OSAC Friction Ridge Subcommittee Progress Update and Q&A

Henry Swofford, Josh Connelly, and Carey Hall

Executive Committee
Friction Ridge Subcommittee (FRS)
Organization for Scientific Area Committees for Forensic Science (OSAC)

IAI – Nashville, TN
August 4, 2021

Disclaimer

The opinions or assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the National Institute of Standards and Technology (NIST) or the Organization of Scientific Area Committees (OSAC).

OSAC and Standards Development

- OSAC was established in 2014 to replace SWGs
- OSAC is administered by the National Institute of Standards and Technology (NIST)
- OSAC is responsible for

"facilitating the development and promoting the use of high-quality, technically sound standards. These standards define minimum requirements, best practices, standard protocols and other guidance to help ensure that the results of forensic analysis are reliable and reproducible."

OSAC Structure

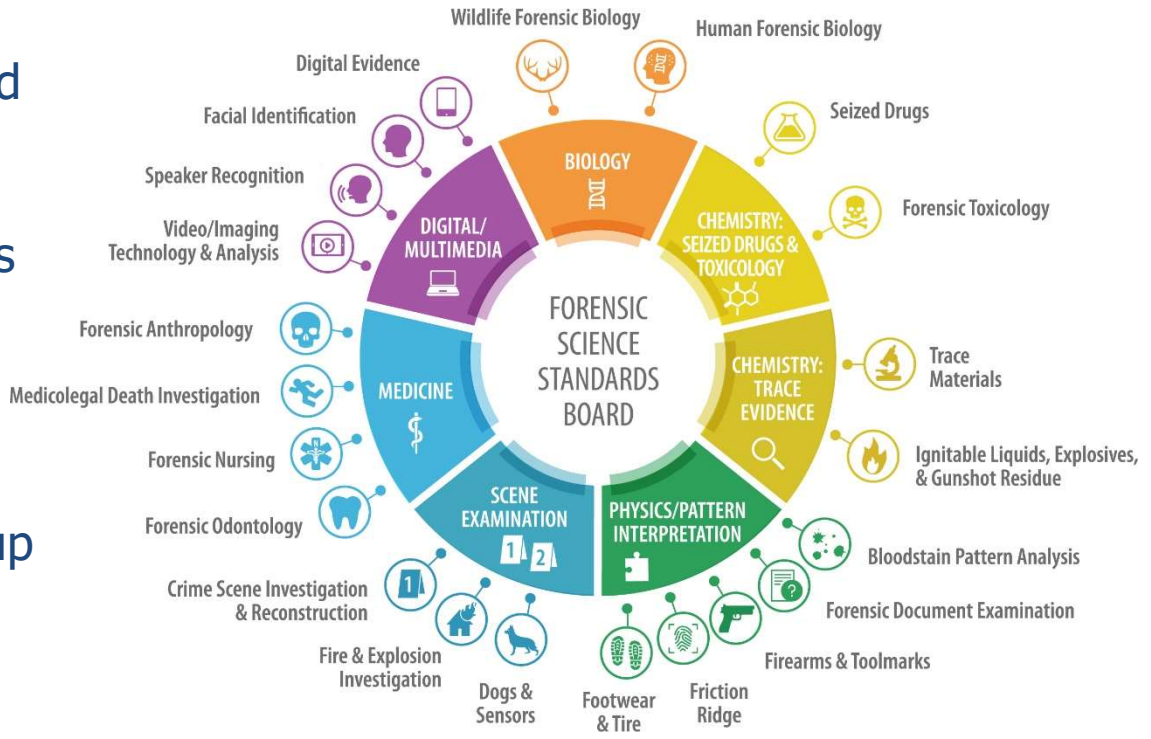
Forensic Science Standards Board (FSSB)

Seven Scientific Area Committees (SACs)

22 Subcommittees (SCs)

FSSB Task Groups (these make up STRPs):

- Quality
- Statistics
- Human factors
- Legal
- Terminology



OSAC and Standards Development

- The OSAC Registry is a repository of high-quality, technically sound published *and* proposed standards for forensic science.
- *All* the standards on this registry (published and proposed) have passed a rigorous technical and quality review by OSAC members, including forensic science practitioners, research scientists, statisticians and legal experts.
- OSAC encourages the forensic science community to implement these published and proposed standards.

