IBMATA
INTERNATIONAL BORDER MANAGEMENT
AND TECHNOLOGIES ASSOCIATION

SEAMLESS AND SECURE TRAVEL: THE FUTURE OF INTERNATIONAL PASSENGER TRAVEL AND BORDER CONTROL

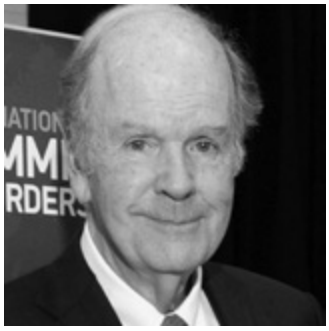
By Tony Smith[2] and Rob Bonner[3]

[1] The International Border Management and Technologies Association is an independent non profit organisation promoting collaboration on safe and secure borders between border agencies, transportation companies and industry suppliers worldwide.
[2] Tony Smith is the Chairman of IBMATA, Managing Director of Fortinus Global Ltd and the former Director of the UK Border Force.
[3] Rob Bonner is the Principal of Bonner ADR & Consulting and former Commissioner of U.S. Customs and Border Protection.

Contents

Foreward

Tony Smith CBE
Former DG, UK Border Force
Chairman, IBMATA
Managing Director, Fortinus Global Ltd



Rob Bonner
Former Commissioner, US CBP
Principal
Bonner & ADR Consulting

This paper posits that the time is ripe to broadly implement seamless, cross-border processing of all or many international travellers, by building upon the trusted traveller programs now in place in many countries; gaining a consensus around a common set of standards for such programs; and facilitating mutual recognition and integration of these forward looking programs. Both the technology and the trusted traveller programs exist to implement seamless travel, usually without any routine direct interaction with a Border Agency Officer by an arriving or departing passenger. What is lacking is a clear vision and process how to build and achieve it. This paper is our attempt to fill that gap.

Seamless travel is the logical next step. It will not only facilitate and expedite cross-border travel; done properly, it will add to the security of those nations that implement it. To achieve this, we recommend:

1. Development of a collaborative approach between international border agencies to achieve the goal of seamless travel. We suggest that a leadership role be adopted by the Border 5 and Migration 5 groups (Australia, Canada, New Zealand, US and UK) and also the EU cross cutting Agencies (Frontex and EU LISA) to work together on potential solutions and standards represents the best way forward. This is not to exclude like-minded countries elsewhere in the world; but more to build upon existing governance frameworks for international collaboration on people movement and border control, in the absence of any World Customs Organisation (WCO) or similar international governmental organization with global competence in this field.
2. The articulation of a set of standards for seamless travel through ports of entry; and common enrolment and vetting criteria for trusted traveller programs. This work would be supported by dedicated Secure Seamless Traveller Units (SSTU's) in the Border 5 and EU.
3. Bilateral and, where possible, multilateral recognition of trusted traveller programs, such as the NEXUS program between Canada and the U.S., based on agreed upon and verifiable standards.
4. International standards should be created for trusted traveller programs, akin to the trusted shipper standard adopted by the World Customs Organization in the WCO SAFE Framework of Standards. Like the WCO Safe Framework, standards for trusted traveller programs should provide for mutual recognition by countries meeting the agreed upon security criteria. Likewise, expedited processing of enrolled trusted travellers, including seamless movement through arrival halls at ports of entry, should follow on a reciprocal basis.
5. "Walk-through" arrival halls at ports of entry, for both immigration and customs, where passengers, at least those enrolled in mutually recognized trust traveller programs, are recognised by facial recognition or other biometric identifiers upon arrival; with only those chosen for a further or secondary inspection being diverted to see an officer.

Immigration and Border Agencies worldwide are faced with ever increasing volumes of international passengers, against a backdrop of static or declining resources. According to the World Travel & Tourism Council (WTTC) Travel & Tourism continues to grow faster than the world economy, with more people travelling than ever before. Travel & Tourism currently employs one in ten people on the planet, over 300 million people. By 2028, 100 million more jobs will depend on the sector, representing 1 in 9 jobs around the world. At the same time, according to IATA, the number of air travellers is expected to double from 4.2 billion in 2018 to 8.2 billion by 2037.[4]

As one of the world's largest economic sectors, according to WTTC data, Travel & Tourism accounts for 10.4% of global GDP and supports one in ten jobs around the world. In 2018, the Travel & Tourism sector experienced 3.9% growth, outpacing that of the global economy (3.2%) for the eighth consecutive year, and one in five jobs were created by the sector over the past five years.

[4] https://www.iata.org/pressroom/pr/Pages/2018-10-24-02.aspx

In 2018, WTTC brought together more than 200 travel industry, technology, and government leaders in a series of workshops to drive forward this initiative. Efforts have been focused on understanding, documenting and finding solutions across the sector to implement biometrics and other processes or technologies to facilitate seamless travel. Research undertaken by the WTTC suggests that there are over 50 implementations and trials around the world in 6 regions using biometrics within the Travel & Tourism sector that can be defined by three categories: those which are government driven, those which are government and private sector driven and those which are private sector driven.

In order to reduce wait times in arrivals halls, Border Agencies are turning to technology in ever increasing numbers in order to cope with passenger flows while simultaneously preserving and enhancing security and compliance.

There are no global standards for these programs. Most are unilateral (in that they are not interchangeable with another country). Some are bilateral with a neighbouring country (such as the US / Canada NEXUS programme[5], which enables US and Canadian citizens to register for expedited clearance on both sides of the border). None are multilateral, enabling groups of travellers to enjoy expedited passage into a range of countries via a single window enrolment system.

There are several initiatives underway led by other international groups and agencies which are aiming for the same outcome, namely a seamless end to end journey across international borders using biometric identifiers and "on the move" technology to facilitate the free flow of travellers. These include the International Air Transportation Association (IATA) "One ID" initiative[6]; the World Economic Forum "Known Traveller" initiative[7], and the US / Canada "Beyond Pre-Clearance" initiative[8].

5 https://www.cbp.gov/travel/trusted-traveler-programs/nexus
6 https://www.iata.org/whatwedo/passenger/Pages/one-id.aspx
7 https://www.weforum.org/press/2018/01/canada-to-test-advancements-in-biometrics-and-blockchain-to-welcome-international-travellers/
8 https://www.wilsoncenter.org/article/beyond-preclearance-the-next-generation-canada-us-border

WTTC Members representing the global private sector, have identified security and travel facilitation as a top priority to enable the sustainable growth of the Travel & Tourism sector, enhance security but also to offer an unparalleled experience to the traveller. WTTC has taken a collaborative approach, building on the efforts underway with organizations including IATA, ICAO, ACI, CLIA and the WEF as well as independent efforts by airlines, airports and governments. IBMATA - in collaboration with WTTC - supports that a solution can only be achieved by working collaboratively across national boundaries and in partnership between private companies and governments.

We are mindful of the fact that there is no global organisation to set standards and recommended practices for the management of people crossing borders. The World Customs Organization (WCO) exercises this role for the movement of goods, but not for the movement of people. The International Civil Aviation Organisation (ICAO) sets the standards for passports and travel documents; but how these are used at Border Crossing points around the world is largely dependent upon the country concerned. Indeed, ICAO has specifically requested the support of Border Agencies to help them collaborate more effectively with Border Agencies on key initiatives such as the development of the next generation passport chip (LDS2) and the Digital Travel Credential (DTC).

Our aim is to provide guidance and help co-ordinate a joint international Border Agency response to these initiatives, which will enable Border Agencies to work with one another and with industry in order to process low risk international travellers through entry and exit controls swiftly and efficiently without delay, making best use of new and emerging technology while simultaneously enhancing security and compliance.

