

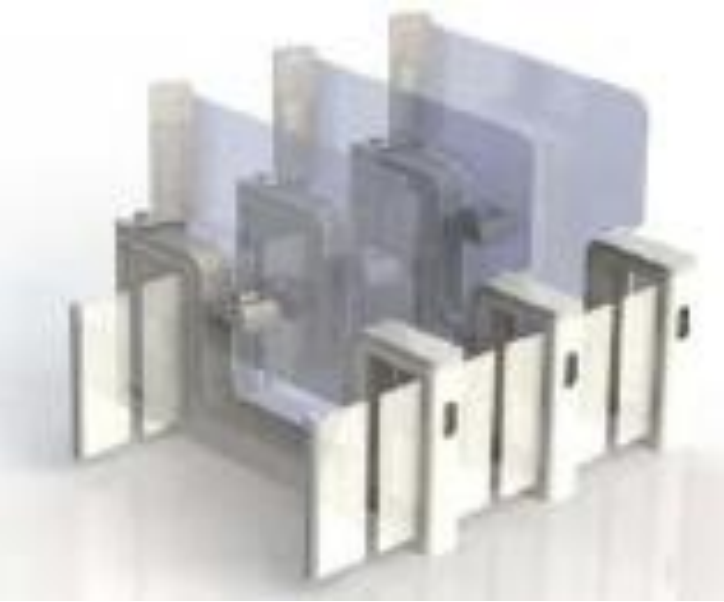


# **Establishing and Managing the Schengen Masterlist of CSCAs**

**Big City  
21/04/2015**

**European Commission – Directorate-General HOME  
Unit B3 – Information Systems for Borders and Security**

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Automated Border Control (ABC) uses various types of technology to (partially) automate the border-control processes.

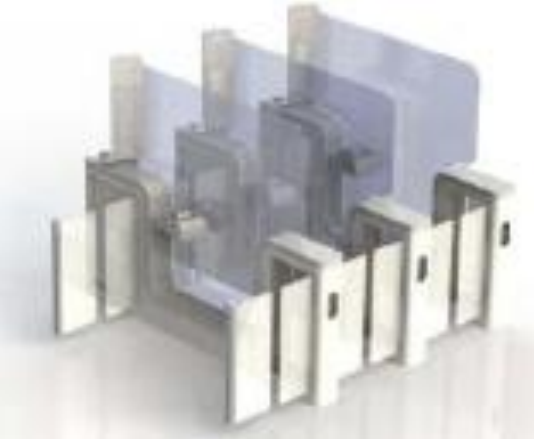
It uses devices like:

- eGates
- Self Service Kiosks
- Self Service Smart Devices

These devices are good at performing standardised, repetitive, administrative tasks.



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ABC generally requires the use of an electronic Machine Readable Travel Document (eMRTD) in absence of a human border-guard.

eMRTDs contain a chip which contains data of the bearer, including biometric data (facial-image, fingerprints, other?)

eMRTDs can be:

- Electronic passport (ePassport)
- Electronic Identity Card
- Electronic Residence permit
- Electronic tokens



# ABC for Third Country Nationals in Schengen



The SmartBorders initiative **will permit** the use of ABC for Third Country Nationals (TCN) **under specific conditions**.

As currently the case for EU citizens, the use of an electronic Machine Readable Travel Document (eMRTD) will be mandatory.



TCN would use self service kiosks to register/enroll personal details (including biometrics) and eGates to verify previously given personal details (including biometrics).

# Differences in document inspection



What is the significant difference between a 'machine' inspecting your passport and a human border-guard inspecting your passport?



*There are other significant differences requiring compensatory measures but these are not part of this initiative*

# eGate vs. border-guard Optical vs. Digital



P<NLDDE<BRUIJN<<WILLEKE<LISELOTTE<<<<<  
SPECI20142NLD6503101F240309699999999990<<

- DataGroup 1
- DataGroup 2
- DataGroup 3
- DataGroup 4
- DataGroup 12
- DataGroup 14
- DataGroup 15

