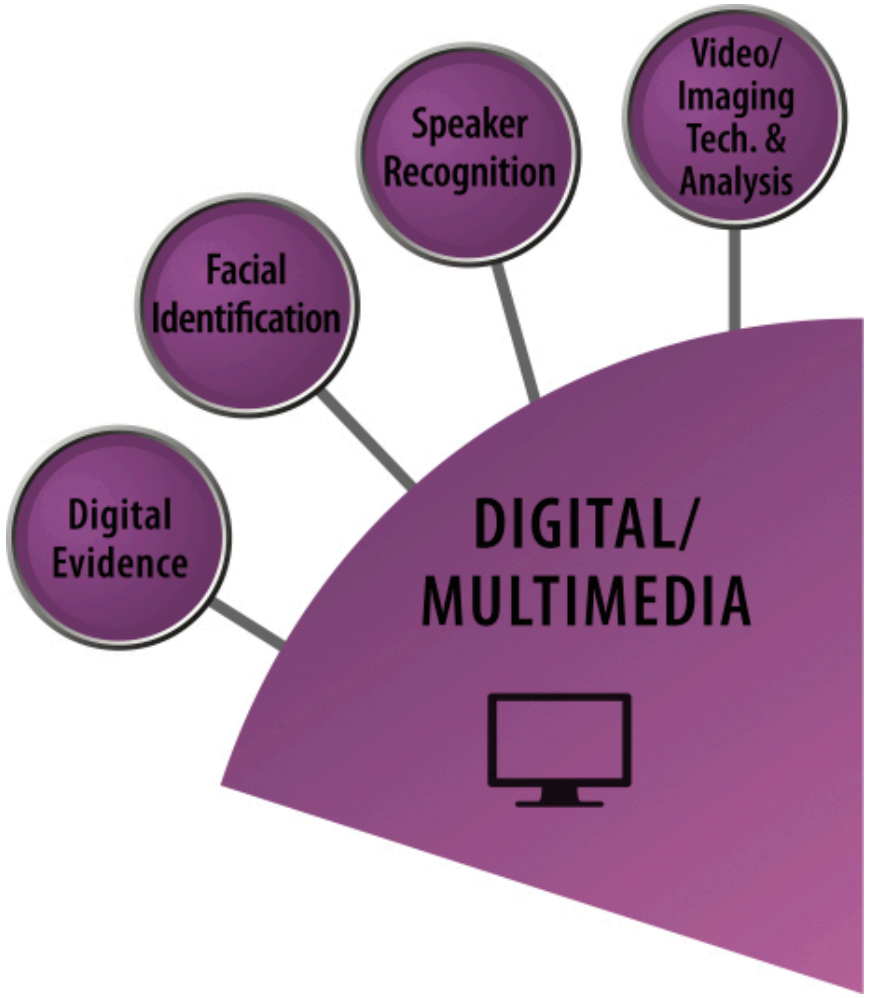
OSAC

Organization of Scientific Area Committees for Forensic Science

Digital/Multimedia Scientific Area Committee

Richard W. Vorder Bruegge, Chair



DMSAC Subcommittees

Facial Identification

Speaker Recognition

Video/Imaging Technology & Analysis

Digital Evidence

Digital/ Multimedia SAC Leadership

Richard Vorder Bruegge, Chair, U.S. Federal Bureau of Investigation

Lam Nguyen, Vice Chair, Mandiant

Douglas Lacey, Executive Secretary, BEK TEK LLC

Julie Carnes, Chair, Video/Imaging Technology and Analysis, Target

John Duckworth, Chair, Digital Evidence, U.S. Postal Service Office of Inspector General

David Marks, Chair, Speaker Recognition, U.S. Federal Bureau of Investigation

Lora Sims, Chair, Facial Identification, Ideal Innovations Inc.

