and the global community is essential for sharing best practices and knowledge regarding the implementation of emerging technologies. International partnerships can provide valuable support for African nations in their efforts to enhance border security.

CONCLUSION

The Digital Africa Summit was a significant milestone in our ongoing efforts to strengthen international border security. It reaffirmed the importance of cross-

border collaboration, technological innovation, and government-industry partnership in securing African borders effectively. IBMATA is excited to continue its mission of building a platform for communication and collaboration between government agencies, both domestically and internationally. We are committed to supporting the development of new and emerging technologies that will help secure borders not only in Africa but around the world. Together, we can create a safer and more secure future for all.

If you are interested in learning more about IBMATA or becoming a member, please vist www.ibmata.org or email info@ibmata.org

FEATURE

By Stephen Cooper OBE,
Chief Operating Officer,
Apstec Systems.

Embracing the latest passenger screening technology: contributing to customs operations and digitising the border at airports

According to the World Customs Organisation (WCO) there were 765 cases of narcotics traffickers being detected on arrival or in transit at Western European airports in 2020. In total, these detections resulted in the seizure of 6.9 tonnes of illicit drugs. Whilst the largest percentage was trafficked in bags or inside the body, a not insignificant 15 percent was concealed on the body under or in clothing. This is a substantial figure, especially when you consider that, unlike hold luggage and cabin bags that are routinely screened by x-ray and other means, passengers rarely undergo screening at the departure airport using equipment that will detect narcotics concealed on the body. If the truth be known, nobody really knows how much narcotics is trafficked on the body through airports of entry. All we know is how much is detected but we do not know how much is not detected; assumptions regarding the percentage of narcotics that are being detected are not high. This situation is no reflection on the customs authorities or operations but rather a symptom of the fact that detecting narcotics concealed on the body is very challenging. Technology has struggled to deliver effective solutions and large-scale manual operations are intrusive, costly and generally impractical; there's a capability gap and a need to do something about it.

This need is widely recognised and the EU Horizon project has been calling for proposals to meet a range of closely related requirements for some years. Calls have included: unobtrusive technologies for secure and seamless border crossings; improving the border crossing screening experience for passengers; and improving the detection of concealed objects on or in the body. These calls haven't gone unanswered and there is an increasing response from industry to meet these needs. However, as the EU calls for proposals above illustrate, it's not just about being able to detect items of interest being concealed on the person but also of doing this in a way that is safe, unobtrusive and a better experience for the passenger, whilst respecting their right to privacy. It's also about adding value in a way that makes the customs officer's life easier by introducing technology that can fit seamlessly into operations with the minimum of fuss and at a justifiable cost. With the advent of new screening equipment specifically designed to detect items of customs interest, this is a good time to consider what the latest technological advances can offer.

It's fair to say that most 'people screening' equipment started life in a counter terrorist role but it's become clear that the approach and technologies that were used for this application have much to offer the customs world. Increasingly, equipment is being designed with customs applications in mind. Full height screening, the ability to discriminate between items of interest and benign items, the ability to detect thin material concealed anywhere on the body and the ability to deploy equipment rapidly to enhance operational flexibility, are the hallmarks of the

latest equipment. The technology underpinning this capability may be based on the entirely safe emission of low power radio waves (millimetre wave) or passive scanning technology (teraherz). Whilst detecting concealments internal to the body is not possible with these low power or passive systems, they are particularly well suited to detecting concealments on the body and this is what they do best. A variety of equipment exists under the banner of these technologies. It varies size and complexity, offers widely different throughputs from a few hundred people to thousands an hour and, of course, varies widely in price. Where things get exciting is where material discrimination, operational mobility and agility, high throughput and cost effectiveness align.

FIG 1. APSTEC'S HSS FALCON – THE LATEST EQUIPMENT DESIGNED FOR CUSTOMS APPLICATIONS

Whilst we've focussed on detecting narcotics, today's equipment is equally adept at detecting large quantities of currency being carried on the body. Although this feature may not generate the same degree of excitement as detecting narcotics, money laundering is a massive global issue and one that contributes to the financing of terrorism and wider organised crime. Beyond illicit drugs and currency, detecting firearms and other weapons is part of the functionality of this equipment. At land borders there's a strong case for delivering the capability to detect weapons, as well as narcotics and currency, particularly as there won't have been any pre-screening before arrival at the border. However, given the pre-flight screening that takes place for aircraft it's probably a complicating factor to include metal detection at airports of entry. Either way, the option exists to integrate weapons detection into the equation, if necessary.

Traditional problems with the size and weight of the screening equipment, its lack of mobility and high cost have been overcome; this allows for the development of very responsive operational concepts. Whether screening passengers at the airbridge, in transit or in green channels, modern equipment enables a wide range of responses to suit many different scenarios. Responding to risk profiling and intelligence led operations in a timely manner happens by design. Whilst this article has focussed on passengers, there's an opportunity to introduce this type of technology into staff screening when moving from land to air side and vice versa, and some of this equipment allows people to be scanned in both directions, making for efficient operations with the minimum of

management of movement. There's also the opportunity to screen passengers prior to embarkation and this may be particularly relevant to the movement of currency and money laundering.

None of this needs to wait for the arrival of passengers into the airport of entry. Given the success of the Joint Airport Interdiction Task Forces (JAITFs), passenger screening for narcotics as part of an integrated operation would offer the possibility to contribute to operational success before traffickers even managed to board the aircraft. At last, there's a real opportunity to deploy technology in a way that is non disruptive to the customs authorities and passengers alike. None of this is intended to replace the customs officer. Rather, it should be seen as a tool that can be targeted at specific high-risk situations or simply used as a means of generating more information to aid decision making; it's affordable, simple to deploy and to operate. As borders become increasingly digitised and passenger travel less disruptive and more seamless, it seems the right time to seriously consider the benefits that technology can bring to customs and border operations. With air passenger numbers set to continue to rise for the foreseeable future and with increasing pressure being brought to bear on limited human resources, there's a real opportunity here to deliver a step change in capability without negatively impacting on passengers and staff, and without breaking the bank.

Stephen is the operational advisor to Apstec Systems. Having spent 6 years as Head of Security for the Olympic Delivery Authority and as security director for the Olympic Park and Village during the London 2012 Games, he was engaged as the senior advisor to the British Government on joint security programmes with international partner governments. Prior to this, Stephen enjoyed a successful military career, in which he was ultimately responsible for delivering the UK counter terrorist bomb disposal capability to Worldwide operations. He's worked with Apstec since 2017.

FUTURE FIT SMART COMMAND & CONTROL CENTER

MAJOR GENERAL OBAID MUHAIR BIN SUROOR
DEPUTY DIRECTOR GENERAL OF THE GENERAL DIRECTORATE
OF RESIDENCY AND FOREIGNERS AFFAIRS - DUBAI

THE SMART COMMAND AND CONTROL CENTER IS A PROACTIVE PROJECT THAT CONTRIBUTES TO PROVIDING SUPPORT THROUGH ADVANCED TECHNOLOGICAL SOLUTIONS FOR ALL PORTS AND SECTORS OF THE CITY OF DUBAI.

Our goal at the General Directorate of Residency and Foreigners Affairs- Dubai is to enhance our services by bolstering safety and security measures for all passengers traveling to and from the city of Dubai.

We aspire to achieve a zero-touch point airport, ensuring a seamless travel experience for all passengers from the moment they book their tickets to their time of travel. Our endeavor is to establish an environment characterized by safety, efficiency, comfort, and a stress-free atmosphere.

The overarching objective of the General Directorate of Residency and Foreigners Affairs - Dubai is to uphold the highest standards of service provision and the quality of our procedures.

The Smart Command & Control Center holds the responsibility of making sound decisions in accordance with international best practices, guaranteeing the sustainability of the security and service system in coordination with local, federal, and international authorities and organizations through continuous, round-the-clock (24/7) direct communication.

This border control unit constitutes a qualitative leap in the field of monitoring future opportunities and enhancing the readiness of the Emirate of Dubai and the UAE for the future.

We employ proactive procedures to authenticate and verify every passenger entering the country, scrutinizing their profiles to minimize errors or address issues that could impede their smooth entry, while effectively tackling security challenges. Our methodologies and practices are quality-centric, elevating efficiency standards, and embodying innovation, technological advancement, and foresight in technology utilization.

The Command and Smart Control Center focuses on enhancing investments in big data analysis and scenario development using advanced artificial intelligence

techniques. This involves integrating all accessible internal and external data sources into the digital platform of the smart command and control center.

Our digital platform is a crucial alert mechanism, allowing us to monitor and respond to emergency events and incidents promptly, safeguarding the efficiency of services delivered during the customer's journey.

Furthermore, we proficiently manage crises by implementing institutional resilience policies, digital coordination, formulating future business strategies, and upholding business continuity within established standard procedures.

FUTURE FIT TECHNOLOGIES IMPLEMENTED IN THE SMART COMMAND & CONTROL CENTER

IOC PLATFORM FOR SMART OPERATIONS:

The IOC takes proactive measures to continuously monitor the infrastructure systems and performance metrics related to critical sectors within the General Directorate of Residency and Foreigners Affairs-Dubai. It is dedicated to promptly issuing warnings to relevant stakeholders to address any issues within the predefined time frame, ensuring the seamless functionality of the system and the achievement of its objectives and indicators.

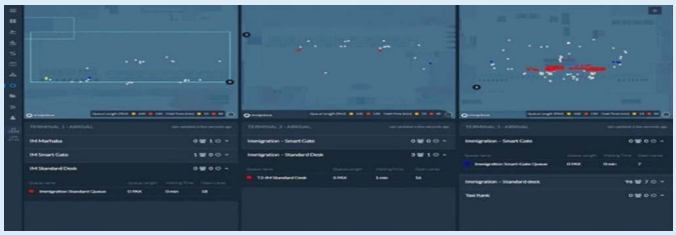
NGE PLATFORM

Next-generation system for pre-clearance:

The General Directorate of Residency and Foreigners Affairs-Dubai (Smart Command and Control Center) has been proactive in adapting to the growing influx of passengers by seamlessly evolving the entry and exit systems.

Passenger clearance at border crossings is carried out proactively, enabling a swift 1-second procedure to complete pre-clearance formalities for travelers.

The Smart Command Center manages passenger files that need detailed review by our staff, aiming to streamline the entry and exit processes for travelers within the Emirate of Dubai, all within the stipulated time frame.



IOT PLATFORM

Sensor platform helps determine passenger density across all Dubai airport terminals by utilizing thermal scanners. This enables us to have a comprehensive view of the location of every staff member and passenger by terminal.

SMART PLATFORM

Smart platform helps the Smart Command & Control Center monitor suspicious movements and activities at passport control points across various border locations (e.g., security reports and information received regarding suspected passengers).

BIO-HUB BIO PRINT SYSTEM

The Bio-Hub system is a database that houses travel document data along with essential biometric features such as “eye and face print.” Upon verification and approval of the application, a unique BIO-ID number is generated for each traveler, enabling individuals to be identified based on their biometric features rather than their travel documents.

THE SMART GATE SYSTEM

Smart gates employ a system known as Smart Gate System. The system we use is a tool engineered at the Smart Command and Control Center to monitor and enhance the performance of passenger and resource entry and exit processes. It plays a crucial role in overseeing and evaluating operational efficiency through smart channels, issuing alerts regarding numerous aspects of service channels. These include:

1. Identification: This entails identifying individuals passing through service platforms and smart gates, comparing the furnished data, and transmitting instant alerts to the observer at the Smart Command and Control Center for information analysis or immediate action if warranted.
2. Security Risk Alerts: This function generates immediate warnings upon detecting potential security infringements or risks. Examples could include unauthorized smart gate usage such as: attempts to use counterfeit documents at smart gates, data discrepancies with information stored in business databases, or incorrect usage of smart gates.
3. General Performance Monitoring: This involves measuring and analyzing the time spent during each entry or exit through smart gates. The collected data is instrumental in evaluating system efficiency and identifying any operational deviations or delays. Based on this data, corrective measures can be implemented to ameliorate the overall performance of smart gates, ensuring efficient and effective operations.

FUTURE FITTING OUR SYSTEMS

To future-proof our technologies, it's imperative to leverage the Internet of Things. The systems within the Smart Command and Control Center have been augmented through proactive integration of internal systems with strategic and operational partners, aiming to deliver services effectively and optimally.

For instance, the statistical forecasting system along with the PPFM system provide flight and passenger forecasts, which directly feed into the Airport Passenger Flow system and Smart 360 View systems. These systems are designed for monitoring traveler crowd management in real-time and measuring employee capacity on various service platforms (such as passport platforms and smart gates). This setup ensures readiness to handle a large influx of travelers during peak entry and exit times. Consequently, we have devised a forecast for the coming 8 years to ensure seamless operation and preparedness.

ADVANCED OPS

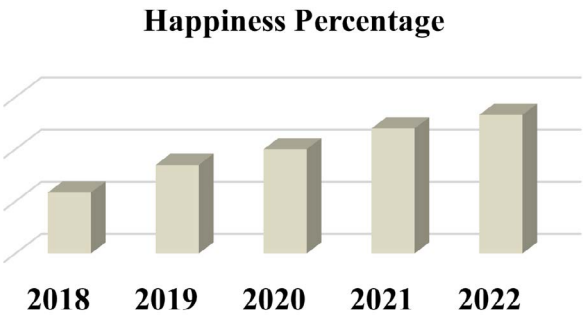
As a result of the increasing the use of advanced technology systems at the Command and Smart Control Center with the use of pre-clearance systems, there has been a marked increase in passenger use of applied technology, which has led to a reduction in the use of traditional passport counters. That's a successful investment for the Smart Command and Control Center initiatives and projects.

For example, in 2018, the daily passenger count through traditional counters stood at 37,609,586, which plummeted to approximately 15,142,250 passengers in the first half of 2023. Conversely, the user count for smart gates saw an upswing from 6,913,960 passengers in 2018 to 10,006,237 passengers in the first half of 2023.

