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Quality Management Requirements for Forensic Facial Image Comparison

1 **1. Scope**

2   1.1 This document outlines requirements for establishing and maintaining a quality

3   management system (QMS) for forensic facial image comparison (FIC).

4   1.2 It is intended for organizations of all sizes, from those without formal quality

5   systems to those pursuing accreditation.

6   1.3 This document addresses quality management practices that support reliable,

7   transparent, and defensible FIC casework.

8   **2.   Referenced Documents**

9   2.1   *ASTM Standards*:

10   E620 – Practice for Reporting Opinions of Scientific or Technical Experts

11   E1459 – Guide for Physical Evidence Labeling and Related Documentation

12   E1492 – Practice for Receiving, Documenting, Storing, and Retrieving Evidence

13   E1732 – Terminology Relating to Forensic Science

14   E2917 – Practice for Forensic Science Practitioner Training, Continuing

15   Education, and Professional Development

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16   E3149 – Standard Guide for Facial Image Comparison Feature List for

17   Morphological Analysis

18   *2.2 OSAC Registry*:

19   OSAC 2022-S-0001 – Standard Guide for Image Comparison Opinions

20   OSAC 2022-S-0008 – Standard Guide for Minimum Facial Image Comparison

21   Documentation

22   *2.3 FISWG Guidelines*:

23   FISWG Glossary

24   FISWG Guide for Mentorship of Facial Comparison Trainees in Role-Based Facial

25   Comparison

26   FISWG Guide for Role-Based Training in Facial Comparison

27   FISWG Physical Stability of Facial Features of Adults

28   FISWG Guideline for the Use of ACE-V Methodology in One-to-One Examinations

29   *2.4 Other Standards and related quality guidance*:

30   ISO/IEC 17025 – General requirements for the competence of testing and

31   calibration laboratories

32   ISO/IEC 21043 – Forensic sciences framework

33   ILAC G19:06/2022 – Modules in a Forensic Science Process

34 **3.   Terminology**

35   *3.1 Definitions:*

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36   3.1.1 Forensic Science Practitioner, *n*—an individual who (1) applies scientific or

37   technical practices to the recognition, collection, analysis, or interpretation of evidence

38   for criminal and civil law or regulatory issues; and (2) issues test results, provides

39   interpretations, or opinions through reports or testimony with respect to such evidence.

40   3.1.2 Forensic Science Service Provider*, n*—an organization or individual that

41   provides forensic services.

42   3.1.3 Nonconforming work, *n*—any work that deviates from documented

43   procedures, produces an erroneous result, or otherwise fails to meet required

44   standards.

45   3.1.4 Technical review, *v*—a qualified second party's evaluation of reports, notes,

46   data, and other documentation to ensure there is appropriate and sufficient support for

47   the actions, results, conclusions, opinions, and interpretations.

48   3.2 *Acronyms*:

49   3.2.1 FIC, *n*—Facial Image Comparison

50   3.2.2 FSP, *n*—Forensic Science Practitioner

51   3.2.3 FSSP, *n*—Forensic Science Service Provider

52   3.2.4 QMS, *n*—Quality Management System

53   **4. Summary of Guide**

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54   4.1   This document outlines the essential components of a QMS for FIC, including
55   personnel, documentation, casework practices, training, review, method validation,
56   proficiency testing, audits, and corrective actions.

57   4.2 It provides both baseline and advanced practices to enable scalability depending
58   on organizational structures and resources, while promoting consistency across agencies
59   and organizations.

60   4.3 It aligns FIC activities with international forensic quality standards and is intended
61   for organizations of varying size and maturity, from those without formal quality systems
62   to those pursuing accreditation.

63   **5.   Significance and Use**

64   5.1   An effective QMS provides assurance of and confidence in the quality of results
65   and rigor of performance. Quality management systems serve as a basis for following
66   best practice and improving processes.