Digital/ Multimedia SAC Members and Liaisions

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Dorothy Glancy, J.D., Santa Clara University

Matthew Graves, United States Army Criminal Investigation Laboratory

Abhyuday Mandal, Ph.D., University of Georgia

P. Jonathon Phillips, Ph.D., National Institute of Standards and Technology

Michael Piper, Target Corporation

Mark Pollitt, Ph.D., Digital Evidence Professional Services, Inc.

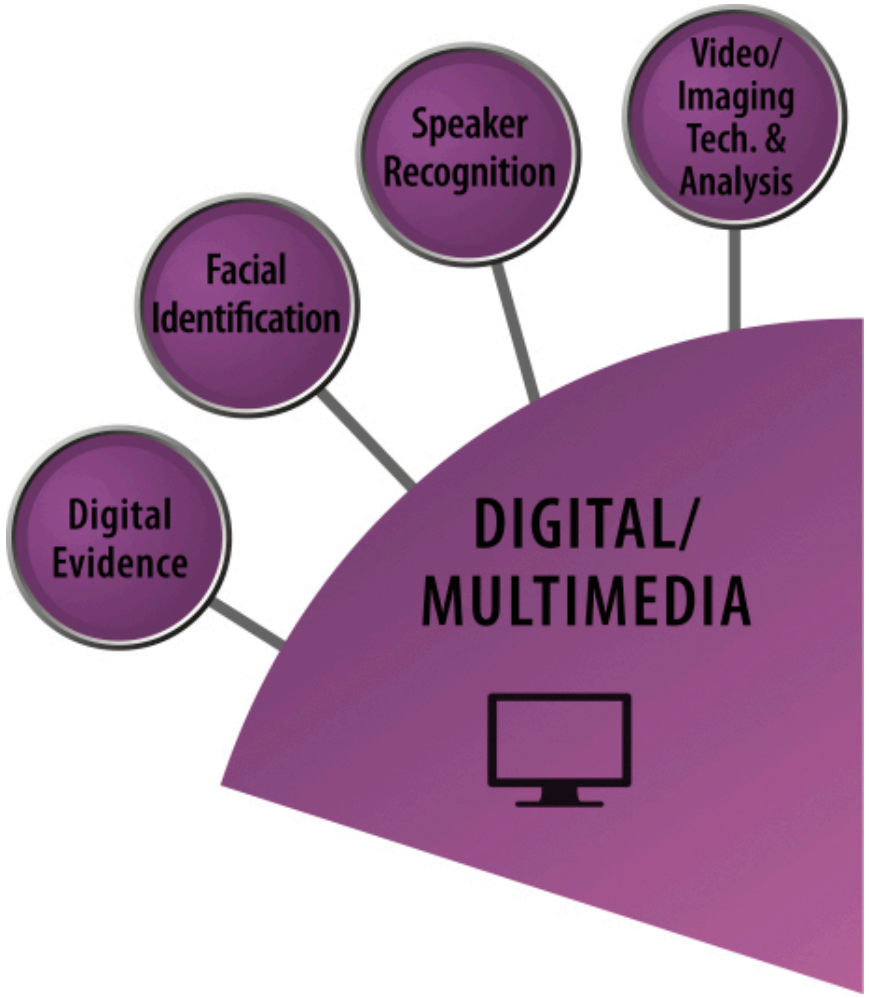
James Wayman, San Jose State University

Ex-Officio Members - **John F. Holloway**, Associate Dean and Exec. Dir., Quattrone Center for the Fair Administration of Justice, University of Pennsylvania (HFC)

Lori Varnell, Tarrant County Criminal District Attorney's Office (LRC)

