

DIGITAL SOLUTIONS FOR REVIVING INTERNATIONAL TRAVEL

The role of Interoperability
& Digital Travel Portals

FORWARD

Travel & Tourism is an integral part of the global economy, and no crisis has demonstrated this better than COVID-19. In 2020, the Travel & Tourism sector lost more than 62 million jobs, with its contribution to global GDP falling by USD \$4.5 trillion. Governments have witnessed how the loss of tourism has affected more than just jobs and livelihoods in the sector; it has also had an adverse impact on community development, the environment and wildlife, as well as local and national economies. There is a pressing need to work together to restore livelihoods, recharge economies and reunite people around the world and digital solutions are a vital component that can help accelerate this recovery.

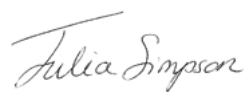
The development of health certificates has enabled the public to demonstrate their COVID-19 vaccination or test status, but the use of paper documents and the vast array of smartphone solutions, has **overtaken the formation of internationally coordinated policy and processes, creating complex and unsustainable procedures for traveller COVID-19 health checks.** To provide support to governments and the global Travel & Tourism sector in achieving safe international travel, **WTTC has prepared this report for a digitally interoperable, efficient and scalable solution,** which draws on guidance developed for governments from the World Health Organization (WHO), International Civil Aviation Organization (ICAO) and Organisation for Economic Co-operation & Development (OECD). This report outlines a **practical digital solution for COVID-19 checks** of travellers that enables governments to meet the recommendations from these international organisations and achieves the needs of both governments and industry for the safe and sustainable resumption of international travel.

Rarely has collaboration, coordination and partnerships between the public and private sector been more important. International travel could be considered as a giant mechanical system, with each cog turning in sequence that keeps the entire mechanism moving smoothly through each take-off and landing, or each ship departure and arrival. This is what global interoperability brings. But each time a country introduces a new or independent requirement for traveller COVID-19 health checks, it can introduce friction into the system and risks causing long queues at travel terminals, which can be a health risk themselves, and delay to the much needed recovery of the sector. **Ensuring interoperability must be at the heart of all planning for international travel.**

The safe and rapid revival of international travel can therefore be achieved by Digitally Verifiable COVID-19 Certificates and for all governments to swiftly activate a **Digital Travel Portal** following the guidance outlined in this report. This will allow the pre-journey submission of digitised COVID-19 health certificates to destination governments and enable the electronic issuing of pre-travel authorisations to travellers if they meet the country COVID-19 entry requirements. This will strengthen governments integrity of their borders through pre-travel health checks and meet the recommendations from the WHO, ICAO, G7 and G20 for digital travel solutions, whilst achieving global interoperability through internationally verifiable digital certificates.

A Digital Travel Portal for the pre-travel collection and assessment of travellers COVID-19 status information will also **remove the need for lengthy inspections of COVID-19 paperwork** during the traveller journey and deliver a practical and scalable solution for COVID-19 health checks as traveller volumes increase. As we look to the future this solution also provides the foundations for digital travel technologies to rapidly mitigate future health risks at the border and can be integrated with other government services for enhanced border security and additional immigration benefits, including as a platform for the efficient digital processing of electronic visas (eVisa).

Through the use of smart digital technologies and public-private sector collaboration, the world can achieve the safe and efficient revival of international travel.



Julia Simpson

President & CEO, World Travel & Tourism Council

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ACHIEVING A GLOBALLY INTEROPERABLE SOLUTION

International Ambitions & Government Commitments

The closing of international borders as a response to the COVID-19 pandemic has had an unprecedented and profound global impact, particularly to national and international economies, as well as on the livelihoods of the hundreds of millions of people who depend on Travel & Tourism. There is therefore an urgent need to revive safe international travel. This has been recognised by the G7 Leaders as an important element of their **“Shared Agenda for Global Action to Build Back Better”** which noted:

“The importance to the global economy of safely restarting international travel, by land, air and sea”

(G7 Carbis Bay Summit Communique¹, June 2021)

In September 2021 the G7 Health and Transport Ministers reaffirmed the importance of a safe and sustainable reopening of international travel when they agreed a series of measures to align international travel strategies, through 7 core principles² that will drive global standards for safe international travel and build the long-lasting recovery of the international travel sector noting:

“The expressed ambition for G7 Ministers to work together in promoting international solutions and standards on COVID-19 certification for travel purposes” and “encouraged G7 Ministers to ensure interoperability of certification solutions”

(Chairman Statement³, G7 Health & Transport Ministers Meeting, September 2021)

This was further endorsed by the G20 Leaders at the Rome Summit⁴ in October 2021 where they agreed:

“Building on the work made in 2020, we will continue to support a rapid, resilient, inclusive and sustainable recovery of the tourism sector, which is among those hardest hit by the pandemic” and “we will endeavour to restart international travel in a safe and orderly manner, consistent with the work of relevant international organizations such as the WHO, ICAO, IMO and the OECD. To this end, taking into consideration national public health policies, we acknowledge the relevance of shared standards to ensure seamless travel, including testing requirements and results, vaccination certificates and interoperability and mutual recognition of digital applications, while continuing to protect public health and ensuring privacy and data protection”

(Leaders Declaration, G20 Heads of State & Government Summit, October 2021)

To achieve these aims it is **critical for the public and private sector to work together**. Innovative technologies and processes have been swiftly developed to support the introduction of COVID-19 health checks of travellers and there has been rapid and substantial technological progress, with governments introducing new online systems for capturing traveller contact tracing information and both national authorities and commercial organisations introducing new smartphone solutions for COVID-19 status certificates.

Whilst there is no shortage of technical innovation across the globe, **this rapid development has created an extensive international patchwork of misaligned approaches**. The need for speed in addressing the pandemic has meant that similar, but different, technological solutions and policies for COVID-19 health checks of travellers have been developed simultaneously and independently across borders. These many solutions and country specific regulations bring major challenges for global interoperability and the smooth operation of international travel. **WTTC has therefore compiled this report for governments to provide recommendations for meeting the joint challenges of both safe and efficient international travel.**

At present, international travel is operating at substantially reduced levels, enabling the sector to, just about, absorb delays in passenger processing due to COVID-19 document check requirements. However, at full capacity with the existing health check requirements, there would be long and unacceptable delays and disruption. Crowds would build up at travel terminals, further enhancing health risks and create a substantial risk that the confidence of the travelling public would be severely damaged.

To maintain trust and confidence in the Travel & Tourism sector, there is a need to simplify the processes whilst ensuring travel remains safe and provide predictability for travellers, despite the uncertainty of the pandemic. To do this, collaboration is required across borders and organisational boundaries to build systems that are harmonised, have proportionality in their rules and comply with recommended international standards and best practices.

To support this objective **Ministers from the 38 member countries of the Organisation for Economic Co-operation and Development (OECD)** endorsed a Blueprint for **‘Safe International Mobility During the COVID-19 Pandemic’**²⁵ in May 2021 that aimed to increase interoperability amongst travel regimes and support countries with greater certainty, safety and security in travel. The Blueprint offered a risk-based framework for countries to adopt and recommended that:

“If countries choose to enable travel through the use of vaccination certificates or certificates of recovery, these should be based on a common set of information elements and agreed measures for security, facilitation, machine readability and interoperability”

(OECD Blueprint for Safe International Mobility, May 2021)

This was echoed by the **World Health Organization (WHO)** who issued updated policy⁶ and technical⁷ guidance for safe international travel in July 2021 where they highlighted:

“Where digital certificates of COVID-19 status are used, interoperable solutions should be sought to allow for cross border verification”

and noted ***“the rapid proliferation of national and international certificates to prove vaccination status or recovery status has given rise to challenges related to compatibility, data protection, certification and authentication at borders”***

(WHO Technical Considerations for Risk Based Approach to International Travel, July 2021)

In their technical guidance the WHO also encouraged countries that are introducing disease prevention and control systems at their border to ensure there are efficient mechanisms for exchanging information between health and immigration authorities and recommended that:

“The digitalisation of passenger locator forms may improve the exchange of information, but should be done in line with privacy and data protection guidance”

(WHO Technical Considerations for Risk Based Approach to International Travel, July 2021)

In August 2021, the WHO released its '**Digital Documentation for COVID-19 Certificates: Vaccination Status**⁸ (DDCC:VS)' which provided guidance for countries on issuing interoperable digital COVID-19 vaccination certificates. The WHO document focussed on technical specifications, ethical guidance and data privacy recommendations, as well as implementation guidance for how these certificates could work within a broader ecosystem of tools for the health sector and other industries.

The document also provided a core data set and interoperability guidance that provides a consistent way to link existing specifications for digital COVID-19 certificates, such as from the EU Digital COVID Certificate (EU DCC), SMART Health Cards, DIVOC (Digital Infrastructure for Vaccination Open Credentialing) or the International Civil Aviation Organization (ICAO) Visible Digital Seal for Non-Constrained Environments (VDS-NC).

The EU Digital COVID Certificate (EU DCC) was launched across Europe on 1st July 2021 and includes three types of digital certificates, for demonstrating proof of vaccination, proof of a negative test result or proof of recovery from COVID-19. Originally for the 27 EU Member States, the EU has recently opened up their programme allowing countries outside of Europe to join the EU DCC scheme if they agree to follow the EU certificate standards⁹. In October 2021 over 40 countries were integrated into the EU DCC system enabling interoperable digital COVID-19 certificates for vaccination, test and recovery between all European and Non-European participants of the scheme.

SMART Health Cards are a private sector led initiative developed by the Vaccine Credential Initiative (VCI), which is a large coalition of health and technology organisations committed to using open standards to provide individuals with a digitally verifiable copy of their vaccination record. This can be very useful in countries with decentralised healthcare systems and in countries without national immunisation databases. SMART Health Cards were successfully launched across the USA in summer 2021 and enables organisations administering vaccines or tests, such as pharmacies and laboratories, to issue trusted and digitally verifiable COVID-19 certificates. SMART Health Cards were also adopted by Canada in October 2021 as their standardised form of proof for COVID-19 vaccination¹⁰.

The Digital Infrastructure for Vaccination Open Credentialing (DIVOC)¹¹ is an open source digital platform for the management and rollout of a large scale COVID-19 vaccination programme with digital certification. DIVOC is freely available to all countries, but was created in India and is maintained by the eGov Foundation (an Indian not for profit organisation). The DIVOC solution contains four modules – an “Orchestration” module for the maintenance of a vaccination programme (such as approved vaccines and a registry of official vaccinators), a “Registration & Appointment” module for users to book vaccination appointments, a “Certification” module which has the ability to generate digitally verifiable COVID-19 vaccination certificates and a “Feedback” module that enables users to be able to provide feedback, such as on any side effects experienced after vaccination. The largest implementation of DIVOC is within the Indian CoWIN digital vaccination platform which has issued more than 900 million digital vaccination certificates (as of October 2021). DIVOC has also been adopted by Sri Lanka¹² and the Philippines¹³ for their national digital vaccination certificates.