67   5.2 The QMS shall cover all procedures and reports related to FIC activities,
68   including management practices, evidence handling, analysis and reporting, training,
69   mentorship and competency, documented protocols and procedures, technical and
70   administrative review, proficiency testing, as well as equipment and consumables.

71   5.3 This document is intended for forensic science service providers (FSSPs) and is
72   to be used by forensic science practitioners (FSP), managers, and quality personnel
73   engaged in FIC activities.

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74 **6. Quality Management System**

75   6.1 FSSPs shall establish, document, and maintain a QMS for FIC consistent with

76 international standards.

77   6.2 The QMS shall include policies and procedures covering case management,

78 evidence and image handling, examiner training, comparison methods, review

79 processes, equipment validation, proficiency testing, and audits.

80   6.3 The QMS shall be consistent with an international standard, such as ISO/IEC

81 17025 or ISO/IEC 17020. Organizations seeking accreditation shall conform with the

82 specific standard.

83   6.4 The QMS shall be reviewed annually and updated as necessary.

84 **7. Personnel**

85   7.1 FSSPs shall define and document qualifications, roles, and responsibilities

86 necessary for reliable and defensible FIC casework in line with international standards

87 and best practice guidelines.

88   7.2 Documented job descriptions shall define responsibilities, duties, and required

89 skills.

90   7.3 Personnel roles shall align with role definitions in the FISWG Guide for Role-

91 Based Training in Facial Comparison.

92   7.4 Additional roles may include, but are not limited to:

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93   7.4.1 Director – Oversees operations and compliance.

94   7.4.2 Quality Assurance Manager – maintains the QMS and coordinates internal or

95   external reviews and audits.

96   7.4.3 Technician – prepares or processes case material but does not issue reports

97   or opinions.

98   7.4.4 Forensic Science Practitioner – a designated person authorized to:

99   7.4.4.1 Examine and analyze materials, or direct such examinations.

100   7.4.4.2 Interpret data, issue reports for court or investigative purposes, and conduct

101   technical reviews of reports.

102   7.4.5 Case Manager – reviews evidence for contextual information, assesses

103   suitability, sets case strategy, or monitors caseload.

104   7.5 Forensic facial practitioners (herein practitioners) shall meet competency

105   requirements consistent with ASTM E2917 and discipline-specific training programs.

106   7.6 Practitioners conducting FIC shall be trained and assessed in the ACE-V

107   methodology as defined in the FISWG Guideline for the Use of ACE-V Methodology in

108   One-to-One Examinations and apply the E3149 – Standard Guide for Facial Image

109   Comparison Feature List for Morphological Analysis (ASTM).

110   **8. Training, Competency, and Proficiency**

111   8.1 FSSPs shall ensure all personnel are trained, competent, and proficiency-tested

112   to perform FIC casework.

113   8.1.1 FSSPs shall maintain a documented training, continuing education, and

114   professional development program to ensure practitioners are trained, competent, and

115   tested for reliable casework.

116   8.1.2 Practitioners shall demonstrate and maintain the knowledge, skills, and

117   abilities required for independent casework.

118   8.1.3 Competency and proficiency testing shall confirm that personnel performing

119   FIC casework are capable of producing reliable and defensible results.

120   8.1.4 A documented program shall define objectives, responsibilities, test design,

121   acceptance criteria, and remedial actions based on best practice guidelines and

122   recognized standards.

123   8.2 Initial Competency Assessment

124   8.2.1 Candidates shall complete initial training and pass a competency assessment

125   prior to performing independent casework.

126   8.2.2 Competency test samples shall be representative of typical casework.

127   8.2.3 The methodology for competency tests shall correspond to standard operating

128   practice.

129   8.2.4 Assessments shall include:

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130   8.2.4.1 Knowledge tests (image science, anatomy, structured methods, bias

131 mitigation, documentation, ethics, and Facial Recognition System principles).

132   8.2.4.2 Practical comparison exercises (representative case types such as

133 mugshots, CCTV, passport photos, social media, etc.).

134   8.2.4.3 Documentation and reporting (annotated notes and written report).

