Passports are the product of globalization, required by millions throughout the world in order to travel internationally. They are also the most preeminent proof of identity and nationality worldwide. But carrying a passport casually is not recommended because it is big enough to be seen from afar and Western passports can fetch a high price on the black market. Hundreds of stolen passports were found in the hands of ISIS terrorist groups this year alone.

Ireland recently announced the arrival of a new Irish e-Passport Card, presumably the first of its kind, with security features incorporated on the advice of security experts including the national police service of Ireland. This new Irish e-Passport replaces the previous version of the e-Passport that was first developed in 2006.

The soon-to-be launched e-passport card incorporates several innovative security features. For one, the embedded hologram photo, on a strip at the back of the card, has never been used on a travel document before. Another novel feature of this new system is a mobile application that allows citizens to apply for their card remotely by submitting a “selfie.” The app will verify that the photographs meet international standards. Charles Flanagan, Ireland’s minister for foreign affairs and travel, said the new card would provide a useful backup travel document within Europe.

The European Union already issued a standard travel document in the form of a citizens’ e-ID card, and as of 2016 Russia will begin replacing its paper passports with e-passport cards that authenticate the identity of the traveler using biometric information stored in an embedded smart chip. If the e-passport cards prove to be successful, the Russian government plans to eliminate paper passports altogether by 2030.

In the United States, a credit card sized non-biometric e-passport card has been available to citizens since 2008 as a less expensive, convenient way to prove identity and citizenship. It can be used for traveling to neighboring Canada, Mexico, Bermuda and the Caribbean. However, it cannot be used for visas or international air travel.

Challenges to implementation

Remarkably, the passport book has remained the backbone of international travel documentation for centuries. Current resistance to change lies in maintaining uniformity of technology standards throughout the world.

Tony Poole, a leading document security expert with extensive experience in the use of existing and emerging technologies said, “Immigration processes around the world are geared for application of a stamp on a passport visa page that signify entry into and exit from a country. These provide a record of where you’ve been and when you have traveled … passport cards are not designed to accommodate a visa stamp and are not valid for international air travel.”

Poole added, “I see a number of documents, such as visa foils, gradually migrating to electronic (e-visas) but one I don’t see changing in the near future is the passport. To accommodate a truly electronic, virtual passport, systems around the world would all need to be interoperable—something that will take decades to realize.”

The technology used in producing a safe and secure passport document is extremely important and complex because protecting one’s identity is not just critical to personal security, it is critical to protecting national security. The complexities of the current passport book make it increasingly difficult to be forged but in parallel, it is getting all the more
challenging for security agents to check every security feature completely. One of the biggest issues, research has found, is the rate of errors that occur in face-to-photo verification.

Experiments with trained security professionals, matching photo to photo of unfamiliar faces, consistently result in a great number of errors—even in tests using high quality photos, taken on the same day, shown side-by-side. Likewise, matching a live person to a photo is just as difficult. Fraudulent IDs are accepted so frequently it brings into question the reliability of using a photo ID in general. And though there is increasing interest and justification for the use of biometric modalities to support the verification process, matching a live person with a photo ID continues to be the most prevalent method.

However, many foreign countries are fast embracing biometrics and building biometric databases with the future in mind. India’s national biometric ID program, Aadhaar, is now the largest biometric database in the world. Australia, Brazil, Canada, Iraq, Israel, Netherlands, New Zealand, Norway and Ukraine all have biometric databases and/or national biometric IDs, and Russia’s new e-passport card has biometrics stored on a smart chip. It may not be long before we see biometrics as the primary mode of proving identity. While the global passport system relies on international passport systems’ interoperability, with so many countries turning to biometrics for identity verification and authentication a biometric based e-passport card system could be the future worldwide standard.

In coming months, the Interoperable Credential Verification Card (ICV) will be launched in the United States. The ICV is unique in that advanced biometric technology prevents any data stored within it from being released without the owner’s multi-modal biometrics, such as a fingerprint, iris, face or voice. Therefore the card cannot be read unless activated by the owner. The developers of the card have identified numerous identity management scenarios, including the biometric e-passport card. This type of card could be used for international travel in conjunction with passport booklets until they are eventually replaced.

Key to bridging the gap may be the implementation of low cost, mobile card readers and applications that can read the biometrics and log electronic visas. With mobile technology advances and lowered costs involved in upgrading technology, the future of a biometrically secured system for travel may be close at hand. If emerging economies and third world countries continue to adopt low cost, high tech biometric solutions they will eventually be at the forefront of this technology, which will force the adoption of similar solutions by other first world countries.

However, many foreign countries are fast embracing biometrics and building biometric databases with the future in mind. India’s national biometric ID program, Aadhaar, is now the largest biometric database in the world. Australia, Brazil, Canada, Iraq, Israel, Netherlands, New Zealand, Norway and Ukraine all have biometric databases and/or national biometric IDs, and Russia’s new e-passport card has biometrics stored on a smart chip. It may not be long before we see biometrics as the primary mode of proving identity. While the global passport system relies on international passport systems’ interoperability, with so many countries turning to biometrics for identity verification and authentication a biometric based e-passport card system could be the future worldwide standard.

In coming months, the Interoperable Credential Verification Card (ICV) will be launched in the United States. The ICV is unique in that advanced biometric technology prevents any data stored within it from being released without the owner’s multi-modal biometrics, such as a fingerprint, iris, face or voice. Therefore the card cannot be read unless activated by the owner. The developers of the card have identified numerous identity management scenarios, including the biometric e-passport card. This type of card could be used for international travel in conjunction with passport booklets until they are eventually replaced.

Key to bridging the gap may be the implementation of low cost, mobile card readers and applications that can read the biometrics and log electronic visas. With mobile technology advances and lowered costs involved in upgrading technology, the future of a biometrically secured system for travel may be close at hand. If emerging economies and third world countries continue to adopt low cost, high tech biometric solutions they will eventually be at the forefront of this technology, which will force the adoption of similar solutions by other first world countries.

HDIAC publishes short articles (spotlights) every two weeks on www.hdiac.org. Spotlights are high-level, short summaries of technologies, research, or events in our eight focus areas. They are typically one to two pages in length and include at least one picture for the homepage slider. Additional pictures are not required but are recommended, should support the text, and will be placed in the spotlight. All pictures must be of high resolution, approved and released for publication to HDIAC, and credited.

References should be fully cited at the end of the spotlight in APA format. Spotlights must be free of political opinion/positions, refrain from promoting a specific product or company, and not editorialize. The spotlight and any associated references will be added to the HDIAC collection.

Spotlights are published on hdiac.org along with a downloadable PDF versions and are posted to HDIAC’s twitter and LinkedIn accounts. Authors are encouraged to visit the HDIAC website to download and display the pdf. The spotlights can be re-published after they have been taken off the HDIAC website, and we appreciate citing HDIAC as the original source.

To submit a spotlight, send a complete spotlight to publications@hdiac.org. If you have an idea for a spotlight and would like to check that it falls within our focus areas, you can also email the idea to the same address.

Read the HDIAC Journal * Subscribe to the HDIAC * HDIAC Spotlight Archive

This content was published on August 10, 2015 as an HDIAC Spotlight at the following URL: https://www.hdiac.org/node/2078