Priority Action Report

Facial Identification Subcommittee

Digital Multimedia SAC
Lora S Sims
July 31, 2018
San Antonio, TX – IAI Annual Conference
# Subcommittee Leadership

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Organization</th>
<th>Term</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Lora S Sims</td>
<td>Ideal Innovations, Inc</td>
<td>2018</td>
<td><a href="mailto:Lora.sims@idealinnovations.com">Lora.sims@idealinnovations.com</a></td>
</tr>
<tr>
<td>Vice Chair</td>
<td>Britt Toalson</td>
<td>Seattle Police Dept</td>
<td>2019</td>
<td><a href="mailto:Britt.toalson@seattle.gov">Britt.toalson@seattle.gov</a></td>
</tr>
<tr>
<td>Executive Secretary</td>
<td>Jane Wankmiller</td>
<td>University of Northern Michigan</td>
<td>2018</td>
<td><a href="mailto:jwankmil@nmu.edu">jwankmil@nmu.edu</a></td>
</tr>
</tbody>
</table>
## Subcommittee Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Term</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walt Bruehs</td>
<td>FBI</td>
<td>2019</td>
<td><a href="mailto:webruehs@fbi.gov">webruehs@fbi.gov</a></td>
</tr>
<tr>
<td>Mark Dolfi</td>
<td>LA Co Sheriff Dept</td>
<td>2018</td>
<td><a href="mailto:madolfi@lasd.org">madolfi@lasd.org</a></td>
</tr>
<tr>
<td>Neal Gieselman</td>
<td>AWARE, Inc</td>
<td>2019</td>
<td><a href="mailto:Neal.gieselman@gmail.com">Neal.gieselman@gmail.com</a></td>
</tr>
<tr>
<td>Matthew Graves</td>
<td>US Army Criminal Investigation Lab</td>
<td>2017</td>
<td><a href="mailto:mgraves9@gmail.com">mgraves9@gmail.com</a></td>
</tr>
<tr>
<td>Steven Lee</td>
<td>San Jose State University</td>
<td>2018</td>
<td><a href="mailto:sblee999@gmail.com">sblee999@gmail.com</a></td>
</tr>
<tr>
<td>Ping Ma</td>
<td>University of Georgia</td>
<td>2017</td>
<td><a href="mailto:pingma@uga.edu">pingma@uga.edu</a></td>
</tr>
<tr>
<td>Trish Murphy</td>
<td>Dept of Defense</td>
<td>2018</td>
<td><a href="mailto:patramu@nctc.gov">patramu@nctc.gov</a></td>
</tr>
<tr>
<td>P. Jonathan Phillips</td>
<td>NIST</td>
<td>2017</td>
<td><a href="mailto:jonathon@nist.gov">jonathon@nist.gov</a></td>
</tr>
<tr>
<td>Todd Putorti</td>
<td>New York State Department of Motor Vehicles</td>
<td>2019</td>
<td><a href="mailto:todd.putorti@dmv.ny.gov">todd.putorti@dmv.ny.gov</a></td>
</tr>
<tr>
<td>Kirt Simmons</td>
<td>AR Children’s Hospital</td>
<td>2018</td>
<td><a href="mailto:simmonske@archildresn.org">simmonske@archildresn.org</a></td>
</tr>
<tr>
<td>Debra Tennant</td>
<td>Federal Bureau of Investigation</td>
<td>2017</td>
<td><a href="mailto:dltennant@fbi.gov">dltennant@fbi.gov</a></td>
</tr>
<tr>
<td>Antonio Trindade</td>
<td>US Border Patrol</td>
<td>2017</td>
<td><a href="mailto:Antonio.trindade@dhs.gov">Antonio.trindade@dhs.gov</a></td>
</tr>
<tr>
<td>Steve Wilkins</td>
<td>Pierce Co Sheriff’s Dept</td>
<td>2019</td>
<td><a href="mailto:swilkin@co.pierce.wa.us">swilkin@co.pierce.wa.us</a></td>
</tr>
<tr>
<td>Open spot</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Justin Cook
Edward German
Leslie Kelly
Jodie Linger
Michael Streed

Federal Bureau of Investigation
Macon County Sheriff’s Office
U.S. Government
Federal Bureau of Investigation
Baltimore County Police Department

Carolyn Dutot
Netta Lev Tov Chattah
Michael Matheson
Campbell McGhee
Reuben Moreton
Johanna Morley
Patricia Moss
Ruth Phillips
Jason Prince
Arnout Ruifrok
Geoff Whitaker
Caroline Wilkinson