This paper provides a blueprint for Border Agencies and how they might best collaborate at the international level with the travel and tourism sector to create truly seamless international travel through ports of entry. Its content is based upon evidence and data obtained from Border Control Agencies and leading Technology providers, gathered directly from international workshops and conferences in Croatia (May 2018); Washington DC (June 2018 & June 2019); New Delhi (October 2018), Istanbul (April 2019), and Ottawa (May 2019); and indirectly from associated organisations and initiatives.

It is worth noting that modern day Border Control involves much more than processing international travellers. Many Border Agencies are now multi-functional and also responsible for the clearance of goods (Customs); livestock, plants and products of animal origin (Agriculture & Food); sanitary and phytosanitary (SPS) controls (health); the control of harmful goods and materials (national security); and managing irregular migration across borders (immigration / border patrol). Unless specifically mentioned, this paper is restricted to the movement of travellers through ports of entry – primarily by air, but also at seaports and at land border inspection posts.

We are grateful to the officials and staff from US Customs and Border Protection (CBP); Canada Border Services Agency (CBSA), Immigration Refugees and Citizenship Canada (IRCC), UK Border Force (UKBF), UK Visas and Immigration (UKVI), the European Border and Coastguard Agency (Frontex) and the European Union Agency for the Operational Management of Large Scale IT Systems (EU LISA) for their invaluable support and input in giving up their time to attend workshops and provide inputs to this discussion. We are also grateful to the many private sector experts from the IBMATA membership who have provided us with technical advice on the capabilities of new and emerging technology in this field.

In order to develop a collaborative approach between international border agencies to achieve the goal of seamless travel, we suggest that a leadership role be adopted by the Border 5 and Migration 5 groups (Australia, Canada, New Zealand, US and UK) and also the EU cross cutting Agencies (Frontex and EU LISA) to work together on potential solutions representing the best way forward. This is not to exclude like minded countries elsewhere in the world; but more to build upon existing governance frameworks for international collaboration on people movement and border control.

This will enable the WTTC, ICAO, IATA, WEF, IBMATA and other international organisations to work more closely together in a co-ordinated framework with leading Border Agencies in order to develop the STJ; and to provide the platform for the paradigm shift in global passenger travel that is so desperately needed by the border agencies and the travel industry alike.

1. Modern Day Border Management: The Border Agency Perspective

Border Agencies around the world face unprecedented challenges. The volume of people and goods crossing international borders continues to rise inexorably, year on year. Complexities such as irregular migration, human trafficking, smuggling, international organised crime and terrorism dominate the international agenda. In order to focus upon these high harm areas, Border Agencies need to find new ways of facilitating the very large volume of low risk passenger traffic through their borders without compromising security and compliance.

This challenge can be met only via a collaborative response between the private and public sector – not just at national or regional level, but also at a global level. One country's inbound passenger is another country's outbound passenger. One country's imports are another country's exports. By working together on a mutually recognized set of standards – and by embracing new and emerging technology – we believe it is possible to change the traditional dynamics of passport and border checks into a more seamless flow of traffic. By identifying and addressing each of the critical "choke points" in the passenger continuum, lengthy delays in arrivals halls, ferry terminals and border inspection posts can be significantly reduced.

Putting Delays in Context

It is important to note that delays in the traveller journey are not always attributable to Border Control Agencies. Severe travel disruption is often due to factors beyond their control. For example, adverse weather conditions may interrupt services; or industrial action by third parties can lead to delays and cancellations. Issues such as transfer services to and from ports and airports, congestion at check-in and bag drop, and even delays at pre-board security cannot be attributed to the border agencies. Even delays on arrival may be attributable to deficiencies in airport infrastructure rather than in border control.

Also, borders come in all kinds of shapes and sizes. In some cases, movements across borders do not require any passport checks at all, because the countries concerned have agreed to abolish them - such as in the UK / Ireland Common Travel Area (CTA) and the EU Schengen zone . Some countries (including those in the EU) have formed an international "Customs Union" where goods are checked upon entry and exit from the Common Zone, but may circulate freely across borders within it.

Hard vs. Soft Borders

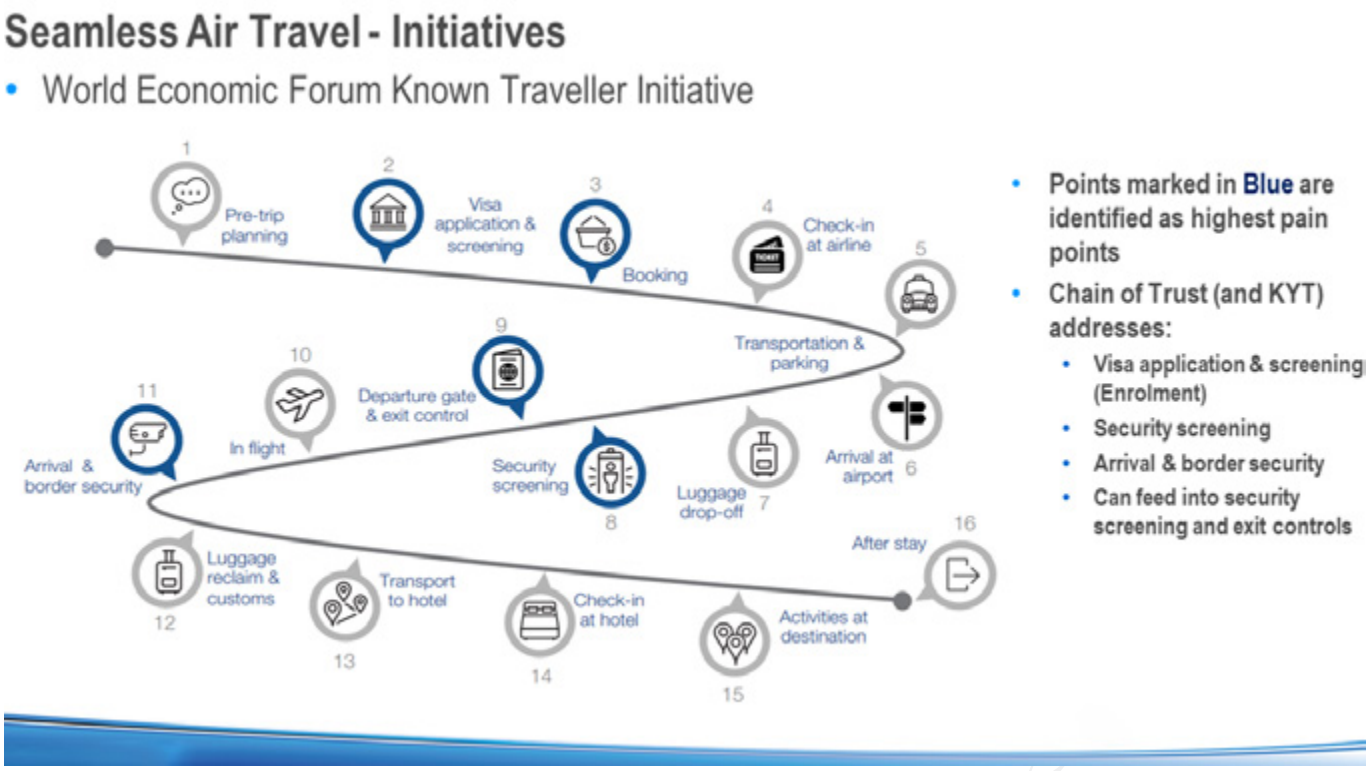
Border Agencies can therefore only make a real difference in enhancing passenger flows at those borders which are genuinely international in nature, where entry and exit checks are required at both ends of the journey. These borders are increasingly being referred to as "hard borders". Even then, border control agencies can intervene only at specific points in the passenger journey where they have a direct or indirect influence upon it. Flows of traffic through ports and airports are largely the responsibility of the port and airport authorities that run them, and not the Border Agencies themselves.

