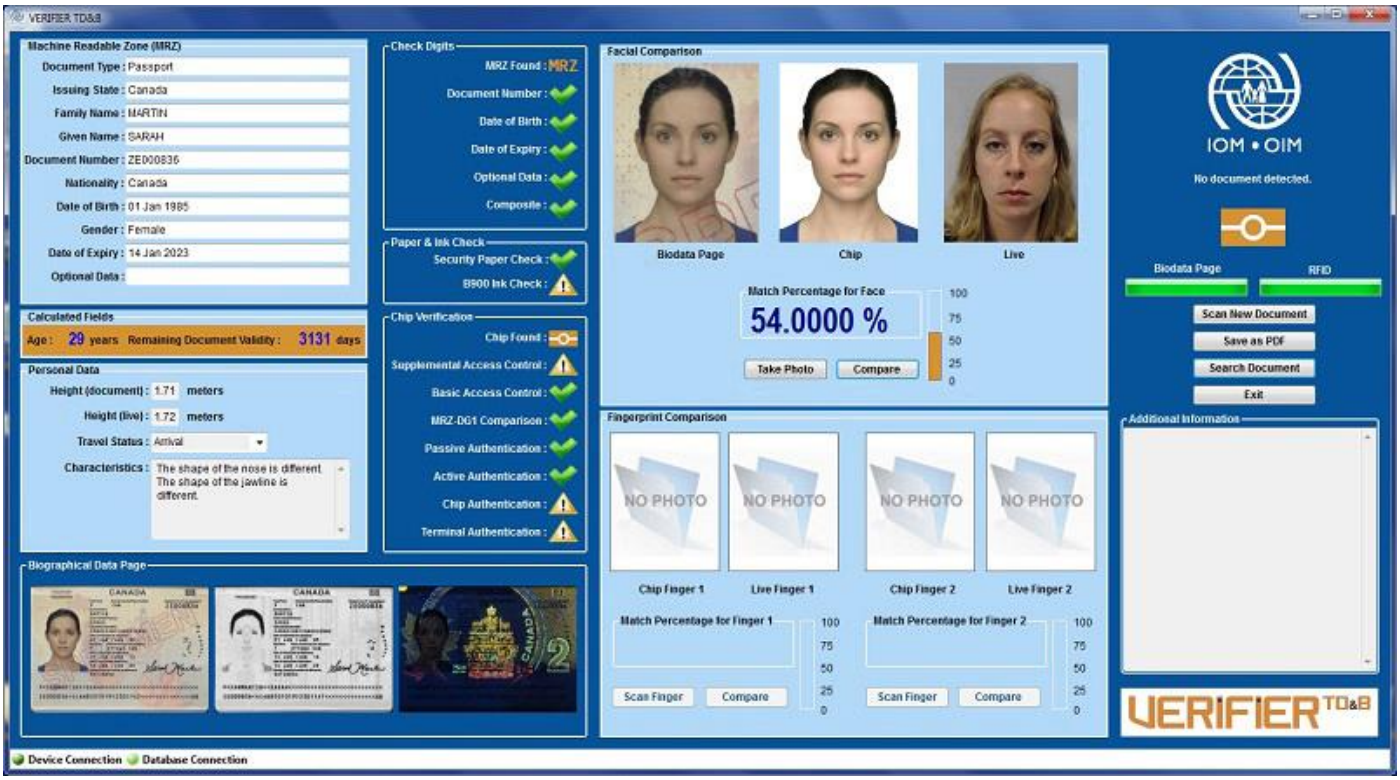
IOM International Organization for Migration

VERIFIER TD&B

A Stand-Alone System for Checking ePassports at Secondary Inspection

International Civil Aviation Organization (ICAO)-compliant electronic passports (ePassports) have been in circulation since 2005. Today, more than 100 countries issue ePassports, with an estimated circulation worldwide of more than 500 million ePassports, a number that is growing by the day. Since the ePassport is so widely available, forgers are beginning to explore how to attack it and to circumvent the new security elements embedded within.



In an ePassport, a contactless chip is integrated in the booklet. The chip contains both biographical and biometric information of the bearer. This information is protected by various digital security features. To verify these security features, an ePassport reader is needed. Once connected to a computer that has suitable software installed, an ePassport reader can check the security features and determine the authenticity and integrity of the content in the chip. There is a need for each forgery unit to be equipped with a solid system capable of verifying the data in the ePassport, a camera to capture a live photo of the bearer and a facial matching algorithm to conduct a 1:1 verification.