OSAC and Standards Development

Subcommittee Leadership

Chair – Henry Swofford

- HJS Consulting, LLC
- Term expiration: Sept. 30, 2023
- Email: hswofford@hotmail.com

Vice-Chair – Josh Connelly

- Douglas County Sheriff's Office
- Term expiration: Sept. 30, 2022
- Email: joshua.connelly@douglascounty-ne.gov

Executive Secretary – Carey Hall

- Minnesota BCA
- Term expiration: Sept. 30, 2022
- Email: carey.hall@state.mn.us

Subcommittee Breakdown

Category	**Current**	
Practitioner Total	13	65%
Federal	4	20%
State & Local	8	40%
Academia	4	20%
Private Sector (includes self-employed)	4	20%

Subcommittee Background

- Each SC no longer limited to 20 voting members
  - Executive committee decided kept SC membership to 16 voting members, 3 RC/FRS voting members, and 1 SC chair to align headcount with resources.

- Can have an 'unlimited' number of affiliate members and increase, as needed.

- Affiliates are a great way to on-board for a particular topic and serve on a TG – they can't vote but can provide extremely valuable insight and can turn into voting members at a later date

Documents Under Development

1. Automated Biometric Identification Systems Best Practices
2. Monitoring the proficiency of FSP personnel
3. Method Validation & Performance Checks
4. Limited Examinations
5. Feature Selection
6. Recruiting/Selection for Pattern Recognition
7. Processing/Development of Friction Ridge Impressions
8. Terminology related to friction ridge examination (standing)

Published Proposed Standards & BPRs

1. Standard for Examining Friction Ridge Impressions
2. Best Practice Recommendation for Analysis of Friction Ridge Impressions
3. Best Practice Recommendation for Comparison and Evaluation of Friction Ridge Impressions
4. Best Practice Recommendation for Testimony Monitoring
5. Best Practice Recommendation for Articulating a Source Identification in Friction Ridge Examination
6. Standard for Friction Ridge Examination Conclusions
7. Standard for Friction Ridge Examination Training Program
8. Best Practice Recommendations for Technical Review in Friction Ridge Identification
9. Best Practice Recommendations for the Resolution of Conflicts in the Course of Friction Ridge Examination
10. Best Practice Recommendations for the Verification Component in Friction Ridge Examination
11. Standard for Reporting Results from Friction Ridge Examinations
12. Standard for Consultation During Friction Ridge Examination

Published Proposed Standards & BPRs

All [Tier 3] documents listed below are completed work products of the OSAC Friction Ridge Subcommittee and have passed a rigorous technical and quality review by the subcommittee. The subcommittee encourages the forensic science community to implement these proposed standards.

Published Proposed Standards & BPRs

1. Standard for Examining Friction Ridge Impressions
2. Best Practice Recommendation for Analysis of Friction Ridge Impressions
3. Best Practice Recommendation for Comparison and Evaluation of Friction Ridge Impressions
4. Best Practice Recommendation for Testimony Monitoring
5. Best Practice Recommendation for Articulating a Source Identification in Friction Ridge Examination
6. Standard for Friction Ridge Examination Conclusions
7. Standard for Friction Ridge Examination Training Program
8. Best Practice Recommendations for Technical Review in Friction Ridge Identification
9. Best Practice Recommendations for the Resolution of Conflicts in the Course of Friction Ridge Examination
10. Best Practice Recommendations for the Verification Component in Friction Ridge Examination
11. Standard for Reporting Results from Friction Ridge Examinations
12. Standard for Consultation During Friction Ridge Examination

OSAC FRS Proposed Examination Trio

S Proposed Examination Trio

Defines minimum requirements for FSP policies & procedures (i.e., *what* shall be accounted for)

OSAC FRS Proposed Examination Trio

OSAC FRS Proposed Std for Examination

Standard for Examining Friction Ridge Impressions

Friction Ridge Subcommittee
Physics/Pattern Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science

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The FSP *shall* . . .