Canada Border Services Agency
Israel National Police
Department of Foreign Affairs
INTERPOL
Metropolitan Police Service
Metropolitan Police Service
Australian Passport Office
Metropolitan Police Service
Australian Federal Police
Netherlands Forensic Institute
UK Home Office
Liverpool School of Art and Design

Foreign Affiliates

U.S. Affiliates
March 20-23, 2018 Chicago, IL
The Mission of the OSAC Facial Identification Subcommittee is to develop consensus standards and guidelines for the image-based comparisons of human facial features and to provide recommendations for the research and development necessary to advance the state of the science.
## Summary of Standards/Guidelines Priority Actions

<table>
<thead>
<tr>
<th>Priority</th>
<th>Working Title of Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Facial Image Comparison Feature List for Morphological Analysis</td>
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<td>5</td>
<td>Overview of Facial Comparison Methods</td>
</tr>
<tr>
<td>6</td>
<td>Image Processing</td>
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</tbody>
</table>
Standards/Guidelines Development Priority 1 Document

**Document Title**: Facial Image Comparison Feature List for Morphological Analysis

**Scope**: To provide a standardized list to be considered when conducting morphological analysis

**Objective/rationale**: Aids in providing a systematic way of comparing features of the face/head

**Issues/Concerns**: Does not cover the entire comparison process

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**Task Group Name**: One-to-one

**Task Group Chair Name**: Debra Tennant

**Task Group Chair Contact Information**: dltennant@fbi.gov

**Date of Last Task Group Meeting**: March 20-23, 2018
Standards/Guidelines Development
Priority 1 Document

Key Components of Standard:
• List of Facial Components (gross features considered in virtually all comparisons, e.g. Nose)
• List of Component Characteristics (details about the Facial Components, e.g. Root, Bridge, Tip, Nostrils, Columella, Alae)
Priority 1: Facial Image Comparison Feature List for Morphological Analysis

Task Group/Subcommittee Action Plan

<table>
<thead>
<tr>
<th>Planned Actions</th>
<th>OSAC Process Stage (e.g., SDO 100)</th>
<th>Assignee</th>
<th>Estimated Completion Date</th>
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<tbody>
<tr>
<td>Seek approval from DM SAC to send to SDO (ASTM)</td>
<td>SDO 400</td>
<td>Matthew Graves</td>
<td>Complete</td>
</tr>
<tr>
<td>Send to SDO (ASTM)</td>
<td>SDO 500</td>
<td>Lora Sims</td>
<td>Complete</td>
</tr>
<tr>
<td>ASTM process</td>
<td>SDO 700</td>
<td>Lora Sims</td>
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<tr>
<td>Registry Approval process</td>
<td>RA-30</td>
<td>Lora Sims</td>
<td>Sept 1, 2018</td>
</tr>
</tbody>
</table>
Standards/Guidelines Development
Priority 2 Document

**Document Title:** Capture And Equipment Assessment For Face Recognition Systems

**Scope:** Provide best practices for collection to ensure the images captured are suitable for Face Recognition (FR) system use

**Objective/rationale:** Provides an overview of the considerations a practitioner should take when making decisions for the capture of facial images.

**Issues/Concerns:** none

**Task Group Name:** Systems & Capture
**Task Group Chair Name:** Neal Gieselman
**Task Group Chair Contact Information:** Neal.gieselman@gmail.com
**Date of Last Task Group Meeting:** March 20-23, 2018
Standards/Guidelines Development
Priority 2 Document

Key Components of Standard:

• Image capture process as it relates to the following:
  • Controlled acquisition (when all imaging parameters can be adjusted as needed to optimize the resulting image, e.g. passport offices)
  • Semi-controlled acquisition (when some aspects of the environment or subject can be controlled, but not all aspects of both)
  • Ad-hoc acquisition (when neither the environment nor the subject can be controlled, e.g. surveillance, cell phones, and third party imagery).
### Priority 2: Capture And Equipment Assessment For Face Recognition Systems

#### Task Group/Subcommittee Action Plan

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<tr>
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<tr>
<td>Seek approval from DM SAC to send to SDO (ASTM)</td>
<td>SDO 400</td>
<td>Neal Gieselman</td>
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<tr>
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<td>SDO 700</td>
<td>Neal Gieselman</td>
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<td>Published at SDO (ASTM E3115-17)</td>
<td>SDO 1100</td>
<td>Neal Gieselman</td>
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<tr>
<td>Starting the Registry Approval Process</td>
<td>RA 30</td>
<td>Neal Gieselman</td>
<td>Aug 31, 2018</td>
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</table>
Standards/Guidelines Development
Priority 3 Document

**Document Title:** Guidelines for Post Mortem Facial Image Capture

**Scope:** Provide guidelines for capturing postmortem facial images of unidentified human remains in a controlled (morgue) and semi-controlled (field) settings to facilitate Facial Recognition (FR) searches or facial comparison that may contribute to determining the identity of the unidentified person.