Document Signer  
EF.SOD



(should) be  
checking electronic  
security features



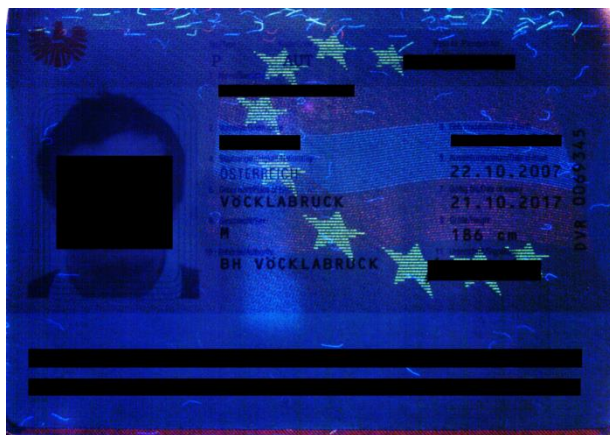
Checking  
(primarily) optical  
features



**How will the 'machine' determine that the document is GENUINE?**

## What about real document inspection algorithms?

- Commercially available document authentication systems
  - Typically use more sophisticated metrics/checks
  - Currently used in manual checking to assist the inspection process
  - Counterfeiter **MUST** create a document that fools the human observer **AND** the document inspection system at the same time
- **Attacks on fully automated document inspection can be tuned to exploit weaknesses of a specific checking algorithm in use**
  - We demonstrated this problem on a modified UV page of a real passport:



UV page of a real document.  
Similarity against ground-truth model: 87%



Modified UV page  
Similarity against ground-truth model: 94%





All data in the chip (alphanumeric & picture) of an eMRTD is digitally 'signed' by a Document Signer (DS) derived from the Country Signing Certification Authority (CSCA) certificate.

This digital signature can be verified against the 'trusted' CSCA (called PassiveAuthentication or ActiveAuthentication), leading to a high degree of assurance that the chip and its data are genuine

Disabling the 'original/real' chip in an eMRTD is simple; Creating a 'fake' chip with a new facial image that is linked to the real passport is simple;

In the majority of EU ABC eGates, the live-facial-image is compared to the facial-image extracted from the eMRTD; there is no (automated) comparison between the live-facial-image and the optical picture on the data-page of the passport

In case of a match (score > 80% for example), the border-guard does NOT intervene (generally)





# Masterlist contains trusted CSCA certificates with public keys



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JMRTD - CSCA Anchors

- CSCA
  - AE United Arab Emirates
  - AR Argentina
  - AT Austria
  - AU Australia
  - AZ Azerbaijan
  - BE Belgium
  - BG Bulgaria
  - CA Canada
  - CH Switzerland
  - CL Chile
  - CN China
  - CY Cyprus
  - CZ Czech Republic
  - DE Germany
  - DK Denmark
  - EE Estonia
  - ES Spain
  - FI Finland
  - FR France
  - GB United Kingdom
  - GR Greece
  - HR Croatia
  - HU Hungary
  - IE Ireland
  - IL Israel
  - IS Iceland
  - IT Italy
  - JP Japan
  - KR Korea Republic of
  - KZ Kazakhstan
  - LI Liechtenstein
  - LT Lithuania
  - LU Luxembourg
  - LV Latvia
  - MC Monaco
  - MD Moldova
    - C=MD, O=REGISTRU, OU=MRTD Department, CN=ePassport CSCA (4867059947298461103)
    - CN=Moldova ePassport CSCA, OU=Centrul de certificare a cheilor publice, O=IS Centrul de telecomunicatii speciale, L=Chisinau, ST=Moldova Republic of, C=MD (1299074708)
  - MK Macedonia the former Yugoslav Republic of
  - MT Malta
  - MY Malaysia
  - NL Netherlands
    - C=NL, O=State of the Netherlands, OU=Ministry of the Interior and Kingdom Relations, CN=CSCA NL, OID.2.5.4.5=3 (550)
    - C=NL, O=Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, OU=Immigratie- en Naturalisatiedienst, CN=CSCA IND (28)
    - C=NL, O=State of the Netherlands, OU=Ministry of the Interior and Kingdom Relations, CN=CSCA NL, OID.2.5.4.5=2 (314)
    - C=NL, O=State of the Netherlands, OU=Ministry of the Interior and Kingdom Relations, CN=CSCA NL, OID.2.5.4.5=4 (812)
    - C=NL, O=Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, OU=Immigratie- en Naturalisatiedienst, CN=CSCA IND, OID.2.5.4.5=2 (55)
  - NO Norway
  - NZ New Zealand
  - PL Poland
  - PT Portugal
  - RO Romania
  - RS Serbia
  - RU Russian Federation