Therefore if Border Agencies are to make a significant difference to improving passenger flows across international borders, it is important to first understand the "traveller continuum" and those points where they can exert the most influence.

9 https://en.m.wikipedia.org/wiki/Common_Travel_Area
10 https://en.m.wikipedia.org/wiki/Schengen_Area

2. The Traveller Continuum

The World Economic Forum (WEF) has already considered the "traveller continuum" in some detail; and has identified those "pain points" where Border Agencies are most closely involved:



The above chart demonstrates the key "choke points" where immigration and border agencies are directly involved. In order to address this challenge, the WEF is currently engaged with the governments of Canada and the Netherlands to test an "end to end" journey between those two countries where travel will be entirely "seamless", using biometric identifiers and blockchain technology to undertake the necessary checks and risk assessments that previously involved face to face examination by an officer.

However, in order to make a real impact upon facilitating global passenger flows systems such as these must cater for a broad segment of passsengers from different countries; and align with other programs in other countries where similar initiatives apply. And in coming to Border Agencies for a solution, the transportation sector needs to fully understand the role played by immigration and border agencies in the process. These include a variety of checks which vary from country to country, and from traveller to traveller.

Pre-Travel Checks

Visa Applications

Most countries require foreign nationals to obtain a visa before travel. Visa applications can be time consuming and expensive. Indeed, there is evidence that a cumbersome visa process is a real inhibitor to the travel and tourism sector and consequential economic growth. Visa jurisdiction is commonly within the domain of the immigration agencies or even foreign ministries, rather than the border agencies themselves. In the US they are overseen by the Department of State, with policy led by the Department of Homeland Security. In the UK they are managed by UK Visas and Immigration (UKVI) rather than UK Border Force (UKBF). A detailed analysis of future visa systems may therefore be more relevant to the migration 5 group than the border 5 group.

Visa Waiver Programs (VWPs) and Electronic Travel Authorizations (ETAs)

Visa processes were further complicated by visa waiver programs that applied to foreign nationals of certain countries - and permitted them to enter without a visa being issued. In the post 9/11 era the security dimensions of this were profound. To improve security around the visa waiver gap, the concept of electronic visa, or electronic travel authorizations, was developed -

first in Australia with ETA, followed by the US's ESTA program. These created, in effect, an electronic visa for a national of a Visa Waiver country. Not only did they improve advance information about a traveller, beyond API and PNR data from airlines, but they facilitated risk targeting and no board decisions.

However, *Electronic Travel Authorizations*, while unquestionably improving the pre-clearance security process, can also be an inhibitor to travel, if the on-line process is difficult to negotiate. There have been reports of difficulties in being directed to "spoof" websites charging exorbitant fees for the service. Others have reported being regularly "timed out" of the process, with helplines being frequently busy or unobtainable. There is no question, however, that ETA has the potential to replace the need to obtain an in person visit to a consular office in many instances, not just for visa wavier country nationals, thus facilitating travel.

Pre-clearance

Border controls worldwide are already being rapidly transformed by the "multiple borders strategy". This means that modern day border control is delivered by way of a "series of transactions" where passengers and freight are checked electronically before travel, rather than on arrival at the destination port or airport. In some cases – such as in U.S. pre-clearance zones – passengers are physically examined by an officer before they travel, rather than after they land. In others, identity and entitlement to travel can be verified electronically in advance; so that, at most, only the most cursory identity check is required upon landing. There is no question that pre-clearance programs at check-in, although expensive, facilitate an expedited travel experience. Moreover, they add immeasurably to the security of the aircraft.

Departure Checks

Security Screening

Security Screening at departure is a critical choke point at airports; but it is not usually the function of a Border Agency. Some countries (such as the US) have a separate Security Agency (TSA) performing such security (although not exit) checks. Others (such as the UK) delegate the function to ports and airports to conduct, under an agreed framework of standards with the government. A few countries offer streamlined security screening for pre-registered travellers who are perceived to be lower risk (e.g. TSA Pre✓). At our expert workshops, we concluded that security screening could be improved through better process (e.g. multiple tray stations), better technology (e.g. body scanners requiring less divestment) and risk assessment frameworks such as Smart Security – but as these matters fall outside the traditional ambit of Border Agencies, they are not pursued further in this paper.

Check-in, Departure gate and exit controls

Check-in and departure gate controls usually involve document inspections that are conducted by airline and airport staff rather than border agents – but as these are to ensure that passengers are properly documented to travel to their onward destination, they can be described as border checks.

Exit controls are also cursory checks of passport and identity, but are a chokepoint for international travel outbound. Some countries – including the UK and the US – do not undertake "physical" exit checks. Instead outbound data is captured by the airline or the transportation company and transmitted electronically to the border agency, without the need for a physical intervention by an officer. In this way, these countries have biographic data regarding foreign nationals who have departed and when. Conversely, they are able to determine which and how many foreign nationals have overstayed their visa, electronic or otherwise. Absent the real need for biometric data, further exit control data is rarely needed.

We believe that with proper communication between border agencies and transportation companies there should be no need for frequent physical examination of passports at multiple stages of the outbound process (e.g. check in, bag drop, security, boarding). One IBMATA member counted at least 6 physical examinations of their passport by different agents on an outbound journey through an airport.

Arrivals Checks

Passport and Border Security Control

This is an area where border agencies have the most to contribute to seamless travel - or what the WTTC has dubbed the "Seamless Traveller Journey" or "STJ". Arrivals halls have always been "choke points" where passengers must queue – sometimes for hours – to see an officer for examination and adjudication. Border Agencies are increasingly turning to automation to address these queues – notably e-gates and kiosks – but even there, queues can be significant during busy periods. What is needed is a "walk-through" Border where passengers are recognised by facial recognition or other biometric identifiers upon arrival; with only those

chosen for a secondary inspection being diverted to see an officer. While many countries have "walk-through" customs checks with self-declaratory "red / green" channels for the importation of goods, no such process exists for front end immigration or passport control.

This is also an issue for maritime and land borders. Cruise ships face similar challenges when boarding and disembarking large numbers of travellers at multiple locations within a short timeframe. Cross border ferries have to load and unload passengers and vehicles at ever increasing speeds. And it is not unusual to see delays of several hours in vehicle lanes at land border crossing checkpoints. These can only be reduced by a fundamental change in border control procedures, both at passport and at customs control.

Segmentation

One of the most important concepts to advance security and to facilitate movement of legitimate, low risk travellers is segmentation, - the proverbial "finding of the needle in the haystack" made far more likely by reducing the haystack. Indeed, segmentation is an underlying goal of all trusted traveller and other programs which differentiate for risk.

Some form of segmentation is nothing new. For years, pre-dating 9/11, most immigration arrivals halls at airports around the world – and those departures halls which retain physical exit controls – have "segmented" travellers into different lanes depending upon their nationality.

This is mainly because host nation citizens are entitled to entry and require less interaction by Border Agencies; and also because some non-citizen nationality groups require a more detailed examination than others. Of course, this discrimination is not lost on non-citizens who invariably have the longer queues. But a passenger returning to their own country need only establish their nationality and identity; there is no need to answer any questions about purpose or duration of stay, because they are not subject to immigration control beyond establishing their identity and citizenship, which is typically accomplished by presenting their passports. Whereas passengers entering a country other than their own may be subject to additional checks, which include an admissibility determination under national legislation. If found to be inadmissible, they may be denied entry. In the post 9/11 era, hundreds of foreign nationals posing a terrorist threat have been denied entry into the U.S. In addition, persons with a criminal record or who have previously been deported or overstayed their visas may be denied admission. Those who are deemed likely to overstay and illegally reside in a country may also be denied admission.