The ICAO 'Visible Digital Seal (VDS-NC) for Travel Related Health Proofs'^{13,2} was adapted from an existing mechanism used for the verification of emergency travel documents and non-electronic visas and was developed to meet the ICAO Civil Aviation Recovery Taskforce (CART) framework for the validation of testing and vaccination records that could be used in international aviation. The ICAO VDS-NC has been developed in partnership with the International Organization for Standardization (ISO)¹⁴ and Australia¹⁵ has adopted the ICAO VDS-NC for its digital vaccination certificates.

There are therefore five major international specifications for digital COVID-19 certificates from the WHO, EU, ICAO, DIVOC and SMART Health Cards which are being adopted around the world, although they do not all follow the same technical approach. The WHO specifications focus on the requirements for digital certificates based on public health needs, regardless of wider use cases and consider the EU DCC and ICAO VDS-NC as an implementation of the WHO guidance that can be used for international travel purposes. **This document therefore focusses on the four major approaches that could be used for international travel from the EU DCC, ICAO VDS-NC, DIVOC and SMART Health Cards**, whilst the WHO document provides high level overarching guidance for all implementations. Whilst other solutions have also been developed to support national COVID-19 certificate schemes and regional travel including the joint African Union and Africa CDC Trusted Travel COVID Pass¹⁶ for safe travel across Africa, the PASS-INFRA¹⁷ system for vaccination verification and management developed in the Republic of Korea, and the International Travel Health Certificate¹⁸ from China, many other solutions also exist around the world and all governments are therefore encouraged, in the near term, to work towards alignment and mutual recognition with at least one of the four major standards for international travel from the EU, ICAO, DIVOC or SMART Health Cards and ultimately **work towards a single global standard**.

To further support the revival of international aviation, Ministers and government officials came together at the **ICAO High Level Conference on COVID-19 (HLCC)** in October 2021 where they adopted a Ministerial Declaration¹⁹ to safely restore international connectivity and support the revival of the global economy by committing to:

“Working with ICAO and other stakeholders to ensure the interoperability and mutual recognition of, and accessibility to, digital applications, secure transmission and validation of pandemic-related testing, vaccination and recovery certification that protects privacy and personal data”

(ICAO HLLC Ministerial Declaration, Commitment No.7)

This commitment was further expanded upon within the detailed conference reports^{20, 21, 22, 23, 24} where the Ministerial and government delegates recommended that countries should support the implementation of digital COVID-19 certificates and consider the use of an online government digital portal with electronic messaging (called Interactive Advance Passenger Information [iAPI]) to complete COVID-19 health checks of travellers.

The ICAO High Level Conference on COVID-19 specific recommendations that countries should adopt included:

Digital COVID-19 Certificates

- ***“Accelerate the adoption and acceptance of digital health certificates for testing and vaccination to facilitate international air travel...”*** (ICAO HLLC 2021, Recommendation 6/1/q)
- ***“Support digital issuance of health proofs in line with the World Health Organization (WHO) recommendations....”*** (ICAO HLLC 2021, Recommendation 8/1/a)
- ***“Adopt a policy of mutual recognition of health proofs to facilitate the opening of borders”*** (ICAO HLCC 2021, Recommendation 8/1/d)

Government Portals & Electronic Messaging (iAPI)

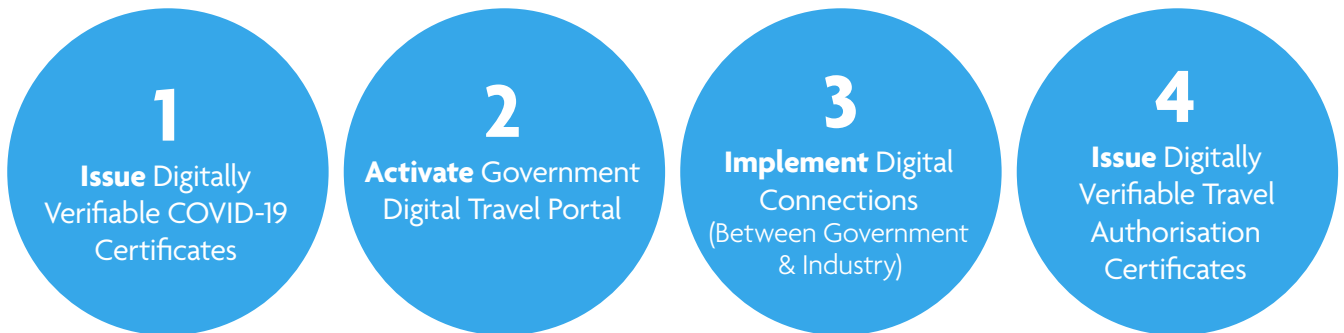
- ***“Ensure a better and more fluid flow of information to the health authority, so that its management of airport processes, traveller tracking, or any other process directly or indirectly related to the airline industry, is more efficient. To this end, the controlled use of operational information, API and passenger information provided to government portals can be useful....”*** (ICAO HLLC 2021, Recommendation 7/1/k)
- ***“If requesting health-related documentation, consider developing a health digital platform where passengers can apply for obtaining a notification of approval to travel by the States of destination and transit”*** (ICAO HLLC 2021, Recommendation 8/1/f)
- ***“Exploit the use of iAPI systems where feasible by providing a response message to aircraft operators with information related to public health requirements”*** (ICAO HLLC 2021, Recommendation 8/1/i)

WTTC Recommendations

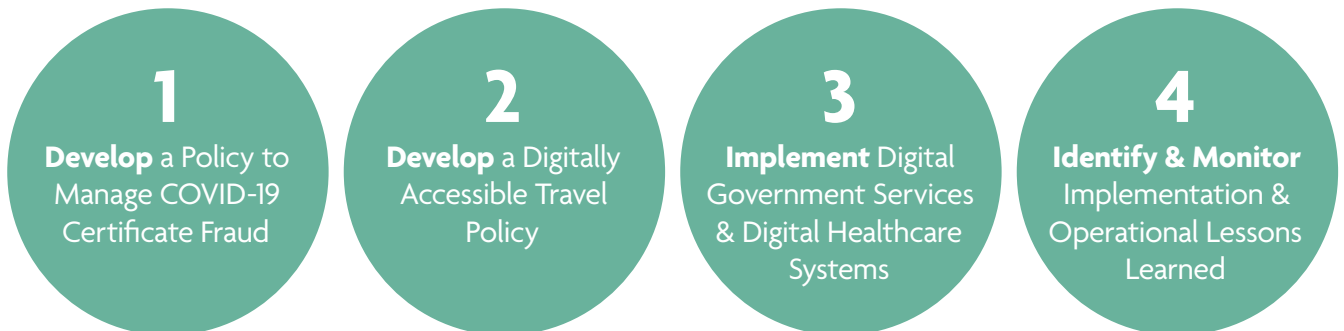
This report provides support and guidance for countries to meet the many recommendations and commitments agreed for governments through the WHO, ICAO, OECD, G7 and G20, by outlining an optimal and practical **integrated digital solution** for the safe and efficient COVID-19 health checks of travellers that can be achieved by governments implementing **4 technical recommendations and 4 policy recommendations**.

These recommendations will enable countries to **grow their economies again and safely reconnect families and businesses through an efficient digital solution for COVID-19 health checks of international travellers**. It also provides the foundations for digital travel technologies that can be integrated with other government services and healthcare systems to rapidly mitigate future health risks at the border and can provide a future proofed platform for enhanced border security with additional immigration benefits, such as the efficient digital processing of electronic Visas (eVisa) and electronic Travel Authorisations (eTA).

Technical Recommendations:



Policy Recommendations:



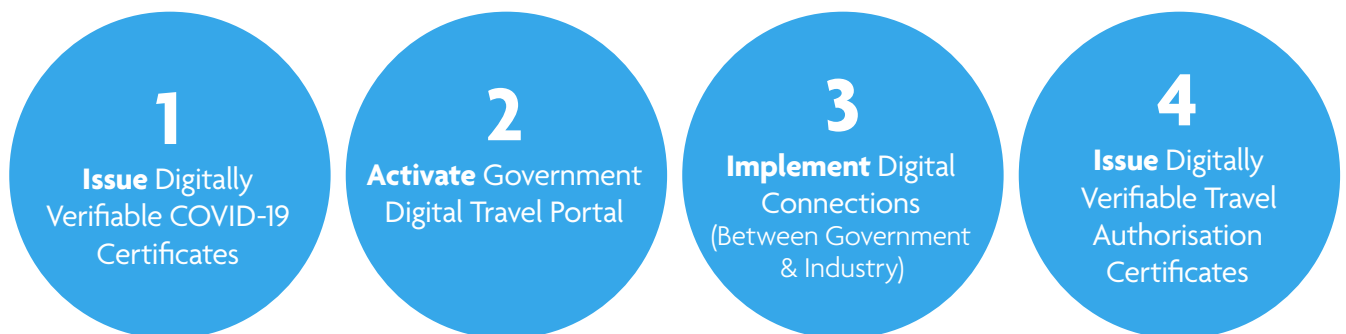


CALL TO ACTION

Technical Recommendations

The following four recommendations offer a **practical, scalable and achievable digital solution** for COVID-19 health checks of travellers.

Governments are encouraged to:



1 Digitally Verifiable COVID-19 Certificates:

Governments should issue COVID-19 certificates for testing and vaccination with a machine readable QR code, following one of the four major international standards (from either the EU Digital COVID Certificate (DCC), ICAO Visible Digital Seal (VDS-NC), DIVOC or SMART Health Cards). This will reduce the number of digital certificate 'formats' from a currently vast number, to a manageable level of four certificate formats in the near term and governments are encouraged to accept for international travel all vaccines that have received WHO Emergency Use Listing (EUL)²⁵. In the medium-to-longer term governments are encouraged to work towards a single global standard that can be used for the digital certification of all vaccines, regardless of the disease. As recommended by the WHO, ICAO and the EU, governments are also encouraged to establish Public Key Infrastructure (PKI), to enable COVID-19 digital certificates to be digitally verifiable. This may leverage existing Public Key Infrastructure used within countries for managing the authenticity of ePassports.

2 Digital Travel Portal:

As referenced at the ICAO High Level Conference on COVID-19 (HLCC) countries are encouraged to swiftly implement a government Digital Travel Portal that allows travellers to electronically share their contact tracing information and digital COVID-19 certificates before their journey with the government of their destination and where appropriate receive an automated 'authority to travel' if their information is digitally verified and they meet all of the entry requirements. This is a similar model to the granting of eVisas, or electronic Travel Authorisations (eTAs).

Where countries have already implemented online contact tracing portals, this simply extends their functionality by allowing travellers to also electronically present their COVID-19 certificates and have them digitally verified in real time. For countries that have not yet established an online system for capturing contact tracing information, this allows a single integrated system to be implemented that digitally captures and verifies all of the travellers contact tracing and COVID-19 information in one convenient place.