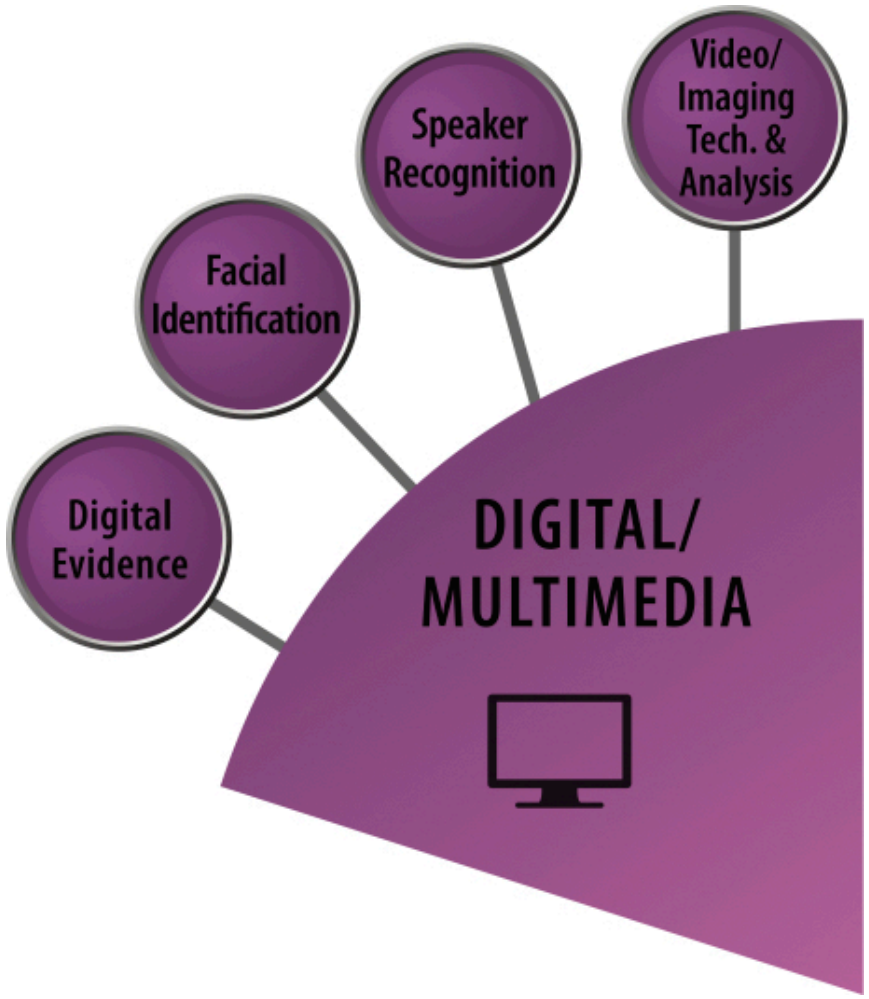
John Ellis, Federal Defenders of San Diego, Inc. (LRC)

Jan L. Johnson, Illinois State Police, Forensic Sciences Command (QIC)



