ICAO NTWG REQUEST FOR INFORMATION
INSTRUCTIONS FOR PREPARATION
OF SUMMARY PAPER

1. OVERVIEW

Interested parties must present their technologies in the context of ICAO Document 9303, which prescribes international format and on-board data standards for machine-readable passports, visas, and other official machine-readable travel documents.

The requested summary paper must be submitted with all responses to the Request for Information (RFI). A separate summary paper should be submitted with each technology concept introduced. Summary papers will be included in a comprehensive Summary Report and will be presented to the ICAO Contracting States.
The Summary Report will be divided into the following categories:

- Cryptography
- Live Capture of Images
- Facial Matching Algorithms
- Photo Quality Assessment Systems
- Image Manipulation Detection Systems
- Hand Held Traveller Processing Systems
- Physical Security Features
- Machine Authentication of Documents
- Data Mining Analytics

2. PURPOSE

The summary paper is an information tool that may be used by the ICAO New Technologies Working Group (NTWG) when considering standards for new technologies, with possible application to machine-readable travel documents. The summary papers will also be used to familiarize ICAO Contracting States with the new technologies.

The summary paper should describe the technology being introduced in an accurate, succinct and complete manner. The summary paper will reflect how interested parties would like their technology presented to the NTWG and the ICAO Contracting States. It should highlight - in summary form - **all** information that interested parties want to convey to ICAO.

3. CATEGORIES AND REQUIREMENTS

CATEGORY 1: Cryptography
Requirements: *Cryptography that can be used for access control and authentication of e-MRTDs.*

NTWG is interested in Cryptography related to following methods:

- Anti-skimming method;
- Chip authenticating method; and

- Data protecting method.

The NTWG is seeking information on more secure cryptographic techniques that can be used for future travel documents such as the e-Passport with a recordable integrated circuit chip

CATEGORY 2: Live Capture of Images
Requirements: *Biometrics including face, fingerprint and iris that may be used for online applications and/or kiosk systems and/or open air (outdoor) applications.*

Online application and/or kiosk systems significantly facilitate and simplify the application process for travel document applicants, make it an area of interest. The NTWG is seeking information on the applications and/or systems for live capturing that can provide biometric images with appropriate quality to recognize applicants and verify their travel documents, while they are captured under unconstrained harsh conditions.

Harsh conditions may be described as:
- Back ground is not uniform or simple wall;
- There could be other persons behind the applicant;
- The applicant does not look at the camera for an adequate period; and/or
- Lighting is too strong otherwise dark, or causes deep shadow.

Live capturing image systems for following purposes are also welcomed.
- for border inspection process working under environmentally harsh conditions; and
- for children's application and/or border inspection.

CATEGORY 3: Facial Matching Algorithms
Requirements: *Algorithms that can be used to verify facial images at travel document application or border control.*

NTWG seeks new algorithms that can improve the accuracy of the following facial matching systems.
- Comparing an image submitted by applicant with registered images in data bases; or
- Comparing a live captured image with registered images in databases.

For more accurate matching, NTWG is interesting in algorithms that account for the following factors:
- Aging;
- different poses, such as tilted;
- hair style, beard or expressions; and/or
- glasses, head coverings or any other non-facial artifacts.

Algorithms that work for children's photos are also welcomed.

CATEGORY 4: Photo Quality Assessment Systems
Requirements: *Assessment Systems that can be utilized to judge whether a facial photo submitted by travel document applicants is compliant with the photo specifications provided in Doc 9303 and appropriate ISO standards.*

Verification/assessment of photos submitted digitally through channels such as online application or kiosk capture against international standards/specifications could increase photo acceptance rates. Doc 9303 and appropriate ISO standards, particularly ISO/IEC 19794-5, define acceptable photos and provide guidance on several aspects such as pose, prohibited items, lighting, and colour balance.

The NTWG is seeking information on technologies that allow for high true accept rate and low false accept rate. System needs to perform quick and automatic assessment, and when it rejects a photo it should identify the appropriate reasons, so that the applicant may understand why their photo has been rejected.

CATEGORY 5: Image Manipulation Detection Systems
Requirements: *Image manipulation detection systems that can be utilized for inspection of submitted facial photos by travel document applicant in order to prevent attacks such as morphing.*

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.

CATEGORY 6: Hand Held Traveller Processing Systems
Requirements: *Systems that can be utilized to inspect travel documents and verify their holders in various situations where online systems cannot be used.*

, The NTWG is interested in versatile systems, particularly smart phone-based systems, that can be applied in urgent or routine situations. As a relatively new area of interest, the NTWG is seeking innovative or creative uses of these systems in the following areas:

- Smart phones and their application with MRTDs
- Smart phones and their application for the use of ICAO PKI to authenticate MRTD data

CATEGORY 7: Physical Security Features
Requirements: *Physical security features that protect travel documents from counterfeiting, photo-substitution, alteration of text of the data page, and replacement of IC inlays.*

Features that can make it easy to recognize visually and/or be authenticated at automatic border control by automated inspection systems are welcomed.

CATEGORY 8: Machine Authentication of Documents

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

NTWG requests for the information of the following fields:

- Design rules and examples for documents suited for machine authentication;
- Reader systems; and/or
- Authentication software and reference databases.

CATEGORY 9: Data Mining Analytics

Requirements: *Data mining analytics that can be utilized for risk assessment in the process of border crossing.*

The purpose of mining is to avoid the international travel by criminals, such as terrorist activity or illegal immigrants. The NTWG requests information on analytics that may be applied to detect specific patterns related to suspicious activities. The results of the analysis should support enrollment processes for travel document issuance or border inspection, cross-referencing data bases.

4. METHOD OF SUBMISSION

The summary paper for each technology should 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”.

5. 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, each

lasting no more than 45 minutes, are planned for the week of 21-25 July, 2014 at ICAO HQ, Montreal, Canada.