The shift in travelers' preference towards utilizing smart gates over the old traditional counters has culminated in a substantial 60% reduction in operational costs, signifying not only a technological advancement but also a financial saving.

FUTURE FIT SMART COMMAND & CONTROL CENTER

The Smart Command & Control Center has also contributed to raising the percentage of happiness (KPI) from 81.70% in 2018 to 94.20% in 2022 and maintaining the rate of happiness of passengers at 99% in 2022.



AWARDS

THE SMART COMMAND & CONTROL CENTER HAS CONTRIBUTED IN WINNING A LOT OF AWARDS (Local, regional, and global)

- 2023: GDRFA being recognized as future fit by government development and the future office, Operations at GDRFA Airport considered as pro-active procedures ensuring best customer journey.
- Golden Bridge gold prize for the best client service
- 2021 Emirates Prize for Innovation (best innovation class)
- 2022: Stevie International Business Award
- British Idea UK Award for the Smart Corridor Project, in the category of innovation and private resident
- British Intellectuals Award
- Award for Arab Thoughts
- GCXA Award (Best Digital Transformation)

First place global ranking in:

- The busiest global airport index Source: World Airport Council Classification 2022
- The residence laws flexibility index Source: International Institute for Administrative Development, 2022
- Universal performance of the first Dubai passports
- According to the SKYTRAX report (Bard. Google),
- Launch of the world's first children's book
- Receive the largest number of international passengers for the ninth consecutive year.

FUTURE FIT SEAL

AUTHORIZED BY THE GOVERNMENT DEVELOPMENT AND FUTURE OFFICE

Projects awarded the Future Fit Seal are proactive, exceptional, and dedicated to investing in future-oriented skills.

They deploy advanced technologies to attain practical readiness for the impending challenges and exhibit tangible, impactful outcomes.

The Future Fit Seal emphasizes priority sectors of the future, including the new economy, food and water security, environmental sustainability, as well as future technologies, skills, and quality of life.

Future Fit projects undergo assessment by the Government Development and Future Office based on six key criteria:

1. Projects should embody human-centered approaches, harnessing emerging trends and data to design initiatives that foster future readiness.
2. The ability of the project to generate added value for both the national economy and the society of the UAE.
3. The degree to which the project adheres to sustainable practices, employing advanced technology to foster a brighter future.
4. Projects should be proactive, innovative, and practical, contributing significantly to enhancing future readiness.
5. Achieving flexibility and demonstrating the capacity to adapt to future alterations.
6. Attaining digital readiness through the adoption and advancement of cutting-edge future technologies.

By Captin Engineer
Obaid AlMansoori

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By Declan Trezise,
VP Global Solutions Engineering,
Babel Street

AI-powered technologies smooth current customs and border security operations, underpin innovations

Surgical masks. They're everyone's least favourite fashion accessory. Still, in the COVID era, they served a vital purpose.

Whenever we speak or cough, we expel tiny droplets of respiratory matter. Surgical masks stop this matter — and the COVID virus contained within — from spreading to others, while still enabling air to pass and us to breathe.[1]

National borders should work in much the same way. Think of your country's legitimate visitors as air. We all need air. Increasingly, our national economies depend on tourism and international trade. So, customs and border security agencies must determine ways to enable the easiest possible passage for legitimate travellers. Concurrently, they need better ways to stop the terrorists, human traffickers, drug runners, arms dealers, and purveyors of counterfeit goods who seek international passage alongside business travellers and newlyweds honeymooning in Paris.

New technologies for matching names and searching publicly available information and commercially available information (PAI/CAI) can help customs and border security agencies meet this two-pronged goal. These technologies bolster pre-screening efforts and lay the foundation for integrated border management and other innovations.

1 Mayo Clinic Staff, Fight coronavirus (COVID-19) transmission at home, Mayo Clinic, July 2023, https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-transmission/art-20482397

WHAT IS INTEGRATED BORDER MANAGEMENT?

In many countries, an array of agencies operating from federal to local levels of government take some responsibility for customs and border security. Integrated border management (IBM) is an initiative to enable significant collaboration among these agencies by integrating border-related information, systems, processes, and people.

THE RIGHT TECH IMPROVES BORDER PROCESSES

AI-powered PAI/CAI platforms scan for insight in real time and append information found to search queries. Information returned comes from a broad array of websites (including those hosted on the deep and dark web), social media sites, and real-word interactions generated via online chats and comments. In conducting these searches and coalescing data, PAI/CAI platforms help to resolve entities — matching names found in unstructured text to entities appearing in public knowledge bases, or to the knowledge bases maintained by your organisation.

PAI/CAI platforms search for names in unstructured text. But matching names in structured text — watchlists and sanctions lists, for example — is equally important. The best name matching systems match names across a variety of languages and scripts, detecting aliases, nicknames, and misspellings. To disambiguate names in structured text, (to find the right "John James Jones" among a sea of "John James Joneses") they apply additional identifiers to each record. These identifiers help to differentiate between the plumber John James Jones hoping to see the White Cliffs of Dover with his family and John James Jones, known drug kingpin. Similar capabilities help link business names to their nicknames and to names of their subsidiaries.

These name-matching technologies also provide clear scores, helping you to understand why two names have been deemed a "match" or a "mismatch." They empower you to adjust match parameters according to your organisation's needs. These capabilities can give organisations strengthened confidence in the match obtained.

Of course, all the insight in the world does border and customs officials no good if it's presented in a language they can't understand. This is obviously true for news articles, social media posts, and other pieces of PAI. It is also true for names. It's a safe bet that very few American customs and border officials would recognise the name "Владимир Путин" as "Vladimir Putin." Cutting-edge PAI and name matching solutions automatically transliterate names and translate content from an array of different languages, helping customs and border security officials to monitor names and online content from across the globe.

OVERCOMING KNOWN CHALLENGES

PAI/CAI platforms and name-matching solutions help customs and border security officials overcome several existing challenges. These include:

- **Incomplete insight**
  While some customs and border security organisations currently use PAI systems, those systems are often suboptimal. They may only scan a limited number of data sources; serve up poor quality data; and prove incapable of handling the vast amounts of data necessary for true insight.
- **Inability to detect present threats**
  Many PAI/CAI systems now in use cannot search optimally in real time. Therefore, they cannot effectively detect immediate dangers. New PAI/CAI systems can change that. If a passenger posts, "Just saw a woman abandon a bag @Liverpool John Lennon Airport, Gate 3," it can trigger an immediate alert to airport authorities.
- **Ineffective and inefficient name matching**
  Often, customs and border security agents rely on full-text search platforms to match names in structured text. Glaring shortcomings abound in these systems. They often return an excess of false positives which require human investigative time to resolve. They typically accommodate only a limited number of languages, making it difficult to match translated names, transliterated names, and names rendered in non-Latin scripts. Finally, they often fail to spot aliases, nicknames, misspellings, honorifics, or out-of-order names.

OUTDATED TECHNOLOGY

Efforts to pre-screen travellers and integrate border management are often hampered by legacy systems' inability to communicate with each other. One outdated system simply cannot work well with another to find and present the data needed to pre-screen travellers and businesses, then to communicate findings among agencies. These same systems are too often incapable of running the modern PAI and name-matching solutions that can improve insight. Replacing these legacy systems, or retooling them to communicate better, can be prohibitively expensive. That's why today's top PAI and name-matching solutions are API-based. They work on top of legacy systems to facilitate sharing from one application or data silo to another — avoiding the need to replace or re-tool older systems.

PLANNING FOR FUTURE INNOVATIONS

Modern name matching and PAI solutions help today's customs and border security agencies overcome known challenges to meet the dual goals of easing legitimate passage while better securing nations against wrongdoers. These solutions also underpin current and near-future innovations, including "pushing the border out" through pre-screening, IBM, and "frictionless borders."

A frictionless border is one in which a combination of pre-screening, X-ray technologies and biometrics enable the free passage of legitimate travellers and goods. What would a frictionless border look like? Imagine arriving at Boston's Logan Airport, rushing for a flight to Paris. Imaging systems automatically X-ray your car and your luggage. Before entering the terminal, you stand at a biometrics station. It scans your retina. Your identity confirmed, your possessions examined, you simply walk onto the plane. Or imagine you're an importer/exporter whose trucks regularly travel from the United States to Canada and back. You enter a government programme labeling your company a trusted international trader. Your cargo may be automatically scanned at the border, but your drivers roll right through.

By investing in AI-powered PAI and name-matching technologies today, customs and border organisations can overcome current challenges while laying the groundwork for frictionless borders and other innovations.

Declan Trezise is the VP of Global Solutions Engineering for Babel Street, based out of the UK. He has many years of experience working out the thorniest problems of converting unstructured text into actionable insight, and communicating complex technical solutions to audiences at all levels and walks of life — from international royalty and heads of state to rock stars.
Prior to Babel Street, he was with Monster.com's Government Solutions division, where he delivered the UK's largest job board, Universal Jobmatch for the Department for Work and Pensions. Before that, he was the face of cybersecurity for BAE Systems Digital Intelligence (formerly known as Detica) as the manager and presenter at the prestigious NerveCentre facility.
Declan trained as a theoretical physicist at the University of Exeter and as a graduate, cut his teeth as a developer across a range of technologies in "spooky" applications from network probes for lawful interception to data retention and querying systems for the largest telecommunications companies in Europe.

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FEATURE

U.S. Customs and Border Protection

Streamlining Travel: CBP's Innovative Global Entry Mobile App

In an era of rapid technological advancement, U.S. Customs and Border Protection (CBP) has taken significant steps towards enhancing the international travel experience with the launch of their new Global Entry Mobile App. This groundbreaking development promises to revolutionize the way travelers navigate customs and immigration processing, making international journeys smoother, more efficient, and safer. The Global Entry Mobile App marks a significant leap forward in CBP's efforts to modernize and simplify travel procedures for both U.S. citizens and eligible foreign nationals.

THE GENESIS OF THE GLOBAL ENTRY MOBILE APP

The Global Entry program, introduced in 2008, has been a game-changer for frequent international travelers. It allows pre-approved, low-risk travelers to bypass long immigration and customs queues by using automated kiosks upon arrival in the United States. However, even with the success of the program, CBP identified an opportunity to further improve the traveler experience by harnessing the power of mobile technology.

In February 2021, CBP announced the launch of the Global Entry Mobile App, a digital tool designed to streamline the application process and provide real-time information to program members. This innovative app enables travelers to complete and submit their U.S. entry applications in advance of their arrival, manage their membership, and receive important updates directly on their smartphones, reducing the need for paper forms and in-person appointments. It is a testament to CBP's commitment to reinforcing border security and ensuring a seamless travel experience for everyone.

KEY FEATURES OF THE GLOBAL ENTRY MOBILE APP

1. **Simplified Application Process:** One of the most significant advantages of the Global Entry Mobile App is the simplified application process. Travelers can now complete their applications electronically, eliminating the need for time-consuming paperwork. The app guides users through the application, ensuring that all necessary information is provided and reducing the

chances of errors or omissions.

2. **Real-time Updates:** The app offers real-time updates on the status of an applicant's membership, making it easier for travelers to track their progress and stay informed. This feature provides peace of mind, allowing members to plan their trips with confidence.
3. **Convenient Appointment Scheduling:** Global Entry applicants can schedule their mandatory in-person interviews at enrollment centers directly through the app, eliminating the need for phone calls or emails. This not only saves time but also ensures that appointments are convenient and tailored to the traveler's schedule.
4. **Mobile Passport Control:** MPC allows eligible travelers to submit their travel document, photo, and customs declaration information through a free, secure app on their smartphone or other mobile device to expedite their entry into the United States. With Mobile Passport Control integration, Global Entry members can scan their passports and answer custom declaration questions on their smartphones before even reaching a customs kiosk, further reducing wait times.
5. **Enhanced Security:** CBP takes security seriously, and the Global Entry Mobile App is designed with robust security measures to protect users' sensitive information. Biometric verification and encryption protocols ensure that personal data remains secure at all times.

A WIN-WIN FOR TRAVELERS AND CBP

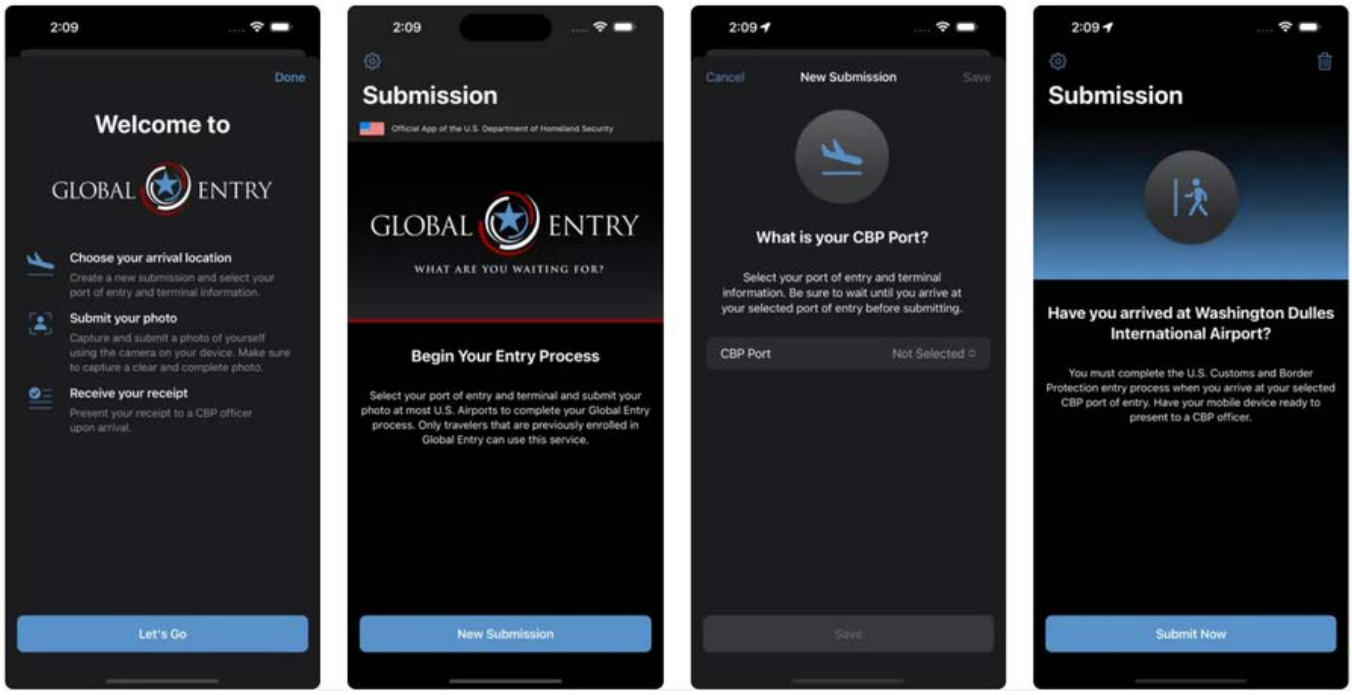
The Global Entry Mobile App is a win-win for both travelers and CBP. For travelers, it means a more efficient, hassle-free travel experience. Gone are the days of filling out forms, waiting in long lines, and juggling paperwork. With the app, the process becomes paperless, streamlined, and user-friendly.