Some countries may form part of an international agreement which means that they may move freely into another country because they do not require permission to do so – for example, citizens of EU and EEA countries may move freely into another EU or EEA country for short or long term stays, without needing any form of visa or permission to do so. Australia and New Zealand have a similar program. As noted below, citizens of countries that are part of a visa waiver program, typically reciprocal, need only have a passport from a qualifying country; although post 9/11 many countries also require them to provide electronic information to secure an "electronic travel authorization".

Another way of segmenting passengers is by way of the nature of their travel document and age. For example, holders of "e-passports" who are above aged 12 may enter the UK e-gates because these can match the holder to the document through facial recognition technology, without any need for officer intervention. (This technology is currently less effective for children below the age of 12, due to the changing facial characteristics during growth).

In other cases, some nationality groups may require a form of prior entry clearance in order to enter the destination country; and cannot travel without one. This may be a form of electronic travel authority (such as the Australian ETA or the US ESTA); or it may be a visa. Different countries have different requirements for ETA or visa; again, there is no universal model. Holders of ETAs or visas may be required to go through further physical and / or electronic checks on arrival, depending upon the national legislation of the destination country. Moreover, citizens and residents of some nations will be required to obtain an actual visa, which frequently entails applying at an embassy or consular office before being able to travel to a destination country.

But for the goal of seamless travel, by far the most important segmentation is between those travellers who have been pre-vetted, identified biometrically and enrolled in a trusted traveller program. They are getting expedited treatment, in many cases very close to a "green lane" through the arrival halls at international ports of entry.

So, when considering which passengers might lend themselves more easily to the "seamless traveller journey", we will need to consider each international border and each passenger segment to identify those that might benefit from it. In general terms the more that technology enables Border Agencies to verify the traveller's identity, entitlement and intent in advance of arrival, the more likely it is that they will be able to permit a more seamless experience on arrival. It follows that where Border Agencies can agree a common set of factors to determine risk for a common group of travellers (e.g. frequent or trusted travellers) then one risk assessment/trusted traveller framework might be mutually recognised by more than one country.

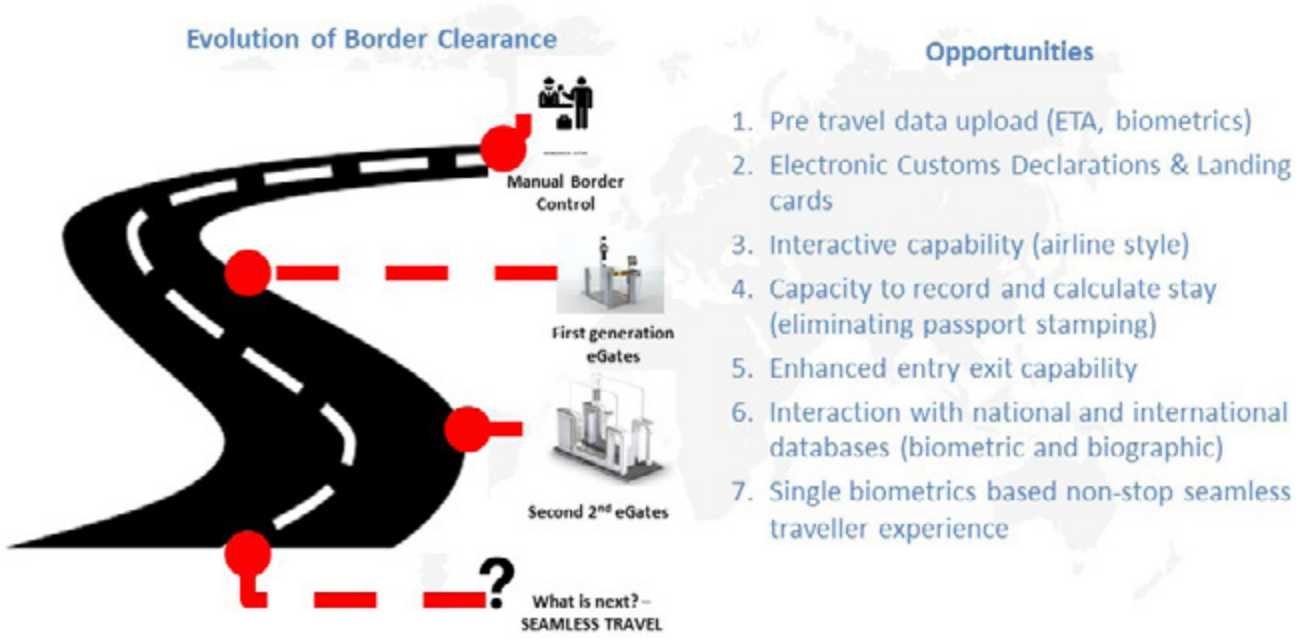
3. Evolution of Border Clearance

Border Clearance has evolved exponentially over recent decades in line with additional security requirements and advances in technology.

Prior to the technological age, controls were conducted manually by way of a physical inspection of the passport and a face to face examination of every traveller by an immigration officer or a customs officer. Watch lists were maintained manually and referred to selectively; passports were easy to forge, and data could only be captured manually on landing cards or customs declarations.

Machine Readable Passports (MRPs)

The first major breakthrough was delivered by the International Civil and Aviation Authority (ICAO) with the development of a common global standard for a "Machine Readable Passport" (MRP) containing a "Machine Readable Zone" (MRZ)[11]. Countries first started issuing MRPs in the 1980s; and since 24 November 2015 it has been a requirement of ICAO for all countries to issue these. This enables passenger bio data such as full name, nationality, date of birth and passport number to be captured electronically by Border Agencies and transportation companies alike; checked electronically against watchlists; and even transmitted across borders.



Advanced Passenger Information and Passenger Name Records (API & PNR)

Shortly after the 9/11 attacks, the US government enacted legislation requiring that all airlines operating to US airports must provide passenger data, both API and PNR, to U.S. Customs and Border Protection in advance[12] so that risk assessments could be conducted electronically prior to travel. Other countries followed suit. This required border agencies to work together with airlines to try to agree upon a common set of standards for data elements and data sharing. Even now, views differ between countries on the extent to which PNR data can be shared. Many Border Agencies now require and receive advanced passenger information (API) and passenger name record (PNR) data routinely from airlines. And they use it for determining in advance, through automated risk assessment systems, which travellers pose a risk and require some officer interaction or secondary, and which (and this is most of them) require no attention whatsoever, other than establishing identity (biometrically or otherwise).

[11] https://info.viselio.com/machine-readable-passport/
[12] https://en.m.wikipedia.org/wiki/Advance_Passenger_Information_System

Electronic Travel Authorisation (ETA)

Then, through the introduction of "interactive" API (iAPI) Systems, governments were able to communicate directly with airlines to authorise (or deny) travel in advance. This has led to an explosion of "electronic travel authorizations" (ETA) requiring variable levels of passenger data whereby international travellers are required to go on-line and provide data directly to the destination government, for pre-approval to travel.

There are good examples of collaboration between governments, industry, airlines and international bodies from the past. The API/iAPI Umbrella document endorsed by IATA, ICAO and the WCO drew up guidelines for the implementation of API and iAPI systems to help states considering the use of passenger data to standardise the collection of such data. The UK, Australia, Canada, New Zealand and the USA were the signatory governments. The EU was also an observer to the work.