**Objective/rationale:** Provides an overview of the optimal processes and techniques for the capture of postmortem facial images of human remains in order to maximize their utility in FR searches and facial image comparisons.

**Issues/Concerns:** May have some time and financial implications on morgues.

**Task Group Name:** Systems & Capture
**Task Group Chair Name:** Neal Gieselman
**Task Group Chair Contact Information:** Neal.gieselman@gmail.com
**Date of Last Task Group Meeting:** March 20-23, 2018
Standards/Guidelines Development
Priority 3 Document

Key Components of Standard:

• Image capture environment (lighting, camera position, and background)
• Preparation of the subject body (head position, head coverings and accessories, shoulder position)
• Preparation of the subject face (obscuring matter, hair, wounds or fragments, mouth, eyes, eyeglasses, prosthetics)
• Use of video
• Documenting scars, marks, tattoos (SMT).
## Task Group/Subcommittee Action Plan

### Priority 3: Guidelines for Post Mortem Facial Image Capture

<table>
<thead>
<tr>
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<tr>
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<td>SDO 400</td>
<td>Neal Gieselman</td>
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<tr>
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<td>Processing through ASTM</td>
<td>SDO 700</td>
<td>Neal Gieselman</td>
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<tr>
<td>Published at SDO (ASTM E3148–18)</td>
<td>SDO 1100</td>
<td>Neal Gieselman</td>
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<tr>
<td>Starting the Registry Approval Process</td>
<td>RA 30</td>
<td>Neal Gieselman</td>
<td>Aug 31, 2018</td>
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Standards/Guidelines Development
Priority 4 Document

**Document Title:** Guide for Role Based Training in Facial Comparison

**Scope:** Provides the recommendations for a role based training to achieve competency in facial comparison tasks

**Objective/rationale:** Providing guidelines for training programs specific subject matter, relevant to facial reviewers and facial examiners required to conduct comparisons from the basic to the advanced level

**Issues/Concerns:** Does not address the specific content of agencies training program but instead provides an overview of recommended topics and levels of training.

**Task Group Name:** Training
**Task Group Chair Name:** Steve Wilkins
**Task Group Chair Contact Information:** swilkin@co.pierce.wa.us
**Date of Last Task Group Meeting:** March 20-23, 2018
Standards/Guidelines Development Priority 4 Document

Key Components of Standard:

- Overview of different roles and what training should be achieved at each role (e.g. manager should have an awareness of all things, facial examiner should be proficient in the majority of subjects)

- Categories of Training (e.g. overview, skills & techniques, knowledge of processes, court preparation & presentation)
### Priority 4: Guide for Role Based Training in Facial Comparison

#### Task Group/Subcommittee Action Plan

<table>
<thead>
<tr>
<th>Planned Actions</th>
<th>OSAC Process Stage (e.g., SDO 100)</th>
<th>Assignee</th>
<th>Estimated Completion Date</th>
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<tbody>
<tr>
<td>Combine “Recommendations for a Training Program in Facial Comparison &amp; Guidelines” and “Recommendations for Facial Comparison Training to Competency”</td>
<td>SDO 200</td>
<td>Steve Wilkins</td>
<td>completed</td>
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<tr>
<td>Subcommittee, DM SAC, &amp; RC review for sending to SDO</td>
<td></td>
<td>Steve Wilkins</td>
<td>August 31, 2018</td>
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<tr>
<td>Send to DM SAC for approval to send to SDO</td>
<td>SDO 400</td>
<td>Steve Wilkins</td>
<td>September 2018</td>
</tr>
</tbody>
</table>
Standards/Guidelines Development
Priority 5 Document

Document Title: Overview of Facial Comparison Methods

Scope: Describes current methods for facial comparison and to provide guidelines for their appropriate use. Provides Overview of how facial comparisons are used in the security, intelligence, law enforcement, and forensic communities.