The Digital Travel Portal could also provide information for travellers on public health and social measures (PHSM) in place in the destination country and how travellers could access health care if they become ill, as well as any other relevant COVID-19 or risk management information.

3 Digital Connections (between government & industry):

Governments should store an electronic record of a travellers 'authority to travel' from the Digital Travel Portal in their national immigration system (or other similar system), respecting all data protection and privacy laws, noting that a traveller is arriving in the next few days and if they have successfully met all of the contact tracing and COVID-19 status entry requirements. To make the best use of pre-travel approvals, governments should also introduce digital connections that enable travel operators to electronically inform a destination government during the check-in process of a travellers confirmed intention to travel and receive a near instantaneous 'authority to board' response.

As noted at the ICAO High Level Conference on COVID-19 it is recommended this digital connection exploits the use of existing 'Interactive Advance Passenger Information' (iAPI) systems, where Travel Operators already transmit a travellers passport information to a destination government during check-in and receive an 'authority to board' message back if the traveller does not pose a known security threat. Where these iAPI systems are already in use between governments and travel operators for border security purposes, it is recommended this capability is extended to include within the 'authority to board' response back to the travel operator if a passenger has also met all of the COVID-19 entry requirements. As the COVID-19 certificate and contact tracing information has already been received by the destination government through the national Digital Travel Portal, no health information is transmitted via the iAPI system (only the travellers passport details required for travel are transmitted) and this does not require any changes to the existing iAPI technical standard. The only change required for governments with existing iAPI systems would be to digitally examine their national immigration system (or other similar system), alongside existing traveller security checks, to determine if the traveller has met all of the COVID-19 entry requirements that were submitted by the traveller to the Digital Travel Portal.

Where iAPI system are not currently in use, governments are encouraged to implement iAPI digital connections to provide combined COVID-19, border and transport security benefits. Guidance on introducing iAPI systems is available from IATA³⁶ and several commercial organisations. If required, governments should also review their national legislation to ensure that information collected from travel operators and transmitted through iAPI systems can also be used for confirmation of COVID-19 health checks, as well as for existing border security purposes.

4 Digitally Verifiable Travel Authorisation Certificates:

Following a traveller submission to the Digital Travel Portal, governments should issue a Travel Authorisation Certificate (TAC) to the traveller with a machine readable QR code that follows the same digital security principles as COVID-19 status certificates, so they can be digitally verifiable. Travel Authorisation Certificates allow travellers to maintain their own record of their 'authority to travel' and can be used by travel operators to confirm a travellers eligibility to travel if digital connections between the government and travel operator are not yet available. This is an additional, undesirable step in the travel process, which could cause long queues and travel disruption at full capacity, but whilst travel volumes are low, or digital connections are being implemented, this enables a pragmatic, practical solution to confirming a travellers 'authority to travel'.

By following the recommendations in this report, any individual, in any country, should therefore have one of two 'types' of COVID status document – a local (or regionally) issued Digital COVID-19 Certificate if they are a national or resident of the country [from recommendation 1], or a Travel Authorisation Certificate (TAC) if they are a visitor to the country [from recommendation 4]. It is therefore suggested that TAC's could also be used to confirm an individual's eligibility to enter domestic venues, such as a tourism attraction or café, where governments require proof of COVID-19 status to enter locations, as their COVID-19 status has already been digitally verified by the destination government. In this way domestic venues (such as bars, restaurants or tourism attractions) only need to be able to verify two types of COVID-19 documents - COVID-19 Status Certificates (used by nationals and residents) and Travel Authorisation Certificates (issued to all overseas visitors).

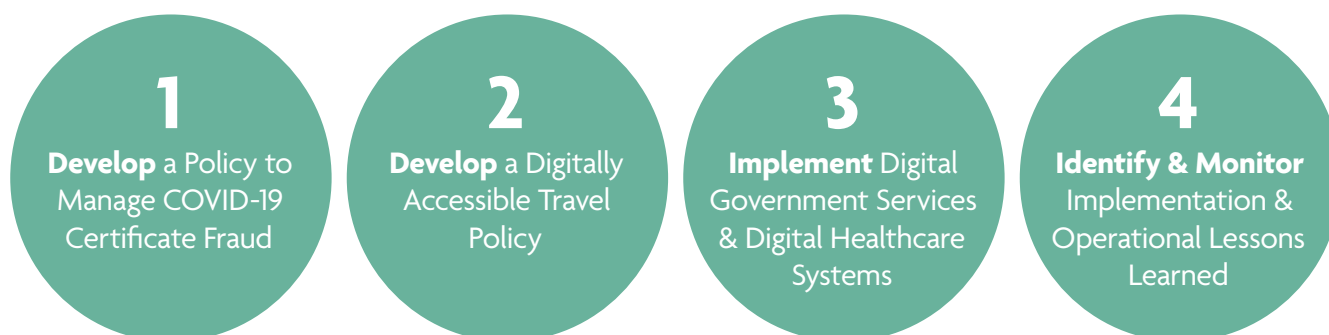
Through these four digital recommendations, global interoperability is not only achieved for cross border international travel, but also for entry to domestic venues and tourism attractions (where proof of COVID-19 status is required). To achieve international consistency of Travel Authorisation Certificates (TAC), governments are encouraged to urge international organisations such as ICAO and the EU, to swiftly define a common specification for Travel Authorisation Certificates.

By adopting these four technical recommendations countries will be able to meet the international recommendations and commitments established through the WHO, ICAO, G7, G20 and OECD and deliver a globally interoperable digital solution for COVID-19 health checks of travellers that is effective and delivers safe and efficient international travel, with the revival of global economies and millions of livelihoods.

Policy Recommendations

The following four policy recommendations ensure that the digital systems developed are **accessible to all travellers** and there is **trust and confidence in the digital solutions**, with lessons learned and opportunities captured to mitigate future health risks at the border.

Governments are encouraged to:



1 Develop a policy to manage fraud:

Digitally verifiable COVID-19 certificates will significantly reduce opportunities for criminal cases of fraud, but governments are still encouraged to implement a policy to identify and manage fraud of COVID-19 certificates to ensure consistent trust in the system of digital COVID-19 health checks. Formulation of a fraud policy could include a review of existing laws and regulations, mechanisms for revocation of fraudulent certificates, assignment of roles and responsibilities to identify, investigate and pursue prosecutions, establishment of an investigation process and determination of the procedures for identified cases of fraud to be shared promptly with other authorities. Governments are also encouraged to consider how internationally co-ordinated oversight of COVID-19 status certificate fraud may be established through their membership of relevant international organisations.

2 Develop a policy and government accountable owner for digitally accessible travel:

Governments are encouraged to develop a policy for digitally accessible travel, including the assignment of a government role to act as an 'accessible travel champion' and consider compliance with the W3C Web Content Accessibility Guidelines [WGAC] for Digital Content Accessibility³⁸ (for example to ensure smartphone applications with digital COVID-19 certificates are digitally accessible to all travellers).

3 Advance digital government services and digital healthcare systems:

Governments are encouraged to develop national strategies for digital healthcare systems and digital government services, integrated with the travel process to enhance the mitigation of future health risks at the border. Practical guidance is available from international organisations such as the WHO^{26, 27} that offers a process for countries to develop a costed implementation plan for digital healthcare systems and recommendations on digital interventions for strengthening health systems, or the Organisation for Economic Cooperation and Development [OECD]²⁸ who offer recommendations for the development and implementation of digital government strategies.

4 Establish a monitoring capability to identify, capture and share implementation lessons learned:

Governments (and the private sector) are encouraged to implement monitoring approaches such as data analytics, benchmarking and passenger surveys to capture and share digital solution implementation and operational lessons learned. These should be shared widely between Travel & Tourism stakeholders, so that global developments and best practices may be identified and so the sector is able to continuously improve and rapidly adapt to changing circumstances and risks.

By adopting these four policy recommendations countries will be able to learn from others around the world and capitalise on digital investments to successfully mitigate and manage current and future health risks at the border.



A person wearing a headset and a high-visibility vest, holding a tablet, standing in front of an airplane. The person is seen from the back, looking towards the right. The background is a blurred airport tarmac with an airplane visible.

DETAIL OF THE TECHNICAL & POLICY RECOMMENDATIONS

TECHNICAL RECOMMENDATIONS



Prior to the COVID-19 pandemic, the Travel & Tourism sector worked hard to optimise travel processes and create an efficient and secure travel experience by introducing automation and passenger self-service solutions, such as electronic boarding cards available on a smartphone, self-service bag drop facilities and automated border e-gates. The emergence of COVID-19, however led to the reintroduction of manual processes and labour intensive examination of paperwork. To complete the check-in requirements, agents would have to inspect COVID-19 documentation that was unfamiliar, non-standardised and complex.

To address this challenge, the use of **digitally verifiable COVID-19 certificates** and a national **Digital Travel Portal** could enable governments to pre-approve travellers and confirm they meet a destination country COVID-19 health requirements and to electronically capture contact tracing information. Such an approach achieves a **secure, interoperable, and scalable** process that meets the needs of governments of protecting their borders, as well as the needs of the sector for smooth and efficient processes.

In this context, the following four digital solutions should be implemented:

1. Digitally Verifiable COVID-19 Certificates
2. Digital Travel Portal
3. Digital Connections (between government & industry)
4. Digital Travel Authorisation Certificates (TAC)

1 Digitally Verifiable Covid-19 Certificates

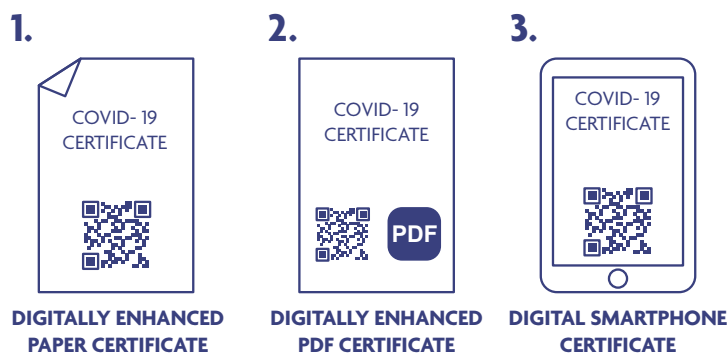
Creating an efficient, safe, and secure traveller experience in the wake of COVID-19 would be enabled by governments issuing their citizens with **digital and verifiable records of their COVID-19 status**. This includes COVID-19 certificates for vaccination, testing.

A digital COVID-19 certificate is a certificate that digitally encodes the minimum information necessary to confirm a persons' vaccination or test status into a machine-readable format, such as a QR code. This QR code may exist within a purely digital solution such as in a smartphone app, or be included on a paper certificate, or its electronic PDF equivalent. **It is the machine-readability that makes a certificate 'digital', not the certificate format.** For instance, a paper certificate, that includes a QR code that can be scanned by an electronic reader, would be considered as a digital certificate.