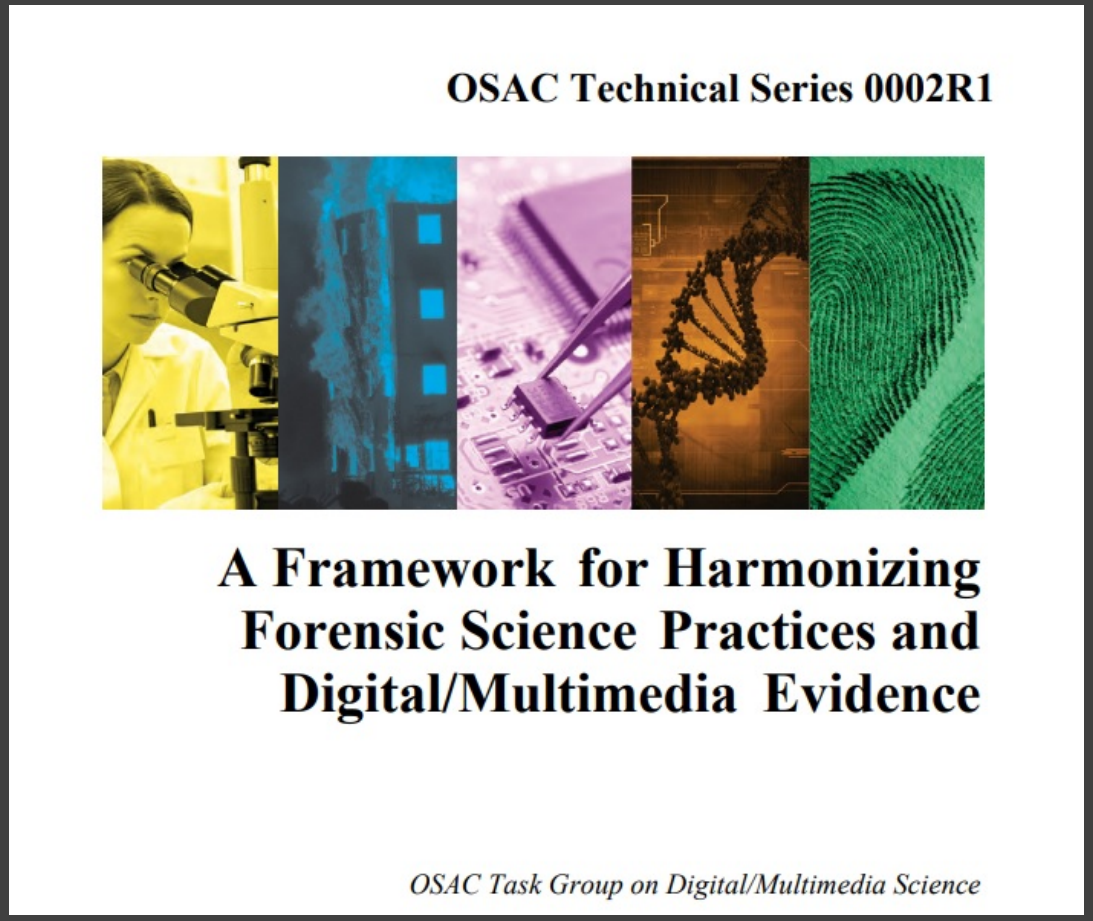
DMSAC & OSAC Focus and Key Challenges

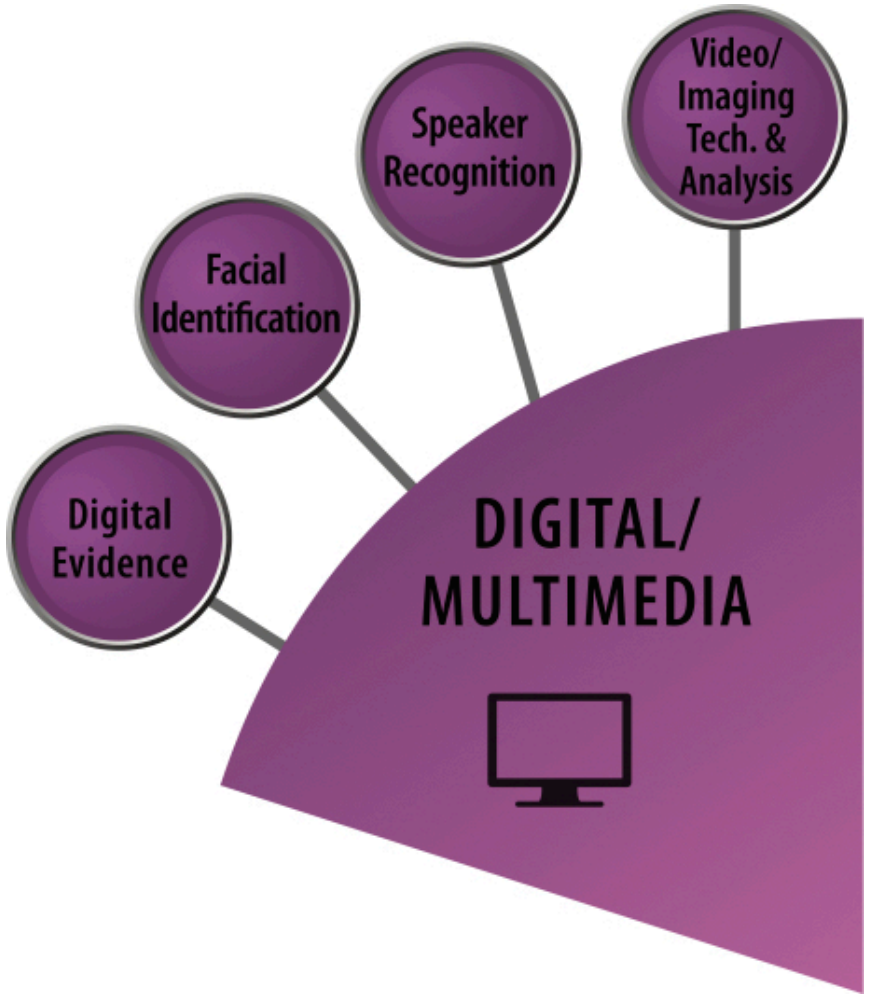
Scientific Paradigm for DMS
Accreditation
Conclusion Scales
Terminology
Error Rates