- Define features that may be used for examination
- Define criteria for utility decisions and source conclusions
- Define criteria for designating impressions as "complex"
- Document observed data (i.e., features + quality) necessary to support source conclusions.
- Routinely monitor examiners' performance related to detection, documentation, and interpretation.

OSAC FRS Proposed BPR for Analysis

Criteria for Quality Designation*

Category 5	All Observed Data are definitive
Category 4	Definitive ridge edges; debatable pores
Category 3	Definitive minutiae; debatable ridge edges
Category 2	Definitive ridge flow; debatable minutiae
Category 1	Debatable ridge flow
Category 0	Background

Best Practice Recommendation for Analysis of Friction Ridge Impressions

Friction Ridge Subcommittee
Physics/Pattern Scientific Area Committee
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*may be determined subjectively or through automated quality software

OSAC FRS Proposed BPR for Analysis

Criteria for *Impression* Complexity Designation

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Non-Complex Impression:

- Greater than 15 minutiae designated as Category 3 (green) quality or higher; or at least 12 minutiae designated as Category 4 (blue) quality or higher.
- The observed data provides strong indication of the anatomical region and orientation

Low-Complexity Impression:

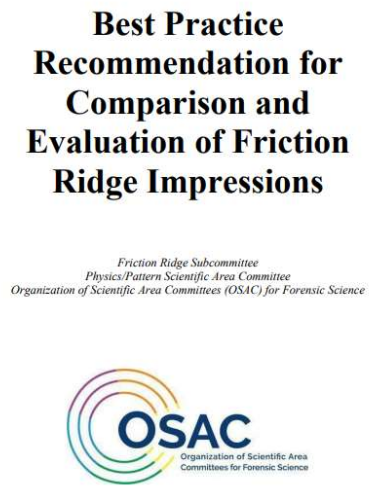
- Between 8 and 15 minutiae designated as Category 3 (green) quality or higher; or between 5 and 12 minutiae designated as Category 4 (blue) quality or higher.
- The observed data does not provide a strong indication of the anatomical region and orientation

High-Complexity Impression:

- Fewer than 8 minutiae designated as Category 3 (green) quality or higher; or fewer than 5 minutiae designated as Category 4 (blue) quality or higher.

OSAC FRS Proposed BPR for Comparison & Evaluation

Criteria for *Comparison* Complexity Designation



Three Categories:

- Non-Complex Comparison
- Low-Complexity Comparison
- High-Complexity Comparison

Criteria accounts for:

- The complexity designation for each impression
- Whether the Observed Data provide strong indications of anatomical region
- Whether the Observed Data provide strong indications of orientation
- Whether the Observed Data in overlapping regions of impressions are designated as Category 3 (green) quality or higher
- Any differences in feature interpretations after exposure to the exemplar impression.

OSAC FRS Proposed BPR for Comparison & Evaluation

Criteria for Source Conclusions

Best Practice Recommendation for Comparison and Evaluation of Friction Ridge Impressions

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Source Identification:

- Observed Data in relevant areas of both impressions are present and designated as Category 2 (yellow) quality or higher during Analysis
- Observed Data between the impressions correspond
- The corresponding data include at least 8 minutiae designated as Category 3 (green) quality or higher and documented during Analysis.

Source Exclusion:

- Observed Data in relevant areas of both impressions are present and designated as Category 2 (yellow) quality or higher during Analysis
- Observed Data between the impressions do not correspond.

OSAC FRS Proposed Std for Conclusions

Standard for Friction Ridge Examination Conclusions

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5 allowable (not required) conclusions

1. **Source Exclusion** is the conclusion that two friction ridge impressions did not originate from the same source.