The importance of this distinction is **to not create a digital divide**. A person does not need to have a smartphone to receive a digital copy of their COVID-19 vaccination, test or recovery information. They can therefore receive their COVID-19 status on a paper certificate, which includes a scannable QR code.

However, to make the process as digitally efficient as possible, travellers could use a smartphone solution that can store their certificate in a “digital wallet”, such as the Apple Health App or IATA Travel Pass.

Examples of COVID-19 Digitally Verifiable Certificates



A strong example of digital COVID-19 certificates for vaccination and testing are the **EU Digital COVID Certificates** (EU DCC) and to support all countries to make their own Digital COVID-19 Certificates (including any country outside of Europe) the **EU eHealth Network** has produced a series of online guidance documents²⁹ and a GitHub website³⁰ with freely available source code.

The **WHO** has also published guidelines for **Digital Vaccination Certificates**³¹, as well as its open-source code via a GitHub website³² that uses the same technical approach as the EU. As such, the WHO and EU are compatible with each other.

In line with the WHO guidelines, WTTTC supports that the minimum information contained in the machine readable QR code should be:

- **Header Data:** Information on the holder of the certificate, such as their name and Date of Birth
- **Data for the Vaccination/Test/Recovery Event:** Information such as the type of vaccine or type of test and the date it was administered
- **Certificate Metadata:** Information to support use of the certificate such as the issuing country, or the certificate validity period

It is also essential that a COVID-19 certificate can be digitally **verifiable**, so that its authenticity and integrity can be assured and anyone inspecting the certificate can be fully confident that the data in the machine readable QR code has not been tampered with or altered. For verifiable certificates, the WHO and EU recommend the use of Public Key Infrastructure (PKI). While historically the authenticity and accuracy of paper documents was proven through written signatures, stamps, or unique seals such as holographic images, the modern, electronic equivalent are secure digital certificates that use a pair of private and public keys. Data is securely signed with a “Private Key” and the signature authenticated with a “Public Key”.

To make COVID-19 certificates digitally verifiable, a trusted authority, such as a government entity responsible for vaccination certificates, or a vetted laboratory for test certificates, converts the certificate data into a QR code and digitally “signs” it with their “Private Key”. This digital signature is like a tamper proof seal which guarantees the authenticity of the document, thereby creating a **digitally verifiable certificate**. The trusted authority keeps their Private Key locked away and secure to prevent anyone else “signing” a certificate in their name, but can widely share its “Public Key” with anyone who needs to digitally verify the authenticity of the COVID-19 certificate. If the Public Key successfully verifies the digital signature, the person reading the certificate can rely on its content and be assured that it could only have been issued by a trusted authority and the owner of the corresponding Private Key. This digital process confirms that the COVID-19 certificate has come from a genuine source and the data on the certificate has not been tampered with.



CASE STUDY: European Union Digital Covid Certificate

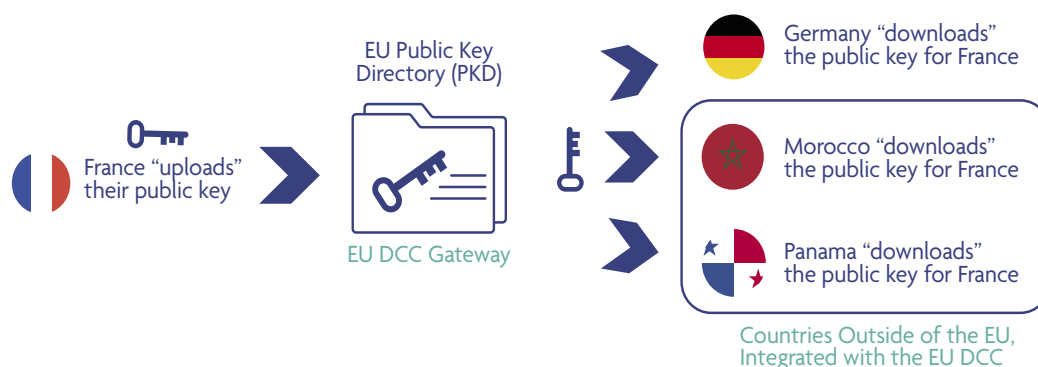
On 1st July 2021, the European Union (EU) implemented the EU Digital COVID Certificate (EU DCC) for digitally verifiable COVID-19 certificates. The EU DCC includes three types of digital certificates, for demonstrating either proof of vaccination, proof of a negative test result or proof of recovery from COVID-19. The EU DCC has been a crucial element of Europe's response to the pandemic and has been key to supporting the European tourism sector. As of October 2021, EU Member States had issued more than 591 million EU Digital COVID-19 Certificates.

Countries outside of the EU are now also able to join the EU DCC scheme by following the publicly available EU standards²⁶ and submitting a formal request for recognition to the European Commission. Digital certificates issued by countries outside of the EU are then interoperable with EU Digital COVID Certificates. As of October 2021, 45 countries had connected to the EU DCC scheme, including 27 EU Member States and 18 other countries and territories. In October 2021, the European Commission reported it is in technical discussions with 28 other countries to join the EU DCC scheme

Public Key Infrastructure (PKI) is widely used throughout the world, from securing credit card transactions to underpinning how passports are verified at the border and is recommended by the International Civil Aviation Organization (ICAO) to ensure COVID-19 digital certificates are trusted and digitally verifiable.

The sharing of "Public Keys" can be managed through a "Public Key Directory" (PKD), whereby trusted authorities upload their public keys to a directory and all trusted authorities who are granted access to the PKD can download all of the other public keys. This is how the EU Digital COVID Certificate (EU DCC) system works, where each of the 27 EU Member States and their certificate issuing authorities (such as a hospital or test centre) upload their public key to the European Public Key Directory (called the "EU DCC Gateway") and in return they are granted permission to download the public key for each of the other 26 EU countries and their trusted authorities. This means that any EU country can decrypt the digital signature on a COVID-19 certificate issued by any other EU country and be assured that it came from the country claimed on the certificate and the data has not been tampered with.

To date, there is unfortunately no global Public Key Directory that holds the COVID-19 Certificate Public Keys from all of the world's governments. Nevertheless, the EU has opened up their EU DCC Gateway to allow other (non-EU countries) to join their scheme and upload their Public Keys if they follow the EU DCC technical specifications and guidelines²⁶. In return countries joining the EU scheme can download the Public Keys from all other participants, making them able to digitally verify the authenticity of any COVID-19 certificate issued by any Government in the scheme. As of October 2021, more than 40 countries have become members of the EU DCC programme, making their COVID-19 certificates fully interoperable with each other, including countries in Africa such as Morocco and countries in Latin America such as Panama. In the below illustrative example Morocco and Panama are able to read and authenticate COVID-19 certificates issued by France, by joining the EU DCC Gateway which enables the sharing of "Public Keys". Similarly, this key sharing process works in reverse, so France is able to read and authenticate COVID-19 certificates issued by Morocco and Panama.



Other countries and organisations have also developed standards for digitally verifiable COVID-19 certificates, including DIVOC¹¹, SMART Health Cards^{33, 34} and the ICAO Visible Digital Seal [VDS-NC]³⁵. SMART Health Cards are based on open standards and have been used in the USA and Canada where there is a decentralised healthcare system and therefore no central government immunisation database. By using open standards, SMART Health Cards allows private organisations, such as pharmacies and clinics to administer vaccines or COVID-19 tests and issue the recipient with a SMART Health Card as a digitally verifiable COVID-19 certificate.

CASE STUDY: Smart Health Cards

The SMART Health Cards³⁰ standard is an open, interoperable format for sharing verifiable healthcare information. It provides individuals with an easy way to store their vaccination record or test result and share it with other organisations, who can verify that the information contained in the SMART Health Card has not been modified and comes from a trusted source. SMART Health Cards can be stored on Apple, Google and Samsung smart phones.

As SMART Health Cards are based on an open standard they can be issued by anyone, so it is important to know when accepting them for international travel if have been issued by a trusted source. The CommonTrust Network³³ is a registry of trusted issuers maintained by the Commons Project Foundation and includes Government Organisations (e.g. National and State Health Departments) and Private Health Organisations (e.g. Hospitals, Pharmacies and Laboratories). Because the SMART Health Card is based on open data standards used in healthcare it could also be used after COVID-19 for other health data and some countries have expressed an interest in using SMART Health Cards to share routine immunisation records in the future.

CASE STUDY: ICAO Visible Digital Seal for Non-Constrained Environments (VDS-NC)

The ICAO Visible Digital Seal for Non-Constrained Environments (VDS-NC)³² was adapted from the original VDS scheme introduced for verifying non-electronic visas and Emergency Travel Documents (e.g. a temporary passport). The VDS-NC was developed to meet the needs of a global approach for the issuance, exchange and verification of digital health proofs, using the field proven ICAO VDS technology that re-used the existing ePassport trust architecture to provide practicability, security and ease of verification.

The VDS-NC features a 2D bar code that is 'verifiable' by applying the trust model established for ePassports. A key benefit of this technology is that it enables countries that issue ePassports (as well as borders equipped with ePassport readers) to be able to re-purpose existing border infrastructure and technology to securely and quickly verify other digital or paper documents, such as VDS-NC vaccination certificates.

CASE STUDY: Digital Infrastructure for Vaccination Open Credentialing (DIVOC)

DIVOC¹¹ is open source software that is freely available and maintained by the eGov Foundation in India. DIVOC is different to the other standards, as it not only addresses digital vaccination certificates, but also includes additional digital components to support a large scale vaccination programme, such as digital vaccination appointment scheduling, post vaccination feedback management and digital registries for trained and accredited vaccinators.

The DIVOC software contains four modules (Orchestration Module, Registration & Appointment Module, Certificate Management Module and Feedback Module) and is designed to be "configurable" (to for example different approved vaccines) and "customisable" (so that countries using the software can add, extend or replace parts with country specific components if they wish). DIVOC can be integrated with many different platforms, such vaccine supply and logistics systems, as well as smartphone 'digital wallets' to store digital COVID-19 certificates and therefore aims to provide the digital backbone for an efficient, auditable and trusted vaccination programme.

There is unfortunately not yet full interoperability between these different digitally verifiable certificate schemes, as they are based on different technical architectures and specifications. Whilst the ideal global solution is for the world to use the same consistent approach, this may take time and require complex agreements due to differences in the way healthcare is provided in different countries. As such, to help restore international mobility as safely and quickly as possible, it is recommended for the short term, that the world align around only a select few standards for digitally verifiable certificates, such as the EU DCC, SMART Health Cards, DIVOC or ICAO VDS-NC, which may have specific

practical uses and benefits in different regions of the world, rather than the current vast array of many different approaches to COVID-19 certificates. In the medium-to-longer term a single global standard for digital certificates covering test, vaccination or recovery that can be used with any disease should be agreed, that also includes the ability for travellers to “selectively disclose” which information from their COVID-19 certificate is shared with others. This would enhance traveller data privacy and data security.

