

Automated Border Control based on (ICAO compliant) eMRTDs



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Outline

- Update on EasyPASS
 - Operational experiences/figures
- EasyPASS PLUS pilot project
 - Support for the new German ID card
 - Background infrastructure (EAC PKI)
- ABC in Europe
 - ABC installations
 - Frontex ABC guidelines

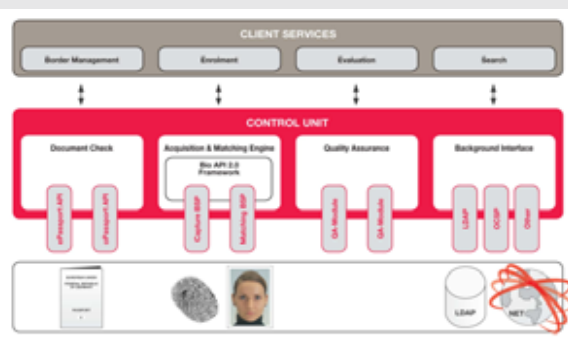
EasyPASS – overview

- ABC system operated by the German Federal Police
- Located at Frankfurt Airport
- 4 self-service eGates, 1 monitoring station
- Open for citizens from 31 European countries (18+ years old)
- Timetable
 - Start of operation was in August 2009
 - Pilot phase until March 2010
 - Since April 2010 regular operation



EasyPASS – system architecture

- Software integration platform BioMiddle
 - Modular and platform independent architecture for biometric applications
 - Standard interfaces and protocols (SOAP, BioAPI 2.0, ISO/IEC 19794-x, etc.)
 - Allows for an easy integration of document readers, biometric components and background systems
- Image acquisition
 - Integration of camera via BioAPI Capture BSP
 - Internal pre-qualification regarding ISO19794-5
- Face verification
 - Different face comparison algorithms for the pilot phase, each integrated as BioAPI Verification BSP



EasyPASS – operational figures (1)

- **≈ 500** users passing through EasyPASS per day
- **88%** success rate
 - border crossing without manual interaction
- **12%** operational reject rate
 - additional manual inspection by border guard
 - **≈ 5%** rejected due to face verification failed
 - **@ ≈ 0,1% FAR** (False Accept Rate)
 - **≈ 7%** rejected by the system due to other reasons
 - non compliant user behaviour
 - document check failed
 - hits from background database checks

EasyPASS – operational figures (2)

- **≈ 18 sec.** average time period to pass the eGate
 - Time from presenting the ePassport on the DocReader until the system is ready to process next traveller
- Average time periods for main sub-processes
 - **5 - 6 sec.** for Reading and checking ePassport data (optical and electronic checks)
 - **5 - 6 sec.** for the traveller to enter the eGate
 - **1 sec.** for biometrics (face capture and comparison)
 - **5 - 6 sec.** for the traveller to leave the eGate

EasyPASS – main lessons learned

- Verification thresholds recommended by vendors did not fit to the actual application scenario
 - Appropriate thresholds have to be calculated based on the real user group and the actual system setup
- Electronic document checks are reliable
 - **< 0,1%** of the travellers are rejected due to failures of the electronic document checks
 - Availability of CSCA certificates is a key issue
- Travellers
 - do not know if they carry an ePassport
 - are not familiar with the document reader
 - are happy with the fast and easy process

EasyPASS PLUS pilot project

- Pilot project of BSI and the German Federal Police
- Main goals
 - Support for the new German national ID card in EasyPASS
 - Development and implementation of the background infrastructure (EAC-PKI)
 - Terminal Control Center - TCC
- Timetable
 - Pilot operation since August 2011
 - Pilot phase until June 2012



New German ID card

Card body



**Since Nov. 2010:
credit-card-size ID 1 format**

Electronic functions

Access to all electronic functions/data via Extended Access Control Version 2 (EAC 2)

- access certificates are mandatory (EAC-PKI)

1. eMRTD function incl. biometrics

- digital photograph and (upon request) two fingerprints
- only for entitled authorities, e.g. border control

2. Electronic ID function

- for E-Business- and E-Government
- access only to certain non-biometric data fields