JMRTD - Certificate

subject:  
c=md  
o=registru  
ou=mrt department  
cn=epassport csca

issuer:  
c=md  
o=registru  
ou=mrt department  
cn=epassport csca

Not before: Thu Dec 27 13:06:42 CET 2012  
Not after: Thu Apr 27 14:06:42 CEST 2023

Serial number: 4867059947298461103

RSA Public Key  
public exponent = 65537  
modulus = 293656500693202539246471679120689134775876498122269

JMRTD - Certificate

subject:  
c=nl  
o=state of the netherlands  
ou=ministry of the interior and kingdom relations  
cn=csca nl  
2.5.4.5=#130134

issuer:  
c=nl  
o=state of the netherlands  
ou=ministry of the interior and kingdom relations  
cn=csca nl  
2.5.4.5=#130134

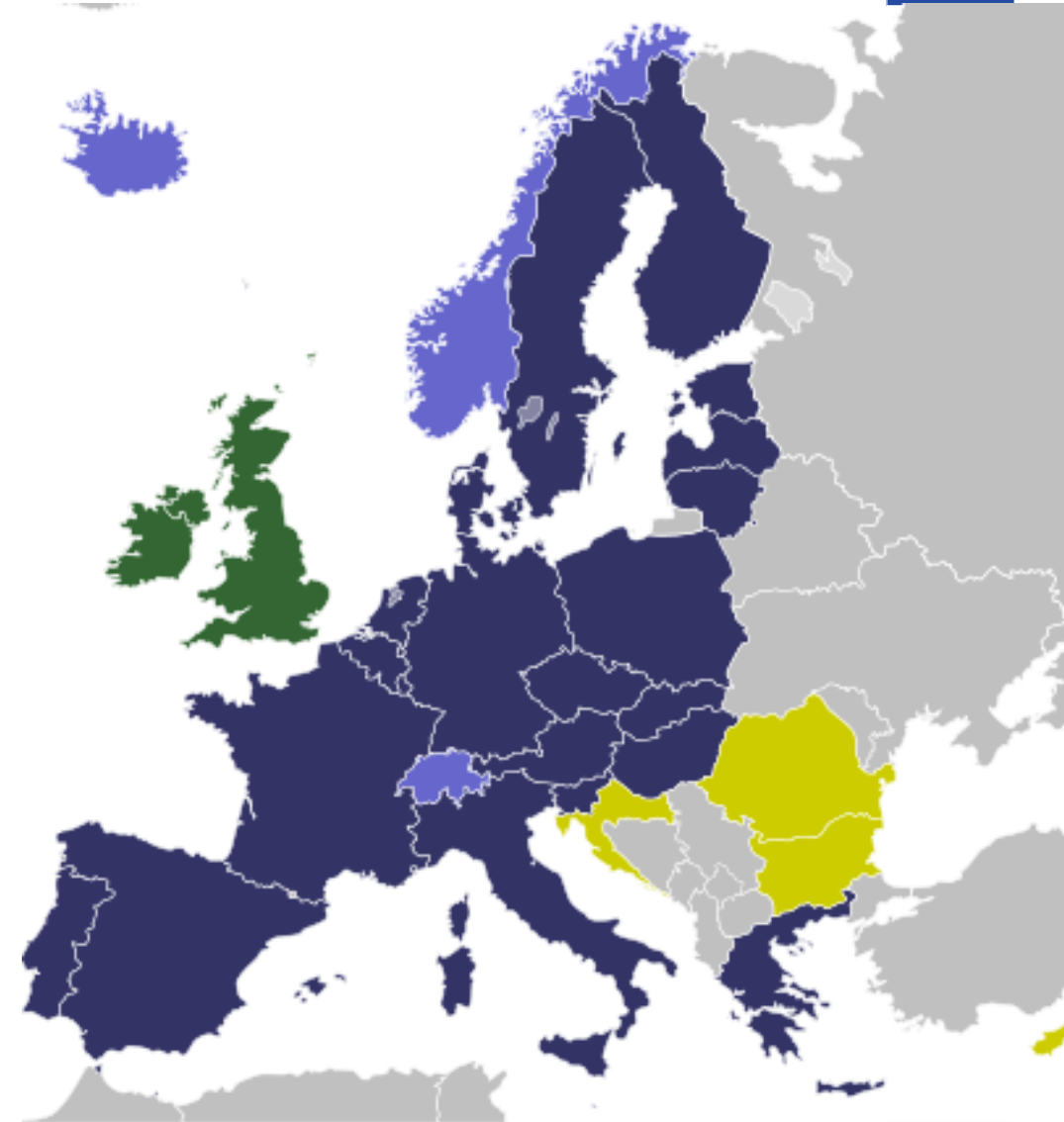
Not before: Fri Feb 21 01:00:00 CET 2014  
Not after: Tue Mar 02 01:00:00 CET 2027

