**New Technologies Work Group, Request for Information 2019/2020**

**Instructions For Preparation Of Summary Paper**

# INTRODUCTION

Interested parties must present their responses/ submissions in the context of ICAO’s:

* Document 9303 7th edition (2015), that prescribes format, RFID IC minimum specifications, data holding requirements, security and specification for Machine Readable Travel Documents, Visas and other official machine readable travel documents;
* Technical Reports that supplement Doc 9303;
* Standards & Recommended Practices (SARPS) for Adjudication, Issuance and lifecycle management of MRTDs prescribed in Annex 9 of the United Nations Convention on International Aviation 15th edition (2017); and
* how they align with the Request for Information (RFI) Themes described below.

The RFI requires a Summary Paper to be completed for all responses submitted from an entity. Your submission (Summary Paper) will be included in a comprehensive Summary Report and will be presented to ICAO Contracting States.

The Summary Report will be based on the following Themes and Topics. Your submission needs to correspond to the relevant Theme and Topic.

1. Strengthen Electronic Machine Readable Travel Document (eMRTD) - identifying solutions that will increase the security of the issuance process and the eMRTD for:
   1. physical security measures, construction methods and material used;
   2. detection and prevention of Image Manipulation e.g. morphing, beautification, digital modification etc;
   3. biometric modalities for eMRTD (Face, Finger, Iris)
   4. automated machine authentication; and
   5. improvements in cryptographic protection.
2. Leverage existing eMRTD capabilities:
   1. advancements in authentication practices;
   2. in or outside of the travel continuum;
   3. usability in manual or automated border control; and
3. Virtual use in smart devices. Future forms of eMRTD and how:
   1. holders data is gathered, stored, protected and transmitted;
   2. quantum computer considerations and identified mitigation measures that can be applied;
   3. LDS2 and mobile technology can be used;
   4. facial recognition on the move can help facilitation of passengers;
   5. movements through the entire travel continuum, secure and expedited; and
   6. multimodal biometrics and multi-biometrics are captured.
4. Other Concepts, Technologies or Research, related to eMRTDs, not covered in the above Themes or Topics.

# PURPOSE

The summary papers will be used to familiarize ICAO Contracting States with the new concepts, technologies and research presented. The ICAO New Technologies Working Group (NTWG) may use the Summary paper when considering specifications for standards for new technologies, the possible application of technologies to machine-readable travel documents and what considerations maybe required to maintain interoperability with border management systems and/or practices.

Your summary paper should describe the concept, technology, research being introduced, in an accurate, succinct and complete manner. Your summary paper will reflect how you as the interested party would like the submission presented to the NTWG and the ICAO Contracting States. It should highlight - in a concise way - all information you want to convey.

# Themes and Requirements

**Theme 1: Strengthen Electronic Machine Readable Travel Document (eMRTD) - identifying solutions that will increase the security and issuance process of the passport book or travel card.**

**1.1 Physical Security, Construction and Material:**

***This topic covers:*** *Physical security, construction material, assembly and print application technics that protect travel documents from counterfeiting, photo-substitution, alteration of biographic and biometric inclusions on the data page, substitution or replacement of visa pages and replacement of IC inlays etc. It can also include systems or practices that improve the issuance process.*

**1.2 Detection and prevention of image manipulation:**

***This topic covers:*** *Image manipulation or morphing detection and prevention of a supplied image of a face, fingerprint or iris, submitted by travel document applicants have been altered, amended or tampered with in order to identify attacks.*

*The system may detect any trace of manipulation that is difficult to be found with human eyes. Such systems should support travel document issuance authorities where quick and precise implementation of examination is needed. Submissions are sought that cover the validation of electronically submitted photographs both in on-line and paper application processes.*

**1.3 Biometric capabilities:**

***This topic covers:*** *Latest developments in biometric capture systems that would allow for the capture of high quality facial and iris biometrics in a single pass. Multi modal biometric controls look to provide greater identity security. Currently, uptake is being limited by a cumbersome and intrusive enrolment processes. Solution(s) that make enrolment easier are of interest.*

**1.4 Automated machine authentication:**

***This topic covers:*** *Systems and/or software that can optically and electronically read travel documents and be used for confirmation of their integrity and authenticity at passport application with kiosk systems or automatic border control.*