DMSAC & OSAC Focus and Key Challenges

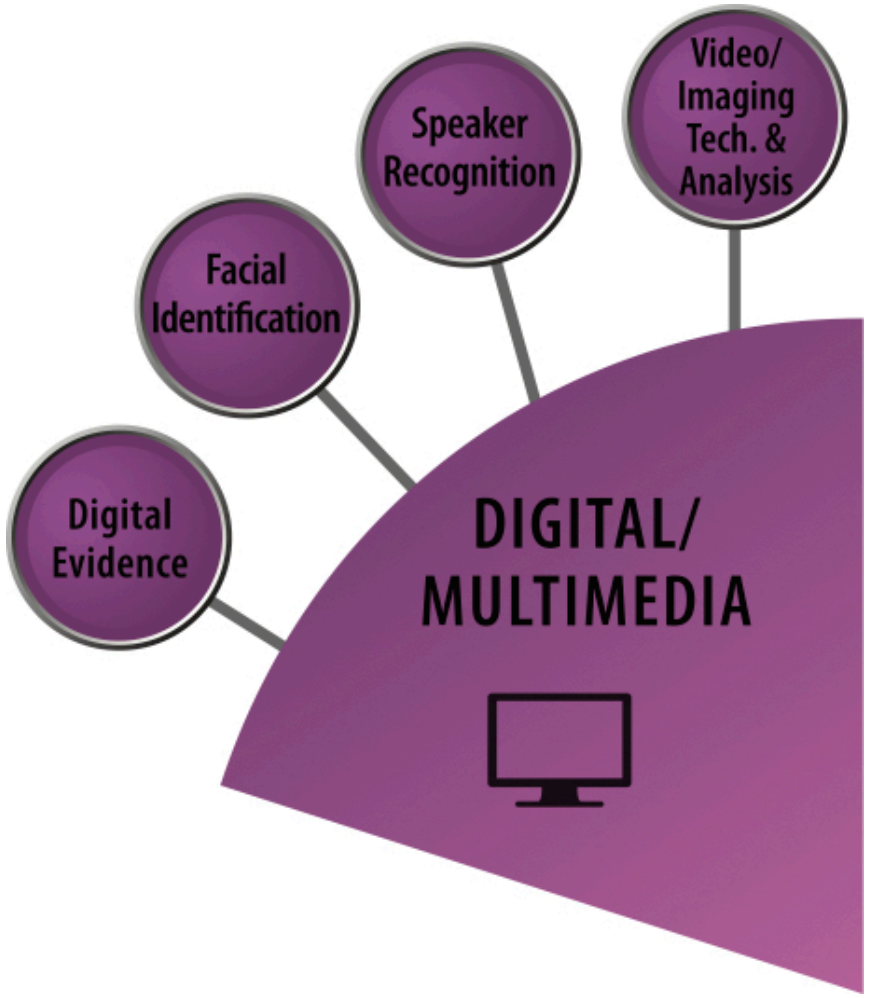
Scientific Paradigm for DMS – Task Group