2 Digital Travel Portal (DTP)

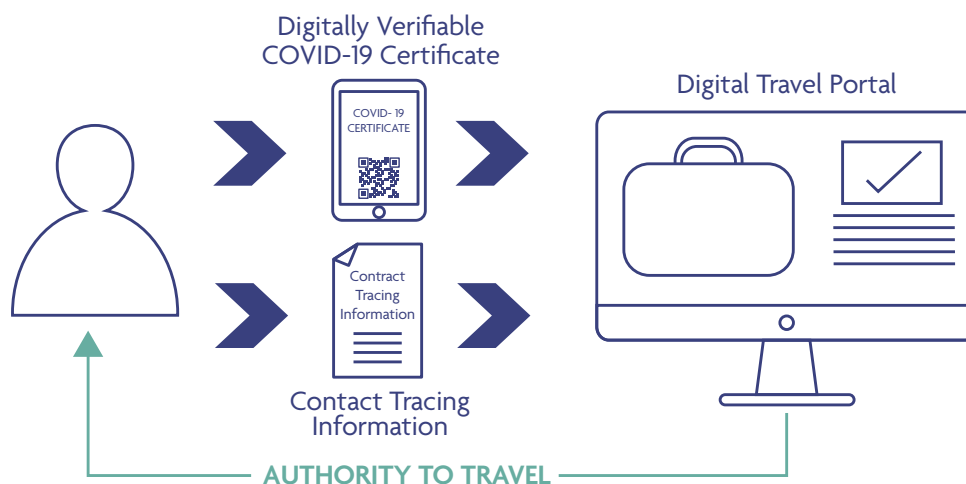
Whilst minimising the number of digitally verifiable COVID-19 certificate ‘formats’ to a very limited number of different standards would significantly reduce the challenge of global certificate verification, it would remain impractical for travel operators to verify these certificates, especially as traveller volumes increase, as modern travel systems are based on automated procedures and in line with data protection and privacy principles, the Travel & Tourism sector should not have access to any person’s private healthcare information.

To overcome this challenge, governments should establish a national **Digital Travel Portal** that allows travellers to their country to electronically present their digitally verifiable COVID-19 certificates several days before their journey and where appropriate receive an automated ‘authority to travel’ if they meet the destination country COVID-19 and immigration entry requirements.

To date, many countries have already implemented national portals to capture COVID-19 contact tracing information, which sometimes also include requests for the traveller to self-certify that they meet the COVID-19 entry requirements, such as their vaccination status. It is recommended the functionality of these existing online contact tracing portals be extended to enable travellers to also be able to electronically present their digital COVID-19 certificates as evidence that they meet the COVID-19 status entry requirements and the Digital Travel Portal would digitally verify and authenticate the certificates as genuine in real time, using the procedures outlined in the previous section of this report. The Digital Travel Portal could also provide information for travellers on public health and social measures (PHSM) in place in the destination country and how travellers could access health care if they become ill, as well as any other relevant COVID-19 or risk management information.

By minimising the number of COVID-19 certificate ‘formats’ in the near term to only a very small number of standards (e.g. EU Digital COVID Certificate standard, DIVOC, SMART Health Cards standard, or ICAO VDS-NC standard), it is possible for countries to share the means to digitally verify each other’s certificates through bilateral, multilateral or regional agreements. Governments and regional intergovernmental organisations could also utilise third parties such as the CommonTrust Network³⁶ or IATA Travel Pass Lab Registry³⁷ to digitally verify COVID-19 certificates for vaccination or test results issued by private sector accredited laboratories.

Digital Travel Portals should also be capable of integration with smartphone ‘digital wallets’ (such as the IATA Travel Pass or Apple Health app), so that COVID-19 certificates can be easily, quickly and digitally sent by a traveller from their smartphone to a Digital Travel Portal, without the traveller having to manually enter all of their COVID-19 information. For countries that have not yet established an online contact tracing solution, a Digital Travel Portal would allow a single integrated system to be implemented that digitally captures and verifies all of the travellers COVID-19 health status and contact tracing information in one convenient place, removing the need for cumbersome paper processes at the point of travel, whilst maintaining compliance with COVID-19 entry rules.



CASE STUDY: United Kingdom

The UK Government online Passenger Locator Form (PLF)³⁸ allows travellers to enter their contact tracing information and electronically upload their COVID-19 vaccination certificate up to 48 hours before travel, which is automatically and digitally verified for entry to the UK. Travellers with a completed PLF and verified COVID-19 certificate through the UK Digital Portal are then not required to show their COVID-19 certificate at the point of travel as it has been pre-approved, streamlining the passenger journey, whilst maintaining compliance with COVID-19 health checks.

Digital verification of a vaccination certificate in the UK Digital Portal is achieved by the traveller either scanning the QR code of their COVID-19 certificate (by using a smartphone camera or computer webcam); or by uploading an image of their COVID-19 certificate QR code. The vaccination certificate is then automatically digitally verified. If the QR code scan fails, the traveller will be asked to self-certify their vaccination status and carry proof of vaccination.

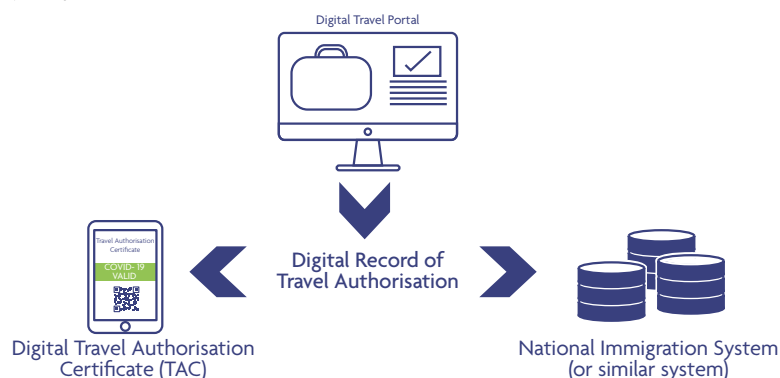
CASE STUDY: Islands & the Caribbean

The Governments of several Caribbean countries and other Islands have introduced online Travel Authorisation Portals to enable travellers to submit their contact tracing information and COVID-19 test or vaccination certificates prior to their journey. These are assessed for compliance against the destination country entry requirements and if approved a Travel Authorisation Certificate is issued to the traveller which they can display prior to boarding. This allows the traveller to electronically complete the COVID-19 health checks before their journey and removes the need for any inspection of COVID-19 documentation on the day of their trip.

Island countries that have introduced online Travel Authorisation Portals for the digital collection and evaluation of contact tracing information and COVID-19 certificates include the Seychelles³⁹, Bermuda⁴⁰, British Virgin Islands⁴¹, Turks & Caicos Islands⁴², St Lucia⁴³ and Jamaica⁴⁴.

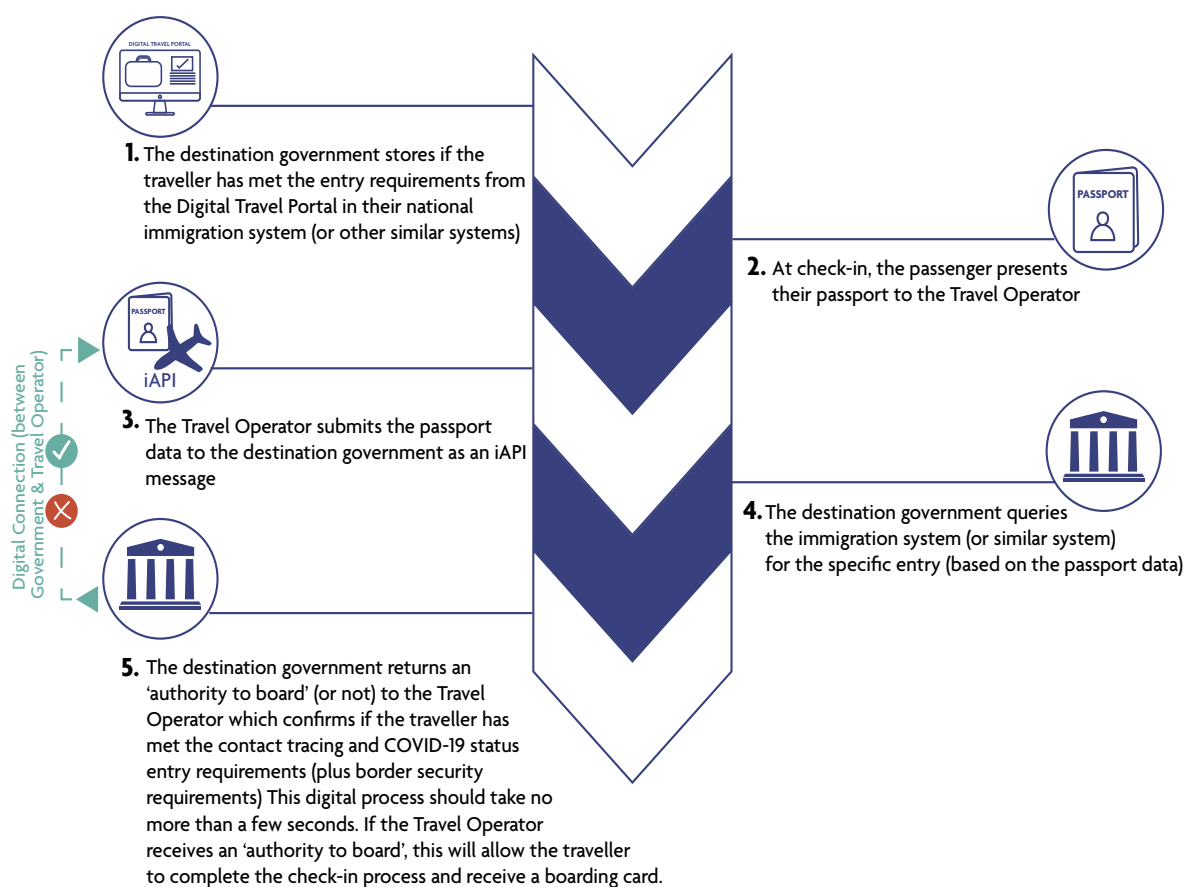
3 Digital Connections

Once a traveller has successfully submitted all of the information required in the Digital Travel Portal, they should be issued with a Digital Travel Authorisation Certificate (TAC), which should be digitally 'signed' following the procedures outlined earlier in this report and the government should also store a digital record of their 'travel authorisation' in a traveller specific record in their national immigration system (or other similar system), respecting all data protection and privacy laws, noting that a traveller is arriving in the next few days and if they have successfully met all of the COVID-19 and contact tracing entry requirements.



To maximise the benefit of pre-approving travellers through a Digital Travel Portal, when a traveller checks-in for their trip (which could be online before travel) travel operators should be able to electronically inform the destination government of a passengers confirmed intention to travel through a digital connection between the traveller operator and government. Upon electronically receiving the traveller details, the destination government can then query their own national immigration system (or other similar system) to identify if the passenger has met the COVID-19 entry requirements and provide an electronic confirmation and 'authority to board' back to the travel operator. In this way an automated and digital process is maintained throughout the journey and the traveller is not required to physically present their COVID-19 certificate on the day of travel, as it has already been pre-approved with confirmation received by the travel operator.