Serial number: 812

# Masterlists in the EU/Schengen & Worldwide?



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**We seem to have  
Masterlists in:  
DE, CH, ES, HU (on PKD)**

**Trusted CSCA collections  
seem to exist in:  
NL, FI, PT**

**What about other  
countries?  
-in EU  
-in the World**



Might with count

...and



[Home](#) > [Reisdocumenten](#) > [Informatiebank](#) > [Procedures](#)

- Reisdocumenten
- Paspoort en Nederlandse identiteitskaart model 2014
- Voorlichtingsfilms Reisdocumenten
- Regiobijeenkomsten Reisdocumenten 2014
- Echtheidskenmerken
- Security features
- Basisregister Reisdocumenten
- Register Paspoortsignaleringen
- Zelfevaluatie paspoort en Nederlandse identiteitskaart
- Vraag en antwoord reisdocumenten
- Informatiebank
  - Juridisch
  - Procedures**
  - Communicatie

## Download certificaten

Webpagina | 07-06-2010

**Over de persoonsgegevens die in de chip zijn opgeslagen, is een digitale handtekening gezet. Iedere chip bevat een DS-certificaat waarmee de digitale handtekening kan worden geverifieerd. De authenticiteit van het DS-certificaat in de chip kan worden nagegaan aan de hand van het bijbehorende CSCA-certificaat. Download hier de CSCA-certificaten en de Certificate Revocation List.**

Heeft u problemen met het downloaden van de certificaten? Neem dan contact op met uw ICT-afdeling. Oorzaak van het probleem kan zijn:

- de beveiligingsinstellingen van uw netwerk
- u gebruikt een verouderde versie van uw browser

**Kenmerk:** Digitale handtekening

**Plaats:** Alle documenten met een contactloze chip.

**Eigenschap:** Over de persoonsgegevens die zich in de chip bevinden, wordt een digitale handtekening gezet. Het DS-certificaat waarmee de handtekening kan worden geverifieerd is opgenomen in de chip. De authenticiteit

### Downloads

- CSCA NL 1
- CSCA NL 2
- CSCA NL 3
- CSCA NL 4
- Link certificate CSCA NL 1 - CSCA NL 2
- Link certificate CSCA NL 2 - CSCA NL 3
- Link certificate CSCA NL 3 - CSCA NL 4
- Certificate Revocation List
- Vingerafdrukken CSCA-certificaten