DMSAC & OSAC Focus and Key Challenges

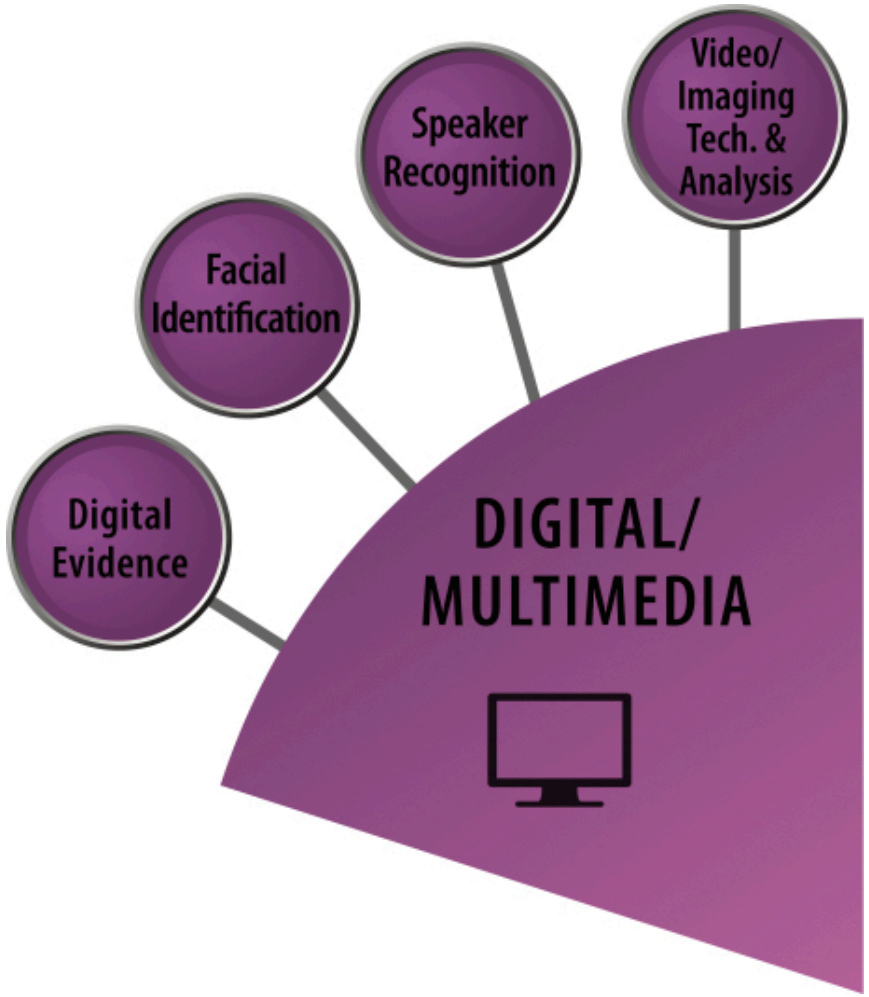
Accreditation Issues



DMSAC & OSAC Focus and Key Challenges

Conclusion Scales
Terminology

Working OSAC Task Groups addressing these issues.



DMSAC & OSAC Focus and Key Challenges

Error Rates

- Defining Areas for Further Study (e.g., Vehicle Make/Model)
- Promoting Existing Peer-Reviewed Research

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NEW RESEARCH IN Physical Sciences Social Sciences Biological Sciences

Face recognition accuracy of forensic examiners, superrecognizers, and face recognition algorithms

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P. Jonathon Phillips, Amy N. Yates, Ying Hu, Carina A. Hahn, Eilidh Noyes, Kelsey Jackson, Jacqueline G. Cavazos, Géraldine Jeckeln, Rajeev Ranjan, Swami Sankaranarayanan, Jun-Cheng Chen, Carlos D. Castillo, Rama Chellappa, David White, and Alice J. O'Toole

PNAS June 12, 2018 115 (24) 6171-6176; first published May 29, 2018 https://doi.org/10.1073/pnas.1721355115