Within aviation, such a digital connection system already exists for border and aviation security purposes called “iAPI” (Interactive Advance Passenger Information), or sometimes also known as ATC, AQQ or APP in some countries. During check-in the airline transmits the travellers passport data to the destination government and receives an electronic response in only a few seconds if they are authorised to board the passenger, as the destination government has confirmed they are not on a terrorist or criminal watchlist. To respond in the most digitally efficient way to COVID-19, it is recommended that this iAPI digital connection systems can be extended to also include if a traveller has met all of the contact tracing and COVID-19 status entry requirements. As this COVID-19 and contact tracing information has already been received by the national Digital Travel Portal, no health information is transmitted via the iAPI system and this does not require any changes to the existing iAPI technical standard. The only change required for the government would be to digitally examine within their own internal systems if the traveller has met all of the COVID-19 entry requirements stored in a traveller specific entry in their national immigration system (or other similar system), alongside their existing security checks and return an ‘authority to board’ or not to the airline. Governments may however need to review their national legislation to ensure that passport information collected from a travel operator can be used to confirm COVID-19 health checks, as well as for border security purposes.



The use of an iAPI digital connection between governments and travel operators would ensure there is a **rapid** and **scalable** solution for digitally checking a traveller’s COVID-19 health status, which would then not require the traveller to physically present any COVID-19 certificates or documentation during their journey. This will reduce queues and congestion at the departure point, by removing manual paper handling processes and return the day of travel experience to pre-pandemic levels.

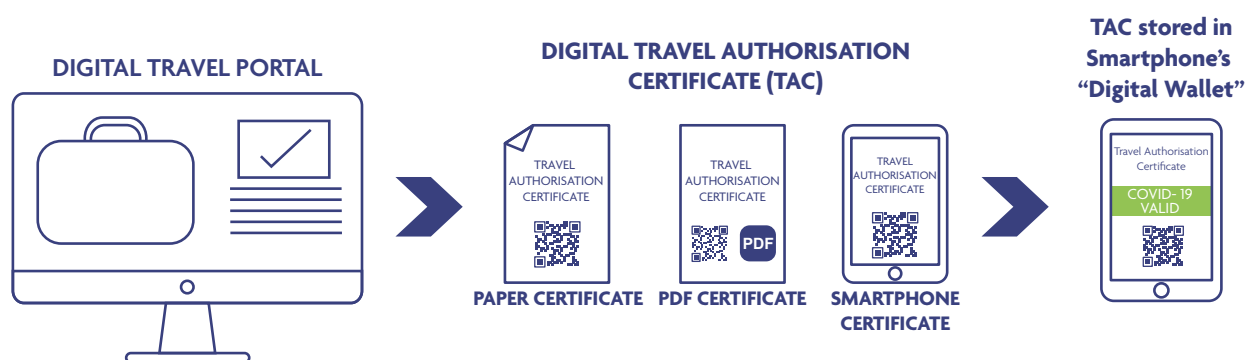
As of October 2021, the global use of iAPI digital systems has been limited, with only around 20 countries operating such a system, although iAPI systems are in use in many large travel markets including the USA, Canada, China, Australia, South Africa, and the UK. It is recommended that countries with existing iAPI digital connections, utilise them with a Digital Travel Portal for an efficient and interoperable process for COVID-19 health checks. Moreover, countries which do not currently employ iAPI systems should consider establishing one given their significant advantages. The IATA Passenger Data Toolkit⁴⁵ can assist countries with establishing an iAPI system and provides guidance material and assistance, including the ‘Joint API Implementation Guidelines’ from IATA, the International Civil Aviation Organization (ICAO) and the World Customs Organisation (WCO)⁴⁶. There are also several commercial organisations that can provide advice, guidance and solutions.

Whilst iAPI connections are used in aviation for the real time checking of passengers during the check-in process, they are currently rarely used in other modes of international travel, such as cruise, ferry, or international rail. As such, governments should therefore explore their implementation across other modes of transport. Nevertheless, given that the expansion of iAPI systems will take time, travellers using these other modes of international travel could demonstrate they have successfully met the destination country entry requirements of the Digital Travel Portal by presenting a **Digital Travel Authorisation Certificate (TAC)**.

4 Digital Travel Authorisation Certificate (TAC)

There should be two outputs from the Digital Travel Portal (DTP); the first is a traveller specific digital record in the destination government national immigration system (as presented in the previous section of this report); and the second is a Digital Travel Authorisation Certificate (TAC) that is issued to the traveller.

The Digital Travel Authorisation Certificate provides the traveller with a response to the information submitted into the Digital Travel Portal and should be able to be stored in a passengers “digital wallet” on their smartphone (such as in the Apple Health App, or in the IATA Travel Pass). This allows the traveller to be able to demonstrate they have successfully met the COVID-19 entry requirements and if their digital certificates have been successfully verified. If their COVID-19 certificates could not be electronically verified through the Digital Travel Portal, the TAC would include that the traveller needs to carry a copy of their proof of vaccination or test with them during travel.



The TAC is similar to a COVID-19 Status Certificate for testing, vaccination, or recovery and should include a machine readable QR code that follows the same digital security principles described earlier in this report, so that it is digitally verifiable. However, the TAC needs to include different fields of information, such as if the traveller has met all of the contact tracing and COVID-19 status entry requirements and if their COVID-19 certificates have been successfully digitally verified, but does not need to include all of the health information included in the COVID-19 certificates as the TAC is not a medical record. It is therefore recommended that international organisations, such as ICAO or the EU, define a common specification for Travel Authorisation Certificates (TAC).

The TAC is issued by the Digital Travel Portal to the traveller and can be used for two purposes:

- 1. International Travel :** When a digital connection between a government and Travel Operator is not available during check-in, the traveller is able to present their digital TAC to the Travel Operator, who can scan the QR code to confirm if the traveller has met the COVID-19 entry requirements, or the Travel Operator could receive the TAC electronically by the traveller sharing it directly from their smartphone “digital wallet” during an online check in procedure. Whilst this is an additional undesirable step in the traditional process, it is manageable if the majority of travellers are processed through a direct digital connection between the government and industry and as the Travel Operator is not interpreting any COVID-19 health data on the TAC, such as deciding if the type of vaccine meets the destination country entry requirements, as this information has already been pre-approved through the Digital Travel Portal. The TAC simply provides a rapid confirmation to the Travel Operator of an authority from the destination government to board the passenger.

2. Domestic Venue Use: If governments require proof of COVID-19 status to enter venues in their country, such as tourist attractions, an additional use of the TAC is to enable an efficient digital entry system for these venues, as a traveller has already had their COVID-19 vaccination or test status approved by the destination government through the Digital Travel Portal. A traveller to a country could therefore use their TAC to enter all venues and tourism attractions and would not have to present any other COVID-19 documentation, or have to download any locally used COVID-19 smartphone apps, which might not be suitable for travellers (as many domestic COVID-19 smartphone apps require users to have healthcare accounts in that country).

It is therefore recommended that governments allow venue operators to accept either:

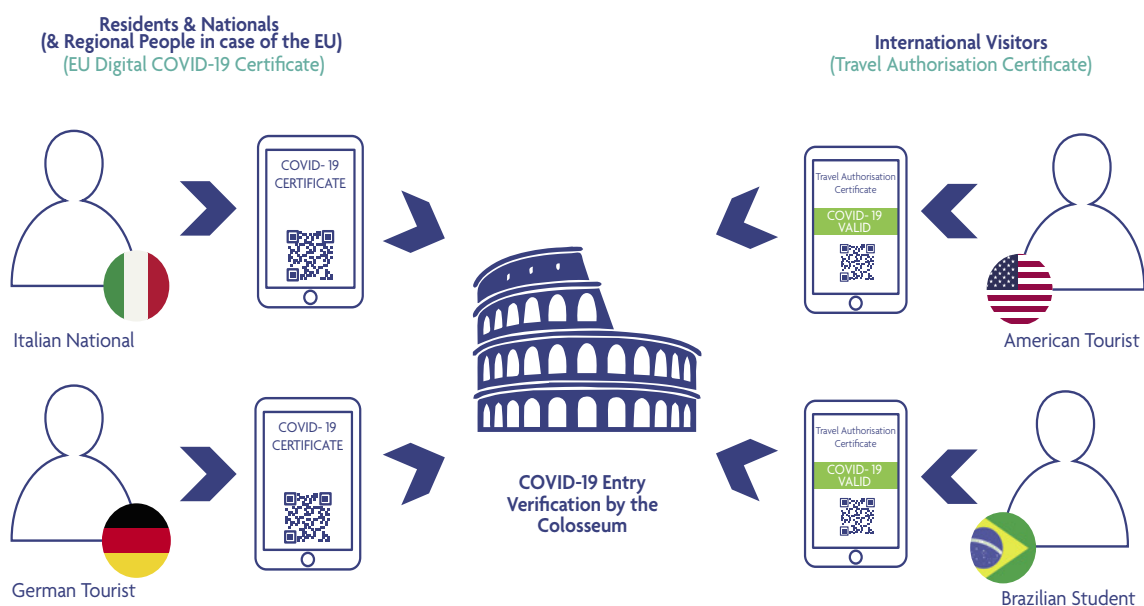
- **National/regional COVID-19 certificates** used by their **nationals and residents**; or
- **Travel Authorisation Certificates (TAC)** issued to all **visitors** to the country.

In this way tourism attractions and other venue operators only need access to the “public keys” to digitally verify national/regional COVID-19 certificates and Travel Authorisation Certificates, which have been issued by their own national authorities. Therefore, domestic venue operators from large tourist attractions to small bars and cafes do not have to worry about global interoperability with foreign COVID-19 certificates.

