ORIGINS – Project Overview & First Results
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Agenda

- Setting the scene of breeder documents
- The ORIGINS project
- First results and findings
- Preliminary recommendations
- Standardisation activities
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Setting the scene (1)

- **Definitions**
  - “A document, genuine or fraudulent, that can serve as a basis to obtain other identification documents or benefits fraudulently” (Oxford Dictionary)
  - “Breeder document are documents used for access to other forms of legitimate identification for the purpose of establishing a false identity” (US Legal)
  - “A document that allows you to obtain other documents”
    - *Examples: Birth certificates, Marriage certificates, Social security, Consular identification card, ...*
  - “Documentary evidence that bear identifying details and nationality and are issued by a trusted government or other official source. » (ICBWG, ICAO 2009)
Setting the scene (2)

Current passport issuance scheme
Setting the scene (3)

• Breeder documents in the EU
  - “The issuing of passports in the Member States of the EU is dealt with under the national law of those Member States.
  - National law requires the presentation of various documents, such as a birth certificate, citizenship certificate, family book, parental authorization, driving license, utility bill, etc.
  - These documents are usually called "breeder" documents, as passports may stem from them.”

• European Data Protection Supervisor (EDPS) on e-passports regulation
Forged or stolen breeder documents can create genuine passports!

Why? ...
Agenda

- Setting the scene of breeder documents
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- Preliminary recommendations
- Standardisation activities
ORIGINS Project (1)

http://www.ORIGIN-project.eu/

Montreal TRIP Conference ICAO, November 2016
ORIGINS Project (2)

Objectives

To **analyse** the current issuance of breeder documents used for passport delivery

To **identify** security loopholes in this process

To **harmonize** the way in which breeder documents are produced and which of them are required for a passport

To **propose** adequate security measures and processes to enhance the security of breeder documents
ORIGINS Project (3)

Expected Results

- Improve the chain lifecycle of ID documents, from breeder to passport issuance.
- Provision of security features to enhance both breeder document and link with applicant.
- Provision of training methods and recommendations to government stakeholders.
- Initiate a standardisation procedure.
Interviews performed in 20 countries

- Passport application process and breeder documents issuance in **20 countries**
- EU/Schengen/associate countries/EU membership prospects
- Representative in terms of population size, geographical localization

**48 government agencies**

**36 face-to-face interviews**

Overview of the existing practices, commonalities & differences between national schemes
Agenda

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## Findings and results (1) : best practices

<table>
<thead>
<tr>
<th>Process</th>
<th>Data collection, exchange and verification</th>
<th>Best practices sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Decentralised passport application process but centralized passport issuance)</td>
<td>• Use of passport database with automatic data processing</td>
<td>• Task Force on Identity fraud</td>
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<td>• Digital transformation in progress</td>
<td>• Use of central registers with civil identification of physical persons</td>
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<td></td>
<td>• Digital exchange of civil events data between municipalities</td>
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<td></td>
<td>• Cross verification of application data using various information sources</td>
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<td></td>
<td>• Holistic management of lost or stolen documents,</td>
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<td></td>
<td>• Portrait live acquisition to avoid any fraud on facial photo</td>
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<tr>
<td></td>
<td>• QR code to secure paper breeder documents</td>
<td></td>
</tr>
</tbody>
</table>
Findings and results (2) : best practices

• Breeder documents issuance :
  – Registration
    • Birth and death registration based on a statement, report or notification by a hospital
    • Central or centrally consolidated civil registers
    • Civil/Population register : single source with all relevant data : foundations of the efficient Identity Systems
    • Digital transformation
      – Automatic data update in registers.
      – Online event notification and/or registration
  – Issuance of certificates:
    • Limitation of the number of persons who can apply for a Breeder document
    • Delivery in person
  – Once-only principle: information sharing between public administrations compliant with personal data privacy rules
  – Data access: Reliable authentication and communication security for civil officers and citizens
Findings and results (3) : Country differences

- **Birth Registration (Identity Creation)**
  - ✓ Face to face declaration by parents or family members (online declaration service not broadly implemented)
  - ✓ Proof of birth (medical certificate) required
    - Medical notification directly to the civil registry (online or by post) for birth at hospital
  - ✓ Civil Registration sometimes available at hospitals
  - ✓ Sometimes it generates a unique National number to the baby
  - ✓ No verification of applicant’s ID

- **Death Registration (Identity Termination)**
  - ✓ Face to face declaration or online (3 countries)
  - ✓ Medical certificate request except for one country
  - ✓ Declaration not restricted to family members
  - ✓ No verification of applicant’s ID
Findings and results (5)

