



W06 Machine-Readable Technologies in Travel and Identity Documents

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After attending this presentation, attendees will understand how contemporary machine-readable technologies used in travel and identity documents function and the circumstances under which the encoded data can be accessed using software and/or hardware readers.

This presentation will impact the forensic science community by describing novel travel and identity documents examination methods that revolve around document reader technology instead of microscopic and other conventional methods for the examination of questioned documents.

Drivers for the adoption of machine-readable security features in identity and travel documents generally include a desire for better facilitation and/or improved security. In context, facilitation means improved speed in the processing of documents and their bearers through border control environments and similar contact points, coupled with a reduced risk of typographical or clerical errors that result from human involvement in data entry. Security means the adaptation of machine-readable features to help a document authenticate itself to a machine reader and/or human inspector or the inclusion of biometric technologies that can bind the document to its bearer to reduce the risk of successful impostor fraud. The nature of machine-readable technologies used in travel and identity documents has changed considerably over the past four decades, and which technologies may be present in a particular document is a function of the document type, its intended usage, and the governing technological standards of the era in which the document was issued.

Passports, visas, birth records, identity cards, and other identity and travel documents have been manufactured with a diverse array of machine-readable technologies that are capable of very different functions. These include optical character recognition fonts, machine-readable text zones, magnetic stripes, barcodes, optical strips, and both contact and contactless smart chips. The function and usage of each of these technologies in the context of identity and travel documents will be described on a technical level, including how the technology encodes data, the limits of how much and the nature of the data that can be encoded, and how the feature may or may not facilitate biometric comparisons. Additionally, the technologies will be considered from the point of view of document design standards promulgated by the International Civil Aviation Organization (ICAO), the American Association of Motor Vehicle Administrators (AAMVA), and other bodies, and as they relate to the REAL ID Act of 2005 and the Western Hemisphere Travel Initiative.

Clearly, machine-readable technologies are not designed for human examination and most cannot be deciphered using conventional questioned document methods, such as microscopy; however, this does not mean that machine-readable document features are inaccessible to questioned document examiners. Although highly sophisticated document reading systems are being deployed for use in border control environments, expensive and complicated readers are not always necessary to access individual machine-readable technologies. Many machine-readable features can be decoded using inexpensive equipment ranging from small magnetic stripe readers to commercial barcode software to a variety of smartphone applications. Similarly, it is often not necessary to have a detailed knowledge of computer science or cryptography to obtain useful information from machine-readable technologies, particularly if the primary benefit of the technology is related to facilitation (as opposed to security). The final goals of this workshop are to describe straightforward methods for accessing machine-readable document features using low-cost tools and to explain when such an approach is likely or unlikely to be successful in regard to different circumstances.

Document, Security, Facilitation