On the other hand, CBP benefits from enhanced efficiency and accuracy. The digitization of the application process reduces the potential for errors and incomplete submissions, resulting in quicker processing times. It also frees up CBP personnel to focus on more critical tasks, such as ensuring security and managing border crossings.

THE PATH TO A SEAMLESS TRAVEL EXPERIENCE

The launch of the Global Entry Mobile App is part of a broader initiative by CBP to modernize and simplify the travel experience. In recent years, CBP has introduced a range of technological advancements to enhance border security and improve traveler convenience.

One notable initiative is the use of facial biometric technology at various U.S. airports and border crossings. This technology allows CBP to quickly and accurately verify travelers' identities, expediting the



entry process while maintaining a high level of security. The integration of facial biometrics with the Global Entry Mobile App further enhances the speed and convenience of international travel.

GLOBAL ENTRY'S GLOBAL REACH

The Global Entry program has grown in popularity since its inception and is now available at more than 77 international airports and 14 preclearance locations around the world. This global reach means that Global Entry members can enjoy expedited entry not only into the United States but also when departing from certain foreign airports.

Moreover, the Global Entry Mobile App extends the program's convenience beyond U.S. borders. Travelers can use the app to manage their Global Entry membership, even while abroad, ensuring a seamless experience throughout their journeys.

THE FUTURE OF TRAVEL: DIGITAL TRANSFORMATION

The Global Entry Mobile App represents a significant milestone in the ongoing digital transformation of the travel industry. As the world becomes increasingly interconnected, travelers expect streamlined and efficient processing. CBP's innovative app aligns perfectly with this trend, providing a glimpse into the future of travel.

As technology continues to advance, we can anticipate further enhancements to the travel experience. Automated passport control, biometric identification, and mobile applications are just the beginning. The Global Entry Mobile App serves as a testament to the power of innovation in making international travel not only safer but also more enjoyable.

CONCLUSION

In a world where time is of the essence, the Global Entry Mobile App is a game-changer for international travelers. By simplifying the application process, offering real-time updates, and integrating with Mobile Passport Control, CBP has created a digital tool that promises to redefine the travel experience. Travelers can now focus on the journey itself, confident that the Global Entry Mobile App has their customs and immigration needs covered.

As CBP continues to invest in technology and innovation, we can only expect further improvements to the travel experience. The Global Entry Mobile App is just the beginning of a new era in border security and international travel convenience. With the world at our fingertips, the future of travel has never looked brighter.

For more information on how the GE Mobile Application works, please go to: https://www.cbp.gov/travel/trusted-traveler-programs/global-entry/global-entry-mobile-application.

FEATURE

By Elke Oberg,
Marketing Manager,
Cognitec Systems

The Data Debate: Roadblocks for biometric expressways through airports

Biometric solutions that optimize airport security and passenger journeys are available and work well, but the underlying data structures and principles still lack standardization and a future-proof framework, within the EU and worldwide.

Face recognition has proven the biometric of choice for automating airport processes from curb to gate, and in the future, even from home to home. In an optimal situation, the face could be used to perform person and flight verification at each touchpoint throughout the airport. Whether dropping off luggage, purchasing duty free items, entering a lounge, passing through security and border control points, or boarding the flight—all these processes can be automated and accelerated via facial image comparison.

While the passenger enjoys faster processing and more convenience at all the touchpoints mentioned above, the use of biometrics also increases security at the airport and for air travel. They help curtailing most unlawful activities involving ID document fraud and illegal immigration. In addition, facial images and fingerprints can be checked against terrorist watch lists, or other databases of wanted criminals or banned persons.

Using facial biometrics for airport journeys requires the person to enroll a reference image for recurring facial comparison. For high-stakes security applications, the reference image must be authenticated against a valid ID document. This step could happen at a kiosk near the airport entrance or even at home before starting the trip. But if the data is stored for a limited time, such solutions would need re-enrollment for each trip and each airport—an impractical, stressful scenario for the frequent traveler.

Currently, airports around the world are installing isolated biometric equipment from different vendors which require the traveler to perform the person verification at each touchpoint, with repeated readouts of passport or ID card data. The data is stored locally within propriety technologies that do not exchange data with each other.

But where could the data live to facilitate its reuse throughout the airport? Airports are adverse to the responsibly to store and protect person-related data, even if it were deleted at the end of the day. They want to avoid the risks of data breaches and other data management faults, but also the cost of purchasing and maintaining the equipment and systems.

Ideally, travel and airport systems could connect at any time to a centralized ID data system. Such systems would guarantee the integrity and security of person-related data as needed for travel and border crossing processes. The data could also be confirmed and displayed in form of a digital ID on mobile devices.

Governing agencies in each country will verify the person's identity and provide a secure public key that combines with a personal key/biometrics to access the data as needed. In the future, these datasets may not only include typical passport/national ID data, but other ID documents and certificates that can authenticate a person.

The EU is working on a framework to bring such a digital wallet to all EU citizens, most likely involving a managed decentralized system. Here, the data is distributed across highly secure database or blockchain frameworks, and allows users to self-govern which dataset is retrieved in which situation.

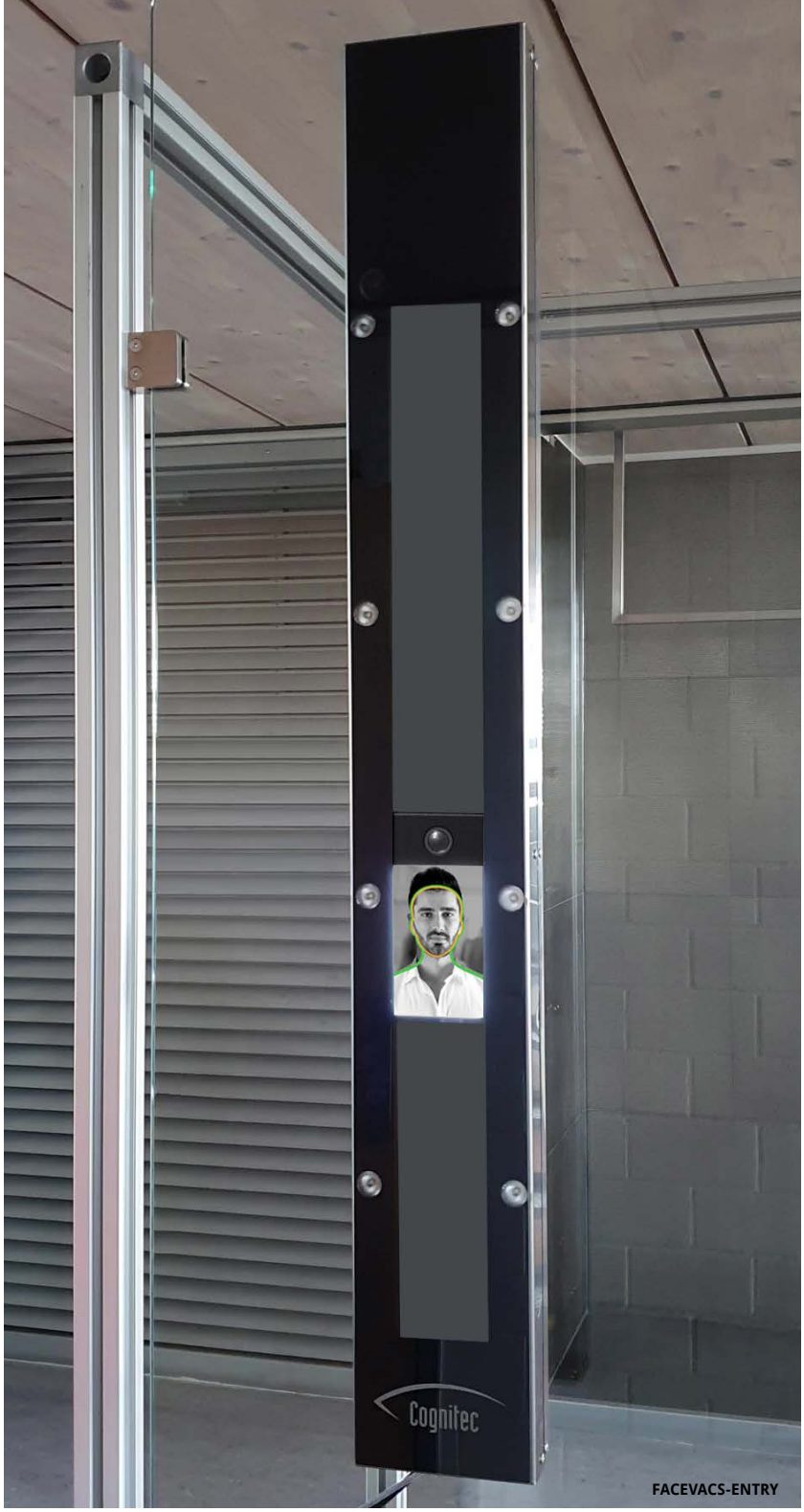
Airports, airlines and border agencies would be allowed to retrieve and share the traveler's facial image for the day of travel, and use cameras at various airport stations to capture live images for instant verifications.

Alternatively, the live image is compared directly to the picture contained within the traveler's digital wallet. This option would eliminate the need to connect to large central or decentralized databases, and to store the data temporarily in a local system.

In summary, seamless movement through airports using one mode of identification, preferable the person's face, needs a secure data system and authorized retrieval methods that provide person data on an as-needed basis, without having to enroll this data at airports or with airlines.

An EU-wide project could bring biometric expressways—with more speed, convenience and security—to European air travel sooner than later.

A global system could remain an illusion for some time, but standardized data formats in digital IDs and unified data protection requirements would extent the expressways around the world.



FACEVACS-ENTRY

TWO DECADES OF INNOVATION FOR SAFER, SWIFTER, SELF-SERVICE BORDER CHECKS

Profound technical expertise, combined with the experience in working on government projects in the past 20+ years, fuel Cognitec's continuous innovations for border control processes.

Most recently, Cognitec evolved its FaceVACS-Entry device to enable all three procedures of ISO-compliant image capture, presentation attack detection, and verification.

The device software now includes a fast, accurate matching algorithm that compares the live image against facial images retrieved from ID documents or databases.

Border agencies can choose to use the device for biometric photo capture only, for traveler verification as used in eGates, or to combine both processes and further reduce the time spent at border check points.

After 12 years as marketing manager of prominent face recognition company Cognitec, Elke Oberg has gained a deep understanding of biometric technologies, their uses and abuses, and their potential applications in the future. She regularly contributes to the educational outreach of industry associations, conferences and general media outlets to promote the responsible use of face recognition technologies in our society.

By Lolade Onabolu,
Senior Programme Director
FBIS Programme & MBG People
Group Director, Borders &
Migration, Home Office

Home Office

The UK Home Office – delivering a smarter, more secure UK border

The Home Office has recently implemented a broad and ambitious set of improvements and reforms to our border and immigration processes, and we continue to deliver on our ambition of a secure and seamless, fully digital, end-to-end journey for customers interacting with the UK's immigration system.

We are embracing technology as we transform our systems, and the progress we have made is already providing greater efficiency for our customers, our economy and our border operations.

UNIVERSAL PERMISSION TO TRAVEL AND ELECTRONIC TRAVEL AUTHORISATION (ETA)

A key principle of our ambition to transform the UK Border and end-to-end passenger experience and further improve UK border security is the introduction of the 'Universal Permission to Travel' scheme. This will enable us to know more

about people before they travel, allowing greater use of upstream interventions to prevent people who are a threat from travelling to the UK. ETA is a key component of our Universal Permission to Travel.

The ETA scheme launched for Qatari nationals on 25 October 2023, and nationals of Saudi Arabia, Bahrain, Kuwait, Oman, United Arab Emirates and Jordan will follow in February 2024. ETAs will replace Electronic Visa Waivers (EVW) for these countries (and will replace visas for Jordan), and will improve our offer, with ETAs being both cheaper and multi-use over a two-year period. ETA rules were laid in Parliament on 9 March setting out how the scheme would operate. On 6 June we announced that ETAs would cost £10 per applicant.

Rollout to the rest of the world will follow through 2024, but we will allow plenty of time for people to become aware of the changes first.

The UK welcomes millions of visitors every year and these improvements will lead to a better customer experience and improve border security. By knowing more about people in advance of travel our ambition is to increase automation of passenger clearance at the border. This will improve the end-to-end user experience for legitimate passengers and promote the UK as a top destination for tourism and business.

We understand that the introduction of ETAs will be a significant change for many people who can currently travel to the UK without any prior interaction with the Home Office, so the rollout will be supported with an international communications campaign to drive awareness and action. Further information about the introduction of the ETA scheme is available here: Electronic travel authorisation (ETA) - GOV.UK (www.gov.uk)

AT THE BORDER

Turning to the UK border, our plans to further strengthen border competitiveness are well underway. We already allow more people and nationalities to use our eGates than any other country and, following a successful proof of concept trial in February 2023, and after having passed legislation earlier this year, we expanded the use of eGates to include 10 and 11-year-olds in July. This has allowed more families to use eGates. Approximately 400,000 children aged 10 and 11 years old have done so to date and we estimate that this will rise to over 600,000 by the end of 2023.