Objective/rationale: Selection of the appropriate method to use for a facial comparison depends on the image quality, the training and experience of the practitioner, and the purpose of the examination. The methods used to compare faces will often depend on the purpose of the comparison.

Issues/Concerns: The best method to utilize based on operational conditions must be understood and if the time or effort to do a full examination cannot be conducted, there are associated risks (i.e., greater chance of error).

Task Group Name: One-to-one
Task Group Chair Name: Debra Tennant
Task Group Chair Contact Information: dltennant@fbi.gov
Date of Last Task Group Meeting: March 20-23, 2018
Standards/Guidelines Development
Priority 5 Document

Key Components of Standard:
• Pros and cons of each type of facial comparison methodology (holistic comparison, morphological analysis, photo-anthropometry, and superimposition)
• Recommended practice to address different type of comparisons (facial review versus facial examination).
• Overview of applications (intelligence gathering for identity management, screening and access control, investigative and operational tool, and forensic identification)
• General procedures for assessment, examination, evaluation, conclusions, and quality management
• Current methods (holistic comparison, morphological analysis, photo-anthropometry, and superimposition) for facial image comparison.
## Priority 5: Overview of Facial Comparison Methods

### Task Group/Subcommittee Action Plan

<table>
<thead>
<tr>
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<th>Assignee</th>
<th>Estimated Completion Date</th>
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<tbody>
<tr>
<td>Combine “Facial Comparison Overview” with “Guideline for Facial Comparison Methods”</td>
<td>SDO 200</td>
<td>Jane Wankmiller</td>
<td>September 1, 2018</td>
</tr>
<tr>
<td>Subcommittee review</td>
<td>SDO 200</td>
<td>Jane Wankmiller</td>
<td>December 2018</td>
</tr>
</tbody>
</table>
Standards/Guidelines Development
Priority 6 Document

**Document Title:** Image Processing to Improve Automated Facial Recognition Search Performance

**Scope:** Provide facial examiner guidelines for processing a probe image in order to maximize the potential that an investigative lead will be included among the candidates returned following a facial recognition system (FRS) search.

**Objective/rationale:** Images that meet agreed upon international standards (such as ISO/IEC 19794-5: Face Image Data) can normally be submitted to an FRS for searching with little or no operator intervention. Many FRS also include intrinsic mechanisms for correcting minor deviations in subject pose, image size or vendor specific adjustments to the image. Manual processing by a trained facial examiner may be beneficial for sub-optimal images (e.g. low resolution, heavily compressed or where the subject’s pose, illumination, and/or expression are non-neutral).

**Issues/Concerns:** none

**Task Group Name:** Systems & Capture
**Task Group Chair Name:** Neal Gieselman
**Task Group Chair Contact Information:** Neal.gieselman@gmail.com
**Date of Last Task Group Meeting:** March 20-23, 2018
Standards/Guidelines Development Priority 6 Document

Key Components of Standard:
• Generalized and sequential search process.
• Adherence to standard workflows
Priority 6: Image Processing to Improve Automated Facial Recognition Search Performance

Task Group/Subcommittee Action Plan

<table>
<thead>
<tr>
<th>Planned Actions</th>
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<th>Estimated Completion Date</th>
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<tbody>
<tr>
<td>Send to RC/STG/VITAL for review/comments</td>
<td></td>
<td>Neal Gieselman</td>
<td>Complete</td>
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<tr>
<td>Seek approval from DM SAC to send to SDO (ASTM)</td>
<td>SDO 400</td>
<td>Neal Gieselman</td>
<td>August 15, 2018</td>
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<tr>
<td>Send to SDO (ASTM)</td>
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<td>Neal Gieselman</td>
<td>Sept 1, 2018</td>
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## Summary of Standards/Guidelines Priority Actions

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<td>Image Processing</td>
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</table>
Additional Documents for OSAC Publication

• Frequently Asked Questions about Facial Identification
  • 12 questions (e.g., How reliable is facial comparison? What is automated facial recognition? Is there a certification for facial image comparison?)
  • Living document - additional and/or updating of questions
    • New questions will be added as necessary
    • When issues arise that may cause removal or rewording
  • Status of document
    • Posted to FI Subcommittee page on OSAC website

• Courtroom Testimony for Facial Identification
  • Approx. 17-20 questions
    • 4-5 relating to research, organizations, publications
    • 6-7 relating to training, terminology, comparison methods
    • 7-8 relating to analysis of images, processing images, and technical skills
  • Status of document
    • Task group development
    • Case law research
    • Courtroom testimony research

