

Smart Borders and Beyond

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The promise of ABCs

- Automated verification of integrity of document – Security Features, Chip validation
- Automated tying of traveller to document – Facial recognition, fingerprint match
- Automatic decision on Entitlement

Types of travellers

Travellers at Border belong to two categories

- Once identity is proven, they have an automatic right to cross the border
 - Citizens returning home
 - Country groupings with unrestricted borders e.g. EU
- Once identity is proven, entitlement is decided at border

Entitled travellers

Two forms of entry systems

- Pre-registered
 - Countries with database of citizens and biometrics
 - Trusted travellers – with pre-registered biometrics
- Not registered
 - E.g. EU citizens

Pre-Registered travellers

- Biometric one to one match
- Token to look up biometric template
- Simple gates with biometric comparison capabilities



AUCTORIZO (medieval Latin)

- to confirm, approve, authenticate.

Non Registered

- Document needs to be validated
- Holder needs to be tied to document

Validating the document

- If non E-Passport
 - Check of security features in passport
 - Machine assisted verification of these features is not always reliable

Validating the document

- If E-Passports
 - Extract each DG from LDS and hash it. Compare with hash stored in SOD
 - If all hashes match, then verify signature of SOD using the Document Signing Certificate (DSC) used to sign the SOD
 - DSC may be available on chip
 - If not, DSC must be received from Issuing Authority
 - If signature passes, verify DSC using Country Signing Certificate Authority (CSCA)
 - CSCA must be received from Issuing Authority
 - If DSC is verified, check Certificate Revocation List (CRL) to check if DSC and CSCA are still valid
 - CRL must be received from Issuing Authority, CRL checking is blacklist checking

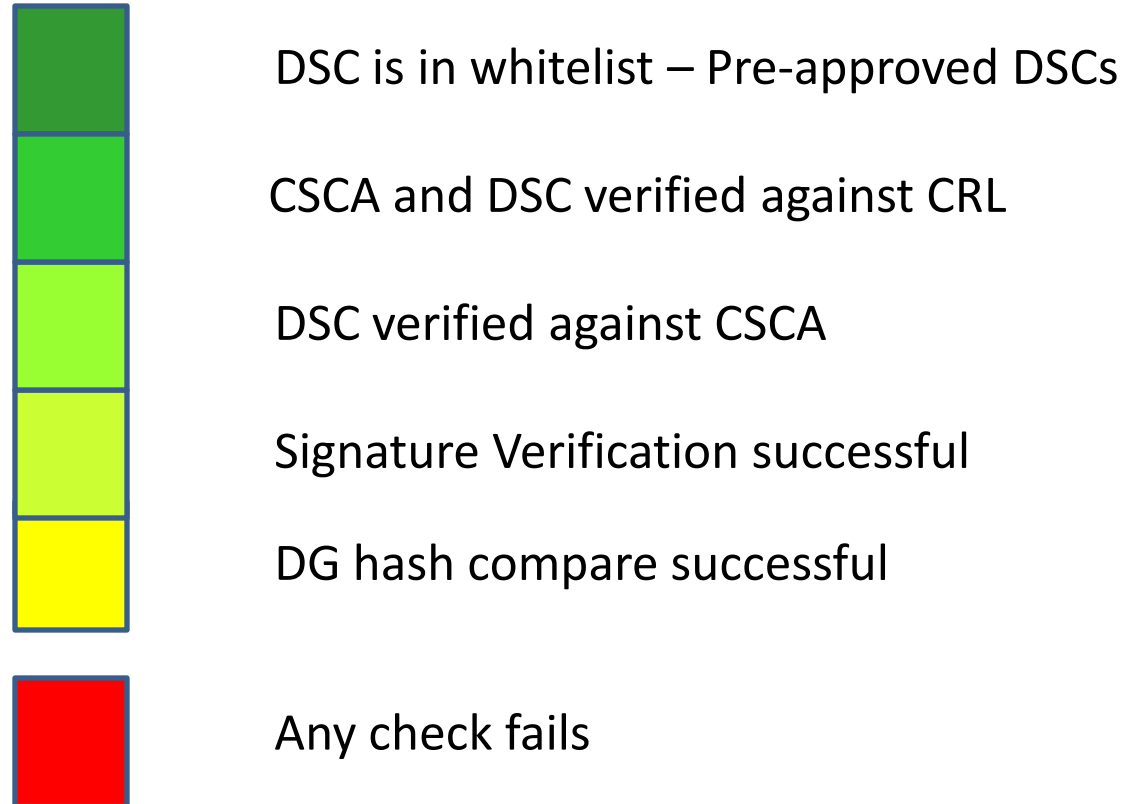
Validation issues

- DSC may not be on chip and not available through diplomatic means
- CRL may not be available or may not be latest
- CSCA exchange may not have been done with that country
- So, can you trust the E-Passport?

Trust Levels

- Ideally, entire process must be completed. In real life, “ideally” does not exist.
- Treat E-Passport validation as a series of increasing confidence in the validity of the document.

Trust Levels



Issues with ABC

- ABCs have a binary decision – Pass or Fail
- With so much uncertainty in having the right data to do validation, will it be easy to do a Pass/Fail test?
- Possible only if all countries whose citizens have the entitlement use E-Passports with on chip biometrics and are members of the PKD or some such distribution mechanism

Validating contents of chip

- IF ALL STEPS SUCCEED, THEN CHIP IS NOT TAMPERED – HOWEVER THIS IS NOT THE END OF THE VALIDATION.
- DG1 must match MRZ of the passport
- DG2 must match the face of the holder – Facial recognition – How reliable?
- DG3 fingerprint must match presented finger print
- AT THIS POINT, FULL ASSURANCE OF INTEGRITY OF DOCUMENT AND OF IDENTITY OF HOLDER



Non Entitled traveller

- Prior knowledge of person – rare
- Trust in integrity of document – doubtful
- Link between document and holder – dubious
- Entitlement – yet to be determined



Non Entitled travellers

- True value of E-Passport and machine assistance in verification
- Proper validation is still necessary

SUMMARY

- Think of the Security Context
- Machines are good – but never as good as Humans Enabled by Technology
- Improper planning and implementation can make your

AUTOMATED **B**ORDER **C**ONTROL

a

CONVENIENT **B**ACKDOOR **A**CCCESS

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THANK YOU

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