Families generally stay together at the border, as the age of the

youngest child dictates their use of eGates, so as a result of these changes 12-16-year-olds with a 10 or 11-year-old sibling are now also more likely to use eGates. We estimate that this is expanding eGate use by 12-16-year-olds by 600,000 annually.

Alongside these developments, we are also working to improve the resilience of eGates, and to increase the number available at any time to shorten queue times. Our ambition is to expand the use of eGates for most passengers who already have an immigration permission.

While the numbers of these passenger groups are not significant in overall border crossing volume terms, their processing times are longer, so any automation of these cohorts will improve flow at the border.

OUR MOST RECENT TRIALS

We have been undertaking a number of exciting trials - working collaboratively with industry experts on our border of the future.

As part of our most recent developments, we are exploring technologies and approaches that support the move towards contactless border crossing, including but not limited to facial recognition technologies for passengers presenting both in person, and vehicles at all UK border ports.

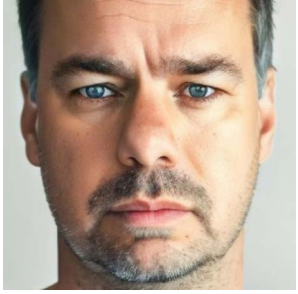
For example, during May 2023, the Home Office conducted a successful live demonstration to test the automated biometric capture and facial recognition of passengers when presenting in a vehicle at Ramsgate port, a non-operational site. We simulated the border to test the efficiency of the innovative technology that supports a contactless maritime and rail port solution.

These demonstrations of the equipment in a live trial scenario brought to life the body of work from the previous twelve months from the Border Vision Advisory Group (BVAG) 'think tank' events held during 2022.

The data from this trial is currently being analysed to assess efficiencies of the process and biometric capture performance of the cameras. The Home Office's Future Border and Immigration System (FBIS) programme will also be assessing the potential to implement solutions of this nature, aligned to benefits and cost analysis for each port that processes passengers in vehicles, over the coming months.

This collaborative, scientific and evidence-based approach is helping to shape the future of technology and automation at the UK border.

We will continue to improve the passenger journey through further automation of the border to 2025 and beyond, becoming more data-driven and intelligence led - delivering a modern, digitised and more customer-focused service.



By Carl Gohringer,
Vice President, Global Public Sector Business Development,
Parvision Inc.

A Reference Design: Paravision's Contactless Corridor

In the dynamic landscape of border management, the role of technology cannot be overstated. Recent advancements in artificial intelligence, camera technology, and computing can now enable a transformative passenger experience at border checkpoints. Paravision, a US-based leader in Vision AI, is proud to unveil our Contactless Corridor 2.0 (CC2.0) reference design[1], with the aim of realising an era of frictionless passenger experiences at border crossings. This article explores how our CC2.0 reference design, made possible by the powerful Paravision Search[2] facial recognition platform and Paravision's suite of mobile biometric technology, can reshape the landscape of border management.

THE VISION OF SEAMLESS BORDER CROSSINGS

Border agencies have long aspired to deliver a seamless passenger experience at checkpoints, one that eliminates long queues resulting from the need for passengers to continuously produce passports and personal devices. However, until recently, realising this vision remained a complex and distant goal, requiring significant investments in infrastructure and human resources. The convergence of cutting-edge technologies has now made this vision an achievable reality.

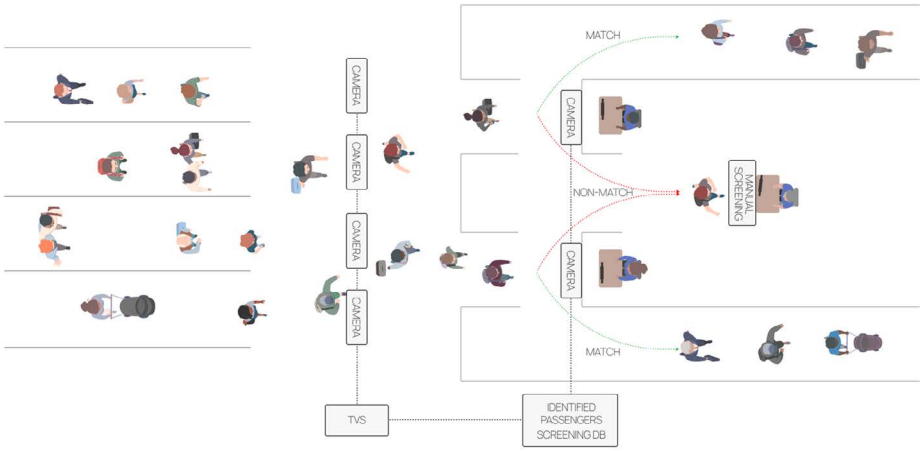
Paravision unveiled our original ground-breaking Contactless Corridor concept[3] at the Future Travel Experience (FTE) exhibition in 2021. Continuously striving towards ever more pragmatic and cost-efficient solutions, we now introduce CC2.0, requiring less physical space, reduced hardware requirements, and a less-demanding personnel support structure.

1 https://www.paravision.ai/news/introducing-the-contactless-corridor-2-0-a-reference-design-for-air-travel/
2 https://www.paravision.ai/paravision-search/
3 https://www.paravision.ai/news/the-biometric-contactless-corridor-a-blueprint/

CONTACTLESS CORRIDOR 2.0 (CC2.0): A PARADIGM SHIFT

CC2.0 builds upon our previous reference design, offering a streamlined and cost-effective approach to delivering seamless passenger experiences. Let's explore how CC2.0 functions and how it is enabled by Paravision's cutting-edge technologies:

1. **Structured Passenger Flow:** Travellers enter the opt-in "Corridor," a series of stanchions and single-person pathways designed for linear flow. This layout reduces complexity whilst maintaining efficiency.
2. **1st Step Overhead Cameras:** As travellers move through, overhead "Walkthrough cameras", powered by Parvision Streaming Containers[4], capture video. Biometric image quality is optimised and the highest quality image of each passenger is then processed using the Paravision Search platform on the backend. We refer to this backend system as a "Traveller Verification Service (TVS)".
3. **Day-of-Travel Database Matching:** The extracted images are matched against a day-of-travel database containing opted-in travellers. This matching is crucial for determining if passengers are authorised to proceed.
4. **2nd Step Front-Facing Screening Cameras:** Passengers then approach a conventional counter with front-facing "Screening cameras" that capture passenger photos. These images are compared with those captured by the overhead cameras to determine passenger identity.
   The identity is then linked to travel authorisation as determined by the TVS.



5. **Efficient Decision-Making:** If passengers are approved by the Traveller Verification System (TVS), they are waved through by security officers. If not, they are directed to the exception handling lane.

CC2.0 incorporates two vital biometric matches to optimise passenger flow. The first match rapidly determines if travellers are authorised to pass, while the second match links passengers to the TVS response in real-time, allowing for smooth and efficient decision-making. This dual-match approach eliminates the need for passengers to stop during the process.

REMOTE VISITOR PRE-REGISTRATION

Key to the successful operation of a contactless biometric corridor is remote visitor pre-registration, which can take the form of a mobile app which enables travellers to securely register their identity and opt-in to the biometric program from the comfort of their home.This may also be a constituent component of a Government ETA app or an airline's remote check-in app.

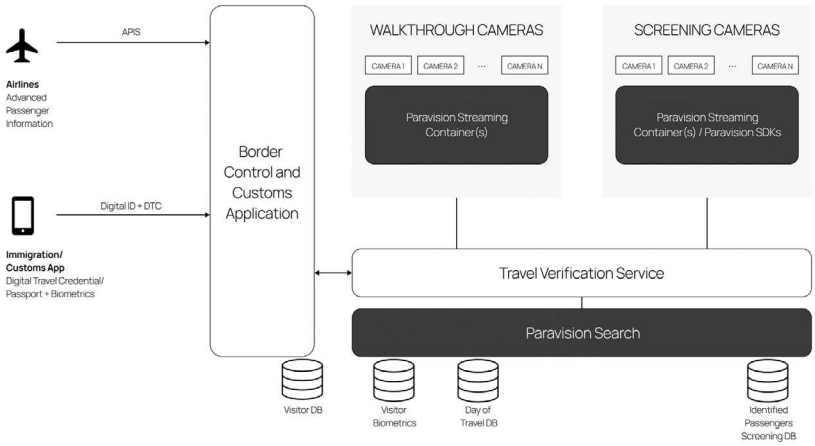
This is both the method for enrolling high quality biometric data as well as managing biometric consent / opt-in. The visitor registration app would most typically be a native iOS or Android application which could use Paravision SDKs[5] for face detection, image quality analysis, and user feedback. Face Image liveness assessment plays a pivotal role in protecting against presentation attacks during the registration and onboarding process, ensuring the integrity of biometric data.

AIRLINE ADVANCED PASSENGER INFORMATION SYSTEM (APIS) DATA

The customs and border management application will take the visitor pre-registration data and, combined with the airlines' APIS data, either enroll the data in the TVS or inform the TVS of who will be traveling on a given day. The TVS in turn provides this direction to Paravision Search, which is the biometric matching workhorse for CC2.0.

4 https://www.paravision.ai/resource/paravision-streaming-container-7/

5 https://www.paravision.ai/resource/paravision-face-recognition-product-suite/



The day-of-travel database is a key concept in that it cleaves what could be a multi-million record database of all registered passengers down into something which is more typically thousands or tens of thousands of records. This reduction in database size increases speed, improves accuracy, and decreases compute costs.

PARAVISION SEARCH: EMPOWERING SEAMLESS PASSENGER EXPERIENCES

Central to the success of CC2.0 is the Paravision Search platform. This cloud-ready, enterprise-grade facial recognition platform brings the following core benefits:

- Massive Scalability: Can handle unlimited concurrency and support for galleries of up to hundreds of millions of records while maintaining its NIST-tested accuracy[6].
- Extreme Speed: Enroll and match identities at staggering speeds: over one million matches per second per core.
- Native Elasticity: Fully elastic, allowing programmatic adjustments in compute resources to meet real-time demands and drive cost savings.
- Sophisticated gallery management: A distributed database for biometric and vector data, allowing speedy addition and search of data; enables definition of sub galleries and focused search with adaptive filters.
- Flexible Deployment: A cloud-ready platform that can be deployed fully within (or alongside) a given TVS in a trusted computing environment, supporting both cloud and on-premises deployments.

These core benefits play a pivotal role in enabling vital elements of CC2.0:

- Biometric Registration: Paravision Search maintains a database of biometric templates for all enrolled travellers, ensuring high-quality biometric data storage.
- Day-of-Travel Database Creation: With information from the Advanced Passenger Information System (APIS), dynamically created sub-galleries aligned with travellers scheduled to cross the border on a given day are enroled in Paravision Search.
- Day-of-Travel Matching: Paravision Search performs high-speed matching against the day-of-travel database, enabling real-time decision-making during the passenger's journey.
- Identified Traveller Matching: This component within Paravision Search maintains a parallel database of travellers identified at the walkthrough cameras, delivering instant results from the second ("Screening") cameras. This ensures efficiency and accuracy.

SYSTEM ARCHITECTURE

The CC2.0 system architecture includes software available from Paravision (typically at the core technology level), application software (typically operated by the airline, airport, or government agency), and hardware endpoints (such as cameras or local processors).

CONCLUSION

In the realm of border management, Paravision's Contactless Corridor 2.0 represents a paradigm shift. It makes the long-standing vision of a seamless passenger experience at border checkpoints an achievable reality, where travellers can move through without the queues that result from the need to continuously present documents and personal devices.

With its efficient two-match approach, CC2.0 ensures high throughput and operational control, seamlessly integrating with standard Traveller Verification System (TVS) architectures. Moreover, it allows for staged deployment, enabling proof of concept, pilot programmes, and structured production rollouts without significant disruption.

As border agencies seek to enhance security and streamline processes, Paravision's CC2.0 highlights the potential of technology to revolutionise passenger experiences. With Paravision Search, Streaming Containers and mobile SDKs at its core, this reference design opens new horizons, making the once-distant dream of frictionless passenger experiences on the border an achievable reality. It is a testament to the power of innovation in shaping the future of border management.

Carl is Paravision's Vice President of Global Public Sector Business Development, focussing on borders, travel, identity documents, counter terrorism, national security, police, defence, and home affairs. Working with end-clients, partners, and system integrators to meet the demand for accurate, secure and convenient identification solutions, he is passionate about leveraging technology to enable a safe and secure society and is always looking for new opportunities to collaborate with government agencies and industry partners to achieve this mission.

6 https://www.paravision.ai/benchmarks

FEATURE

By Neeti Pandhi,
Product Manager ,
Border Management solutions,
SITA

As travel surges, how do we drive down risk at the border?

Identifying risk as early and as far from the border as possible is one of the most complex challenges governments face in their duty to protect the nation. Yet it's a challenge to which governments across the world must rise, especially as the resurgence in global travel brings with it the potential of greater security threats. But how to keep passengers moving while efficiently pinpointing the risks?

The answer lies in having the intelligence to pre-clear passengers in enough time to avoid impacting the flow of travel. Armed with the correct intelligence well in advance of travel, governments can make informed decisions about who can cross their border before they pose a threat. If governments can do this successfully, then they're effectively able to export a country's border to the point of embarkation, so that passengers arrive at the airport ready to go, minimizing hassle and queuing. It helps governments and airlines to maximize both safety and revenue through increased security, operational efficiency, and traveler satisfaction.

ADVANCED TECHNOLOGY, BACKED BY INTELLIGENCE METHODOLOGY

SITA's Intelligence and Targeting solution uses advanced risk assessment methods and artificial intelligence to significantly reduce the time needed to extract strategic risk analysis and operational situational awareness. It does this across multiple data streams, providing valuable intelligence to act before high-risk individuals arrive in the country.