In parallel , work to provide a framework for the collection of reservations data, passenger name record (PNR) was similarly managed in the IATA PNR Working Group. This collaboration between interested parties set out a template to allow other governments seeking to implement the collection of PNR data do so using the PNRGOV format. Details of this work is incorporated in to the latest version of the Umbrella document.[13]

Automated Border Controls (ABCs) and Electronic Passports (e passports)

Development in API/PNR and iAPI systems has coincided with the growth in automated border controls (ABCs). Following the success of the MRP, ICAO commenced work on the next generation passport known as the "e-passport". The e-passport contains an embedded microprocessor chip which can store biographic and biometric information within it. This includes an antenna which enables data from the chip to be transmitted electronically for electronic verification. Over 150 countries are now producing e-passports[14]. Public Key Infrastructure (PKI) is used to protect the integrity of the data on the chip making it hard to forge, and countries can verify the authenticity of a passport via the ICAO Public Key Directory (PKD)[15]. Document security experts judge that those countries who are issuing ICAO standard e-passports and are registered on the ICAO PKD system are providing the most secure forms of travel document in the world.

Biometrics

The ability to capture and store biometrics in travel documents has led to a revolution in border control. Experts believe that biometric matching is a much more secure and accurate method of verifying identity than visual checks and officer examination. Finger scan technology has enabled Border Agencies to identify previous offenders who may seek to return following a criminal or administrative deportation, using a different passport identity. International sharing of biometrics has enabled them to identify and interdict suspects by way of a biometric match, where name records were inconsistent or unreliable. At the same time, rapid advances in biometric technology – notably facial and iris recognition systems – have enabled Border Agencies to identify previously "known" travellers simply by way of a biometric match to the live image, without the need for any passport check at all.

ICAO has approved three biometrics for use in passport technology and border control systems – face, finger, and iris. The current e-passport chip can store all three, although most countries are storing the digital photograph on the chip as the preferred biometric. This means that passengers crossing borders with e-passports can use automated border control systems such as e-gates and kiosks to verify their biometric against a "live image" at the point of passage. Therefore – where verification of identity and nationality is the only requirement for a specific passenger segment – such passengers typically should be able to pass through an automated border control system such as an e-gate or kiosk without any need for a manual inspection by an officer.

Taken together, the advancement of biometric technology and e-passports has enabled Border Agencies to remove the more mundane tasks of a Border Officer (such as verification of identity and watch list checks) to an e-gate or a kiosk where travellers can "self-serve" themselves through Border Control. Some countries (such as Canada and the US) still require a "face to face" encounter with an officer – but the transaction time is significantly reduced. Others (such as the UK) have a "one stop shop" where passengers passing the e-gate test do not encounter a Border Force Officer at all. Indeed, the UK now moves over 50 million passengers a year through e gates – representing about 40% of its entire inbound traffic. Even then, UK Border Force sometimes fails to deliver its target of keeping wait times below 25 minutes for EU arrivals and 45 minutes for non-EU arrivals.

In order to alleviate queues, the UK Border Force now allows visitors from seven "low risk" countries with e passports (Australia, Canada, Japan, New Zealand, Singapore, South Korea, and the United States) to enter via the e-gates, without any form of visa, ETA or pre-Clearance risk assessment. [16]

[13] http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/api-pnr.aspx?p=1
[14] https://www.gemalto.com/govt/travel/electronic-passport-trends
[15] https://www.icao.int/Security/FAL/PKD/Pages/ePassportBasics.aspx
[16] https://www.tandtstatesman.com/blog/travel-news/may-13th-confirmed-for-e-gates-go-live-at-lhr-and-lgw

This raises a risk that immigration and security examinations have been reduced in favour of expedited passenger flows. This risk could be reduced by introducing a UK Electronic Travel Authorization system and a more seamless biometric arrivals process. Even then, it also means that Border Agencies – including the Border 5 – are adopting differing policies and strategies for checking the same passenger groups. For example British citizens visiting the United States must first obtain a US ESTA and enrol biometrics upon arrival at a US airport; whereas US citizens visiting the UK do not need any form of prior permission and do not need to register biometrics upon arrival at a UK airport. An agreement between like-minded countries such as these on minimum data standards for crossing their respective borders would bring much needed consistency to the international traveller frameworks; whilst simultaneously enhancing security and compliance on all sides.

The Border Management Triangle

Experts agree that the critical components of an effective border control are identity, travel document, and intent. This is known as "the border management triangle".

Advances in technology described above have gone along way to delivering more effective ways of verifying identity and documentation. If the e-passport is the preferred identity document and the biometric is the preferred identifier, then it should be possible to use the data held on the e-passport chip to verify both the validity and authenticity of the document; and the identity of the holder. This enables border agencies to conduct watch list checks and identity checks electronically and to make advance risk assessments without the need for a manual inspection or questioning by an frontline officer. Indeed, with new developments in technology it may be possible one day to dispense with the travel document altogether; and to allow passage through border control simply by recognising the biometric. The ICAO New Technologies working group is already working on this (see below).

Use of Biometric Libraries

Trials are already underway in some countries to test this model. By cross matching API manifest data against government libraries such as passport and visa databases, Border Agencies can download the digital images of passengers on board for cross matching against a live image. Therefore, identity can be established and verified at passage without the need to present a passport at all. US CBP are using this technique at selected airports in order to deliver "biometric exit" – a recommendation of the 9/11 report that has been challenging to implement.

