Document Authentication

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3M Credentials

- Identification and Authentication business of 3M is a unit of the Security Systems Division
  - *Initial focus on document materials and secure laminates*
  - *Added Canada-based document issuance and border management business in 2002 (AiT)*
  - *2006 saw the addition of secure printer (SPSL – UK)*

  - *Acquired Rochford Thompson, document reader vendor, in 2007*

3M Projects

- Document Issuance
  - *Consular issuance of UK ePassport*
  - *Manufacture and domestic personalization of UK ePassport*
  - *Caricom Visa in support of Cricket World Cup*
  - *ILO Seafarer ID in Nigeria and Indonesia*
- Border Management
  - *KMAR – The Netherlands*
- Document Data Capture or Authentication
  - *Multiple airlines and national governments*

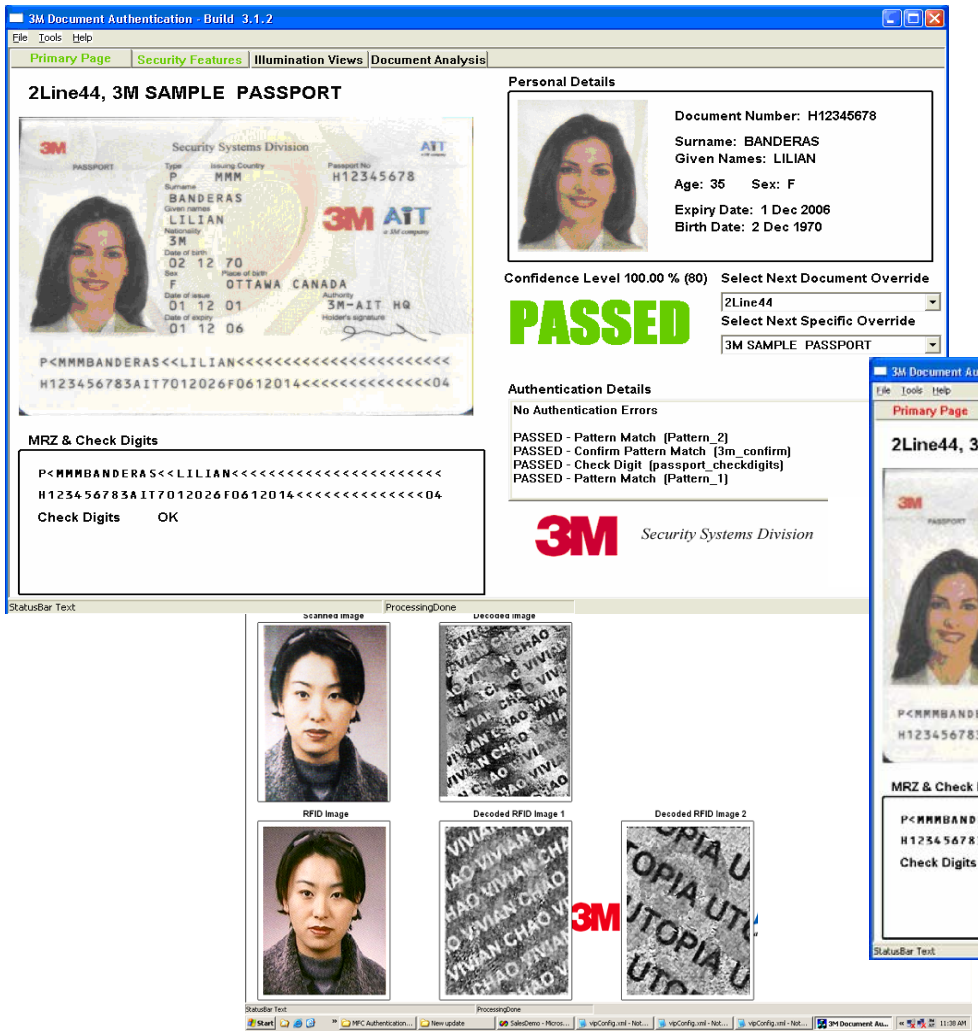
Document Authentication

- Identity Documents are secured in layers
  - *Materials: chips, laminates, inks, overt & covert attributes*
  - *Personnel and facilities*
  - *Process: controlled work flow, audit trails, reporting*
- In today's world, the detection of counterfeit ID documents requires:
  - *Optical document authentication*
  - *Electronic document authentication*

Optical Document Authentication

- Document data capture
  - *Multiple illuminations: visible, infra-red, ultra-violet, others*
- Document identification
  - *Data extraction: find text objects, barcodes and graphical patterns*
  - *Determine type: passport, visa, driver's license, national ID, other*
  - *Determine if known: is reference data available for comparisons?*
- Optical Authentication
  - *Compare document attributes to those of known references*
  - *Is there evidence of tampering?*