Edited by Thomas D. Albright, The Salk Institute for Biological Studies, La Jolla, CA, and approved April 30, 2018 (received for review December 13, 2017)

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NEW RESEARCH IN Physical Sciences Social Sciences

Face recognition accuracy of forensic examiners, superrecognizers, and face recognition algorithms

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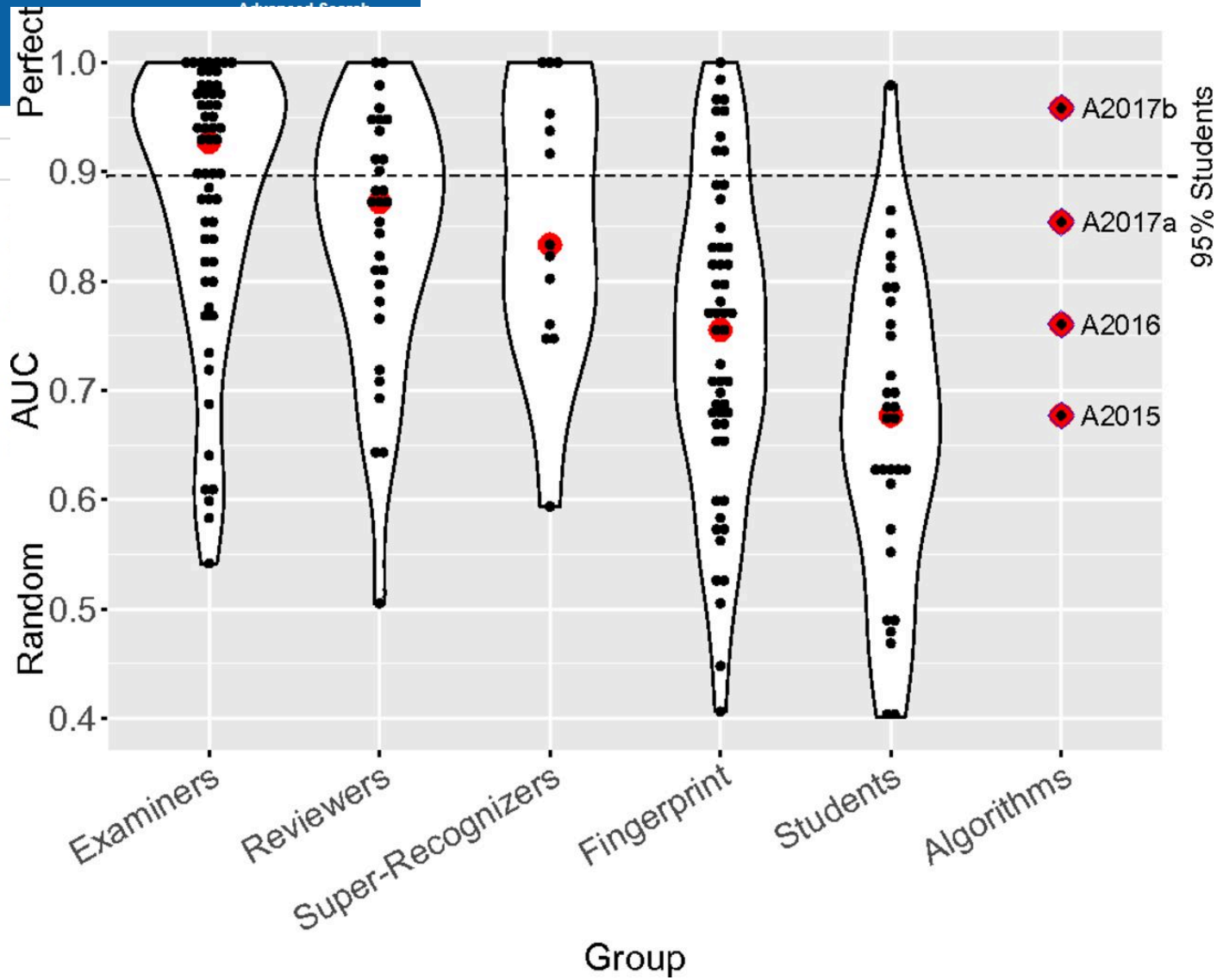