To address this need, the Immigration and Border Management (IBM) Unit in the International Organization for Migration (IOM)'s Regional Office for Asia and the Pacific has developed an automated system called the VERIFIER TD&B, which is designed to read the machine readable zone (MRZ) and the contactless chips in the passports, and conduct a check on a number of digital security features. It is an easy and user-friendly tool for document examination. It compares the stored biometric identifiers against those of their users. The system performs a wide range of verifications and displays various useful results on the screen about the documents and bearers. The main goal of the system is to assist immigration and border management agencies to detect fraudulent travel documents and impostors.

VERIFIER TD&B is a stand-alone system for use at secondary inspection to assist immigration and border control officers to **detect fraudulent travel documents and impostors**. The system also has the capacity to generate a report, which can be used according to each agency's procedures and regulations. No integration to the existing systems or Internet connection is required to perform document verification and impostor detection.

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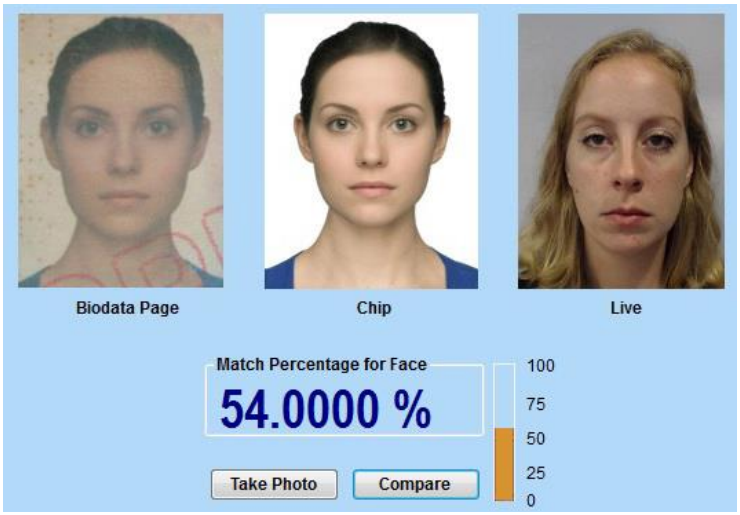
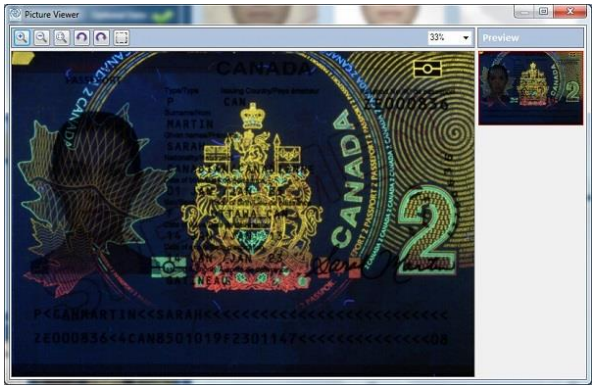
System Functionalities
1. Calculation of the check digits in the MRZ
2. Generating a white light image of the biographical data page
3. Generating an Ultraviolet (UV) image of the biographical data page
4. Generating an Infrared image of the biographical data page
5. Security paper check
6. B900 ink check
7. Calculation of the age of the bearer
8. Calculation of the remaining document validity period
9. MRZ and Data Group (DG) 1 comparison
10. Supplemental Access Control (SAC)
11. Basic Access Control (BAC)
12. Storage of Country Signing Certificate Authority (CSCA) certificates
13. Passive Authentication
14. Active Authentication
15. Chip Authentication
16. Terminal Authentication
17. Impostor detection using the face/fingerprint matching algorithm
18. Adding document bearer's characteristics
19. Report generation for further investigation





VERIFIER TD&B reads the MRZ on the biographical data page, conducts BAC and retrieves the facial image from the chip. Then, a **1:1 facial comparison** is performed. Based on the quality of the photo in the chip and the live photo, a "match" result is displayed as a percentage to support the decision making process.

VERIFIER TD&B has the capacity to compare fingerprint(s) stored in the chip (if they are accessible through the correct certificate chain) with those of the bearer of the passport. Once a fingerprint scanner is connected and license is activated in the system, a **fingerprint comparison** can be performed immediately.

VERIFIER TD&B provides border officials with many useful **results in less than 10 seconds** per examination. However, the decision has to be made by the officials themselves based on the received information from the system and their own observations. The **final decision** should always be taken by the responsible senior supervisor.

Note: To be able to check the authenticity and integrity of the content in the chip, the **Country Signing Certificate Authority (CSCA) certificates** must be stored in the system. Currently, VERIFIER TD&B contains CSCA certificates from more than 60 countries and territories. When the system is used, the Passive Authentication field will show either a green (passing) or yellow (warning) signal. IOM's IBM Unit will constantly update the system with the latest CSCA certificates, received directly from the issuing countries or from downloading the master list from the ICAO Public Key Directory.