Optical Document Authentication

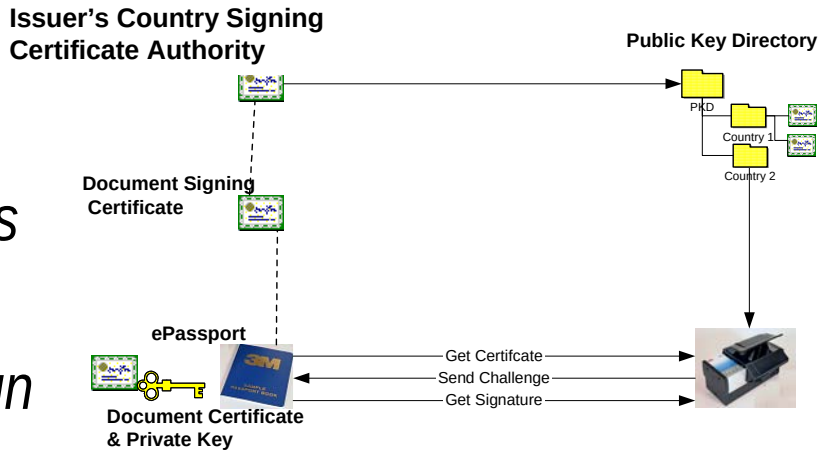


Electronic Document Authentication

- ePassports and SmartCards include microchips
- Data is secured using two mechanisms:
  - *Authentication: encoded information that is used to ensure that the content is original and unmodified*
  - *Access Control: only a knowledgeable or approved system may gain access to the electronic data*

Authentication Mechanisms:

- Passive Authentication
  - *A mandatory requirement of the ICAO specification*
  - *Verification of digital signature on the document's data groups (face, MRZ text, etc.)*
  - *Security Object can also be verified via PKD*
- Active Authentication
  - *Certificate stored in DG15*
  - *Inspection system challenges the chip*
  - *Chip uses a secret key to sign challenge data*
  - *Matching data proves that chip is not a clone*



Access Control

- Basic Access Control
  - *Requires reader to provide text from MRZ to gain access to electronic data*
- Extended Access Control
  - *Additional security for sensitive biometric data*
  - *Complements, does not replace BAC*
  - *Mutual validation of credentials: Chip Authentication & Terminal Authentication*
  - *Increase security of session keys*
  - *Limit access to Inspection Systems that can prove to the chip the right of access to 2nd biometric data*

EAC Components: Chip Authentication

- What it does
  - *Verifies that the chip is genuine, not cloned*
  - *Provides new, more secure session keys used to encrypt messages between chip and inspection system (prevents eavesdropping)*
  - *Must be executed after BAC*
- What it doesn't do
  - *Prove the contents of the chip are unaltered (use passive authentication)*
  - *Prove that the terminal has any right to access 'sensitive' data*
  - *Alter the security status on the chip*

EAC Components: Terminal Authentication

- Terminal Authentication
  - *Onus on now Inspection System to prove it is entitled to access 'sensitive' biometric data*
- What it does
  - *Prevents unauthorized access to sensitive data including fingerprints and iris scan if available*
  - *Must previously have performed Chip Authentication*
- What it doesn't do
  - *Prevent a stolen inspection system from gaining access to sensitive data groups*
  - *Prevent an inspection system being compromised*

Extended Access Control Issues

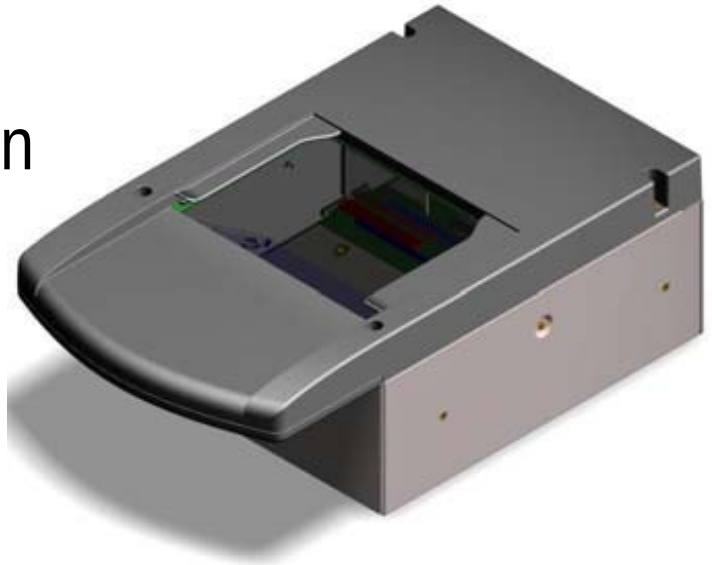
- Secure certificate storage and key management is required
  - *Each country is required to set-up and maintain a certificate infrastructure to issue and distribute certificates*
  - *Need bilateral relationships with each issuer*
  - *Constantly needs to be updated and maintained*
  - *Large number of certificates need to be managed*
- Location of key store
  - *Local: Timely access but must be secured and protected*
  - *Central: Reduced risk of "theft" but providing access to all inspection sites is an IT & telecom burden*
- What is the time impact on inspections?

Extended Access Control Issues

- Chips need to updated
  - *With date/time and new Country Verifier Certificate Authority Certificates to prevent access with 'old' certificates*
- No specification how the Inspection System interfaces with Document Verifier Certificate Authority or DVCA and CVCA
- Managing many inspection authorities with one country
  - *Over 30 different DVs in the Netherlands alone*
- Chips still in development
- Conformity specification in development
- Certificate policy document not implemented
- No PKI infrastructure in place

Wrap-up

- Document Authentication continues to mature
  - *Optical & Electronic authentication offer the highest levels of security assurance*
- Document Authentication is the next critical phase in validating travelers
- Full page readers and automation are fundamental tools for validation of documents



- Please enjoy the reception!