For example, visiting the Colosseum in Rome currently requires tourists to demonstrate proof of vaccination or a negative COVID-19 test result (as of October 2021). By using the digital procedures outlined in this report, the Colosseum would only need to be able to digitally verify either:

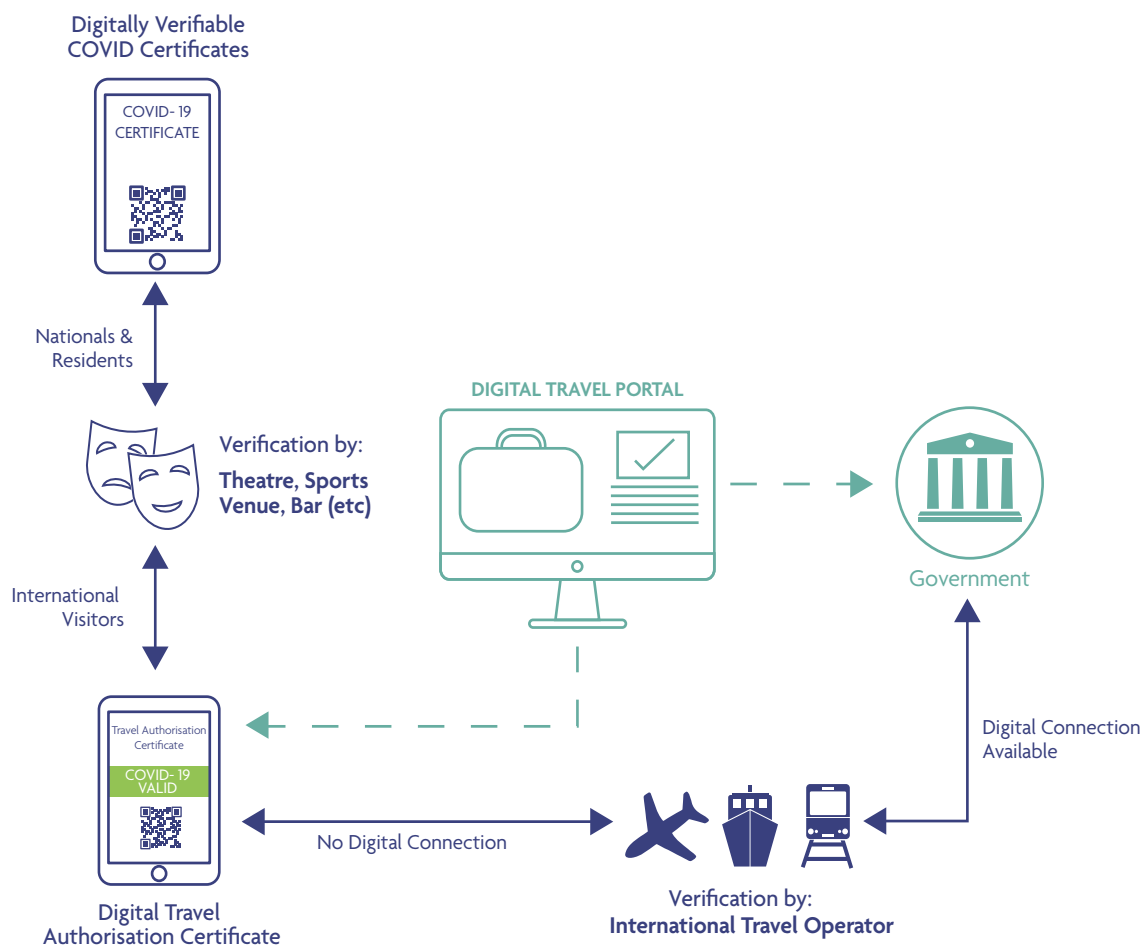
- EU Digital COVID Certificates (EU DCC) used by Italian, or other European, nationals and residents; or
- Travel Authorisation Certificates (TAC) issued by the Italian Government Digital Travel Portal to all other visitors to Italy from the rest of the world

Therefore, the Colosseum only has to be able to verify **two** types of certificates - Italian issued TAC's, or Italian (or EU) issued DCC's. For example, an American tourist would have a TAC issued by the Italian Digital Travel Portal when they entered the country, whereas an Italian resident would have a locally issued EU DCC.



Tourist attractions, and other venues, in any country therefore only need the ability to verify two types of certificates to achieve global interoperability; COVID-19 Certificates used by nationals and residents in their country and Travel Authorisation Certificates (TAC) issued by their national government's Digital Travel Portal, which are used by all other visitors to the country.

Governments should therefore enable **Digital Certificate Verification Apps** that can be used by Travel Operators and Venue Owners, which are able to read and verify Travel Authorisation Certificates and national/regional COVID-19 Certificates used in their country. Verification Apps should digitally verify TAC's and COVID-19 certificates by using the "public keys" issued by the country they are used in. This could be achieved by countries establishing a national mechanism to share the public keys of their national TAC and Digital COVID-19 Certificate with any applicable venue in their country. This is especially useful for smaller venues (such as cafes) who then only have to deal with their national authorities (and not overseas organisations) to be able to verify the digital COVID-19 certificates of all visitors.





POLICY RECOMMENDATIONS

1 Develop A Policy To Manage Fraud

Trust and confidence are the underpinnings of a successful digital travel system, requiring that fraud and corruption are proactively addressed. There have been many reports of fake or fraudulently obtained COVID-19 certificates in the media, which would be significantly reduced by using the digital procedures outlined in this report and digitally verifiable COVID-19 certificates and Travel Authorisation Certificates.

Governments should also consider formulating a policy to identify and manage any abuse of the system that could include:

- The review of existing laws and regulations for countering fraud, to ensure they are fit for purpose for COVID-19 status certificates and Travel Authorisation Certificates
- The establishment of mechanisms for the revocation of fraudulent certificates
- The refining and assignment of roles and responsibility to identify, investigate and pursue prosecution for cases of fraud in this context
- The establishment of an investigation process, taking account of unintentional, as well as intentional, use of a fraudulent document
- The establishment of processes for identified cases of fraud to be shared promptly with other authorities - locally, regionally and internationally - to limit its impact and maintain trust and confidence in the system

At present there is no clear structure to oversee an international approach to countering fraud of COVID-19 health checks and therefore the establishment of global oversight would be helpful to maintain trust and confidence in the issuing and verification of COVID-19 health status information, as well as to ensure that the issuing and verification systems implemented are valid and effective. In this context, establishing globally coordinated oversight of COVID-19 certificate fraud could be helpful to governments through their memberships of relevant international organisations.

In the current environment, instances of fraud that are reported to Police forces should be shared with health organisations and made available to verifying authorities. Travel operators should not be fined for cases of fraud by travellers, where the travel operator has followed all official procedures. Where travellers are found to be in breach of COVID-19 entry conditions, without deliberate fraudulent intent, they should be offered alternative conditions such as additional testing, so that they may safely continue their journey.

2 Develop a Digitally Accessible Travel Policy

Governments should consider establishing a policy for both physical and digitally accessible travel. For digital travel accessibility this could include:

Compliance with W3C Web Content Accessibility Guidelines [WGAC]⁴⁹ for Digital Content Accessibility. Whilst originally developed for online website content, the open standards and recommendations for text, images and sound are equally applicable to other digital solutions, such as smartphone applications for COVID-19 certificates

Assignment of a government role as ‘accessible travel champion’ to identify and promote good practices for all travellers who require additional support. Supporting information on accessible tourism is available in the WTTC Inclusive & Accessible Travel Guidelines⁵⁰

3 Implement Digital Government Services and Digital Healthcare Systems

Countries with an established digital strategy for delivering government services have an advantage when assessing how best to integrate the current COVID-19 requirements for international travel and future development plans. Governments should therefore develop their national digital strategies, whilst benefiting from the shared skills and experiences of other countries in integrating digital healthcare systems with travel processes that can lead to enhanced mitigation of future health risks at the border.

Practical guidance is available from international organisations such as the WHO^{23, 24} that offers a process for countries to develop a costed implementation plan for digital healthcare systems and recommendations on digital interventions for strengthening health systems, or the Organisation for Economic Cooperation and Development [OECD]²⁵ who offer recommendations for the development and implementation of digital government strategies.

4 Identify and Monitor Lessons Learned

The COVID-19 pandemic has accelerated the introduction and expansion of new digital processes for travel, creating an opportunity for all countries and the Travel & Tourism industry to gain insights as new systems are developed and implemented, which will ultimately enhance the sectors agility and resilience.

Monitoring methodologies such as data analytics, benchmarking and traveller surveys will all be useful in capturing lessons learned, as well as supporting long term planning by identifying changes in traveller behaviours and expectations. This information should be shared widely across the international community and between Travel & Tourism stakeholders, from both the public and private sector, so that global developments and best practices may be identified and so the sector is able to continuously improve and rapidly adapt to changing circumstances and risks.



CALL TO ACTION CHECKLIST

To achieve a **globally interoperable and scalable** solution for traveller COVID-19 health checks that is **safe and efficient**, WTTTC recommends that governments consider the swift implementation of the following **17 actions**:

Action Complete	#	Call to Action
	1	Digitally Verifiable COVID-19 Certificates
	1.1	Issue COVID-19 certificates for testing and vaccination with machine readable QR codes, following one of the major international standards (e.g. EU DCC, DIVOC, SMART Health Cards or ICAO VDS-NC). This will reduce the number of digital certificate 'formats' to a manageable level in the near term. In the medium-to-longer term governments are encouraged to work towards a single global standard for digital certificates
	1.2	Consider joining the EU DCC Gateway and adoption of EU DCC standard to achieve interoperability with a growing number of countries, both within and beyond the EU
	1.3	As recommended by ICAO, the WHO and EU, establish national Public Key Infrastructure [PKI], to enable COVID-19 digital certificates to be digitally verifiable
	2	Digital Travel Portal
	2.1	Swiftly implement a national Digital Travel Portal that allows travellers to digitally share their contact tracing information and COVID-19 status certificates before their journey with the government of their destination and where appropriate receive an automated 'authority to travel' if their information is digitally verified and they meet all of the entry requirements. <ul style="list-style-type: none"> • For countries who have already implemented online contact tracing systems, this simply extends the functionality by allowing travellers to also upload their COVID-19 certificates and have them digitally verified in real time • For countries that have not yet established an online system for capturing contact tracing information, this allows a single integrated system to be implemented that digitally captures and verifies all of the travellers contact tracing and COVID-19 information in one convenient place

	3	Digital Connections (between Government & Industry)
	3.1	Store a digital record of a travellers 'authority to travel' from the Digital Travel Portal in a traveller specific record in the national immigration system (or other similar system) noting that a traveller is arriving in the next few days and if they have successfully met all of the contact tracing and COVID-19 status entry requirements
	3.2	<p>Introduce digital connections that enable travel operators to electronically inform a destination government during the check-in process of a travellers confirmed intention to travel and receive a near instantaneous 'authority to board' response.</p> <ul style="list-style-type: none"> • Where iAPI systems are in use between governments and travel operators for border security purposes, extend its capability to include a response back to the travel operator if a passenger has met all of the contact tracing and COVID-19 status entry requirements received by the Digital Travel Portal • Where iAPI system are not currently in use, implement iAPI digital connections to provide combined COVID-19, border and transport security benefits. Guidance on introducing iAPI systems is available from IATA³⁶ and several commercial organisations. <p>As the COVID-19 and contact tracing information has already been received by the Digital Travel Portal, no health information is transmitted via the iAPI system and this does not require any changes to the existing iAPI technical standard.</p>
	3.3	If required, review national legislation to ensure that passport information collected from travel operators and transmitted through iAPI systems can be used to confirm COVID-19 health checks, as well as for aviation and border security purposes.
	4	Digital Travel Authorisation Certificates (TAC)
	4.1	Following a traveller submission to the Digital Travel Portal, issue a Travel Authorisation Certificate (TAC) to the traveller (alongside storing a traveller specific record in the national immigration system, or other similar system), with a machine readable QR code that follows the same digital security principles as COVID-19 status certificates so they can be digitally verifiable
	4.2	Issue TAC's with only the minimum amount of health information necessary for a tourism attraction (or other venue operator) to confirm an individuals' eligibility for entry (where proof of COVID-19 status is required) and include if the traveller met all of the contact tracing and COVID-19 status entry requirements and if their COVID-19 certificates have been successfully digitally verified by the Digital Travel Portal
	4.3	Encourage international organisations such as ICAO and the EU, to define a common specification for Travel Authorisation Certificates, to achieve international consistency
	4.4	Where countries require proof of COVID-19 status to enter tourism attractions or other venues, enable Digital Certificate Verification Apps to be able to read and verify <u>two</u> types of certificates - COVID-19 Certificates (used by their nationals and residents) and Travel Authorisation Certificates (issued to all overseas visitors)
	5	Develop a policy to manage fraud
	5.1	Formulate a policy to identify and manage fraud of COVID-19 certificates. This could include a review of existing laws and regulations; the assignment of roles and responsibility to identify, investigate and pursue prosecution; the establishment of an investigation process; and the establishment of processes for identified cases of fraud to be shared promptly with other authorities
	5.2	Consider how the internationally co-ordinated oversight of COVID-19 status certificate fraud may be established through membership of relevant international organisations
	6	Develop a policy and government accountable owner for digitally accessible travel