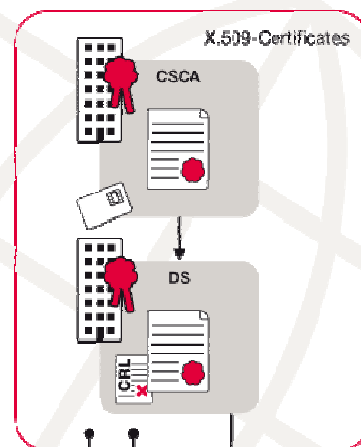
3. Qualified electronic signature

- upon request

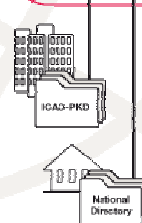
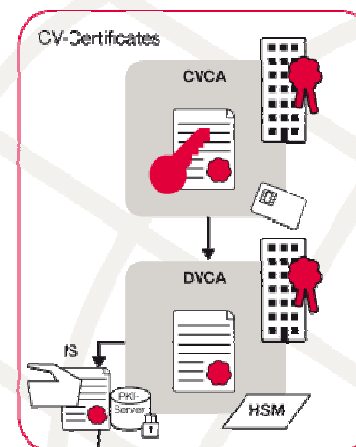
eMRTD PKI landscape

EasyPASS until Q3/2011

ICAO-PKI



EAC-PKI



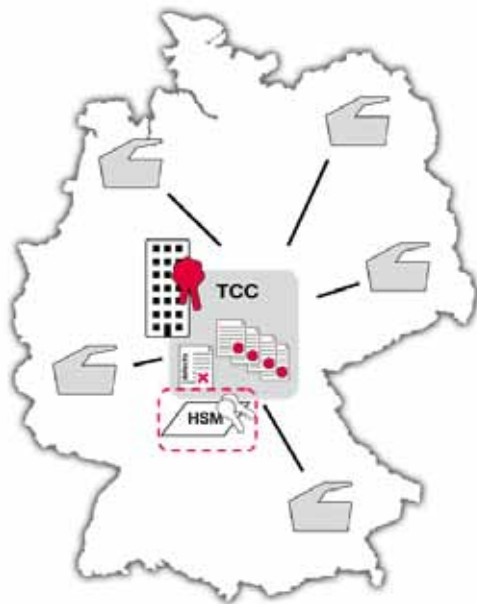
Passive
Authentication

Terminal
Authentication



Trust Anchor

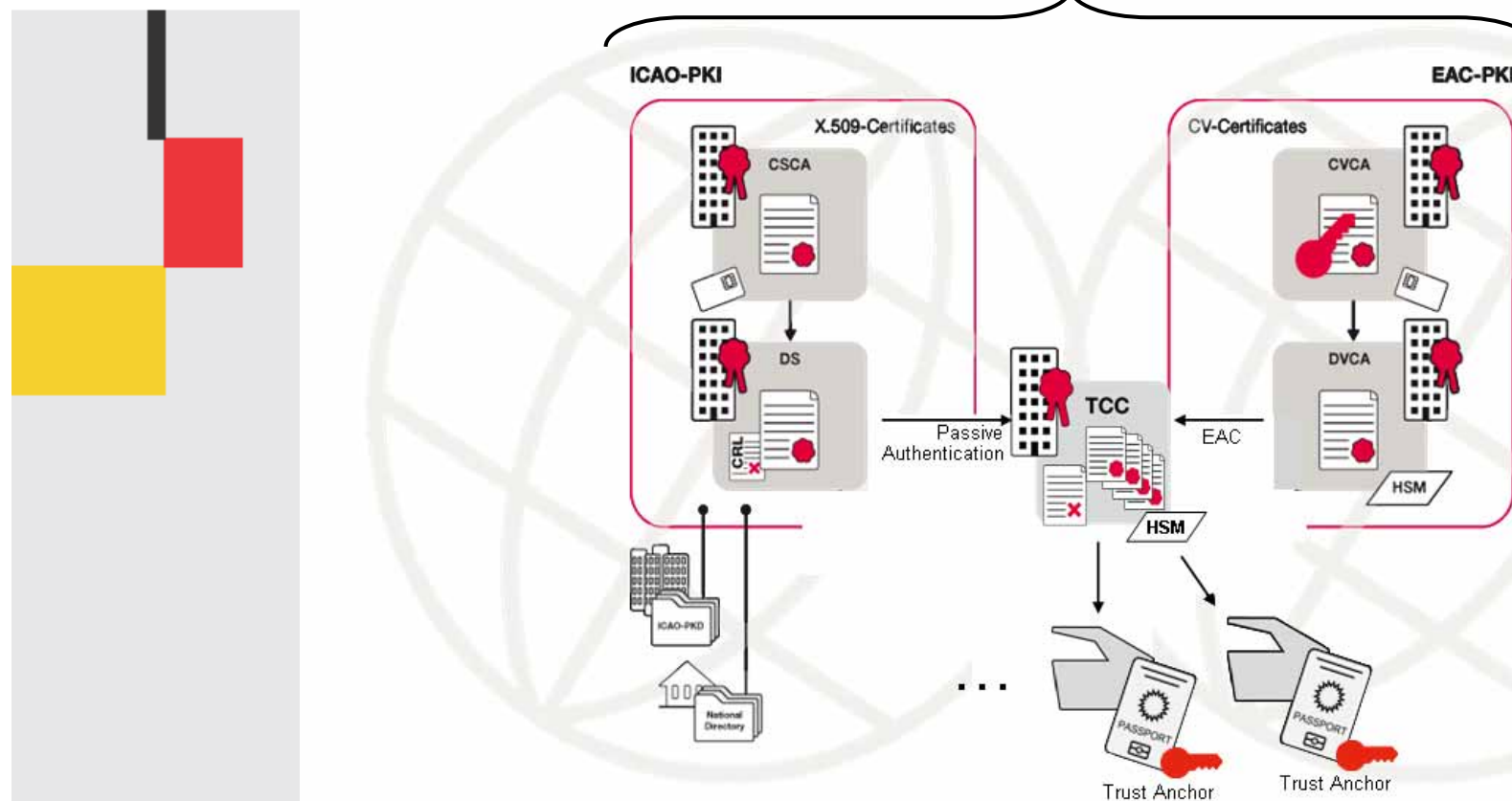
TCC – Terminal Control Center



- TCC as central PKI component
 - Management of certificates and cryptographic keys
 - Authentication of connected terminals
 - Communication to DVCA and terminals via standardized interfaces
- ICAO-PKI (TCC for Passive Authentication)
 - Central storage of trusted CSCA certificates
 - Centralized checking of DS certificates
- EAC-PKI (TCC as core of the Inspection System)
 - Central storage of private keys in HSM
 - Easy certificate management incl. renewal

eMRTD PKI landscape incl. Terminal Control Center

EasyPASS since Q4/2011



EasyPASS – summing-up

- Combination of different checks to ensure a secure ABC process
 - Complete checking of eMRTD electronic security features at a high reliability level
 - **Biometrics are of no use, if not authenticated!**
- Fast and easy process (approx. 18 sec)
- Innovative software architecture (BioMiddle)
- Detailed monitoring of real life performance
- Since Q4/2011 support for the German ID card