Its capabilities are powered by an intelligence methodology that directs the government's targeting operations, and drives down risk – before, at and

after the border. Intelligence comes in many forms, comprised of myriad elements, including open source and human intelligence. It's enriched by a country's strategic risk analysis, operational trends, recent incident responses, and a range of risk analyses involving many (and constantly evolving) sources of data.

For that intelligence to remain of value, results from operations must be fed back into the cycle to understand how accurate it was, which is typically determined by whether it resulted in a hit, seizure, or the identification of some form of criminality.

ACQUIRE, AUGMENT, ANALYZE, ACTION

SITA's approach is built around a four-phase intelligence methodology: acquire, augment, analyze, action. This maps directly onto our government customers' operational environments.

For intelligence to be of value, it must be 'actionable'. Frontline operations must be able to report on outcomes to augment profiling to match evolving modus operandi, improve data quality and enrich intelligence sources to deliver greater accuracy in future operations. Let me quickly walk through each phase:

Acquire' involves the collection, structuring and harmonization of multiple data sources. This can include eVisas, electronic travel authorizations, health declarations, historical border crossing transactions, passenger information – such as API, APP and PNR – and many other sources.

'Augment' is vital to reducing the number of false positives, improving intelligence value and data quality, and ensuring an effective feedback loop on alert results. Here, data and information acquired from all these sources is enriched to help government control authorities understand the relationships between – and the importance of – specific data elements. This might include being able to calculate the age of a traveler, the duration of their stay, how and with whom they traveled, or whether they're returning to their original departure point or continuing to travel onwards. Without this crucial phase, over time, poor accuracy undermines the entire targeting operation and erodes confidence in the national capability.

During the 'Analyze' phase, risk assessments are run against the data to deliver comprehensive situational awareness of all expected movements across, departures from, and/or arrivals at the country's border. This is the phase when that intelligence becomes actionable.

During the 'Action' phase, priorities are determined and targeting operations directed. This is the phase when frontline operations decide when, where and how to launch operations to target high priority risks.

MANAGE RISK AS EARLY AND AS FAR FROM THE BORDER AS POSSIBLE

One of the most valuable lessons we learned recently came from our experience helping governments re-open their borders following the Covid-19 pandemic. It highlighted just how important it is for frontline staff to have tools to quickly reconfigure policy rules. In so many cases, these were changing daily in terms of what tests, documentation or certification travelers needed to travel to/from a particular country. Our experiences taught us that tools need to be readily configurable to incorporate new intelligence and respond to new threats.

Through our experience of working with over 70 governments in nearly every corner of the globe, we have learned just how different and unique each government's challenges are. But they all agree on the need to manage risk as early and as far from the border as possible.

That's why we designed SITA Intelligence and Targeting to provide advanced risk assessment and identification, threat management, and alert management for borders across the entire traveler journey.

Through this, they can direct their targeting operations and drive down risk before the passenger boards or the shipment is loaded on the aircraft or vessel at the port of origin.

*It's this capability that enables governments to identify and respond to risk as early and as far from the border as possible, including the real-time denial of boarding of travelers who have been assessed as 'persons of interest' or 'persona non grata'. The ability to pre-screen and pre-clear passengers is vital to the digital border of the future, to enable growth through safer, easier, and more secure travel – with all the potential economic benefits that come with growth.

Neeti Pandhi is a Product Manager within SITA's Border Management solutions. She is an experienced and recognized product manager with more than 20 plus years of experience in the travel industry, developing innovative solutions and products for clients and organisations to improve efficiency, security and streamlining operations. Neeti holds a master's degree in marketing, bachelor's degree in commerce, Safe5 certified Product Manager and has various certifications in the Travel and Tourism industry.

IBMATA
INTERNATIONAL BORDER MANAGEMENT AND TECHNOLOGIES ASSOCIATION

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4-6 June 2024

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FEATURE

By Monique Hawkins,
Interim Co-CEO and Head of Research
and Operations at the3million

ETA and ETIAS:

Airlines must adjust for dual nationals or face increased manual check-in costs

Several million people used their EU free movement rights to travel in and out of the UK before Brexit - both EU27 citizens building a life in the UK and British citizens settling around the EU.

Until December 2020, it was irrelevant whether they showed a British or EU passport when travelling between the UK and the EU member states. Now however, it matters - people have to demonstrate their rights to enter their destination country, whether as a visitor or a resident.

The introduction of the UK's ETA (Electronic Travel Authorisations) and the EU's ETIAS (Electronic Travel Information and Authorisation System) will make this far more relevant to carriers, because checks that were previously made at the destination border will now need to be made before

boarding, at the point of check-in. Up to now, carriers have only needed to perform extra checks for visa nationals, whereas the introduction of ETA and ETIAS will change this to also encompass non-visa nationals.

This change will affect the hundreds of thousands of EU-UK dual nationals currently living in the UK. This cohort of citizens is only going to increase as these citizens have children who hold both British and EU nationality. The data also shows that the number of EU citizens applying for British citizenship increases year on year. These people will contribute considerably to the journeys across the British/EU border, as they are likely to travel not just for holidays but also to visit relatives and friends in their country of origin.

Unless airlines and other carriers make some simple adjustments to their processes that apply to dual nationals, the introduction of ETA and ETIAS is likely to lead to greatly increased pressure on manual check-ins and subsequent staffing.

This is best illustrated by an example, first taking the simpler case of someone with a single nationality.

Consider a Portuguese citizen who lives in the UK, and has a digital UK residency status which is linked to their Portuguese passport. When they book a return flight from the UK to anywhere in the EU, attaching their Portuguese passport details to their booking should allow them to do online check-in for both legs of their journey.

For their outbound journey, their Portuguese passport proves their right of entry to the EU member state and their exemption from the requirement to get an ETIAS.

For their return journey, that same Portuguese passport will prove their right to enter the UK and exemption from ETA, because their Portuguese passport should be linked to their UK eVisa. The UK's interactive Advance Passenger Information (iAPI) system will check the passport, find the eVisa and return a successful Permission to Travel message.

However, now consider the situation when this same Portuguese citizen naturalises to become a dual British/Portuguese citizen. When making the same return journey, their Portuguese passport still proves their exemption from ETIAS on the outbound journey. However, that Portuguese passport will no longer work to prove their exemption from ETA on their return journey, because they no longer have a UK eVISA. The iAPI will not pick up that the traveller is also a British national, as the Home Office system will not link the Portuguese passport to the grant of British nationality. As far as the iAPI is concerned, the person is a Portuguese citizen only who needs permission to travel to the UK.

As a result, the iAPI system will return a code that results in the passenger being directed to visit a manual check-in desk at the airport. At that point they will need to explain to a member of staff that they also have a British passport and should therefore be allowed to board.

If instead they attach their British passport to the booking, their outbound journey will now reject an automated online check-in, because their British passport is not linked to any residence rights in the EU and they are therefore presumed to require an ETIAS to enter the EU.

Exactly the same situation will apply in reverse to a dual British/EU citizen living in the EU.

Fundamentally, the dual national passenger will need to check-in with a different travel document for each leg of their journey, because these different documents prove their exemption from the ETIAS/ETA requirements respectively.

Carriers need to adapt their systems to allow people to choose which travel document to attach to each leg of their journey. Most carriers just ask for a travel document once, and attach that to all legs of the booking. Some then allow the passenger to amend the booking after they have taken the outbound leg of their journey, to switch the travel document. However, this ability is not advertised and most passengers would be unaware they can do this, instead facing the inconvenience of having to attend a manual check-in process. It is an onerous requirement to have to undertake mid-way through a trip.

Some simple changes now by carriers to the online check-in process therefore could help avert, post ETA/ETIAS, a surge in demand for manual check-ins and all associated costs.

Monique Hawkins is Interim Co-CEO and Head of Research and Operations at the3million, an organisation formed after the 2016 referendum to represent the rights of EU citizens in the UK. She joined the3million in early 2017, initially as a volunteer. As a Dutch citizen, she made the UK her home over 30 years ago, working as a software developer across various industries. She has since become a dual British-Dutch citizen.

FEATURE

By Muhammad Kashif Iqbal,
Chief of Staff,
NADRA

Strengthening the Nation's Frontier: Pakistan's Leap into Integrated Border Management System

Borders delineate more than just geographic territories. They represent a nation's strategic choices, diplomatic endeavors, trade engagements and its commitment to security. Acting as conduits of commerce and movement, borders shoulder the dual responsibilities of national interest and international obligations. In this era of globalization, the rise in movement and commerce demands evolving border management strategies, facilitating genuine trade and travel while ensuring safety.

Pakistan, nestled amidst Iran, Afghanistan, China, and India and washed by the Arabian Sea, isn't defined by its geographic confines alone. These borders tell tales of history, trade, tribes and geopolitical shifts. For Pakistan, managing these borders goes beyond logistics; it's about blending technology, transformation, and dedication to the nation's goals and regional stability. As the crossroads of history and commerce, Pakistan highlights its evolving identity in a globally connected world.

EVOLUTION OF BORDER MANAGEMENT IN PAKISTAN

The evolution of Pakistan's border management paints a vivid picture of adaptability and progress. Transitioning from a foreign-funded grant-based system, Pakistan took significant steps towards border modernization. Born out of sheer necessity, this system aimed to address the growing complexities of immigration and border security. Concurrently, the Rahdari agreement spun a narrative of diplomacy, simplifying trade and transit, particularly in territories resonating with tribal lore. Until 2009, these systems diligently catered to the foundational needs of migration.

RISING TO NEW CHALLENGES

Recognizing escalating challenges – from Pakistan's unique geography to the complexities of the Pak-Afghanistan border– the National Database & Registration Authority

(NADRA) embarked on significant digitization. In the backdrop of the 'War on Terror' in Afghanistan, the complexities of border management intensified as Pakistan faced both direct and indirect repercussions, including the threat of cross-border terrorism. This highlighted the need for a more streamlined, integrated and vigilant border control mechanism. Central to this digital shift were stringent checks that minimized human errors and biases. The optimized process reduced human involvement, leading to quicker and more consistent border crossings. Additionally, the passenger auto reconciliation system was introduced, cross-referencing passenger details with multiple databases for enhanced security against potential threats.

In modernizing border management, Pakistan saw the need to merge various information management systems. This vision materialized into a "virtual border", spearheaded by NADRA's comprehensive border management system. Beyond a mere upgrade, this system stands as Pakistan's commitment to employing advanced technology for national security.

The machine-readable passport system of Pakistan launched in 2005 offered many advance features of biometric verification and encryption-based offline verification. The new border management system completely utilized these features and offers specialized modules for different travelers. Moreover, the IBMS replicates each site's database onto a central server, forming a consolidated databank. Accessible to key stakeholders, it's pivotal in preventing illicit travel activities and aiding law enforcement with real-time data. Ensuring the invaluable data of yesteryears was retained, the challenge was tackled robustly. Within just a year, this revolutionary system with its innovative features was introduced as the IBMS in February 2010, marking its presence across Pakistan's entry and exit points.

IBMS: THE VANGUARD OF BORDER MANAGEMENT

A closer examination of the IBMS reveals a sophisticated array of functionalities. The system stands out as a digital guardian at the nation's thresholds. Integrated features include Machine Readable Passport (MRP) support, biometric verifications, UV-light document scrutiny and a comprehensive databank of travel histories. With its phonetic 'Stop List' search capability, IBMS remains vigilant against potential threats, ensuring security without compromising efficiency.

The system is synchronized with other essential components, such as system-based implementation

of visa-free entries, overstay calculations, and advanced biometric features in Pakistani passports. This centralized platform, linked to the NADRA Database, visa database and the Stop-list Database, operates across all key entry and exit points in Pakistan including air, land and sea ports.

TRIUMPHS ON THE GROUND

IBMS's vast capabilities epitomize its essence as a singular system. Beyond its frontline duties, its integration showcases unparalleled robustness. This intricate tapestry was especially instrumental in accommodating the significant influx of Afghan refugees—a testament to its adaptability and foresight.

A 2022 report by the European Union Agency for Asylum (EUAA) offered a detailed chronicle of this migration. What commenced as a modest flow across the Afghanistan-Pakistan border—comprising nomads, traders and kinfolk—intensified with time. By the dawn of 2010, an astonishing 1.7 million undocumented Afghans had crossed into Pakistan. Their numbers varied, shaped by seasonal shifts and the capricious politico-security milieu. However, 2016 marked a turning point. With the rigorous enforcement of Pakistan's IBMS, the influx of illegal border crossings at the western border points witnessed a precipitous decline. This shift underscored Pakistan's unwavering commitment to regulated, orderly movement

Amidst these strides, the nation's vision for border management continues to evolve. Work is currently underway on the next frontier of technological advancements—e-Gates. Once operational, these will further streamline entry and exit processes, making border crossings even more efficient and secure.

On the ground, the influence of IBMS is palpable. From the bustling corridor of the Pak-Afghan border to the sprawling premises of major international airports, seaports and land, IBMS stands as a resounding affirmation of Pakistan's dedication to secure and adept border management.

CHALLENGES AND THE PATH AHEAD

However, the journey isn't without challenges. As the digital landscape evolves, there's a pressing need for a mobile version of the IBMS. Furthermore, while systems like customs and trade are digitized, seamless integration with the IBMS remains a task at hand. Yet, with the foundation in place and a clear vision for the future, Pakistan is poised to set a global benchmark in integrated border management.

PAKISTAN'S STANCE AND FUTURE VISION

In an era increasingly dominated by technology and interconnectivity, Pakistan's border management strategy stands as a testament to its forward-thinking approach and commitment to national security and prosperity. A salient feature of this progressive stance is the incorporation of cutting-edge facial recognition technology, compliant with the International Civil Aviation Organization (ICAO) standards. Moreover, the integration with ICAO PKD further amplifies the nation's dedication to international collaboration and security standards.

This ongoing evolution demonstrates Pakistan's resolve not only to safeguard its own boundaries but also to contribute proactively to the global cause of secure and facilitated international travel.

As technological advancements continue to reshape the world, Pakistan remains poised to adapt, innovate and lead in the domain of border management, ensuring both safety and efficiency for its citizens and visitors alike.