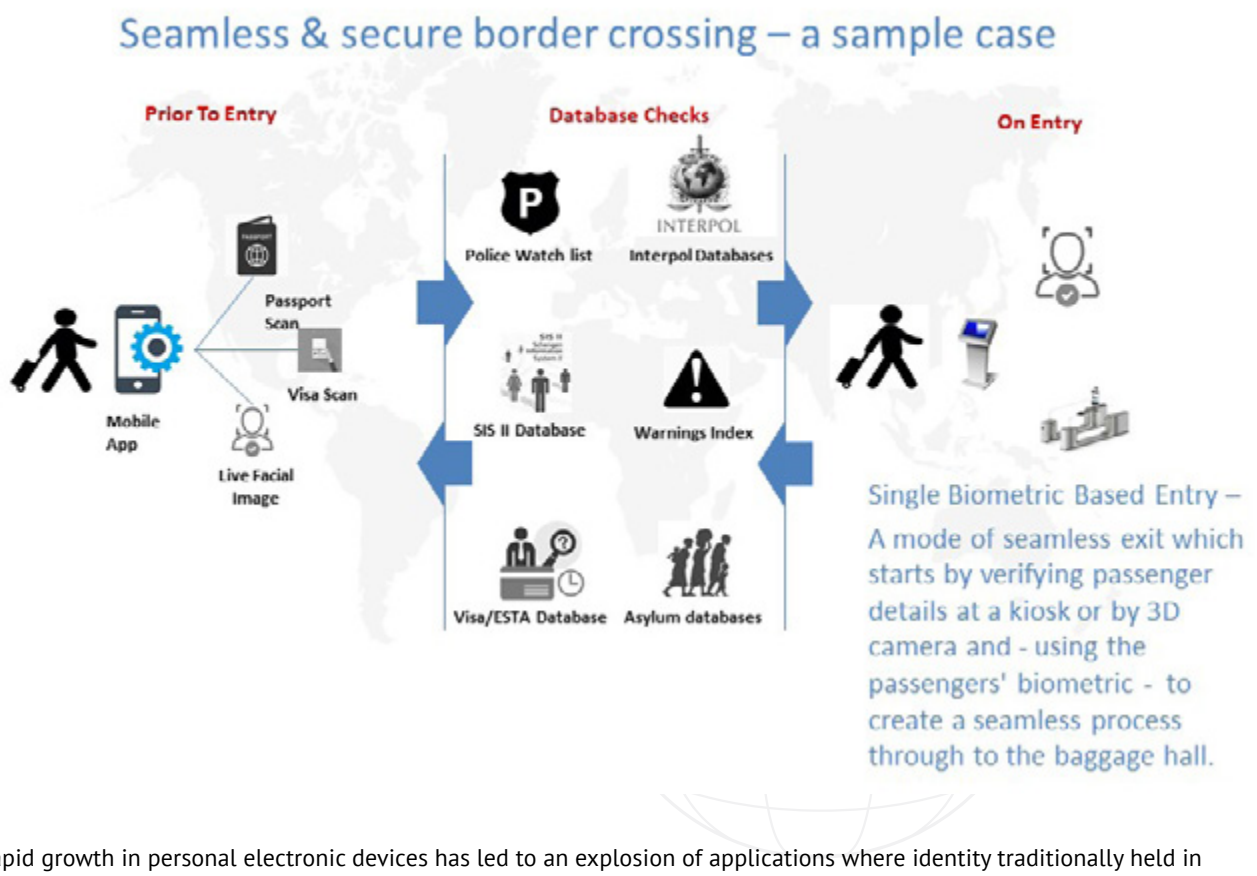
Assessing purpose and intent

That said, we have yet to discover technology which can establish intent. We can ask questions about background, family, travel history, financial standing and so on which may help us to adjudicate visa applications either before or at arrival; but this is not always verifiable. It is even more problematic when the application is made under a visa waiver program, requiring no visa. Border Agencies can (and do) ask questions about purpose and intent – length of stay, purpose of visit, intention to commit criminal or hostile acts or other indicators that may cause concern. Sometimes this is effective – but they cannot know what is hidden in a traveller's mind. The use of a border search authority for high risk travellers can be helpful in making admissibility determinations. Countries are increasingly turning to alternative forms of risk assessment – including demanding access to social media profiles in advance – to help assess this risk;[17] but, despite broad border search authority, this is proving highly controversial in terms of privacy.

[17] https://learningenglish.voanews.com/a/us-now-requiring-visa-applicants-to-provide-social-media-details/4943880.html

Concerns about security and intent are critical factors in determining the extent to which "seamless" travel is permissible for some or all travellers crossing international borders. This is best achieved by opening interactive electronic communications channels between the traveller and the Border Officer, using mobile digital technology which, amongst other considerations, protects travellers' personal information.

Mobile Digital Technology



The rapid growth in personal electronic devices has led to an explosion of applications where identity traditionally held in passports, cards or paper documents can be converted into a "digital identity" which is held on a mobile device. The big advantage of this technology is that it enables biographic and biometric data to be captured accurately and securely from source documents; matched against the holder; encrypted; and transmitted electronically to government.

Border Agencies are now experimenting with mobile / digital technology and facial recognition systems to enable travellers to upload personal data in advance of travel and – following extensive risk assessment processes – to pass through border control on arrival without the need to stop and show a passport. Models vary from country to country, as the sample case above shows.

By using a technology known as "near field communication" (NFC), it is now possible to transfer data held on an e-passport chip directly onto a mobile device, simply by holding the passport against it. Software companies have developed apps to facilitate this process; and even to conduct a facial match against a live image "selfie". This means that applicants for immigration, visa and electronic traveller authorities can submit passport and identity data to government agencies swiftly and securely, without the need to submit the passport itself. Keying errors such as misspellings or date of birth formats can be eliminated; and with an interactive capability, officers can assess applications remotely from anywhere in the world and communicate directly with applicants to obtain additional information where needed.

This technology is already in use in the UK to enable EU citizens to register to remain in the UK after Brexit, with over 2 million applications processed between January and October 2019.[18] This technology also enables Immigration and Border Agencies to issue digital permissions to enter without recourse to passport stamps and visa stickers. Once this process is complete, a simple identity verification check and record of entry is all that is required upon arrival.

[18] https://www.gov.uk/government/news/two-million-applications-to-the-eu-settlement-scheme

Known v unknown passengers

In general terms, Border Agencies are more comfortable with those passenger groups that are "known" than those that are "unknown". A passenger who is already known to the government – either because the government has recognised them as a citizen by issuing a national passport or identity card, or performed some other form of risk assessment in advance of arrival – is less likely to demand an intrusive examination on arrival than one who is not.

So how can we move more travellers from the "unknown" into the "known" category? In general terms this is achieved by gathering and assessing information about the traveller in advance. This can be done in various ways.

Registered / Trusted Traveller Schemes

There has been a great deal of debate in the international border community about "registered traveller" and "trusted traveller" schemes. In general terms, a "registered traveller" is somebody who has gone through some form of prior vetting or examination process in return for a less intrusive check at the border – such as the US Global Entry scheme [19]. These are often also referred to as "trusted traveller" schemes – although some countries might confer "trusted traveller" status on others without any need for prior registration. For example, the UK Border Force now allows entry via e-gate for e passport holders from seven "low risk" countries without the need for any prior examination or registration. [20]

There has been a proliferation of such registered/trusted traveller schemes in recent years. WTTC has identified 57 such programmes involving different Border Agencies around the world. Some are government run; some are private sector run; some are combined. There are no global standards for these programs. Most are unilateral (in that they are not interchangeable with another country); some are bilateral with a neighbouring country (such as the US / Canada NEXUS program[21], which enables US and Canadian citizens to register for expedited clearance on both sides of the border). None are multilateral, enabling groups of travellers to enjoy expedited passage into a range of countries via a single window enrolment system. We recommend that international standards be created for trusted traveller programs, akin to the trusted shipper standard adopted by the World Customs Organization in the WCO SAFE Framework of Standards. Like the WCO Safe Framework, standards for trusted traveller programs should provide for mutual recognition by countries meeting the agreed upon security criteria. Likewise, expedited processing of enrolled trusted travellers, including seamless movement through arrival halls at ports of entry, should follow on a reciprocal basis.

E Visa systems

Advanced immigration agencies such as the Department of Immigration and Border Protection (DIBP) Australia and the UK Visas and Immigration department (UKVI) have embarked on a new strategy for managing pre-entry visa processes.

Identity data and credentials such as financial standing, employment status, educational qualifications, family background and travel history are increasingly being acquired on-line to inform visa and eTA adjudications. Apps are also being developed with additional functionality to enable travellers to store personal data such as this securely on their mobile devices; and to release it selectively to control agencies as and when required. Where an interview is required, it can be conducted internationally by video conference, rather than at a face to face interview in the source country.

This is leading to a paradigm shift in traditional visa processing. With further innovation and engagement, Immigration and Border Agencies can communicate with visa applicants on-line; arrange for the electronic verification of biometrics and identity documents; and even procure verifiable supporting documentary evidence without resorting to the examination or scanning of traditional paper documents. And from the traveller perspective, personal data can be held on a personal electronic device and shared at will to multiple countries in support of visa applications.

Mutually recognised visas and trusted traveller programs

Most countries operate an exclusive visa system for their own territory, but there are exceptions. In the EU, countries who are members of the "Schengen zone" may issue visas on behalf of one another, whereupon entry into one Member State automatically confers entry to all of them. Other countries such as Mexico take the view that possession of a visa for another country (such as a US visa) automatically confers entry to Mexico, without the need to apply for a separate visa from the Mexican authorities.

---

[19] https://www.cbp.gov/travel/trusted-traveler-programs/global-entry
[20] http://www.securitydocumentworld.com/article-details/i/15955/
[21] https://www.cbp.gov/travel/trusted-traveler-programs/nexus

This raises the possibility that like minded countries such as the Border 5 and the EU could work together to develop a system of mutual recognition agreements, similar to those in place for customs, where clearance to enter one country would automatically confer clearance to enter another without the need for a further examination.

This would work equally well for trusted traveller schemes. For example, registration in US Global Entry might also confer seamless entry into their countries through a mutual recognition agreement (MRA) with the Border 5 and/or the EU. Although not without its complexities, we recommend that this be explored. In time, it could evolve into a multinational trusted traveller initiative leading toward a seamless passage through arrival ports of entry. But developing bilateral or multilateral consensus regarding the standards, degree and method of vetting and biometric identifier(s) is essential if there is to be progress toward seamless and secure international travel.