Civil status harmonisation initiated but still not unified

- **CIEC/ICCS**: International Commission on Civil Status founded in 1948
  - Facilitate international co-operation in civil-status matters
  - 10 members, 9 observer members (European and non European)
  - 34 conventions and 11 recommendations
    - Harmonisation of format and content of civil data records and extracts
    - Recommendation for combatting fraud
  - Project of Platform to enable secure electronic transmission of civil-status document between states

- **ECRN**: European Civil Registry Network
  - Launched in 2008
  - Pilot among Civil Registries and Administrations to allow safe transmission and identification of the civil acts exchanged between European administrations
    - ECRN civil act web application on a certified platform
    - Obtain a certificate from another country in 2-3 days
  - 7 EU countries: Belgium, Germany, Italy, Netherlands, Poland, Romania, Slovenia

Not all EU members, need for a unified approach and common acceptance of findings
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Preliminary recommendations (1)

- Physical and optical security features for breeder documents
- Many outcomes from FIDELITY

Security features proposed for breeder documents:
Preliminary recommendations (3)

- **Biometrics**
  - Ensure a strong link between document and the document holder
  - Multiple modalities exist
  - Lifetime of document
    - *biometric ageing?*
  - Central database or data stored on document
Preliminary recommendations (4)

- **Biometrics**
  - Stability of biometric characteristics is key to long-term recognition.
  - Diverse biometric characteristics have been analysed with respect to ageing effects.
  - In addition, the feasibility of recognizing infants has been investigated.
• Researches suggest that iris and fingerprint should be the biometric characteristic of choice for reliable long-term recognition.

• However, different challenges have to be solved:
  – Sensor interoperability
  – Image quality
  – Template ageing effects
  – Sensor ageing effects
Preliminary recommendations (6)

- Biometrics

Offline approach similar to ePassport

Fig. 1. Proposed birth certificate layout and overview of the processing chain of this study. Sizes of barcodes in Fig. 1(a) correspond to the approximated storage requirement for the compressed biometric sample.
Preliminary recommendations (7)

Biometrics

Human readable data
- Given Names
- Surname
- Date of birth
- ID No.
- Nationality
- Place of birth etc.
- Signature of parents

Machine readable data
- Encoding of left index finger
- Encoding of left iris

Overview of relevant parameters of employed databases:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Name</th>
<th>Sensor</th>
<th>Format</th>
<th>Image resolution</th>
<th>File size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fingerprint</td>
<td>FVC02 DB1</td>
<td>TouchView II (optical)</td>
<td>Finger-image</td>
<td>588x374 px</td>
<td>142 KB</td>
</tr>
<tr>
<td></td>
<td>FVC02 DB3</td>
<td>100 SC (capacitive)</td>
<td>Finger-image</td>
<td>300x300 px</td>
<td>88 KB</td>
</tr>
<tr>
<td>Iris</td>
<td>IITDvl</td>
<td>BioSecure 3000 (NIR)</td>
<td>Cropped</td>
<td>640x480 px</td>
<td>300 KB</td>
</tr>
</tbody>
</table>

Fig. 2. Uncompressed image samples (images correspond to the first instance of the first subject).
Preliminary recommendations (8)

- **Facial photograph**
  - Current procedure
    - *Facial image captured by public photographer*
    - *Printed and sold to customer*
    - *Scanned before document personalisation*
    - *Weakness of process:*
      - Image can be altered by document holder
      - Digital gap: digital -> analog → analog -> digital
  - ORIGINS Recommendations:
    - *Take picture directly in government office*
    - *Or at least send picture digitally signed to personalisation process*
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Standardisation activities (1)

• A voluntary standard may be the starting point to ensure harmonisation of security features and facilitate interoperability between MS Europe
• Setting-up of best practices for issuance and use of breeder documents
• Minimum set of requirements
• The standard should specify interoperable process without limiting or discriminating technologies
• An European Standardization initiative (rather than ISO) is considered to raise a first level agreement and implement key recommendations
• Issues are global: an overall standard should aim international level
Standardisation activities (2)

- **ICAO**
- **ISO/SC27**
- **ISO/SC37**
  - Biometrics standards on fingerprint, iris, facial recognition...
- **ISO/TC292/WG4**
  - ISO 12931:2012 Performance criteria for authentication solutions used to combat counterfeiting of material goods
Standardisation activities (3)

Launched at Berlin on October 14th 2016

**Technical Specification/Standard for**

- Definition of use cases
- Technology neutral
- Open trust management environment
- Trust interoperability among different breeder documents
- Requirements on biometrics’ use for breeder document ownership verification

**CEN TC224**
(Personal identification and related personal devices with secure element, systems, operations and privacy in a multi sectorial environment)

**ISO SC17**
(Cards and personal identification)

**ISO SC27**
(IT Security techniques)

**ISO SC37**
(Biometrics)

**ICAO NTWG**