 - Centralized checking of DS certificates and EAC via Terminal Control Center (TCC)
- Future challenges in the ABC / eGate area
 - Multiapplication (eMRTD, Visa, RTP)
 - Multibiometric (face, fingerprint, iris)



ABC installations in Europe

Country	System	Start of Operation	Locations	Token	Biometrics
PT	RAPID	2007	all int. airports	ePassport	face
UK	ePassport Gates	2008	all major int. airports	ePassport	face
FI	ABC lines	2008	Helsinki airport and Vaalimaa BCP	ePassport	face
FR	PARAFES	2009	2 airports (Paris CDG and Orly)	RTP / ePassport from 2012 on	fingerprint
DE	EasyPASS	2010	Frankfurt airport	ePassport / German ID card	face
ES	ABC system	2010	2 airports (Madrid and Barcelona)	ePassport / Spanish ID card	face / fingerprint
CZ	EasyGO	2011	Prague airport	ePassport	face
NL	No-Q	2012	Amsterdam airport	ePassport	face

Frontex ABC Guidelines

- ABC Working Group
 - NL, UK, FI, ES, PT, FR and DE
 - WG started in Feb. 2010
- *Best Practice Guidelines on the Design, Deployment and Operation of ABC Systems
 - Version 1.1, March 2011
 - Biometrics: face verification only
- ABC Guidelines version 2.0 (coming in Q2/2012)
 - Two separate documents (technical / operational)
 - Biometrics: face and fingerprint



*http://www.frontex.europa.eu/gfx/frontex/files/abc_best_practice_guidelines_v1.1.pdf

Thank you!



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