Task Group Name: Public Communication
Task Group Chair Name: Mark Dolfi
Task Group Chair Contact Information: madolfi@lasd.org
Date of Last Task Group Meeting: Mar 20-23, 2018
<table>
<thead>
<tr>
<th>Title</th>
<th>Developing Organization</th>
<th>Status*</th>
<th>OSAC Process Stage (e.g., RA 100)</th>
</tr>
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<tbody>
<tr>
<td>Physical Stability of Facial Features of Adults</td>
<td>FISWG</td>
<td>Review of comments</td>
<td>At SWG</td>
</tr>
<tr>
<td>Factors To Consider in Facial Image Assessment</td>
<td>FISWG</td>
<td>In draft</td>
<td>At SWG</td>
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<tr>
<td>Metadata Usage</td>
<td>FISWG</td>
<td>Reformatting</td>
<td>SDO 200</td>
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<tr>
<td>Facial Recognition System Methods and Techniques</td>
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<td>Reformatting</td>
<td>SDO 200</td>
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<td>Facial Recognition System Bulk Data Transfer</td>
<td>FISWG</td>
<td>Reformatting</td>
<td>SDO 200</td>
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</tbody>
</table>
Research Gaps Identified

• Validation of Physical Stability
  • Literature review of relevant studies [scientific, medical, academic, and professional] regarding the physical stability of the facial features of adults detailed within the current Physical Stability of Facial Features of Adults document.
  • In addition to the literature review, the conclusions reached based on relevant research should be presented to the subcommittee in layman's terms for incorporation into the document.

• Post Capture Imaging Processing
  • Best practices and scientifically validated techniques to improve facial image quality for biometrics and forensics

• Human Factors in Facial Image Comparison
  • Research to determine effective strategies for training in facial comparison and to develop testing material.
  • Research to validate the methods used by trained examiners to compare faces and establish effective case management and bias mitigation strategies.

• Assessment of the accuracy of getting Facial Images from DNA
  • Research to perform an objective evaluation of the performance of claimed techniques by vendor(s) who are selling technology that purports to create an accurate adolescent facial image from DNA.

• Evaluation into the Validity of Facial Comparison Training Methods *new*
  • Conduct empirical validation of current facial comparison training courses for operational personnel to determine what aspects of training are required to improve facial comparison ability
Additional Items of Interest

• Additional standards/guidelines currently being worked on by FI Subcommittee (all in draft format)
  • Guideline on the Effects of a Printed Image for Facial Image Comparison
  • Physical Stability of Facial Features of Adults
  • Conclusion Scale
  • Guide for facial comparison training to competency

• Future standards/guidelines by Facial Identification Subcommittee
  • Guidelines for Post Capture Analysis and Processing of Facial Images
  • Presenting Facial Identification Results in Court
  • 3D Pose Correction to Improve Automated Facial Recognition Search Performance
  • Using imagery from Body Worn Cameras
  • Guide for proficiency testing in role based facial comparison
  • Guide for competency frameworks for role based facial comparisons
Additional Items of Interest

• Current multi-subcommittee standards/guidelines
  • Virtual Subcommittee #1: ISO 17020/17025
  • Virtual Subcommittee #2: ANSI/NIST-ITL 1-2011
  • Virtual Subcommittee #3: ACE Process Map
  • Virtual Subcommittee #4: Training, Continuing Education & Professional Development
  • Virtual Subcommittee #5: Source Conclusions

• Future multi-subcommittee standards/guidelines
  • Presenting Evidence in Court (e.g. how to use visual aids)
  • Reporting findings

• Leverage those already on the affiliate list and encourage others within the community to join OSAC to assist with document development, research, etc.
  • Complete the OSAC membership application form found at: https://www.nist.gov/forensics/osac-application.cfm
  • Please be sure to specify your interest in the Facial Identification Subcommittee
Additional Items of Interest

• Work with FISWG on development of additional standards & guidelines
  • Next FISWG meeting scheduled for September 10-14, 2018 at Michigan State Police campus in Lansing, MI.
  • Currently accepting membership applications to FISWG
    • Application information can be found at www.FISWG.org
• Questions regarding FISWG can be sent to: FISWG1@gmail.com
Questions

• Lora Sims can be contacted at:
  facial_id-chair@workspace.forensicosac.org

• For more information about OSAC or becoming a member:
  • https://www.nist.gov/forensics/organization-scientific-area-committees-forensic-science
  • https://www.nist.gov/osac-application-form

Be sure to specify your interest in the
Facial Identification Subcommittee