**1.5 Improvements in cryptographic protection**

***This topic covers:*** *Latest developments in standards for cryptographic algorithms that could be used to provide for greater security. Cryptographic encoding techniques, message hashing algorithms or asymmetrical or symmetric encryption techniques that will reduce the risk of data being compromised; in storage; during transit; in the eMRTD; or repudiation occurring for issued eMRTD can be addressed.*

**Theme 2: Leverage existing eMRTD capabilities:**

**2.1 Advancements in authentication practices;**

***This topic covers:*** *additional ways to use security features in travel documents and how machine authentication can recognise and verify these features through automation. The use of machine assisted document security verification techniques covers structure, substance and data features to be authenticated at the time of inspection. Examples are diffractive optical variable image devices, hidden image information and pattern recognition through white light (VIS), Infrared, UV, also sensors for taggents or magnetic ink features. Authentication of these features should be explained in your submission and include reader software and hardware required. Improvements in or new systems that use security feature libraries are also of interest. This topic should include how the feature is authenticated and how this improves the issuers or holders travel experience, to increase security and data integrity.*

**2.3 Manual or automated border control improvements;**

***This topic covers:*** *ways that eMRTDs can be harnessed to give border control entities better management of passengers either through primary line inspections or use in automated border control devices***.**

**2.4 Virtual use in smart devices;**

***This topic covers:*** *smartphones or devices that can protect and use eMRTD data to validate your identity. It also covers how to utilize eMRTD data stored in the LDS for additional use in the travel continuum.*

**Theme 3 Future forms of eMRTD’s and associated systems:**

**3.1 Data collection, use, storage, protected and transmission;**

***This topic covers:*** *online systems for application, adjudication, physical components and security measures that are applied to ensure confidentiality of interchange of data, integrity of data, systems and processes and availability to authorised entities in a timely manner. Presentation attack detection should be discussed in any systems or solution responses.*

**3.2 Quantum computing considerations and mitigation;**

***This topic covers:*** *considerations for a post quantum environment and mitigation measures included in future forms or eMRTD’s. This can include research findings, new cryptography standards and algorithms to ensure integrity, interoperability and trust in issuing states practices.*

**3.3 Mobile technology and use of Logical Data Structure 2.0;**

***This topic covers:*** *information on application systems that allow mobile devices (e.g. smartphones) to securely communicate and display data held in LDS2 with eMRTD inspection systems. This can include NFC, Personal Access Networks (Bluetooth) and current ISO – IEC 14443 standards and protocol for transmission. Submissions can address border control use, airline industry application or general public viewing.*

**3.4 Video streaming and facial recognition on the move:**

***This topic covers:*** *systems or solutions that utilise streaming for facial recognition in automated border control, controlled area tracking of passengers for boarding or dis-embarking from vessels.*

**3.5 Multimodal biometrics capture and use.**

***This topic covers:*** *new technologies, solutions for capturing Face, Iris and/or Finger and how they can be used in the travel continuum. Systems or solutions that use on card biometric matching incorporated into eMRTD’s or as part of mobile devices are areas of interest.*

**Other topics not covered.**

**4.** *Should your submission cover other topics that fall partially in or are not mentioned in any of the other themes please provide a response under this number in your submission.*

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| **5. METHOD OF SUBMISSION** |

The summary paper for each technology must be submitted in electronic form. Electronic copies should be submitted in Microsoft Word or compatible versions. PDF format is acceptable. Interested parties should use Times New Roman or compatible print font (12 point) in order to make all summary papers easy to read and similar in appearance for compilation into the Summary Report. Additional information, e.g. brochures, must also be submitted in electronic form to ensure easy transmission to an international review panel of government representatives.

Each summary paper should be limited to no more than three (3) pages.

Summary papers must follow the format prescribed in the attachment following this instruction, identified as “Summary Paper Format”.

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| **6. ORAL PRESENTATIONS** |

Following the receipt of summary papers and descriptive literature and information, a panel of government representatives from the NTWG will review all submissions. The panel will select those submissions that meet the requirements of the RFI and invite those interested parties to make oral presentations to government members of the NTWG and representatives of ICAO Contracting States.

The oral presentations, expected to be no longer than 45 minutes, are planned to be held from the16th to 18th of September 2020 in Ispra, Italy at the European Unions, Joint Research Centre facility.

Further details on arrangements to access the Joint Research Centre will be provided to successful entities in May 2020.