

Constraints in the Implementation of Operational Systems

Workshop on Face Image Quality

EAB – NIST - eu-LISA

16-18/11/2021

Contents

- **What does the Regulation say**
- **What is the eu-LISA approach**
- **What factors will impact the sample quality**
- **Preliminary Ongoing pilots' results**



What does the Regulation say – eu-LISA systems

- **No explicit quality requirements for the systems already into operation**

- Currently none of the eu-LISA systems uses face recognition
- Future recasts will include it (VIS, Eurodac, ECRIS-TCN)
- Only requirements in the data format
- Quality in the hands of MS

- **The Entry-Exit System**

- The Commission Implementing decision (EU) 2019/329 enforces the use of face recognition for verification and identification (jointly with fingerprints)
- “The quality of the facial images (...) shall comply with (...) the image requirements of ISO/IEC 19794-5:2011 Frontal image type. The quality of the facial image shall be assessed at national level by Member States at the time of capture prior to their transmission to the CS-EES”*

- **0-FTE Policy**

- After a certain number of recaptures the sample is saved (no matter the quality)
- High impact on the overall quality



What is the eu-LISA approach



- **Open source solutions when possible**

- Prevents from vendor lock-in
- Fosters interoperability
- Enables comparability
- Reduces costs (maintenance, licences, etc.)
- Not always possible...
 - Unavailability
 - Need for out-of-the-box solutions

- **eu-LISA provides the USK tool to the MS**

- Score aligned with the central system (sBMS)
- Fingerprint quality assessment (NFIQ2)
- Face quality assessment (fit for purpose algorithm - SFIQ)
- Further tools such as image cropping
- Tool under constant improvement



What is the eu-LISA approach

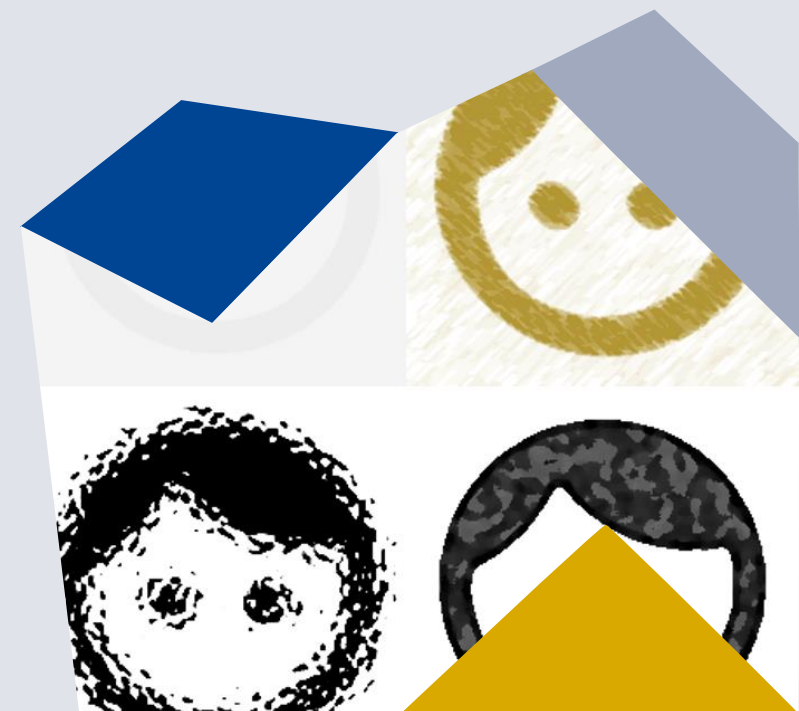
- **SFIQ - sBMS Face Image Quality algorithm**

- Fit for purpose
- Focus on sufficient quality for optimal accuracy
 - Recaptures have high impact in border control flows
- Based on the quality measures outlined in ISO/IEC 19794-5: 2011
 - Best effort to meet the requirements
 - Certain factors relaxed to be tailored to the reality
 - Lighting
 - Outdoors
 - Trains, cars, etc.
 - Background
- Reliable indication of the matching result
- Still proprietary...



What factors will impact the sample quality

- **Border controls pose a wide range of scenarios**
 - Air, sea and land borders
 - Certain allow for a smooth border crossing
 - Convenient environmental conditions
 - Proper steady lighting
 - Adequate elements set-up
 - Other border controls present challenging situations
 - Poor lighting
 - Little time to capture
 - Non-collaborative passengers
 - Small spaces
- **Human factors play an important role**
 - Border guard protocols
 - Passenger constraints
 - Proper instructions + feedback
 - Impact on the resources deployed



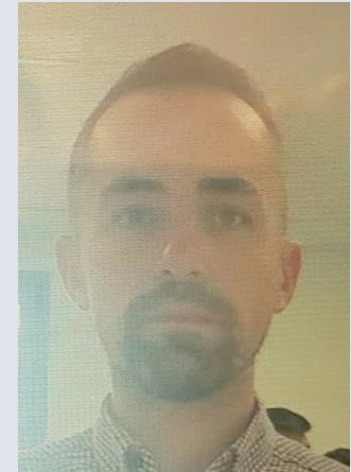
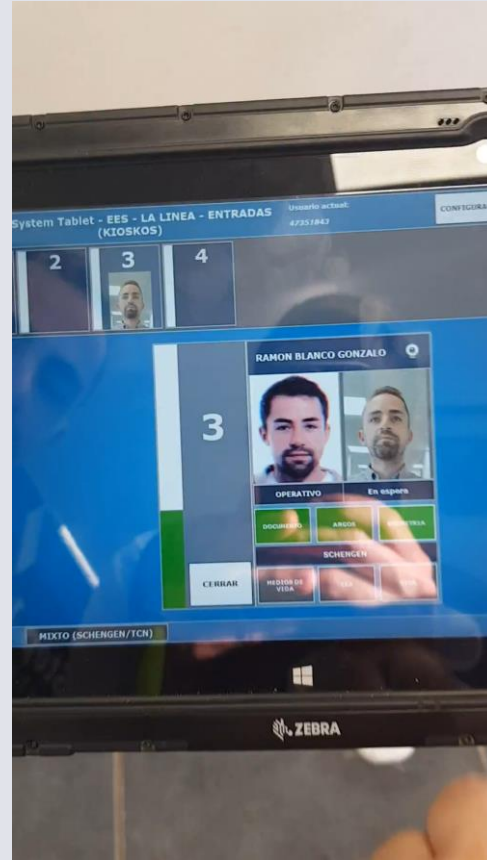
Preliminary Ongoing pilots' results



- **Frontex EES Pilot**
 - ❑ Spain and Bulgaria – EES mock-up
 - ❑ Different environments tested dynamically
 - ❑ Biometrics on the move
 - ❑ Face recognition impacted by light conditions
 - ❑ Improve Kiosks disposition
 - ❑ Set means for blocking undesired lights
 - ❑ Border police assistance is crucial
 - ❑ Proper feedback and passenger instructions



Preliminary Ongoing pilots' results



THANK YOU!

eu-LISA

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