With over two decades of extensive expertise in data management, technology, and operational project management, Muhammad Kashif Iqbal is a seasoned professional known for consistently elevating market positions and driving substantial financial growth for organizations. His skill set encompasses analytical thinking, strategic planning, leadership, and cultivating robust business relationships. Since 2000, he has been an integral part of the National Database and Registration Authority (NADRA), serving as a Chief of Staff/Director General. NADRA, the technological cornerstone of the Pakistan government, is responsible for the civil registration of citizens, and executes government and commercial projects both domestically and internationally. Throughout his career, he has successfully focused on acquiring and implementing technology ventures in demanding regions including South Asia and Africa. This track record underscores his proficiency in navigating complex landscapes and delivering impactful results.

Iqbal's commitment to excellence, coupled with a proven ability to lead and strategize, has been instrumental in shaping his career. He remains dedicated to driving success and innovation in the realm of data management, technology, and project management, continuing to be a driving force in the industry.

FEATURE

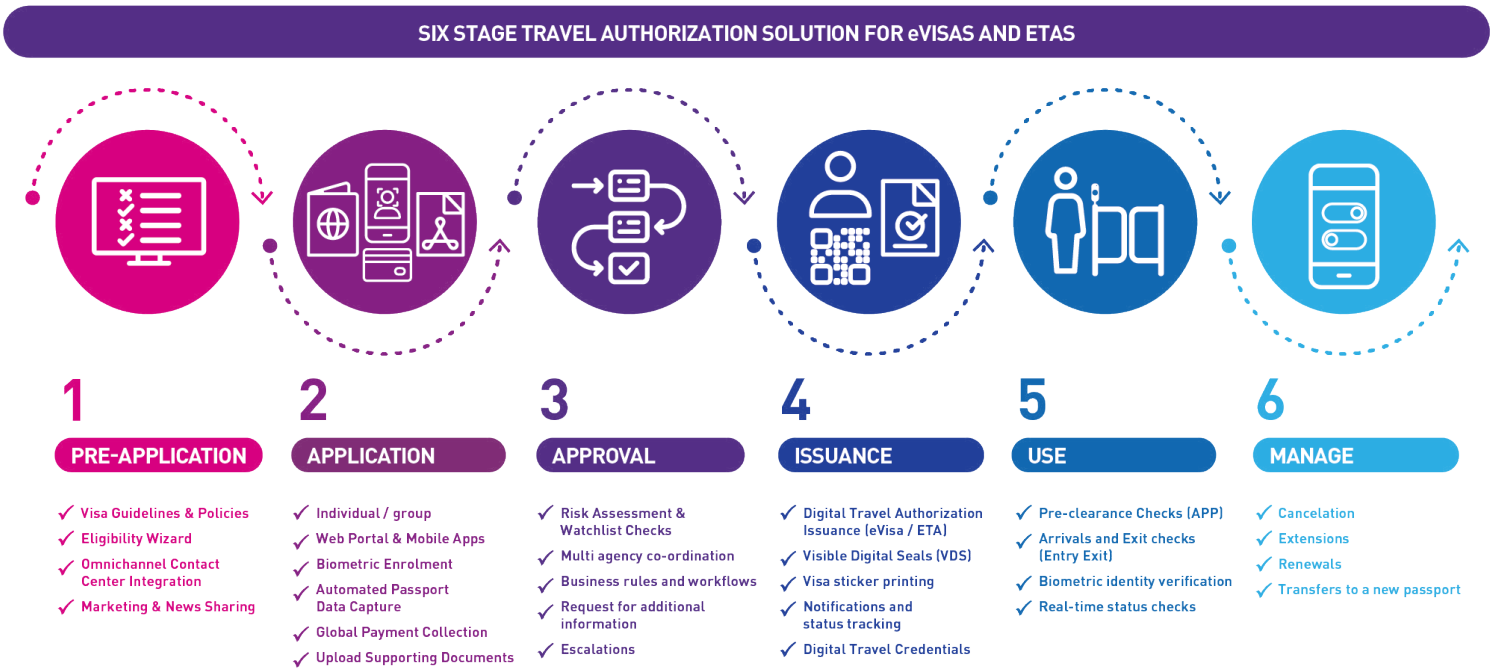
By Aleksei Markachev,
Product Manager,
Travel Authorization, SITA

Streamlining Global Travel: Cutting-Edge Digital Pre-Clearance and Electronic Travel Authorization Solutions

In an era dominated by technological advancements, the landscape of visa and travel authorization processes is undergoing a transformative shift. The implementation of Digital Pre-Clearance solutions and Travel Authorization systems, encompassing both eVisas and ETAs, is revolutionizing the travel experience, making it more streamlined, efficient, and secure.

NAVIGATING THE DIGITAL REVOLUTION IN GLOBAL TRAVEL

At SITA, we have witnessed the transformative power of digitalization, enabling countries not only to enhance service quality but also to elevate their competitiveness in the global tourism and business landscape. The reliance on rigid, paper-based visa processes has long been a barrier to achieving these goals, contributing to inefficiency in issuance and imposing high operational costs on governments.



DIGITALIZATION OF THE EVISA/ETA APPLICATION PROCESS: A NEW ERA OF CONVENIENCE

The digitalization of the eVisa/ETA application process marks a paradigm shift in convenience and efficiency. Travelers can now effortlessly submit their applications online, providing necessary documents and information with just a few clicks, globally, 24/7. The integration of a secure and transparent payment process and the implementation of automated scoring systems with risk assessment have accelerated adjudication, ensuring quicker turnaround times without compromising accuracy.

In the pursuit of hassle-free visa experiences, centralized international payment collection was introduced. Departing from convoluted payment procedures, our Digital Pre-Clearance and ETA systems consolidate payment processes, ensuring a transparent and secure transactional journey. Applicants benefit from an integrated digital platform that simplifies the payment process, eliminating unnecessary intermediaries and complexities. For governments, this streamlined approach not only enhances operational efficiency but also offers a transparent view of financial transactions.

ENHANCED DATA QUALITY AND AUTOMATION: A DIGITAL ADVANTAGE

Digitalization brings forth enhanced data quality and automation, critical components in the evolution of visa and travel authorization processes. By digitizing the data collection process, authorities can guarantee the accuracy of applicant-provided information. Advanced algorithms cross-verify data, minimizing errors and detecting fraudulent submissions, contributing to a more robust and reliable database.

IDENTITY CAPTURE SERVICES: REDEFINING VISA AND TRAVEL AUTHORIZATION PROCESSES

The inclusion of identity capture services has become a game-changer, allowing applicants to remotely submit biometric information through secure channels. This not only enhances traveler convenience but also alleviates the operational burden on consular services. The implementation of biometric authentication adds an extra layer of security, ensuring the integrity of the visa applicant's identity.

COMPREHENSIVE SECURITY MEASURES: PROTECTING BORDERS WITHOUT IMPEDING GENUINE TRAVEL

Thorough security checks are integral to any travel authorization system. SITA's Digital Pre-Clearance and ETA systems leverage advanced technologies to screen applicants against security watchlists, combining biographic and biometric data for a comprehensive risk assessment. This proactive approach enhances national security, fortifying borders without impeding the travel of genuine visitors. The digitalization of eVisa and ETA issuance empowers border officers with access to a comprehensive and up-to-date database of visa records.

COST OPTIMIZATION THROUGH DIGITALIZATION: A

STRATEGIC AND WELL-PACED TRANSITION

The shift towards digital pre-clearance and ETA systems extends beyond efficiency—it brings significant cost benefits. Automation of routine checks reduces the workload on human resources, allowing them to focus on more complex tasks. The streamlined processes minimize manual intervention, leading to cost savings in terms of time and resources. Additionally, the reduction in paperwork and physical infrastructure aligns with a more sustainable and environmentally friendly approach.

SITA prioritizes consistency in visa adjudication, employing a standardized approach that ensures uniformity and efficiency. Our advanced systems utilize standardized criteria and automated scoring for a thorough yet streamlined evaluation of applications. This commitment to standardization accelerates the adjudication process, delivering a fair and objective assessment. Trust in a system that is not only reliable but also transparent. SITA's standardized adjudication approach minimizes complexities for governments and instills confidence in applicants.

MODULAR APPROACH FOR SEAMLESS INTEGRATION: MAXIMIZING EFFICIENCY AND COST-EFFECTIVENESS

SITA's Digital Pre-Clearance and ETA systems follow a modular approach, ensuring a smooth transition and integration with existing services. Governments can roll out these systems in phases, allowing for thorough testing and optimization at each stage. This approach minimizes disruption to current processes while gradually introducing the benefits of digitalization. By leveraging existing infrastructure and services, countries can maximize efficiency and cost-effectiveness, making the transition to a fully digitalized system strategic and well-paced.

Furthermore, the digital platform provides governments with the flexibility to customize approval workflows, payment collection procedures, and the specific document requirements based on individual circumstances. This adaptability ensures a more efficient and tailored visa issuance process, accommodating various visa types, durations, and renewal scenarios. It also minimizes the burden on governmental officers, allowing them to focus their attention on new applicants or cases that require additional scrutiny.

EMBRACING A SECURE, CONVENIENT, AND SUSTAINABLE FUTURE FOR INTERNATIONAL TRAVEL

A visa serves as a temporary authorization to enter a country, and SITA's digital approach offers numerous benefits, from eliminating the need for repetitive application processes to supporting renewals, extensions, switches, and transfers seamlessly. The SITA Digital Pre-Clearance and Electronic Travel Authorization solutions signify a pivotal moment in the evolution of global travel. As nations embrace this digital revolution, they are not only optimizing costs but also creating a more welcoming and secure environment for visitors worldwide.

Through the SITA Mobile Travel Authorization solutions, applicants can navigate the entire journey effortlessly – from digitalizing the application process to biometric enrolment, integrated payment collection, and receiving the digital eVisa ETA in versatile formats such as ICAO VDS qr-codes or Digital Travel Certificate (DTC). Our proficiency in Travel Authorization spans eVisa and ETA systems, proudly marking us as the pioneers behind the world's first Mobile ETA solution.

Aleksei is at the forefront of digitalizing immigration processes as the manager of the SITA Travel Authorization (eVisa, ETA, DTD, Mobile ETA) product line. With over 15 years in the IT industry and a focus on the Identity industry for more than 8 years, Aleksei brings a wealth of experience to his role. His expertise extends to leading high-load smart city solutions, developing facial and speech biometric algorithms, and pioneering identity-centric solutions. Aleksei is an experienced professional with deep market and technology knowledge, contributing significantly to the evolution of identity management in the digital era. Aleksei's diverse background and leadership in cutting-edge technologies position him as a thought leader at the intersection of immigration, identity, and technology. His contributions to the SITA Travel Authorization product line underscore a commitment to advancing governmental processes through digital innovation.

FEATURE

By Jan Tomczyk, FCILT, Chartered Fellow of the Chartered Institute Logistics & Transport, UK; Member of the International Border Management & Technologies Association

SMART road border crossings

INTRODUCTION

Import and export clearance procedures should not get conducted at road border crossings because they are not logistics centers. Instead, import and export procedures should be carried out at inland customs depots (ICDs) or private logistics centers.

However, in many countries, the import and export procedure gets carried out at the border crossing. Concentrating trucks with import cargo creates vehicle queues, time delays, and congestion. In this scenario, the border crossing is a barrier to trade.

There are several SMART borders crossing good international practices that can be used to reduce vehicle queues, lower time delays, and eliminate congestion. The vision of using SMART technology and procedures is to achieve a seamless, contactless, and paperless border crossing.

The objective is to reduce Customs release times, reduce vehicle queues and eliminate congestion. There are six SMART border crossing good international practices, and they include:

1. SMART CONTAINER TRACKING

Smart Container Tracking technology should use Radio Frequency Identification (RFID) based tracking. In addition, trucks equipped with GPS can ensure the integrity of the containers from origin to destination. Without tracking, goods may go missing because of pilferage and criminality. Customs staff at the Customs office of departure can attach an RFID tag to the truck and container. An RFID reader at the border crossing will detect any deviation from the road route and record the time the truck spent parked. The RFID will communicate with the GPS and report the truck's position periodically to the control system. Arriving at the gate of the inland inspection facility, the truck route and events get scanned automatically by the near-field communication device. Only authorized customs officers lock and unlock the RFID tag. Smart tracking technology must be able to provide the following:

- Automatic alarm in case of route deviance, long-time stop, delay, or tag damage.
- Real-time alarm to customs patrols.
- Automatic scan of route and events at the gate of the new Customs inspection facility.

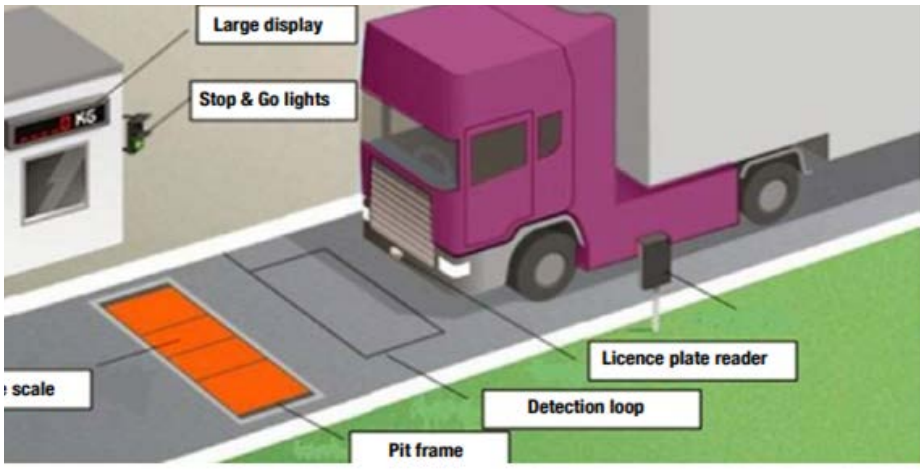


FIG 1: LOW SPEED WEIGH-IN-MOTION (WIM) EQUIPMENT AT A SMART INTEGRATED CHECKPOINT.