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# Schengen Masterlist Pilot

## Collaborative approach to validate new CSCA



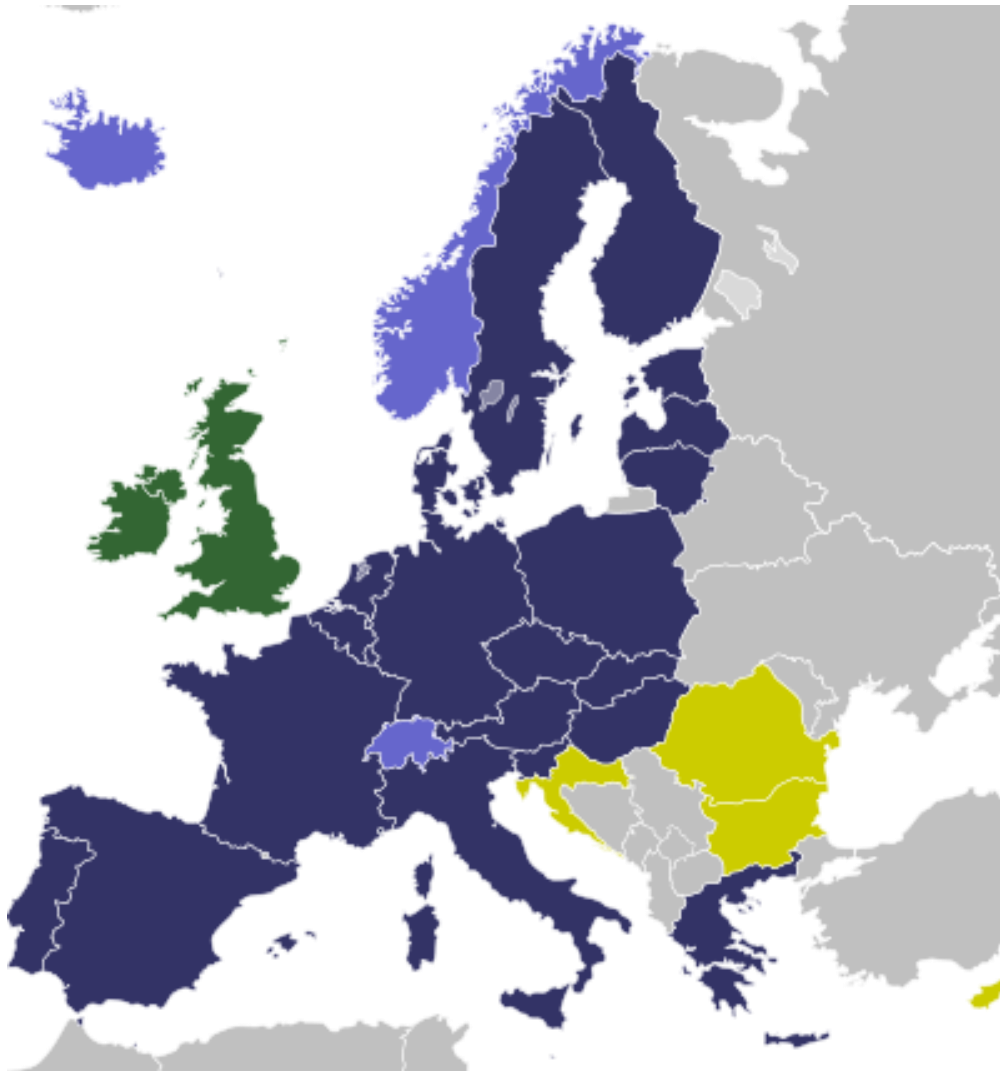
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**The most complex problem in establishing a common Masterlist is agreeing on HOW to validate new CSCAs.**

**Example:**

**"a CSCA from Panama is received"**

- **How to distribute it to all MS+?**
- **Who is able to validate against DS's obtained from actual ePassports?**
- **Common rules on validation?**
- **How many ePassports?**
- **During which time-span?**
- **How many locations?**





So I have a dream....

- Up-to-date, (automated, mandatory) collection of EU CSCAs (Passport, ID-card, Residence permit)
- Active personal contacts with all third-countries issuing eMRTDs
- Validation of CSCA certificates to actual passports/ID-cards/Residence permits, that are seen in border-control
- Collaborative approach to validating CSCA into Schengen Masterlist
- Central storage of Schengen masterlist (but also in PKD)
- Technical facilitation of using a masterlist at border-control