Mutual Recognition with the Private Sector

Travel industry partners – such as the WTTC – have raised the question of mutual recognition for more secure travel outside the traditional border security areas. There are several "reward" programmes in widespread use by hotels, airlines, travel agencies and the like, but these provide benefits based more on commercial considerations (e.g. frequency of use, loyalty, etc.) than by way of risk assessment. The WTTC point out that some of the terrorist attacks in Europe in recent years have been perpetrated by high risk individuals making use of hired vehicles as weapons. A "transferable" token of trust – such as enrolment in a "trusted traveller" program like US Global Entry – might enable users to demonstrate a higher level of trust when booking hotel rooms, transfers, hire cars and the like. This raises questions of data sharing between governments and the private sector; but a "trusted" token which has been mutually recognised by border agencies might also be used to confer additional benefits for travellers wishing to benefit from the "end to end" Secure Traveller Journey (STJ).

ICAO and The Digital Travel Credential (DTC)

The development of the ICAO DTC is another potential "game changer" for global border controls. The DTC enables the passport chip to act in isolation of the traditional booklet, opening up a new range of possibilities for advanced border clearance.

Until now, ICAO engagement with government agencies has been largely with the passport issuing departments as opposed to the Border Agencies themselves. ICAO has recognised the need to engage more with the Border Agencies, as attention shifts from the security of the document itself to the methods in which it might facilitate electronic border controls of the future.

The ICAO New Technologies Working Group has asked IBMATA to help them to engage with Border Agencies in the following areas:

a. Extending or Strengthening the capabilities of the e-passport. This includes updates to third generation photographs stored in e-passports; compatible extensions to the e-passport chip (LDS2); and applications that allow for the secure digital storage of travel data (visas and travel stamps) and additional biometrics, over its period of validity;

b. Exploring opportunities to standardise digital tokens. This includes developing digital passports which could be used in all countries (i.e. globally interoperable) where they are accepted; the remote submission of passports by travellers for border inspection and / or travel authorisation; and enabling government to confirm identity and document authenticity prior to travel, conduct advanced screening including biometric screening, and facilitate seamless travel through border control using biometric recognition technology; and

c. Expanding areas of study in conjunction with border agencies to develop complementary modernisation plans.

Through governance structures in place in the Border 5 group and the EU, Border Agencies should consider adopting a more unified approach to working with ICAO on these critical areas of development rather than the piecemeal approach that currently exists.

Other seamless traveller Initiatives

It is important to give due recognition to the extensive work that is already underway elsewhere to deliver seamless and secure travel. The aim of this paper is to supplement that work, and not to start from scratch.

Other international organisations have not been idle in trying to address this problem. Following the 9/11 attacks in 2001, IATA launched its "Simplified Passenger Travel" (SPT) initiative. In collaboration with the Control Agencies Working Group (CAWG), they identified points in the traveller continuum where passenger data and passport inspections were being duplicated by both government and industry. This led to the inclusion of technology providers in the SPT interest group; and the inception of "Mi-Sense" trials whereby registered travellers could benefit not only from automated fast track boarding and baggage facilities but also via a mutual recognition risk assessment process to enable fast track automated border crossings at Heathrow, Dubai and Hong Kong Airports. These trials proved that the concept of a multilateral trusted traveller system using public and private sector data could work – although it was probably ten years ahead of its time, and was not adopted more widely.

IATA also inspired the "Checkpoint of the Future' concept, whereby passengers could be selected for a less intrusive search at aviation security checkpoints through a process of individual risk assessment. This is now widely used by the Transportation Security Association (TSA) through its Pre✓ programme – but again this has yet to fire the imagination of aviation security agencies elsewhere in the world. It is possible, however, that the benefits from a Pre check-type program could extend beyond segmented queues and not having to take ones' shoes off, or remove a laptop from cabin baggage. It is worth exploring whether, once identity is established biometrically, further x-ray examination of the person or carry-ons is necessary at all.

As technology has advanced, further initiatives have taken hold. IATA has teamed up with ACI and continues to lobby for risk-based security screening through its "Smart Security" initiative. It has also initiated the IATA "One ID" programme to support the possibility of seamless travel by registering traveller biometrics for re-use on each journey.

Canada is working with the US on the "Beyond Pre-Clearance" initiative, to promote a seamless traveller journey on trans-border flights. And the WEF is promoting a seamless traveller journey on flights between Canada and the Netherlands for selected travellers, using blockchain technology.

Border Agency support for these various initiatives is fragmented between government departments and agencies in the country concerned; and also within Government Departments themselves. In their 'One Government at The Border (OGATB)' review, UK Customs identified at least 26 different Departments and Agencies with an interest in the Border. Co-ordination is hard enough at national level, let alone international level.

IBMATA has been working with WTTC and Border Agencies in the Border 5 and the EU for several months to identify the key officials and units in each country that are best placed to take this work forward. Some progress has been made; but constant changes in government structures and personnel have impeded progress. We recommend that dedicated "Seamless and Secure Travel Units" (SSTUs) be established in each country of the Border 5 and in Europe. This would go a long way towards addressing this problem, and accelerating progress.

Research and Development

Alongside the private sector projects set out above, a number of research and development projects are also underway, looking at new ways of clearing people and vehicles through border control "on the move". Research in academic circles is very useful; but not always readily apparent to Border Agency leaders.

One example is EU Pervasive and useR fOcused biomeTRics bordEr projeCT (PROTECT), an EU funded H2020 security research project between the universities of Reading, Salzburg and Namur in conjunction with UK Border Force and the Polish Border Guard[22]. The aim is to develop enhanced biometrics traveller identification concept for "on the move" border clearance at land, sea and air borders for passengers and vehicles alike.

Unlike other initiatives, EU PROTECT is exploring the use of non-ICAO biometrics such as finger vein technology, voice recognition, hand geometry and anthropology. By using and refining these characteristics we may be able to identify new forms of border clearance, such as "hands free" communication between drivers and Border Agents and "walk through" tunnels providing match scores against a range of biometric identifiers rather than the current face and iris systems in the current marketplace.

This technology was tested at the Borderguard HQ in Kertzyn, Poland in June 2019 and despite involvement at practitioner level by UK Border Force and the Polish Border Guard – and being EU funded – it has received little exposure elsewhere.

It is equally important that Border Agencies engage in projects like this at the appropriate level, in order to develop learning in the "art of the possible" for future Border Controls. This requires concerted and collaborative leadership and engagement by Border Agencies, at international level.

[22] http://www.projectprotect.eu/

4. Government Response so far

International Status

It is clear from our workshops and events that there is a real appetite across the Border 5 and in the EU to use technology and biometrics to expedite travellers through border controls without compromising security. On the Immigration side, there is also a desire across the M5 to make better use of technology and automation to streamline and risk assess visa and ETA applications. Indeed, one government agency even questioned whether the marketplace was ready and equipped to deliver some of the technology that will be needed for the Border of the Future.

All of the Border 5 countries already make extensive use of automated border controls (ABC) in their arrivals halls. Some of these (such as the UK e-gates) simply rely upon a biometric match between the holder and the e-passport, with no questions asked. Others (such as US Global Entry) rely both on a document scan and a biometric scan (face and finger) and several questions, before issuing a paper receipt to take to an officer for physical clearance. A third version is to match biometric libraries to the live images of travellers without the need for any physical inspection at all (such as in Dubai, Australia and US exit).

Notwithstanding these developments, Border Agencies continue to face criticism from inbound passengers and associated lobby groups about lengthy delays at border crossing – especially during the busy holiday periods.

Despite these clear and obvious technological advances, most of these initiatives are still unilateral. If a genuinely "seamless" passenger journey is to be delivered (one which is end to end), it will require the cooperation of key international border agencies to work through the policy and practical steps necessary to achieve it.

