

International Civil Aviation Organization

New Technologies Work Group, Request for Information 2024

Instructions for Preparation of Summary Paper

1 INTRODUCTION

Interested parties must present their responses or submissions in the context of ICAO's:

- Document 9303 8th edition (2021), 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 16th edition (2022), 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 Themes and Topics described in this document. Your submission needs to correspond to the relevant Theme and Topic.

2 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.

International Civil Aviation Organization

3 THEMES AND REQUIREMENTS

3.1 Theme 1: Improving the security and issuance process of the passport book or travel card.

3.1.1 Physical Security, Construction and Material:

This topic covers: Physical security, construction material, assembly and print application techniques (including alternative ink solutions using functional pigments) 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. ICAO is also looking for innovations in the area of sustainable substrate, foil materials, and sustainable or recycled ink solutions.

3.1.2 Detection and prevention of image manipulation or deepfakes:

This topic covers: Image manipulation or morphing detection and the prevention of a supplied image of a face, fingerprint, or iris, submitted by travel document applicants have been altered, amended, or tampered with to identify attacks. Submissions should focus on supporting travel document issuance authorities in conducting quick and precise examinations in both online and paper application processes.

3.1.3 Biometric capabilities:

This topic covers: Latest developments in biometric capture systems that would allow for the capture of high quality facial and or iris biometrics in a single pass, including remote enrollment scenarios. Submissions should focus on solutions that make biometric enrolment easier while maintaining integrity.

3.1.4 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. It could also contain AI-based and/or AR (augmented reality) enabled solutions for machine authentication.

3.1.5 Improvements in cryptographic protection:

This topic covers: Latest developments in standards for cryptographic algorithms, with an emphasis on post-quantum cryptography algorithms, that could be used to provide 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. Submissions should explain how backwards compatibility with existing cryptographic approaches will be maintained.

3.1.6 Conformance assessment tools for E-Passports:

This topic covers: Systems and software that can assess the conformance of e-passports with ICAO test specifications and applicable international standards and help countries issue secure eMRTD.

International Civil Aviation Organization

3.1.7 Artificial Intelligence Capabilities:

This topic covers: Latest developments in artificial intelligence systems that would increase the efficiency and security of issuance and verification processes. The generation or the detection of AI-based security features is of interest as well. Submissions should explain the benefits to issuing authorities, how the system would work, and the necessary training data, software and hardware required.

3.1.8 Evidence of Identity:

This topic covers: Latest developments in breeder documents including electronic or digital breeder documents, especially those that can be interoperable with eMRTD issuing systems. Submissions should explain the benefits to issuing authorities, and if these are also linked to national civil registration and vital statistics (CRVS) authorities and how interfaces would work, and the necessary software and hardware required.

3.2 Theme 2: Leveraging existing eMRTD capabilities:

3.2.1 Advancements in authentication practices:

This topic covers: The use of automated machine authentication to recognize and verify security features including the use of mobile devices for the remote verification of travel documents. It covers various elements like document structure, materials, and data. Examples include optical images, hidden information, and pattern recognition under different lighting conditions. We're also interested in new systems using security feature libraries. Submissions should include how features are verified, including the necessary software and hardware and explain how these advancements improve both document issuers' and holders' travel experiences, enhancing security and data integrity.

3.2.2 Manual or automated border control improvements:

This topic covers: ways that eMRTDs can be used to improve the management of passengers at border control. It includes innovations for both manual primary line inspections and automated border control devices. Submissions should focus on solutions that empower border control entities to enhance the efficiency and security of passenger management. Hybrid security features linking physical and digital security mechanisms are of interest.

International Civil Aviation Organization

3.3 Theme 3: Future forms of eMRTDs and associated systems:

3.3.1 Digital Travel Credentials:

This topic covers: technology and concepts for the storage and use of ICAO DTC across the travel continuum and interoperability with digital identity schemes.

For reference ICAO provides the following publications; [Guiding Core Principles for the Development of Digital Travel Credential \(DTC\)](#) and [Digital Travel Credentials \(DTC\) - Physical Component and Protocols](#).

3.3.2 Digital Credentials, wallets, and interoperability:

This topic covers: advancements in implementing digital identity credentials, prioritizing secure methodologies throughout the lifecycle—creation, storage, and usage. The topic is looking for solutions that elevate the portability, choice, and control individuals have over sharing their personal information. Importantly, submissions should explore how these solutions can seamlessly interoperate with the ICAO Digital Travel Credential (DTC).

3.3.3 The use of Barcodes:

This topic covers: the applications and benefits of Barcodes in the travel continuum including use with emergency passports and possible advanced forms such as Visual Digital Seal VDS which contain face biometrics or may be linked to the individual (paper based) document.

For reference ICAO provides the following publications: [ICAO TR - ICAO Data structure for Barcode](#)

3.3.4 Future forms of emergency passport:

This topic covers: Technology and concepts that could shape the design and functionality of emergency passports.

3.3.5 Implementing biometric encoding transition from ISO/IEC 19794 to ISO/IEC 39794:

This topic covers: ICAO Doc 9303 uses standard ISO/IEC 19794:2005 to encode biometric data in eMRTDs. To meet new and emerging market demands and to avoid future compatibility issues, the ISO/IEC 39794 standard series shall be used in the future. This topic is looking for solutions to assist issuing authorities to manage and test the transition from standard ISO/IEC 19794 to ISO/IEC 39794 (-5 for facial images and -4 for fingerprints) and provide ways to test the interoperability of inspection systems, e.g. at border control.

3.3.6 Tracing lost stolen and revoked documents:

This topic covers: information about systems and concepts allowing cost-effective implementation of Interpol-SLTD database search for non-Interpol members, concepts allowing revocation of individual documents or an easy recovery of stolen documents.

International Civil Aviation Organization

3.3.7 Verification with 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. Hybrid security features linking physical and digital security mechanisms are of interest.

3.3.8 Mobile technology and use of Logical Data Structure:

This topic covers: information on application systems that allow mobile devices (e.g., smartphones) to securely communicate and display data held in MRTD 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.

3.3.9 Video streaming and facial recognition on the move:

This topic covers: systems or solutions that utilize streaming for facial recognition in automated border control, controlled area tracking of passengers for boarding or disembarking from vessels.

3.3.10 Advanced trust-frameworks for eMRTDs:

This topic covers: Methods and technologies that improve upon the current travel document trust infrastructure or suggest secure alternatives.

3.3.11 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 eMRTDs or as part of mobile devices are areas of interest.

4 OTHER TOPICS NOT COVERED

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.

International Civil Aviation Organization

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”.

6 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 presentations to government members of the NTWG and representatives of ICAO Contracting States.

The presentations, expected to be no longer than 45 minutes, are planned to be held from the 16th to 17th of September 2024 in Copenhagen, Denmark at the United Nations High Commission for Refugees Facility. Preference will be given to presenters who are able to provide in-person oral presentations, however consideration will be given to supporting online presentations of strong interest. The language used for presentations will be in English.