2. SMART GATES AND PRIMARY VERIFICATION

Smart gate technology includes automatic recognition (container number reader, license plate number reader/scanner), weigh-in-motion (WIM), see Fig 1 above and detections (radioactive materials, physical damage) at the entry gates. The WIM replaces weighbridges.

Truck queuing gets reduced by using dedicated truck lanes. This means eliminating the one-lane in and one-lane out design. Dedicated truck lanes include a lane for eTIR and electronic pre-declaration (EPD) trucks and trucks belonging to a trusted trader program such as Authorized Economic Operator (AEO).

Using SMART gates at a border crossing will enable a seamless process from the entrance gate to the exit gate with less direct official intervention. All the data is automatically sent to the customs system and shared for decision and process control. The SMART entry gate technology must be able to provide the following:

- Automatic recognition of Container Numbers.
- Automatic recognition of Truck Registration Number.
- Automatic Measurement of Weight using weigh-in-motion (WIM) technology. Customs tariff classification and valuation officers will get the good's weight information automatically from the entry SMART gate.
- Automatically scan the Container Seals using RFID and monitor the integrity of transport routes.
- Automatic detection of Radioactive Materials in containers.
- Using pre-notification, Customs has time to decide which trucks get selected for a sample goods inspection or a 100% physical examination.
- Truck queuing gets reduced by using dedicated truck lanes. This means eliminating the one-lane in and one-lane out design. Dedicated truck lanes include a lane for eTIR and TIR EPD trucks and trucks belonging to a trusted trader program such as AEO.
- Paperless crossing registration.

3. SMART SCANNING TECHNOLOGY

Smart scanning includes high-throughput, radiation-safe scanning of containers using AI (Artificial Intelligence) assisted X-ray scanners. Smart technology for an inland inspection facility includes RFID, eCMR, electronic certificate of origin (eCOO), customs and logistics digitization, and a national single window system (NSW).

A new high-throughput truck back-scatter x-ray scanner can enable high-speed scanning of 20-ft/40-ft containers without radiation hazards to truck drivers and operators. Automated guided vehicles (AGVs) automatically pull the trucks with precise speed and position control. Concrete walls guarantee radiation safety with enough thickness and multiple radiation safety devices. Trained customs experts will analyze the scanned image using various image analysis functions and leave comments and marks on the images. AI (Artificial Intelligence) technology will help the experts to enhance the accuracy and speed of analysis. The smart truck X-Ray scanner must be able to provide the following:

- 50-60 scans/hour.
- No radiation hazard for cargo drivers intrinsically (moving along the walkway outside).
- Fully automated operation.
- There must be precise control of the position/speed of multiple AGVs.
- Flexible operation depending on the number of containers that need scanning.
- There must be high image quality, which is related to precise control of AGV's speed.

4. SMART DECISION-MAKING, PROCEDURES, AND OPERATIONAL MANAGEMENT

Smart decision-making of the customs officers, whether to inspect manually or conduct a 100% physical examination, is helped with reliable information such as X-ray scan images, Risk Management systems, Smart Gate Information, etc.

Smart Procedure includes the use of electronic pre-declaration (EPD), Authorized Economic Operator (AEO), advance notice, electronic payment, simplified procedure, integrated border management (IBM), risk management, blockchain, data management, real-time data exchange, electronic Certificate of Origin (eCOO), and joint agency inspections.

Smart decision-making and smart procedures require modern international good practice buildings such as a one-stop shop (OSS) where all the border agencies have space. It enables the truck driver and the customs broker clerk to submit all documents to Customs without going to each border agency. In addition, customs should have a testing laboratory at the inland customs clearance facility.

After X-ray scanning, the truck might wait in the parking space until the customs officers decide whether the container will go through a document check, document, and goods sample inspection or go for a 100% physical (manual) examination. The road border crossing should have truck parking or an inspection bay where the sample of the goods takes place. The size of the sample depends on the type of goods. The customs officers will refer to all the information, such as:

- Customs declaration information submitted by consignees.
- X-ray scan image with remarks from the customs X-ray scanner facility.
- Information from the Risk Management System.
- Smart Gates Information (weight, radioactive materials, container number).

The decision of customs officers can be made within 10 minutes after X-ray scanning. The scanned container image will be sent to the customs officer's computer or the 100% physical examination facility automatically and will be displayed via a large-screen display. It is essential that the facility operator gets the container location information to Customs in real time because they must arrange a sample test inspection team.

Road border crossing operational management improves when all relevant border agencies agree to jointly implement domestic and international integrated border management (IBM)[1].

Combined border management (CBM) represents an approach to managing borders involving public service agencies working across portfolio boundaries in a coordinated manner to achieve a shared goal, thus providing a cohesive government response to border management challenges. CBM is a logical way to manage border operations to ensure efficient and effective processes and procedures used by all regulatory agencies involved in border security and regulatory requirements that apply to travelers, goods, and conveyances crossing international borders. A coordinated border management system aims to facilitate trade and the clearance of travelers while simultaneously ensuring secure borders (WCO 2009, p.5).[2]

A tool of the combined border management framework is installing a one-stop border post (OSBP), which consists of a single, shared infrastructure. This simplifies the border crossing process for travelers and traders. It means goods get stopped only once at the same border and do not require to repeat the procedure on the other side of the same border crossing. This saves time for the trader and reduces the workload on border staff. CBM involves the following:

- a control zone (or zones) is demarcated within which officers from both states conduct controls in terms of their respective laws
- the control zone comprises offices, inspection areas, and related facilities and is usually located within the national territory of only one state
- immigration, import, and export formalities are handled as a seamless transaction between the two countries
- inspection and searches of cargoes or vehicles are generally conducted in the presence of officers from both states) [3].
- CBM must use real-time information exchange between the two countries' border agency administrations to make it effective.

Pre-Arrival Procedure (PAP) as a road border crossing gives Customs and other border crossing agencies pre-notification of arrival and permits them to better allocate staff to detecting and inspecting risk cargo and risk traders.

5. SMART INSPECTION AND SECONDARY CARGO VERIFICATION

In addition to the sample of the goods, a smart inspection and secondary verification include rapid and precise manual inspection using advanced equipment such as pallet/box X-ray scanners, materials detectors such as a handheld density meter, and a non-intrusive detection device such as an Endoscope.

Smart secondary verification is essential for all border crossings and inland inspection facilities. Advanced logistics instruments and inspection equipment, such as pallet/box X-ray scanners and hand-held materials analyzers, will enhance accuracy and reduce manual inspection time. Referring to the X-ray scan image with remarks on a large screen will improve the efficiency of secondary manual inspections.

- Automatic truck assignment to an inspection bay or perhaps to the 100% physical examination facility requires real-time communication with drivers and customs clearance agencies. A mobile radio communications system should be considered.
- Advanced logistics equipment such as electric forklifts, pallet lifts, etc.
- Advanced inspection equipment such as various-size X-ray scanners, backscatter X-ray scanners, hand-held scanners (density meters), and floor-mounted weighing machines.
- Large screen display of the scanned image of containers with remarks
- Integrated Animal/Plant quarantine, Food/Drug inspection, Standard institute, and Customs joint inspection teams. The Joint Inspection Teams must be ready to inspect the cargo-type sample as soon as the truck parks in the Customs inspection area. The Customs inspector should be equipped with a

1 Integrated Border Management (IBM) is the organization and supervision of border agency activities to meet the common challenge of facilitating the movement of legitimate people and goods while maintaining secure borders and meeting national legal requirements.

2 Coordinated border management: from theory to practice, Mariya Polner, WCO, 2009, Vol 5, No2.

3 Kieck, E 2010, 'Coordinated border management: unlocking trade opportunities through one-stop border posts', World Customs Journal, vol. 4, no. 1, pp. 3-13.

handheld tablet where the inspection is recorded, and the inspection result is immediately communicated to all relevant agencies.
- SMART Customs testing laboratories with Laboratory Management Systems (LMS) and communications equipment to send test result certificates electronically.
- Safe and secure Customs 100% physical examination facility (not to be confused with inspection). This facility must have non-intrusive detection equipment and a rummage set of tools.

Ideally, inspections and examinations should occur at an inland customs depot (ICD) rather than at the border. This is because inspections and examinations at border crossings are a barrier to trade. Instead, a post-clearance audit (PCA) system should check the transaction records for a selected number of imports at importers' premises. In this scenario, no warehouse buildings are needed at the border crossing. Ideally, inland customs depots (ICDs) should be built by the private sector, not by Ministries of Finance and Customs administrations.

6. SMART TRAFFIC MOVEMENT AND LAYOUT DESIGN

Monitoring and controlling the flow of containers inside a border crossing territory, usually referred to as the Customs Control Zone, must use advanced IT technologies such as CCTV and overhead drones. The objective of installing monitoring technology is to reduce truck idle time and increase the efficiency and performance of border officials. The result should be less congestion and reduced queuing time.

Smart Manual inspection and examination are essential for a border crossing where import and export procedures occur. Using advanced logistics instruments and inspection equipment such as pallet/box X-ray scanners and hand-held materials analyzers (Density Meters) will enhance accuracy and reduce manual inspection time. Referring to the X-ray scan image with remarks on a large screen will improve the efficiency of manual inspection and 100% physical examination.
- Eliminating vehicle queuing outside and inside the Customs Control Zone (CCZ).
- Reducing vehicle waiting times in the import, export, and transit process.
- Opening border crossings 24/7.
- Segregated entry and exit and lanes for eTIR, TIR EPD, AEO, and perishable cargo.
- No cargo transshipment inside the Customs Control Zone (CCZ).
- Adequate perimeter and daylight-type workplace lighting for 24/7 operations.

The objective of implementing the six SMART, good international practices and technologies are to:
1. Eliminate truck queuing.
2. Reduce the time required for a goods sample inspection.
3. Getting the container as fast as possible from the entry gate to the exit gate.
4. Increase coordination and information exchange between border crossing agencies.
5. Increased supply chain predictability for traders, transport operators, customer brokers traders, transport operators, and customer brokers.
6. Increased transparency for traders, transport operators, and customs brokers.
7. A seamless, contactless, and paperless border crossing.

Jan is a Chartered Fellow of the Chartered Institute of Logistics & Transport, UK. He has designed road border crossings in several countries and advised customs on facilities and operational import, export and transit management in South and Central Asia, including Afghanistan. He is currently working on projects in Bangladesh, Mongolia, and Tajikistan and waiting to go to Ukraine.

FEATURE

By Jorge Ramirez,
Managing Director for the Americas
and in-house API-PNR expert, Travizory.

Integrated Border Management: making the case for API-PNR as a tool for better collaboration

What constitutes effective border management? How can Governments toe the line between openness and facilitation, and security and surveillance? Is cross-agency work truly feasible and, if so, at what cost?

Countries around the world continue to grapple with the challenges of implementing a modern, effective border security system and such questions often sit at the heart of that challenge. A growing set of literature defines a cohesive and coordinated approach to border security as a must. But what does this mean in practice? Opinions about the best tools and solutions to achieve this will differ but there is consensus around the fundamental principles: collaboration, coordination, and connectivity.

It is increasingly apparent that countries which fail to work collaboratively are at greater risk from security and health threats. Therefore, it comes as no surprise that there is growing demand for solutions and systems that enable and perhaps, even foster, a collaborative approach to border security.

In its simplest form, an integrated approach to border management will allow information to be shared with relevant agencies responsible for the control, management, and security of the borders. At its most advanced, global, regional and national agencies at the border, and in-country, are equipped with real-time intelligence and data for rapid decision-making and strategy formulation.

Security systems, such as API-PNR, can go a long way to supporting the successful implementation of an integrated approach. Recognising the need for systems that work for border agents, Travizory Border Security has developed a next-generation multimodal API-PNR targeting system designed to allow cross-agency collaboration from the outset.

In this context, this report will establish that a solid API-PNR system is a cornerstone of modern border security, equipping Governments with the tools for greater coordination, collaboration and transparent decision-making.

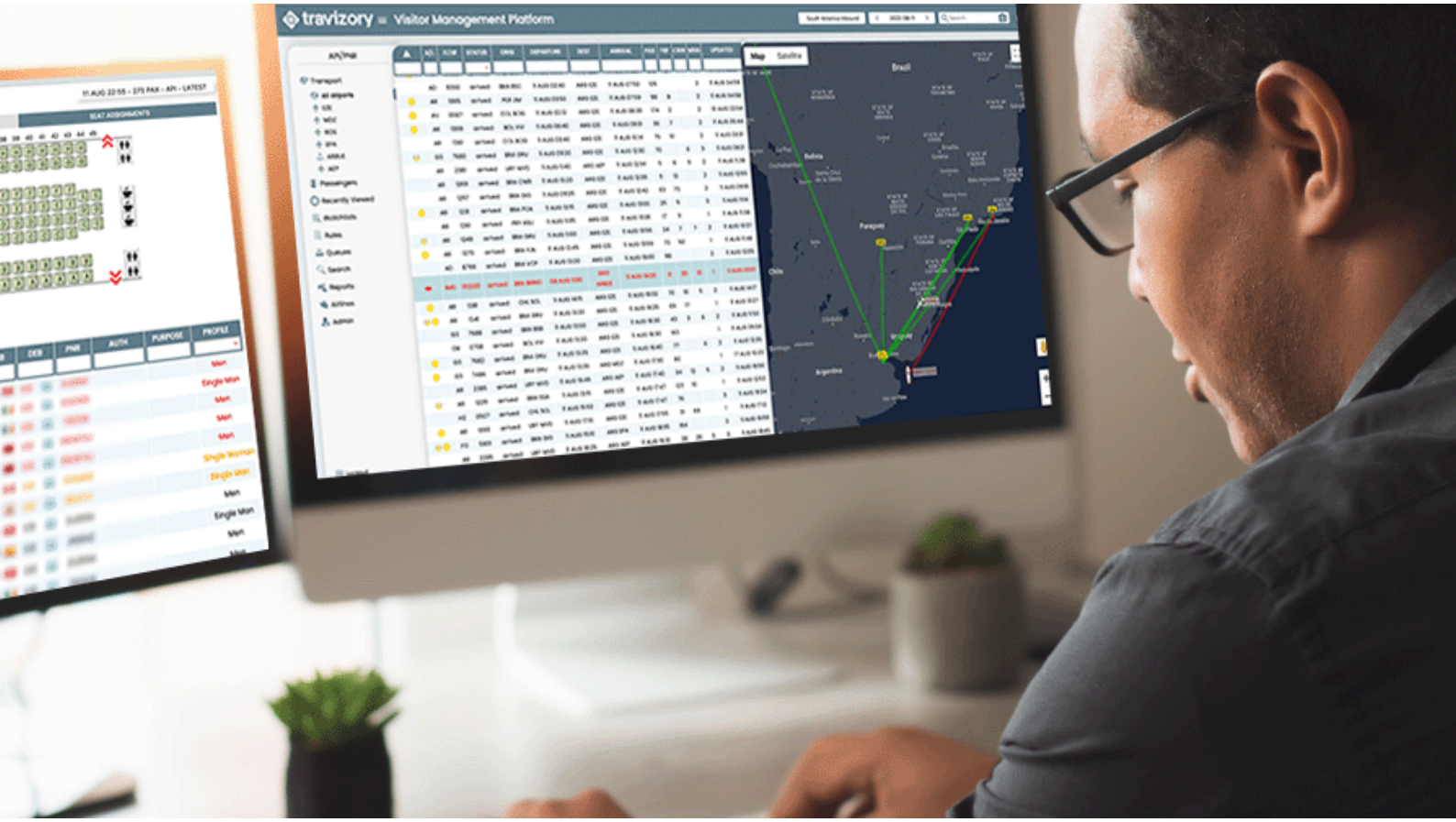
UNDERSTANDING INTEGRATED BORDER MANAGEMENT