135   8.3 Supervised Casework and Mentorship

136   8.3.1 New practitioners shall complete a defined period of supervised casework

137 reflective of the complexity of normal casework (e.g., 10–20 cases).

138   8.3.2 A mentorship program shall be administered in line with the FISWG

139 Mentorship of Facial Comparison Trainees.

140   8.3.3 Mentorship shall include case review, competency evaluation, and

141 observation of testimony where applicable.

142   8.4 Reassessment and Proficiency Testing

143   8.4.1 Competency shall be reassessed at least every two years or sooner if

144 methods change, performance concerns arise, or the practitioner has a prolonged

145 absence.

146   8.4.2 All practitioners shall participate in at least one proficiency test annually.

147   8.4.3 External proficiency tests through internationally recognized agencies are

148 preferred when available.

149   8.4.4 Proficiency tests shall be blind where practicable and reflect diverse case

150   types.

151   8.5 Remediation

152   8.5.1 Deficiencies shall trigger corrective actions such as retraining, supervised

153   casework, or restriction of duties.

154   8.5.2 The action taken and purpose, and the evidence of completion and issues

155   addressed shall be documented.

156   8.6 Performance Monitoring and Documentation

157   8.6.1 Performance indicators (e.g., inter-examiner agreement, inconclusive rates,

158   error rates, timeliness) shall be defined and tracked.

159   8.6.2 All competency and proficiency records shall be retained in accordance with

160   the organization's retention policy.

161   **9. Method Validation**

162   9.1 FSSPs shall validate or verify all methods and software used in FIC to ensure

163   reliability and reproducibility.

164   9.2 Methods shall be validated prior to use to ensure they are reliable, reproducible,

165   and fit for purpose. Adopted methods validated elsewhere (i.e., ACE-V, Morphological

166   analysis) shall undergo local verification. Verification should test accuracy, repeatability,

167   and examiner agreement under local conditions.

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168   9.3 Validation reports shall document objectives, study design, datasets, metrics,

169   results, limitations, and approvals.

170   9.4 Method validation activities shall address:

171   9.4.1 Intended use.

172   9.4.2 Representative datasets.

173   9.4.3 Performance metrics.

174   9.4.4 Reproducibility and robustness testing.

175   9.4.5 Bias evaluation.

176   9.5 Where a facial recognition system is used as an integral part of the examination

177   process, the FSSP shall validate its performance within the operational context. This

178   validation shall include, but is not limited to, independent performance testing, version

179   control, threshold calibration, and results documented, as relevant.

180   9.5.1 Standard biometric performance methods shall be used. International

181   Organization for Standardization (ISO), National Institute of Standards and Technology

182   (NIST), and FISWG provide such recommendations.

183   9.6 Image enhancement procedures shall be validated to ensure they do not create

184   misleading features.

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185   9.7 Methods and software shall be revalidated at least every two years or after

186   software changes that materially affect the software performance (e.g., algorithm

187   upgrade) or the practitioner's use of the software.

188   9.8 Validation records shall be retained and available for audit.

189   **10. Equipment and Software**

190   10.1 FSSPs shall provide equipment and software that is fit for purpose to FSPs for

191   FIC.

192   10.2 Monitors should meet minimum resolution and calibration per manufacturer

193   instructions where available. Calibration shall be verified periodically to ensure

194   consistent image presentation supporting reliable examination and comparison

195   outcomes.

196   10.3 Software should be version-controlled and tested after updates.

197   10.4 Logs of validation, calibration, and monitoring shall be maintained.

198   **11. Documentation and Records**

199   11.1 FSSPs shall ensure that all FIC casework is traceable, reproducible, and

200   meets documentation standards.

201   11.2 Case examination records shall be clear and sufficient for an independent

202   practitioner to evaluate the notes, interpret data, and verify opinions.

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203   11.3 Documentation shall comply with the FISWG Minimum Guidelines for Facial

204   Image Comparison Documentation.

205   11.4 Casework documentation shall include:

206   11.4.1 Chain of custody for both physical and digital evidence.

