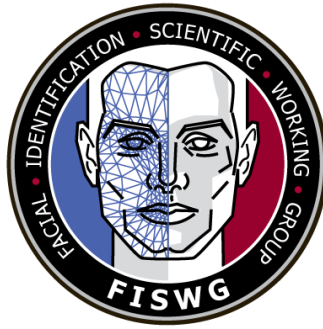




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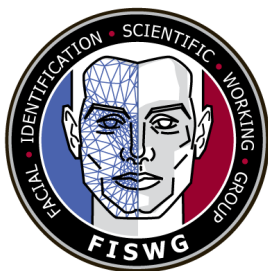
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Guideline for the Use of ACE-V Methodology for One-to-Many Reviews

1. Scope

1.1 The purpose of this document is to provide guidance for the use of Analysis, Comparison, Evaluation, and Verification (ACE-V) methodology for one-to-many comparisons in facial reviews.

1.2 This document does not address applying ACE-V in a one-to-one comparison for facial examinations

2. Referenced Documents

2.1 *ASTM Standards:*

E3149 Facial Image Comparison Feature List for Morphological Analysis

2.2 *FISWG Documents:*

FISWG Glossary

FISWG Physical Stability of Facial Features of Adults

FISWG Facial Comparison Overview and Methodology Guidelines

FISWG Minimum Guidelines for Facial Image Comparison Documentation

FISWG Image Factors to Consider in Facial Image Comparison

FISWG Image Processing Techniques for Facial Image Comparison

FISWG Facial Image Comparison Best Practices for Markups & Annotations

2.3 Other Standards:

OSAC Standard Framework for Developing Discipline Specific Methodology for
ACE-V

3. Terminology

3.1 Definitions:

3.1.1 *Analysis*, *v*—(1) the first step of the ACE-V method (2) the assessment of an image to determine suitability for comparison, including the ability to discriminate significant features.

3.1.2 *Comparison*, *v*—(1) the second step of the ACE-V method (2) the examination of two or more samples to establish similarities and dissimilarities.

3.1.3 *Evaluation*, *v*—(1) the third step of the ACE-V method, where a practitioner assesses the value of the details observed during the analysis and comparison steps and reaches an opinion (2) ascertaining the value of dissimilarities and similarities between two or more samples.

3.1.4 *Examination*, *v*—a comparison of image(s)-to-image(s) often used in a forensic application.

3.1.5 *One-to-many comparison, v*— the process of comparing the facial features in one image to the facial features in two or more images by a trained practitioner.

3.1.5.1 Discussion: The ‘two or more images’ may come from a gallery or collection of images provided to the practitioner for comparison

3.1.6 *One-to-one comparison, v*— the direct comparison of facial features in one image to facial features in another image by a trained practitioner.

3.1.7 *Review, v*— a comparison of image-to-image often used in either investigative and operational leads or intelligence gathering applications.

3.1.8 *Verification, v*—(1) the final step of the ACE-V method; (2) the review or independent analysis of the assessment, comparison, and evaluation performed by another qualified practitioner.

3.2 *Acronyms:*

3.2.1 *ACE-V, v*—Analysis, Comparison, Evaluation, and Verification

4. **Significance and Use**

4.1 This document outlines the methods and recommendations to be applied during a facial review.

4.2 Review is a comparison of image-to-image often used in either investigative and operational leads or intelligence gathering applications. A broad range of purposes and levels of rigor are involved in review that may require some level of documentation.

4.3 Due to the nature of the review task, which often results from an FR search, the process of ACE-V is followed but may deviate from the expectations of forensic examinations. The overarching framework of ACE-V should be followed; however, deviations may occur.

4.4 Within the confines of facial reviews, ACE-V provides a suite of tools that can be applied in full or in part to an agency's facial review process. Each component should be applied as fits into the task's workflow. To that end, any implemented component should be standardized in its use.

4.5 The documentation of the ACE-V process during review should follow the FISWG Minimum Guidelines for Facial Image Comparison Documentation when providing a subject for further investigation (i.e., investigative lead).

4.5.1 Subjects excluded from further investigation during review usually do not require as extensive documentation.

5. Applying ACE-V in Facial Review

5.1 *Analysis*: The step prior to a review where a practitioner observes and makes note of the questioned image(s) in terms of its properties and facial features to assess whether a given image is suitable for use (e.g., search, comparison).

5.1.1 Visual analysis and documentation should include, but are not limited to, the following considerations.

5.1.1.1 Imaging factors (see FISWG Image Factors to Consider in Facial Image Comparison).

5.1.1.2 Image capture timeframe (known or estimated date and time).

5.1.1.3 Image alterations (e.g., filters, enhancements).

5.1.1.4 Metadata.

5.1.2 The determination of image suitability is based on the practitioner's subjective judgement of whether an image has sufficient detail and is deemed to be suitable for use. If deemed suitable, the practitioner will move on to the comparison step.

5.2 *Comparison*: The step during which the practitioner performs a visual, side-by-side comparison of the questioned image and the candidate gallery. This process involves applying morphological analysis (see ASTM E3149 Facial Image Comparison Feature List for Morphological Analysis) and considering the physical stability of facial features (see FISWG Physical Stability of Facial Features of Adults). Through this comparison, the practitioner may narrow the gallery to the most probable candidate, if any.

5.2.1 Practitioners should note any similarities or dissimilarities, along with any associated considerations where necessary (see step 5.1.1). Dissimilarities that can be explained by subject variance (such as expression, pose, weight, or age changes) between images or imaging conditions should also be noted.

5.2.2 The practitioner may produce visual aids in which they annotate images to demonstrate the noteworthy facial features in the comparison (see FISWG Facial Image Comparison Best Practices for Markups & Annotations).

5.3 *Evaluation*: The step during which the practitioner evaluates the weight of the findings, similarities and dissimilarities of probable candidates, to form an opinion (e.g., a negative result or investigative/operational lead). A granulated opinion scale may not be required in all applications of facial review. This evaluation is based on the quality, quantity, specificity, reproducibility, expected variation, and persistence of the findings. Information gathered in the analysis phase should also be considered.

5.3.1 Expected variations that should be considered during the evaluation include, but are not limited to:

5.3.1.1 Stability of features (see FISWG Physical Stability of Facial Features of Adults).

5.3.1.2 Imaging Factors (see FISWG Image Factors to Consider in Facial Image Comparison).

5.4 *Verification*: step in which the analysis, comparison, and evaluation steps should be completed by a second, independent practitioner.

5.4.1 Due to the nature of the cases or operational needs, verification by a second practitioner may, but does not always, take place. It is recommended that some form of verification should be conducted.

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