Quo Vadis Prüm?

Facial-image as a new biometric modality

20 April 2021

European Commission – Directorate-General Migration & Home Affairs
Unit D1 – Police Cooperation and Information Exchange
Multi-modal biometrics

Acquire & Insert (& Search)

AFIS
Mugshots & Trace Facial-Images
Biographics
Other data
DNA

Unique Record Locator

Family Name: Le Rouge
First Name: John
Gender: M
Date of Birth: 02/04/1970
Passport: P/UK/97657825

Police

Search

Police
### MS with Facial-Image Databases

<table>
<thead>
<tr>
<th>EU Member State</th>
<th>Year of impl.</th>
<th>Database</th>
<th>No. of images</th>
<th>No. of persons</th>
<th>Person categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>2020</td>
<td>EDE - Criminal identification database</td>
<td>1.26 M</td>
<td>620 000</td>
<td>criminals</td>
</tr>
<tr>
<td>Finland</td>
<td>2020</td>
<td>RETU - registered persons identifying features database and Aliens database</td>
<td></td>
<td></td>
<td>suspects, asylum seekers and aliens</td>
</tr>
<tr>
<td>France</td>
<td>2013</td>
<td>TAJ - criminal case history database</td>
<td>6 M</td>
<td>21 M</td>
<td>suspects and victims (i.e. unknown dead bodies, seriously injured and missing persons)</td>
</tr>
<tr>
<td>Germany</td>
<td>2008</td>
<td>INFOL - criminal case management system</td>
<td>5.5 M</td>
<td>0.2 M</td>
<td>suspects, convicts, arrestees, missing persons, wanted persons and asylum seekers</td>
</tr>
<tr>
<td>Greece</td>
<td>2019</td>
<td>mugshot database</td>
<td>Not specified</td>
<td>377 000</td>
<td>suspects who have been arrested and convicts who have been sentenced to imprisonment</td>
</tr>
<tr>
<td>Hungary</td>
<td>2018</td>
<td>Facial Image Registry</td>
<td>30 M</td>
<td>Not specified</td>
<td>civil document applicants</td>
</tr>
<tr>
<td>Italy</td>
<td>2017</td>
<td>AFIS</td>
<td>17 M</td>
<td>9 M</td>
<td>convicts, arrested suspects, unidentified persons, immigrants and asylum seekers</td>
</tr>
<tr>
<td>Lithuania</td>
<td>2010</td>
<td>HDR - Habitoscopic Data Register</td>
<td>400 000</td>
<td>186 000</td>
<td>suspects, convicts, arrested persons, wanted persons, unidentified dead bodies and unidentified heippi persons</td>
</tr>
<tr>
<td>Latvia</td>
<td>2012</td>
<td>EIDAS - Biometro Data Processing System (criminal data array)</td>
<td>Not specified</td>
<td>Not specified</td>
<td>detained, suspected, accused and convicted individuals, and unidentified dead bodies</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2018</td>
<td>CATCH - criminal and CATCH alien</td>
<td>Not specified</td>
<td>8.3 M</td>
<td>suspects, convicts, visa and asylum applicants</td>
</tr>
<tr>
<td>Slovenia</td>
<td>2015</td>
<td>the record of photographed persons</td>
<td>Not specified</td>
<td>110 000</td>
<td>suspects, missing persons and unidentified dead bodies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EU Member State</th>
<th>Expected year of FR implementation</th>
<th>Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Croatia</td>
<td>2021</td>
<td>ABIS and image repository of civil documents</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>2021</td>
<td>CBIS - Central Biometric Information System</td>
</tr>
<tr>
<td>Romania</td>
<td>2021</td>
<td>NBIS - National Biometric Identification System</td>
</tr>
<tr>
<td>Spain</td>
<td>2021</td>
<td>ABIS</td>
</tr>
<tr>
<td>Sweden</td>
<td>2021</td>
<td>ABIS</td>
</tr>
<tr>
<td>Cyprus</td>
<td>2021–2022</td>
<td>ISIS Faces</td>
</tr>
<tr>
<td>Estonia</td>
<td>2022</td>
<td>ABIS</td>
</tr>
</tbody>
</table>
Facial-image comparison
Similar to latent-fingerprint search

Step 1 request: FI_trace-Mugshot search

Step 1 reply: Mugshot likely candidates (Mugshots only; no biographics)

Step 2 request: LIKELY CANDIDATE declaration after facial verification): FR-11187

Step 2 reply: core-data (UMF compliant) and facial-image and TP card

Data received in step 2 may be used to query other systems and databases when compatible with the original purpose in step 1!
Step 1 & 2 via Prum router
Ten-print to ten-print search
Step 1 reply contains core-identity-data, TP card & facial-image (where-available)

Step 2 additional request: request for all core-data
DE-04621/NL-99553

Step 2 reply: full-core-data (UMF compliant), TP card, facial-image

Acquisition details
- Relevant police information (convictions and/or suspicions, current investigations)
- Identity documents
- Additional data (e.g. Technical, Alert or Warning Information etc.)

Data received in step 1 & 2 may be used to query other systems and databases when compatible with the original purpose in step 1!

Details on core-data to be specified in a delegated act.
Facial-Image comparison

Re-match: central router optional; indicate what replies to wait for before re-matching.

Originating Agency: DE
TOT: Trace-Mugshot
Query: FR,BE,NL,LU,DK,CH,AT,IT
Priority: 5
Candidates: 100
Central Re-match: No
Include Fingerprints: No

TOT: Trace-Mugshot Results
Query Originator: DE
Priority: 1
Candidates: 40
Number of Images: 80
Fingerprints: 0
Facial Image Recognition is used:
- To unlock your smartphone
- To pass an Automated Border Control eGate with your passport
- To permit contactless travel
- To identify yourself on-line
- Etc.

Differences between 'Remote biometric identification' and 'Criminal Image comparison under Prüm'
Adding the facial-image as biometric modality to be exchanged under Prüm:

- Does not oblige MS/SAC to implement facial-recognition systems or facial-image databases
- Allows sending mugshots & trace facial-images to facial-recognition systems of other MS/SAC (& Europol) (... even if the requesting MS does not have a FR-system)
- Detailed list of offenses to be defined ("serious crime & terrorism" < [facial-image search under Prüm] < "all crimes")
- The national architectures of facial-image databases are to be defined by MS/SAC
- Coherence between records needs to be guaranteed (Unique Record Locator)
- Micro-matching (re-matching) may be implemented nationally (and centrally in the router)
- One ‘person’ per transaction/search (multiple-images relating to one probable suspect/person)
- 2nd step always required for mugshot search & trace-facial-image search (no default core-identity data exchanged)
- 2nd step similar to latent-fingerprint follow-up: well defined core-data exchanged
- 3rd step: not part of Prüm

To be defined in Implementing Acts:

- Use of JPG (only) & maximum size of images
- Definition of ‘container’ (NIST; ISO/IEC 19794-5; other XML scheme)
- Flexible length of candidate-lists: 10 – 100
- Candidates may contain 2 images (highest-scoring & most recent)
- Maximum processing time: 15min ? 60min ? Depending on priority?

For analysis:

- Multi-modal searches?:
  - TenPrint & Mugshot & DNA-profile; latent-print & trace facial-image & DNA-trace-profile

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