207   11.4.2 Annotation of morphological analyses and ACE-V steps.

208   11.4.3 Explicit documentation of limitations (e.g., resolution, obstruction, pose

209   variation).

210   11.4.4 Documentation of any image enhancements applied during the examination.

211   11.4.5 Documentation of uncertainty where applicable.

212   11.5 Case-related communications shall be maintained.

213   11.6 Casework documentation shall be retained in accordance with provider's

214   policies and legal requirements.

215   **12. Case Review and Reporting**

216   12.1 FSSPs shall ensure independent review of casework and clear reporting of

217   results.

218   12.1.1 A documented policy shall define who authorizes reported opinions.

219   12.1.2 Where practicable, individuals performing technical reviews shall not be privy

220   to practitioners' opinions.

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221   12.1.3 Disagreements between practitioners shall be resolved through a

222   documented process with outcomes recorded and retained.

223   12.1.4 Technical reviews shall include validation of recorded observations, not only

224   report text.

225   12.2 Reporting

226   12.2.1 Reports shall be accurate, clear, objective, and express opinions in terms of

227   strength of support for competing propositions.

228   12.2.2 Reports shall follow ASTM E620 and align with OSAC Standard Guide for

229   Image Comparison Opinions.

230   12.2.3 Reports shall meet jurisdictional requirements.

231   12.3 Court Testimony

232   12.3.1 Testimony monitoring shall ensure that results are properly qualified and

233   communicated, including evaluation of the practitioner's explanation of process.

234   12.3.2 Testimony monitoring shall evaluate clarity and accuracy in court.

235   **13. Audits and Nonconforming Work**

236   13.1 FSSPs shall conduct audits and address nonconforming work to ensure

237   accountability and continuous improvement.

238   13.2 Internal audits shall be conducted annually.

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239   13.3 Nonconforming work shall be documented, investigated, classified, and

240   corrected proportionately to risk.

241   13.4 Audit Planning

242   13.4.1 Scope and objectives shall be defined.

243   13.4.2 Timeframes shall be documented.

244   13.4.3 Auditors shall be qualified and independent.

245   13.4.4 External auditors may be used for impartial review.

246   13.4.5 Case file sampling shall include:

247   • At least 10 case files or 10% of annual closed cases, whichever is greater

248   • A mix of case types (1:1, N:N, high-profile/court work)

249   • Cases resulting in inconclusive opinions

250   • Cases using enhancement or automated tools

251   • Any cases flagged as nonconforming or complex

252   • Proportional representation from each practitioner

253   13.5 Audit Activities

254   13.5.1 Standard Operating Procedures review.

255   13.5.2 Forensic Case file review.

256   13.5.3 Technical reassessment of selected cases.

257   13.5.4 Interviews and observations of performance.

258   13.5.5 Proficiency and method validation review.

259   13.6 Findings and Corrective Action

260   13.6.1 Findings shall be classified (minor, major, critical).

261   13.6.2 Corrective actions shall be documented and tracked to closure.

262   13.7 Management Review

263   13.7.1 Audit results shall feed into management review.

264   13.7.2 Continuous improvement measures shall be identified and implemented.

265   13.8 Records Retention

266   13.8.1 All audit and corrective action records shall be maintained in accordance with

267 an agency's data retention policies and quality management systems.

268 **14. Continuous Improvement**

269   14.1 FSSPs shall implement continuous improvement practices to adapt to

270 emerging challenges and maintain quality in FIC activities.

271   14.2 Feedback from investigators, courts, and stakeholders shall be reviewed

272 annually.

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273   14.3 Training programs shall be updated to reflect emerging challenges (e.g.,

274   deepfakes, algorithmic bias).

275   14.4 FSSPs shall support employees in remaining current with best practices and

276   standards in facial image comparison, as well as any relevant legal developments.

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282   FISWG documents can be found at: www.fiswg.org

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