The International Organization for Migration defines “integrated border management” as an approach that “seeks to enhance three levels of coordination: intra-service, inter-agency and international cooperation [1]”. Meanwhile the World Customs Organisation prefers the term “Coordinated Border Management” when referring to “a coordinated approach by border agencies, both domestic and international, in the context of seeking greater efficiencies over managing trade and travel flows, while maintaining a balance with compliance requirements. [2]”

Fundamentally it is the notion that for a secure border, agencies at both national and international level, such as Immigration, Customs

1 https://www.iom.int/integrated-border-management

2 https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/research/research-paper-series/cbm.pdf?la=en#:~:text=The%20actual%20coopera%2D%20tion%20and,happen%20on%20three%20different%20levels%3A&text=local%20co%2Doperation%20between%20officials,and%20%E2%80%A2%20multinational%20co%2Doperation.



and Law enforcement, need to work together to share data, risk-assess travelers and cargo, identify threats and take decisive action.

It is widely accepted that border agencies must interact with a myriad of moving parts both at the physical border and increasingly at the virtual border, prior to arrival. If this wasn't challenging enough, international traveler numbers have reached record volumes over recent years, and are only expected to continue to grow, while cross-border trade is at an all-time high. The pressure on these agencies can be immense: navigating an increasingly complex threat landscape and securing air, land and sea borders, all while adhering to best practice with a digital-first approach to facilitation.

It is here that the concept of a Passenger Information Unit (PIU) can be applied, offering a mechanism for day-to-day operational collaboration and cooperation. A PIU - a multi-agency unit of security and data experts - enables coordinated risk-assessment and profiling of passengers based on API and PNR data collected from transport operators. The beauty of the concept is twofold: transport carriers have a single point of contact within the relevant national authority and only have to share this data once; Government's increase collaboration and minimize the duplication of work.

While passengers are just one component within the border security challenge, a robust API-PNR system can enhance situational awareness of a nation's territory, integrate with the government's existing ecosystem and amplify the impact of timely security interventions.

Perhaps crucially, the WCO suggests an integrated border management approach will enable "national and international coordination and cooperation among the relevant authorities and agencies involved in border security". API-PNR systems are designed to integrate with international and national watchlists to support the interception of transnational criminal activities [3].

CHALLENGES OF IMPLEMENTING AN API-PNR SYSTEM

An API-PNR system comprises two distinct data types from commercial air transport carriers: Advance Passenger Information (API) and Passenger Name Record (PNR) which are collected during the check-in process and when booking a ticket,

3 https://www.unodc.org/romena/en/Stories/2023/May/setting-up-a-passenger-information-unit-and-processing-api-and-pnr_-regional-workshop-for-the-middle-east-and-north-africa.html#:~:text=The%20collection%20and%20processing%20of,)%2C%20and%20other%20serious%20criminals.

respectively. Together, both data types enable the effective vetting of passengers - ultimately giving border agents greater control and oversight as to who is planning to travel to their country and when.

Despite the UN/ICAO mandate on API-PNR [4] large numbers of countries continue to manage their borders without a system in place. There are several reasons to explain the low use of these systems including: lack of technical skills/ capacity; limited funding resources; high maintenance and operational costs; and legal challenges around data privacy [5]. Many Governments also lack a culture of collaboration which can pose an additional challenge.

Different agencies will use API-PNR data to enhance their work and identify persons of interest prior to arrival. However, it has been widely observed that such agencies often work in silos, meaning that profiling efforts are duplicated at both the intra- and inter-agency levels. While the PIU model previously discussed, offers one mechanism for eliminating these silos, many countries struggle with the administrative or regulatory burden of setting one up.

These issues, while challenging, are not insurmountable. The Seychelles, Africa's only country fully compliant with the UN/ICAO mandate, offers a blueprint for countries looking to circumvent these challenges in an innovative way. Since establishing an API-PNR system in 2020, Seychelles Authorities have successfully established a virtual PIU, using Travizory's cloud-based technology. This meant that from the outset all end-user agencies were able to remotely access a single platform from their respective offices. Recognising inter-agency sensitivities, varying security clearance levels and agency specific watchlists are in operation.

DESIGNING AN API-PNR SYSTEM TO PROMOTE INTEGRATED BORDER MANAGEMENT

While API-PNR systems are not new, traditional API-PNR does have its limitations. Acknowledging these gaps in the technical offering was the first step in the development of Travizory's next-generation system which has been in use since 2020.

Using a single platform, Travizory's multimodal system enables border agents to analyze passenger data for arrivals and departures via air and sea. This platform is designed to reflect the way that border agents actually work ensuring access to real time data that is shared in a way that enables decisive action.

Going beyond the scope of traditional API-PNR, the system combines passenger data in a unique and holistic way. Specifically, the system integrates with the government's border security ecosystem which includes eVisa and electronic Travel Authorization systems to provide biometric API-PNR. This ecosystem interconnectivity generates a 360-degree view of the traveler, including their itinerary, contact information, lodging information, duration of stay, flight booking details alongside facial biometrics. Leveraging such vast amounts of data allows border agents to achieve greater intelligence and identity resolution about each traveler.

By integrating the data in such a way, all on a single platform, different agencies are able to track passengers in real time; establish discrepancies; analyze interactive seat/ geographical maps; access national and international watchlists; and benefit from AI technology to find "known-unknowns" or "unknown-unknowns" persons of interest. While each agency can act on their own, the single platform concept actually establishes an integrated and coordinated approach as the default.

Taking it a step further, the Travizory API-PNR system was designed to support the ICAO Facilitation (FAL) Programme which maximizes the efficiency of border clearance formalities while also achieving and maintaining high-quality security and effective law enforcement. All of this via a single platform.

By harnessing the power of API-PNR and maximizing opportunities for integration with existing border systems, the Travizory system is truly unique in its offering to Governments. Using the principles of collaboration, coordination, and connectivity as the foundation for development of the technology and design of the platform, the next-generation API-PNR system is redefining the modern approach to border management and security.

Jorge has more than 30 years' experience developing and selling advanced technology solutions to protect national borders. Jorge is proficient in business strategy and tactical planning and an expert in systems engineering.

4 https://press.un.org/en/2017/sc13138.doc.htm

5 https://www.osce.org/files/22.01.2019%20secgal0014%20API-PNR%20systems%20in%20the%20OSCE%20Area%202019.pdf

FEATURE

MINISTERSTVO VNITRA
ČESKÉ REPUBLIKY

The modern history of the Czech border - from the Austro-Hungarian Empire to the European Union

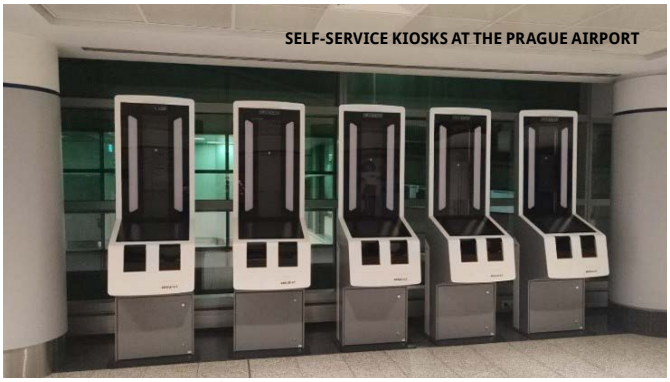
The protection of the Czech border has always been an important tool for implementing state policy and demonstrating state sovereignty. The approach to border protection as such has undergone a varied development. In very simplified terms, the current approach to the border management of the Czech borders has been shaped over the more than a century that has elapsed between the dissolution of the Austro-Hungarian Empire and its internal market to integration into the internal market of the European Union.

Firstly, border management had to respond to the end of the Austro-Hungarian customs union by demarcating the border line between former parts of a single state entity. While in the early years of newly independent Czechoslovakia, the new border was marked by stone bollards and wooden stakes, these were gradually replaced over the coming years by more robust means. In the 1930s, the once non-intrusive marking of state borders between Czechoslovakia and neighbouring countries, newly perceived as a threat to the territorial integrity of Czechoslovakia, was progressively transformed into a new defensive line consisting of forts and bunkers. It is the irony of history that this defensive line was never used for its intended purpose.

After the Second World War, the defensive line against external threats was replaced by the infamous Iron Curtain, which, in direct contradiction to the previous function, prevented citizens from leaving the country. Fortunately, after the collapse of the communist regime a few decades later, the border no longer had to serve to this perverse purpose, and the border management system slowly began to resemble that of democratic European states. The functioning of the border has thus returned to the way it was before the Iron Curtain and more permeable border infrastructure was built, finally to be removed with the Czechia's entry into Schengen.

However, the development and transformation of border protection did not end with the adoption of Schengen standards. While in the first years after joining the Schengen area, free movement was perceived positively and with optimism, new challenges gradually emerged and undermined this approach. Following the outbreak of the migration crisis and terrorist incidents in 2015, the European Union had to respond to the deteriorating security and migratory situation. It has, therefore, carried out a thorough review its justice and home affairs legislation, which is gradually being reflected in virtually all aspects of border management.


SCHENGEN INTERNAL BORDER TARGETED CHECKS


SELF-SERVICE KIOSKS AT THE PRAGUE AIRPORT

TOWARDS COMPLEX BORDER MANAGEMENT

While most of the responsibility for border management and security lies with states with an external land or maritime border, being located inside the Schengen Area does not diminish the relevance of Czechia's role. Hand in hand with the growing importance of transit migration and amidst a backdrop of changing migration policy, the control of secondary movement and transit migration flows is becoming the biggest challenge for border management.

Czechia lies on one of the branches of the so-called West Balkan migration route and implements a policy of rigorous controls targeted at transit migration. To this end, it fully utilizes the tools and procedures enshrined in Schengen legislation. Additionally, it has a well-structured system of state administration for migration and border protection, which is sufficiently flexible when it comes to deploying capacities across the entire territory of the Czech Republic. Czechia possesses an effective information and analytical support system and has developed cooperative methods, particularly with customs services and the intelligence community. Notably, the National Document Centre and the National Situational Border Protection Centre are highlighted as significant operational components. At the same time, the Czech Republic actively supports the functioning of the border/migration management systems in the EU neighbourhood and beyond.

CURRENT AND FUTURE CHALLENGES IN PROTECTING THE BORDERS OF THE CZECH REPUBLIC

The Czech Republic has experienced, especially in the last decade, rapid demographic changes, with the proportion of foreigners in the population rising to approximately one-tenth. However, a significant portion of foreigners still uses the Czech Republic as a transit route to other EU member states. In the context of Schengen, transit migration presents a complex challenge that cannot be ignored. Its impact on destination countries poses a direct threat to the existence of the borderless space without controls, and it is in the interest of Czechia to perform intensive immigration checks and carefully address illegal migration on its territory, resisting the temptation to overlook transit, as has often been witnessed on other migration routes to Europe.

The high practical and symbolic value that Czechia attributes to the free movement of people and goods, partly due to its modern history, is reflected in our approach to the temporary reintroduction of border checks. In line with the spirit and rules of the Schengen acquis, Czechia attempts to avoid such measures when circumstances allow. However, Czechia was forced to reinstate controls during the Covid-19 pandemic as it was the only way to implement health regulations. Subsequently, in 2022, Czechia introduced border controls in response to a sharp increase in transit migration through the Slovak border. Building on these experiences, Czechia manages to reinstall controls almost routinely and with an exceptional response capability.

On the way towards the proper functioning of the Schengen area, one of the significant challenges within the entire Schengen area is the completion of the interoperability architecture (Entry/Exit System, ETIAS and other JHA large-scale information systems). However, the main challenges go beyond border management as a standalone task. Border management is part of an interconnected network of migration policies and measures, and its future will necessarily depend on the EU's ability to find solutions to the most pressing challenges, including notably a common asylum policy but also return procedures and readmission cooperation with third countries. Satisfactorily addressing these tasks could reduce the pressure to address the partial consequences, such as secondary movements of migrants across the Schengen area.

The future of Czech borders will, therefore, depend not only on the ability to implement the existing framework of Schengen cooperation but primarily on the Union's ability to reach consensus on the legal and practical management of mixed migration flows. This paramount issue is not merely a technocratic challenge but represents a task with ethical, demographic, socio-economic, and security dimensions, with implications larger than only for our internal borders.

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