6.1	Develop a policy for digital (and physical) accessible travel including consideration of: <ul style="list-style-type: none"> Compliance with the W3C Web Content Accessibility Guidelines [WGAC] for Digital Content Accessibility³⁸ (such as for smartphone applications with COVID-19 certificates) Assignment of a Government role to act as an ‘accessible travel champion’
7	Advance digital government services and digital healthcare systems
7.1	Use the pandemic as an opportunity to develop national digital strategies for digital healthcare systems and government services integrated with the travel process to enhance the mitigation of future health risk at the border
8	Establish a monitoring capability to identify lessons learned during implementation and operation and share lessons experiences
8.1	Implement, together with the private sector, monitoring approaches such as data analytics, benchmarking and passenger surveys to capture and share digital solution implementations and operational lessons learned
8.2	Share implementation lessons learned widely with Travel & Tourism stakeholders so that global developments and best practices may be identified and so the sector is able to continuously improve and rapidly adapt to changing circumstances and risks



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For further information, please visit: [WTTC.org](https://www.wttc.org)

Endnotes

- 1 G7 Carbis Bay Summit Communiqué [point 21] (<https://www.g7uk.org/wp-content/uploads/2021/06/Carbis-Bay-G7-Summit-Communique-PDF-430KB-25-pages-3.pdf>)
- 2 G7 Health & Transport Ministers High Level Principles for Safe & Sustainable Resumption of International Travel (<https://www.gov.uk/government/publications/g7-high-level-principles-for-a-safe-and-sustainable-resumption-of-international-travel/g7-high-level-principles-for-a-safe-and-sustainable-resumption-of-international-travel>)
- 3 G7 Health & Transport Ministers Chairman Statement (<https://www.gov.uk/government/publications/g7-high-level-principles-for-a-safe-and-sustainable-resumption-of-international-travel/g7-transport-and-health-ministers-meeting-chair-statement>)
- 4 G20 Leaders Declaration, Rome Summit (<https://www.g20.org/wp-content/uploads/2021/10/G20-ROME-LEADERS-DECLARATION.pdf>)
- 5 OECD Blueprint for Safe International Mobility During the COVID-19 Pandemic (<https://www.oecd.org/health/oecd-initiative-for-safe-international-mobility-during-covid-19-pandemic-including-blueprint.htm>)
- 6 WHO Policy Considerations for Implementing a Risk Based Approach to International Travel (<https://www.who.int/publications/i/item/WHO-2019-nCoV-Policy-Brief-Risk-based-international-travel-2021.1>)
- 7 WHO Technical Considerations for Implementing a Risk Based Approach to International Travel (<https://www.who.int/publications/i/item/WHO-2019-nCoV-Risk-based-international-travel-2021.1>)
- 8 WHO Digital Documentation of COVID-19 Certificate : Vaccination Status (https://www.who.int/publications/i/item/WHO-2019-nCoV-Digital_certificates-vaccination-2021.1)
- 9 EU 3rd Country Digital COVID Certificate Equivalence Decision Procedure (https://ec.europa.eu/health/sites/default/files/ehealth/docs/covid-certificate_equivalence_decision_en.pdf)
- 10 Canadian COVID-19 Proof of Vaccination (<https://www.canada.ca/en/immigration-refugees-citizenship/services/canadian-covid-19-proof-vaccination.html>)
- 11 DIVOC - Digital Infrastructure for Vaccination Open Credentialling (<https://divoc.egov.org.in/>)
- 12 Sri Lanka Smart Vaccination Certificate (<https://covid-19.health.gov.lk/certificate/>)
- 13 Philippines VaxCertPH (<https://vaxcert.doh.gov.ph/>)
- 14 ICAO & ISO Technical Specifications for Visible Digital Seal for Non-Constrained Environments (VDS-NC) (<https://www.icao.int/Security/FAL/TRIP/PublishingImages/Pages/Publications/Visible%20Digital%20Seal%20for%20non-constrained%20environments%20%28VDS-NC%29.pdf>)
- 15 Australian Passport Office International COVID-19 Vaccination Certificate (<https://www.passports.gov.au/how-international-covid-19-vaccination-certificate-works>)
- 16 African Union & Africa CDC Trusted Travel COVID Pass (<https://africacdc.org/trusted-travel/>)
- 17 PASS-INFRA Vaccination Verification & Management System (<https://ncv.kdca.go.kr/menu.es?mid=a12503000000>)
- 18 China International Travel Health Certificate (<http://cs.mfa.gov.cn/gyls/lsgz/fwxx/t1859289.shtml>)
- 19 ICAO High Level Conference on COVID-19 (HLCC) Ministerial Declaration (<https://www.icao.int/Meetings/HLCC2021/Documents/Reference%20Documents/Draft%20Declaration.en.closing.pdf>)
- 20 ICAO HLCC Report of the Facilitation Stream - Agenda Item 6 (https://www.icao.int/Meetings/HLCC2021/Documents/WP/EN/FAL/wp_230_en.pdf)
- 21 ICAO HLCC Report of the Facilitation Stream - Agenda Item 7 (https://www.icao.int/Meetings/HLCC2021/Documents/WP/EN/FAL/wp_231_en.pdf)
- 22 ICAO HLCC Report of the Facilitation Stream - Agenda Item 8 (https://www.icao.int/Meetings/HLCC2021/Documents/WP/EN/FAL/wp_232_en.pdf)
- 23 ICAO HLCC Report of the Facilitation Stream - Agenda Item 9 (https://www.icao.int/Meetings/HLCC2021/Documents/WP/EN/FAL/wp_233_en.pdf)
- 24 ICAO HLCC Report of the Facilitation Stream - Agenda Item 10 (https://www.icao.int/Meetings/HLCC2021/Documents/WP/EN/FAL/wp_234_en.pdf)
- 25 WHO COVID-19 Vaccine Emergency Use Listing (<https://www.who.int/teams/regulation-prequalification/eul/covid-19>)
- 26 WHO Digital Implementation Investment Guide [DIIG] (<https://www.who.int/publications/i/item/9789240010567>)
- 27 WHO Recommendations on Digital Interventions for Health System Strengthening (<https://www.who.int/reproductivehealth/publications/digital-interventions-health-system-strengthening/en/>)
- 28 OECD Recommendation on Government Digital Strategies (<https://www.oecd.org/gov/digital-government/recommendation-on-digital-government-strategies.htm>)
- 29 EU Digital COVID Certificate Guidance Documents (https://ec.europa.eu/health/ehealth/covid-19_en)
- 30 EU Digital COVID Certificate GitHub (<https://github.com/eu-digital-green-certificates>)
- 31 WHO Digital Documentation of COVID-19 Certificate for Vaccination Status Guidance Document (https://www.who.int/publications/i/item/WHO-2019-nCoV-Digital_certificates-vaccination-2021.1)
- 32 WHO Digital Documentation of COVID-19 Certificate for Vaccination Status GitHub (<https://worldhealthorganization.github.io/ddcc/>)

- 33 SMART Health Cards FAQ (<https://smarthealth.cards/faq.html>)
 - 34 SMART Health Cards Implementation Guide (<https://build.fhir.org/ig/HL7/fhir-shc-vaccination-ig/>)
 - 35 ICAO Guidelines for Visible Digital Seals (VDS) with Travel Related Health Proofs (<https://www.icao.int/Security/FAL/TRIP/PublishingImages/Pages/Publications/Guidelines%20-%20VDS%20for%20Travel-Related%20Public%20Health%20Proofs.pdf>)
 - 36 CommonTrust Network (<https://www.commontrustnetwork.org/>)
 - 37 IATA Travel Pass Lab Network (<https://www.iata.org/en/programs/passenger/travel-pass/lab-network/>)
 - 38 UK Passenger Locator Form [PLF] How to Guide (<https://www.gov.uk/guidance/passenger-locator-form-how-to-guide>)
 - 39 Seychelles Travel Authorisation Portal (<https://seychelles.govtas.com/>)
 - 40 Bermuda Travel Authorisation Portal (<https://www.gov.bm/applying-bermuda-travel-authorisation>)
 - 41 British Virgin Islands Travel Authorisation Portal (<https://bvigateway.bviaa.com/>)
 - 42 Turks & Caicos Islands Travel Authorisation Portal (<https://travelauthorisation.turksandcaicostourism.com/>)
 - 43 St Lucia Travel Authorisation Portal (<https://travelslu.govt.lc/travel-authorization>)
 - 44 Jamaica Travel Authorisation Portal (<https://travelauth.visitjamaica.com/>)
 - 45 IATA Passenger Data Toolkit (<https://www.iata.org/en/publications/api-pnr-toolkit/#tab-2>)
 - 46 Joint IATA, ICAO & WCO Implementation Guidelines for API (https://www.iata.org/contentassets/18a5fdb2dc144d619a8c10dc1472ae80/api-guidelines-main-text_2014.pdf)
 - 47 W3C Web Content Accessibility Guidelines [WCAG] (<https://www.w3.org/WAI/standards-guidelines/wcag/>)
 - 48 WTTTC Inclusive and Accessible Travel Guidelines (<https://wtcc.org/Portals/0/Documents/Reports/2021/Inclusive%20Accessible%20Travel.pdf?ver=2021-05-04-115923-407>)
 - 49 W3C Web Content Accessibility Guidelines [WCAG] (<https://www.w3.org/WAI/standards-guidelines/wcag/>)
 - 50 WTTTC Inclusive and Accessible Travel Guidelines (<https://wtcc.org/Portals/0/Documents/Reports/2021/Inclusive%20Accessible%20Travel.pdf?ver=2021-05-04-115923-407>)
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