Engagement with Technology

Technology providers have already developed apps capable of capturing and transferring data held on a passport chip quickly and accurately via a mobile device, without any need to store the data on the device itself. This facilitates electronic communication between an applicant and the Department, without having to submit the travel document by post or in person. Digital technology enables the self-capture of a "live" biometric (e.g. face or finger scan) for direct matching to the chip and for subsequent encryption and transmission to an adjudicating caseworker anywhere in the world. These apps can also be interactive, enabling e communication between applicant and adjudicator throughout the process in addition to standard question and answer formats. Other companies are developing e "doc wallets" so that personal data about financial status, family circumstances, travel history and the like can be stored on a device and released by the owner to different adjudicators in different countries as required.

Work is underway to identify travellers at border crossing without the need to stop at a gate or a kiosk. The Canada Border Services Agency (CBSA) is currently testing the "Trip Related Expedited Clearance (TREC)" programme which will enable travellers to communicate with the Border Agency well in advance of arrival using mobile digital devices; and to upload data regarding vehicles and participants for electronic recognition through special lanes on arrival at the border. By benchmarking best practice in this area, the Border 5 and the EU can develop trials to facilitate on-line, kiosk or mobile registration of travellers approaching land borders to finally address the daunting challenge of delivering entry / exit systems at land borders without building up long delays in vehicle lanes. Such systems could work equally well at seaports and for cruise ships.

Data Protection and Privacy

One of the major inhibitors to developing international seamless traveller initiatives is the fact that different countries adopt different approaches to the management of personal data and privacy. What may be acceptable to one country in procuring and retaining personal data on travellers may be unacceptable to another. Therefore, any multilateral seamless traveller process must rely upon the principle of informed consent. Virtually every survey done regarding travellers indicates that in exchange for expedited, seamless arrival processing, there is a willingness to consensually part with some, otherwise private information to the relevant border agency.[23]

[23] https://mytravnews.blogspot.com/2017/07/air-passengers-give-thumbs-up-to_21.html

It will be necessary for participating countries to agree a set of standards and a code of practice for capturing, sharing, and retaining personal data when committing to the Seamless and Secure Traveller concept at their national border. Although we have not sought a legal opinion on this, the consensus view from practitioners and policy makers at our workshops was that wherever possible data should be retained by the traveller, who would decide upon a case by case basis how much data would be shared with Border Agencies before registering in any specific programme. As a baseline, control agencies will need access to those data elements already required as part of the admission process (e.g. full passport bio data and a digital image); but other elements may be required for specific countries in line with national legislation. This area will need further consideration as the programme develops.

We note that the more advanced technology providers are developing applications which are focussed on enhancing individual privacy rather than threatening it, by allowing the traveller to control what information they submit to the authorities. This challenges a common misconception that more technology means less privacy.

5. Conclusion and Recommendations

Towards a paradigm shift in International Traveller Programs

There is widespread consensus in both the international border community and the international travel and tourism community that we need to institute arrangements for a paradigm shift in the clearance of international passengers through border controls over the next decade. A failure to do so will lead to ever longer queues at our borders as passenger volumes increase. This in turn will stifle economic growth, particularly in the travel and tourism sector which is already delivering above average growth projections and job creation across the globe. Moreover, unless we adopt smarter approaches at the ports of entry, the increasing volumes are likely to decrease security.

Border Agencies are to be commended for the excellent work already being done to automate processes for clearing low risk traffic, making best use of pre-registration systems, e-passports, biometrics and the like. But even then, queues in processing visa and ETA applications will build up, as will queues at e-gates and kiosks. There is a clear and urgent need to develop best practice scenarios between like-minded countries whereby traditional passport checks become increasingly obsolete, in favour of digital technology and biometric matching at hard border choke points.

Steering Group on International Standards and Processes

A set of standard rules and processes for the capture of biographic and biometric data in advance of travel and the submission of same to like-minded destination countries is required to deliver the next generation of travel and enable genuine travellers to pass seamlessly through border controls. We believe the technology is available to do it; but we need a platform of collaboration at International level between like-minded Border Agencies to make it happen.

In addition to the foregoing recommendations, **we recommend that** a steering group is established under the auspices of the B5 group, in order to co-ordinate activity towards a new way of standardising current national and bilateral initiatives into a standard set of international baselines for approved passengers travelling to multiple destinations using a single window application process and risk assessment framework.

Security Baselines

As a baseline participating countries must:

a. Issue e-passports as standard;
b. Be members of the ICAO PKD structure;
c. Be capable of clearing inbound and outbound passengers electronically through border control; and
d. Be capable of running at least one trusted traveller programme at its border which might be scalable to other borders.

Next Steps

The objective of the Steering Group would be to:

a. Establish a Seamless and Secure Travel (SST) working group to catalogue and benchmark all current and emerging initiatives in place for expedited traveller clearance within the Border 5 and EU countries;
b. Identify areas of best practice where a common standard risk assessment and adjudication process (such as US Global Entry) might be mutually recognised for use in multiple countries;
c. Identify Border Agency representatives with sufficient power and authority to work with ICAO on developing standards for the future use of passport and mobile technology, including the use of the LDS 2 chip and the DTC in future border crossing; and
d. Develop a Proof of Concept (POC) trial for an "end to end" seamless traveller journey across a hard border between the Border 5 and EU countries for a selected segment of travellers (including by air, sea or land).

Through the IBMATA[24] framework of events and workshops, experts from government agencies and the private sector alike have agreed the general thrust of this report and its recommendations.

We therefore commend this paper to the attention of the B5 and M5 group; and to the EU Commission and associated Agencies (Frontex and EU Lisa). We stand ready to support them in developing a project to implementing the recommendations contained herein.

IBMATA acknowledges the work of the WTTC in the Seamless Traveller Journey Process.

[24] http://www.ibmata.org/about/

Glossary of Terms

ABC	Automated Border Control
ACI	Airports Council International
API	Advanced Passenger Information
B5	Border 5 Group (Australia, Canada, New Zealand, US, UK)
CBP	US Customs and Border Protection
CBSA	Canada Border Services Agency
CLIA	Cruise Lines International Association
DG	Director General
DTC	Digital Traveller Credential
EEA	European Economic Area
E Gate	Electronic Gate
ETA	Electronic Travel Authority
EU	European Union
EU PROTECT	EU Pervasive and useR FOcussed BiomeTric ProjECT
EU LISA	European Union Agency for Large Scale IT systems
iAPI	Interactive Advanced Passenger Information
IATA	International Air Transport Association
IBMATA	International Border Management and Technologies Association
ICAO	International Civil Aviation Organization
IRCC	Immigration Refugees and Citizenship Canada
KYT	Know Your Traveller
LDS	Logical Data Structure
M5	Migration 5 Group (Australia, Canada, New Zealand, US, UK)
MRZ	Machine Readable Zone
NFC	Near Field Communication
NTWG	New Technologies Working Group (ICAO)
PKI	Public Key Infrastructure
PKD	Public Key Directory
PNR	Passenger Name Record
POC	Proof of Concept
SPT	Simplifying Passenger Travel
SST	Seamless and Secure Travel
SSTU	Seamless and Secure Travel Unit
STJ	Seamless Traveller Journey
TREC	Trip Related Expedited Clearance
TSA	US Transportation Security Agency
UKBF	UK Border Force
UKVI	UK Visas and Immigration
VWP	Visa Waiver Program
WCO	World Customs Organization
WEF	World Economic Forum
WTTC	World Travel and Tourism Council

IBMATA
INTERNATIONAL BORDER MANAGEMENT
AND TECHNOLOGIES ASSOCIATION

GET IN TOUCH

Email: info@ibmata.org
Tel: +44 (0)203 196 1500

www.IBMATA.org

twitter.com/border_mgmt

linkedin.com/company/ibmata/