2. **Support for Different Sources** is the conclusion that the observations provide more support for the proposition that the impressions originated from different sources rather than the same source; however, there is insufficient support for a Source Exclusion. The degree of support may range from limited to strong or similar descriptors of the degree of support. Any use of this conclusion shall include a statement of the degree of support and the factor(s) limiting a stronger conclusion.

3. **Inconclusive / Lacking Support** is the conclusion that the observations do not provide a sufficient degree of support for one proposition over the other. Any use of this conclusion shall include a statement of the factor(s) limiting a stronger conclusion.

4. **Support for Same Source** is the conclusion that the observations provide more support for the proposition that the impressions originated from the same source rather than different sources; however, there is insufficient support for a Source Identification. The degree of support may range from limited to strong or similar descriptors of the degree of support. Any use of this conclusion shall include a statement of the degree of support and the factor(s) limiting a stronger conclusion.

5. **Source Identification** is the strongest degree of association between two friction ridge impressions. It is the conclusion that the observations provide extremely strong support for the proposition that the impressions originated from the same source and extremely weak support for the proposition that the impressions originated from different sources.

OSAC FRS Proposed Std for Conclusions

Standard for Friction Ridge Examination Conclusions

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Qualifications and Limitations

- An examiner shall not assert that a source identification is the conclusion that two impressions were made by the same source or imply an individualization to the exclusion of all other sources.
- An examiner shall not suggest that the offered conclusion is an expression of absolute certainty.
- An examiner shall not assert or imply that latent print examination is infallible or has a zero-error rate.
- An examiner shall not cite the number of latent print comparisons performed in his or her career as a measure for the accuracy of a conclusion offered in the case at hand.
- An examiner shall not use the expression 'reasonable degree of scientific certainty' or similar assertions as a description of the confidence held in his or her conclusion.

OSAC FRS Proposed Std for Reporting Results

Standard for Reporting Results from Friction Ridge Examinations

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Technical information that *shall* be included in the written report:

- Any deviation from FSP approved examination methodologies, policy and/or procedure.
- Statement describing that analysis was performed and all the resulting utility decisions of friction ridge impressions.
- A summary of the search results for ABIS searches conducted (Note: this is not intended to require or recommend the inclusion of all individual candidates generated as a result of a database search).

OSAC FRS Proposed Std for Reporting Results

Standard for Reporting Results from Friction Ridge Examinations

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The following information related to examination conclusions *shall* be included in the written report:

- Only comparisons which have been conducted shall be reported (i.e., a comparison must be completed to render a Source Exclusion or Support for Different Source conclusion).
- All non-verified Source Identifications, Support for Same Source, and Source Exclusions included in the written report shall be clearly delineated. The limitations of the assessments shall be clearly indicated, as shall the process to have the conclusion verified.
- Where an Inconclusive/Lacking Support conclusion is included, a statement detailing the reasons for this conclusion.
- Statement when a reported conclusion was the result of a conflict resolution process or consensus review and FSP policy (e.g. FSP policy dictates the most conservative conclusion is reported out).

