OFIQ: “Open-source Face Image Quality metric”

I. OFIQ PROJECT AND eu-LISA

Since August 2024 eu-LISA, through the R&I team, contributes to the maintenance of the OFIQ project. The project was launched within the ISO SC37, and is currently led and developed by the German BSI.

Find in the following some information regarding OFIQ, the involvement of eu-LISA in the project, and the strategic importance of such a project for the Agency.

II. STANDARDISATION AND COLLABORATION eu-LISA – ISO SC-37

Standardisation is key to the core business of eu-LISA in order to:

- Ensure interoperability
- Contribute to business continuity
- Avoid vendor lock-in

Biometric technology is one of the areas where standardisation is needed to reach these objectives.

In this context, in June 2020, eu-LISA applied to the International Organisation for Standardisation, to establish a liaison with the ISO Sub-Committee 37 for Biometrics (ISO SC-37). Since then, eu-LISA has been actively involved as a Liaison C type organisation in the activities of the ISO SC-37.

External liaison representatives of an organisation are to ensure that the organisation’s specialist experience and expertise is included during the development of the standards in an ISO committee.

III. BIOMETRIC QUALITY

The most important factor impacting the performance of biometric analysis and recognition systems is the so called “quality” of the acquired biometric data (i.e., samples), which is influenced by numerous factors.

Automatically assessing the quality of biometric data in terms of its ability to produce future good accuracy results is key to detect low-quality samples and make decisions accordingly.

Such quality assessment is performed by automatic algorithms referred to as “quality measures”.

These algorithms play a major role in the overall operation of the Large-Scale IT Systems managed by eu-LISA, from the time of acquisition of the data, to the moment in which this data is used for recognition purposes.

Furthermore, quality measures are valuable assets as self-auditing tools, in order to check that the overall quality of large datasets comply with the expected standards, or to detect if any specific contributor to a dataset is providing data of deficient quality.

Quality measures are also one of the key components that allow for the interoperability of systems.

Given the importance of biometric quality measures for the core business of the Agency and for the successful implementation of its mandate, eu-LISA is engaged in the development of these applications, in collaboration with:

- EU institutions, especially the Commission through DG JRC
- International institutions, especially ISO SC-37.

eu-LISA specially promotes and supports open-source solutions, which:

- Enhance transparency of the operation of the Agency,
- Contribute to a long-term management of the systems,
- Provide a cost-efficient solution to a need of the Agency,
- Contribute to avoid vendor lock-in situations and
- Contribute to the interoperability and benchmarking of systems.

IV. FACE QUALITY

The need for a standard face quality measure to be integrated in eu-LISA's CBS was identified in the Science for Policy report authored by DG JRC in 2019, where they face recognition technology was analysed for its integration in SIS[1].

This JRC report was one of the factors that eventually contributed to the decision of including automatic face recognition technology in the recast of SIS, through the shared Biometric Matching Service (sBMS) that will also provide this capability to VIS, EES, Eurodac and ECRIS-TCN.

In particular, the 2019 JRC report mentioned the need to develop and promote a:

- open-source,
- vendor-agnostic (i.e., vendor-independent) and
- standardised

face quality measure, similar to the existing NFIQ quality measure used for fingerprint images[2], already integrated in eu-LISA's sBMS and in the USK distributed by eu-LISA to MS.

V. OFIQ

Based on the need/gap identified in the 2019 JRC Report, a specific project for the development of an open-source, vendor-agnostic and standardised face quality measure was launched within Working Group 3 of the ISO SC-37.

The project started in 2020 led by the German BSI (German Federal Office for Information Security)[3].

The face quality metric being developed within the project is referred to as "Open-Source Face Image Quality metric (OFIQ)".

It was decided that, as main development guideline, the EESFQM project would follow the Commission implementing decision (EU) 2019/329 for the Entry/Exit System[4], which requires that the quality of facial images comply with the standard ISO/IEC 19794-5:2011 frontal image type (standard for biometric interchange formats – face image data).

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[1] JRC Science for Policy Report 116530
[2] NIST official website on NFIQ
[3] OFIQ – BSI website
[4] 2019/329 EES Implementing Decision

Within ISO SC-37, and ad-hoc group for the development of OFIQ was formed under the overall umbrella of the working group that has developed the new version of the standard "ISO/IEC 29794-5:2025 on Biometric Sample Quality – Face Image Data"[5].

The new version of the standard started its review process in 2020 and was finally approved and published in April 2025.

The standard has been developed by a very large group of experts from all over the world (including public institutions, private sector, academia/research). This new version of the standard includes OFIQ as the enforced standard quality measure for face images.

Since the launching of the OFIQ project in 2020, eu-LISA, as part of the team involved in the development of the standard and the quality measure, has actively participated, commented and contributed to the discussions that have led to the design and development of the first version of OFIQ.

VI. TIMELINE OF OFIQ

2010. Publication of the latest version of the standard ISO/IEC 29794-5 on Biometric Sample Quality – Face Image Data.

2020. Decision to review the standard ISO/IEC 29794-5, and decision for the inclusion in the standard of a vendor-independent quality measure to be developed within the ISO SC-37.

2020. Launching of the project for the development of OFIQ.

2020-2024. OFIQ is developed by the private contractor Secunet under a contract with BSI. The tool is developed as an open-source software project on the GitHub platform.

2023/09. A first Beta version, still in prototyping and testing phase, of OFIQ is made available.

2024/06. Eu-LISA officially commits to contribute to the maintenance of OFIQ once the first stable version is released.

2024/08. First stable final version of OFIQ is released and made freely available to the public in the OFIQ GitHub Repository[6].

2025 - onwards. BSI will continue to develop, update and evolve OFIQ based on the feedback received from users during the utilisation of the latest stable version of OFIQ released.

[5] ISO/IEC 29794-5:2010 on Biometric Sample Quality – Face Image Data
[6] OFIQ GitHub Repository