Optical Security Features to Complement Chip-based Government Documents
Outline

Automatic border control and the PKD
Security threats & the role of manual inspection
Challenges and opportunities for optical security solutions
Automatic Border Control
e-Travel document designs today

Physical security features

Antenna

Chip
Data Groups and management of keys

Biographic data
- Name
- Date of birth
- Place of birth
- Gender
- Nationality
- Document number
- Expiration date

Biometric data
- Facial image
- Finger prints
- Iris scans

Security Data Object
- Hash values
- Digital signature
- Document certificate

Certification Authority (CA)
- CA Private key

ICAO Public Key Directory
- Government name
- Document Signing Certificate (DSC)
- Country Signing Certificate (CSR)
- Certificate Revocation List (CRL)
Counterfeit threats

van Beek J., “ePassports reloaded goes mobile”, BlackHat Europe 2009, Amsterdam
2014: The threat continues

Photograph courtesy of Canadian Border Services Agency
Substitution of chip/antenna assembly

Passes e-gate inspection without verification of Country Signing Certificate!

Photograph courtesy of Canadian Border Services Agency
Levels of trust

- No match
- Live scan match
  - (DSC) Hash values OK
  - (CSC) Document signing certificate OK
  - (CRL) Country signing certificate OK
- ICAO PKD membership required
Status of ICAO PKD membership

105 Countries issuing ePassports

- 59 ICAO PKD Members
- 46 Non-Members

Percentage of ePassports in circulation

- 24% Non-Members
- 76% ICAO PKD Members
Reliable manual inspection will be imperative

Presentation of e-Passport by document bearer

- Sufficient level of trust?
  - Yes
  - No

- Live captured biometrics match data on chip?
  - Yes
  - No

- Entry permitted

- Manual intervention
What can be verified during manual inspection?

- **KINEGRAM® CLI/MLI**
- **Tactile laser Window**
- **KINEGRAM® OVI**
Diverse range of customized document designs
Challenges for reliable manual inspection

- Knowing what security features to look for
- Knowing how to verify these
Integration by Design
Integration with Electronics
Customized Antenna

Customized Antenna with KINEGRAM Inlay

Customized Antenna with KINEGRAM Image
Summary

→ Electronic document verification has great potential to increase traveller convenience and security

→ Due to existing security gaps in the electronic verification process, document design concepts MUST continue to address the physical security of the token

→ Greater security can be derived by physically interlocking optical security with the document design and the electronic components
Thank you for your attention

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