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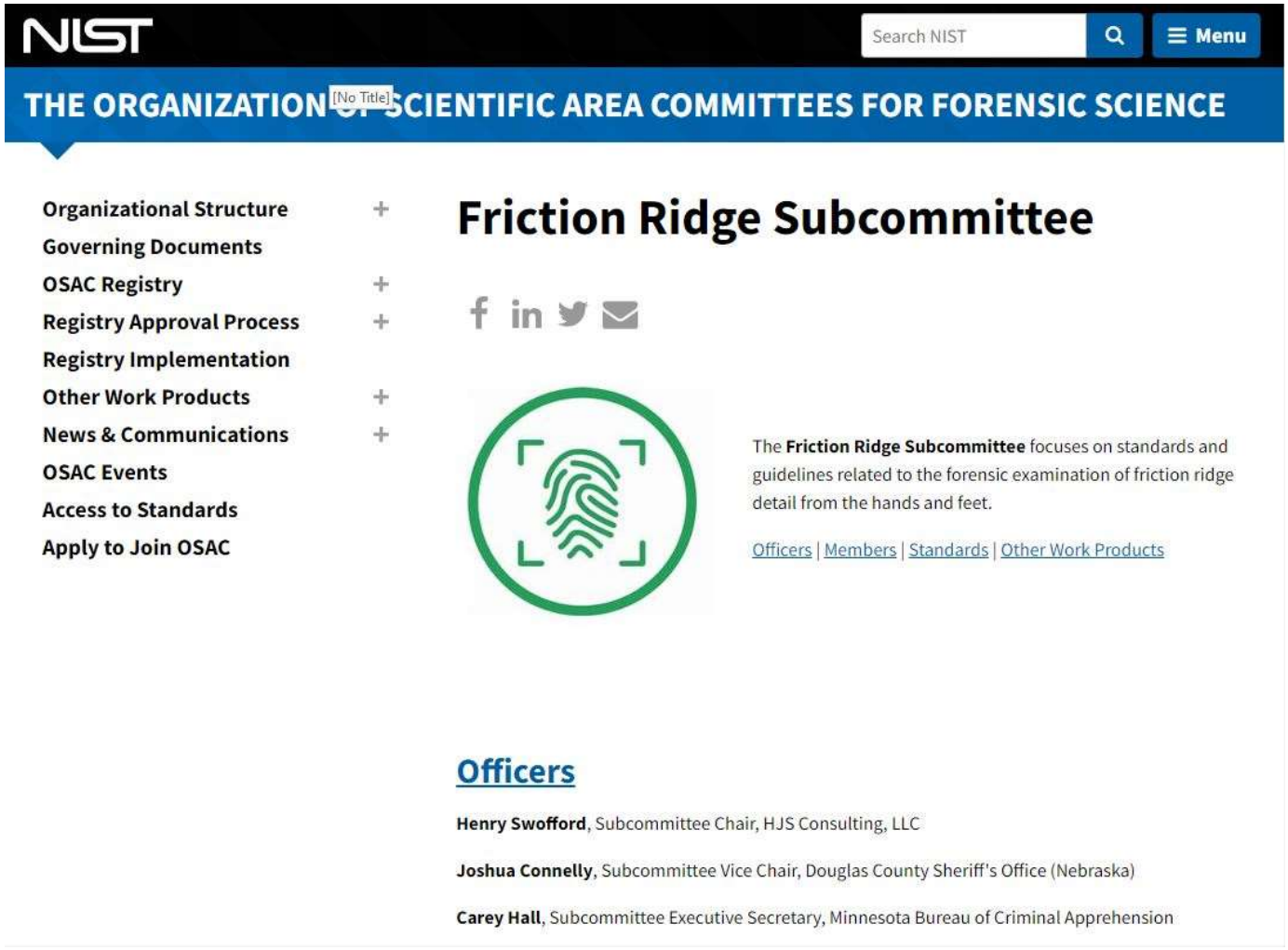