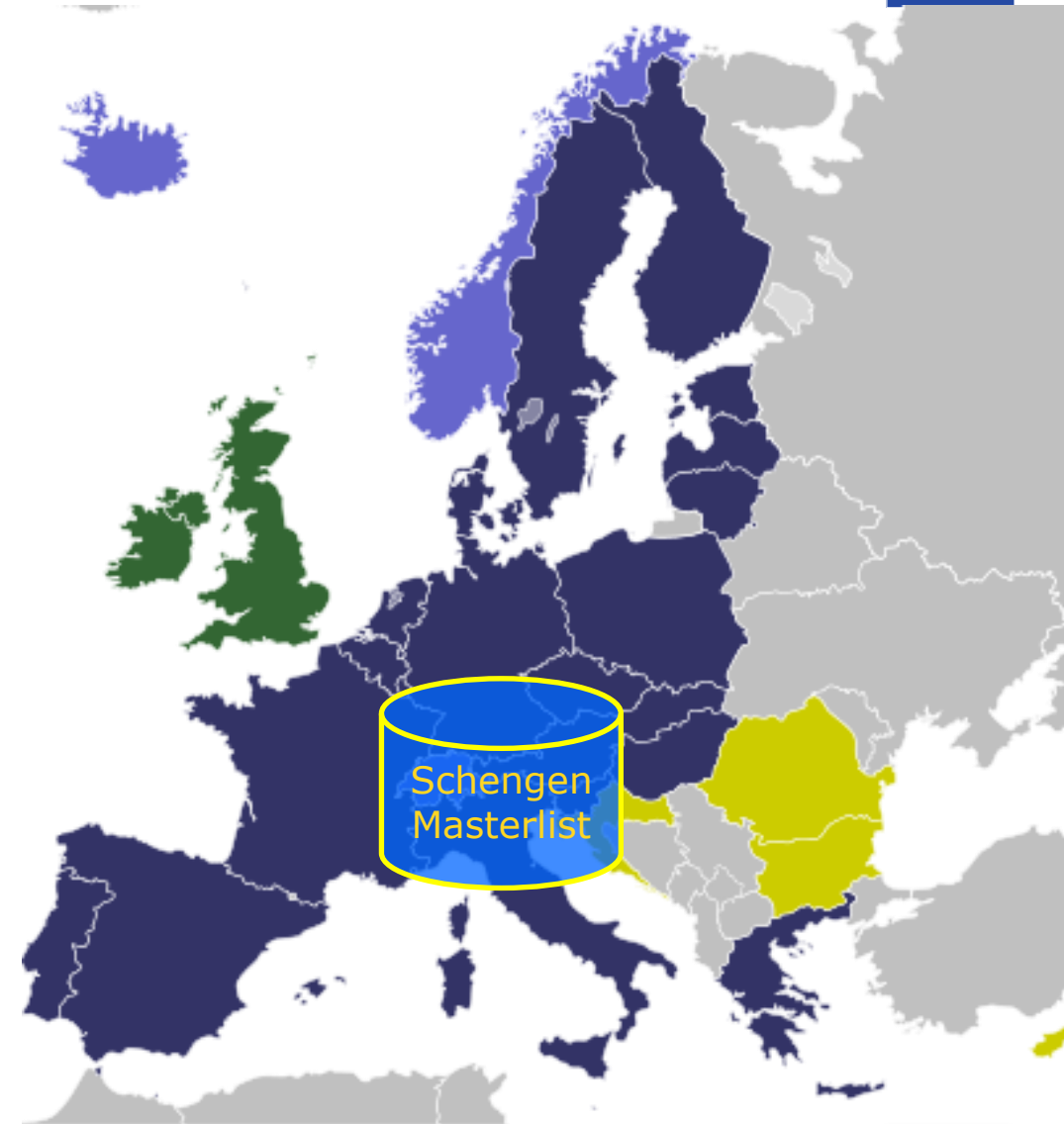
To analyse its feasibility, we'll do a pilot:

- Take existing Masterlists in the EU and have MS validate the existing CSCA's on those list, then merge into a new Schengen Masterlist
- Request all MS to validate the content of this new Masterlist
- Sign Schengen Masterlist with the EU Laissez-Passer CSCA certificate
- Distribute this CSCA in an Article 6 meeting in Brussels
- Publish the pilot Schengen Masterlist on a server, possibly upload to ICAO PKD
- Choose limited number of ABC pilots to use this list
- Help MS to use this list
- Try to update the list with new CSCA's.....

# Using the Schengen Masterlist



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**The Schengen Masterlist would probably be published on a JRC server, hosted in Ispra (IT)**

**The EU Laissez-Passer CSCA would be used to sign it.**

**Once member of ICAO PKD, it would also be uploaded to the PKD.**





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## EU Smart Borders Initiative

Be one of the first to participate in  
the **European Smart Borders Pilot!**

### Can I participate?

Yes, if:

- you're a **non-EU** citizen;
- you are **18 years old** or more;
- you have an **electronic passport** issued by one of the countries represented below:



Chile



Thailand



Japan



Kazakhstan



Singapore



Korea



Macedonia



Canada



China



Serbia



USA



Australia



Turkey



Venezuela



New Zealand



United Arab Emirates



Brazil



Taiwan



Togo



Russia



### Electronic Passport Symbol

Your Passport should have this symbol on the cover



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**Thank you**