https://www.nist.gov/osac/friction-ridge-subcommittee

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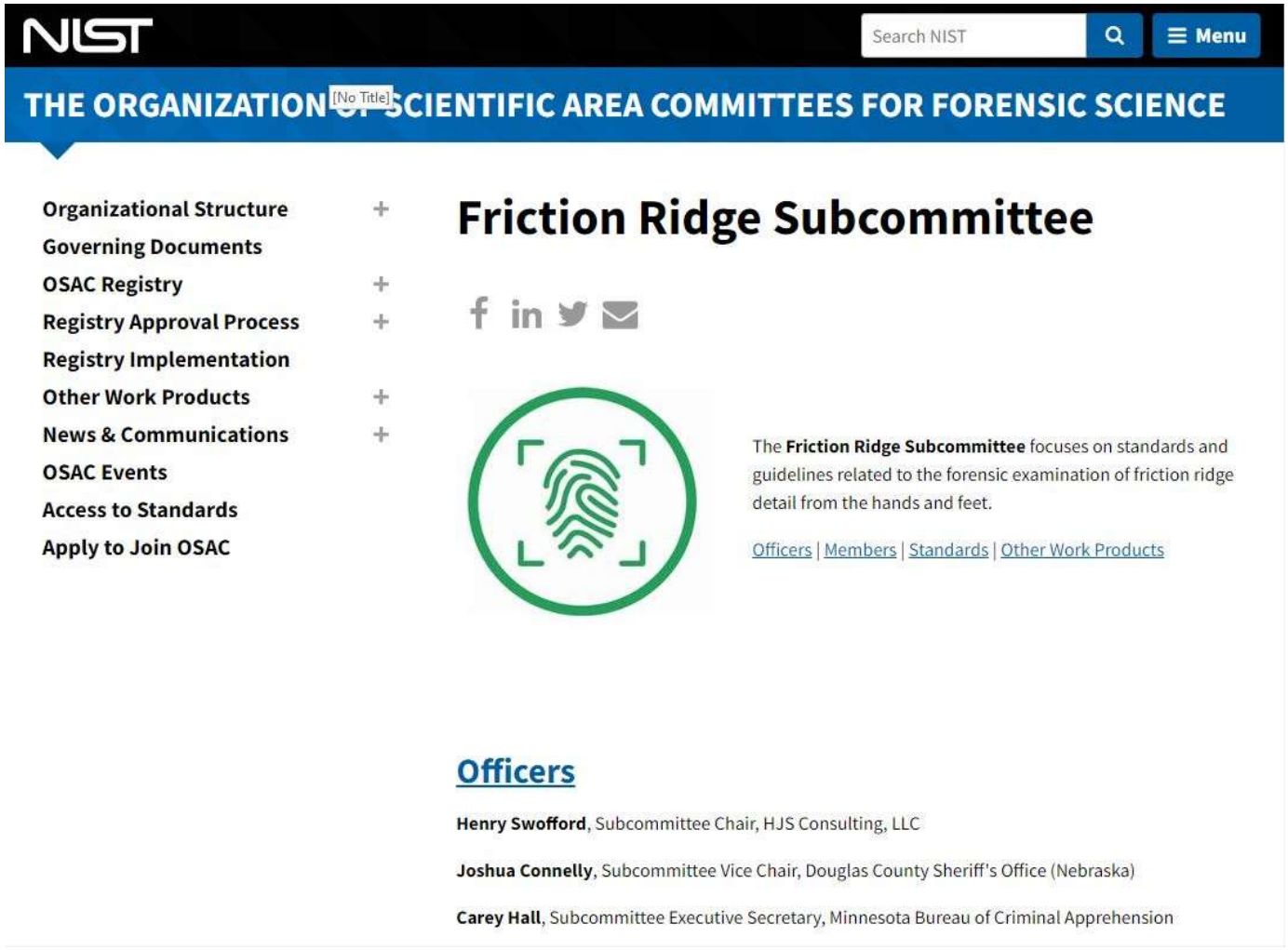

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OSAC Communications

- Provides monthly updates on forensic science standards moving through development process at SDOs and those moving through OSAC Registry process
- Available on OSAC's website: https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/osac-standards-bulletin

- Quarterly communication that provides updates on OSAC's program status, activities, accomplishments, and opportunities for public input with internal and external audiences.
- Available on OSAC's website: https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/osac-newsletter

- Follow us! https://www.linkedin.com/showcase/organization-of-scientific-area-committees-osac-for-forensic-science/

How Can You Get Involved

Sign up for OSAC communications

https://service.govdelivery.com/accounts/USNIST/subscriber/new

Become an OSAC member

https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/apply-join-osac

Review and comment on documents

Stay informed

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