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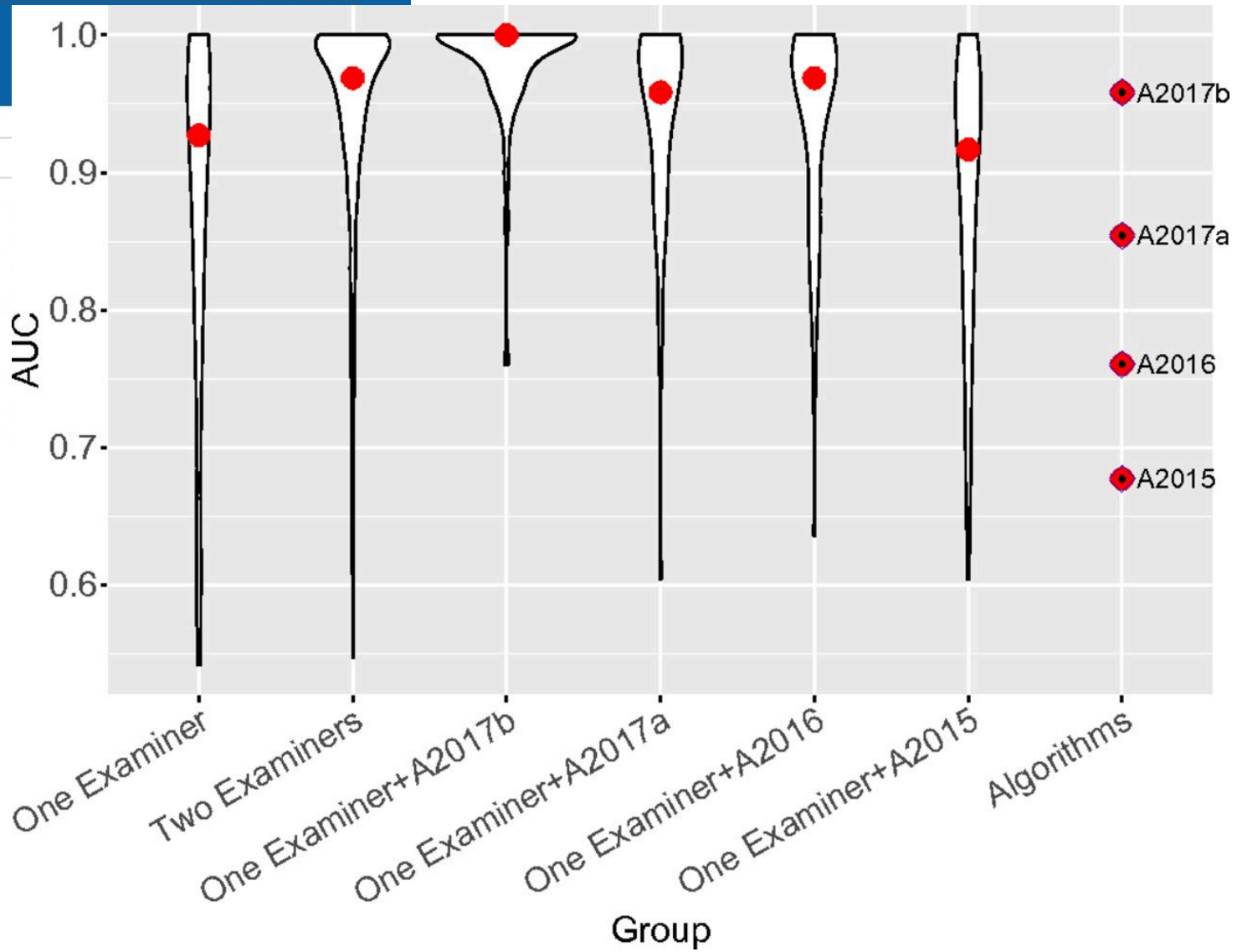

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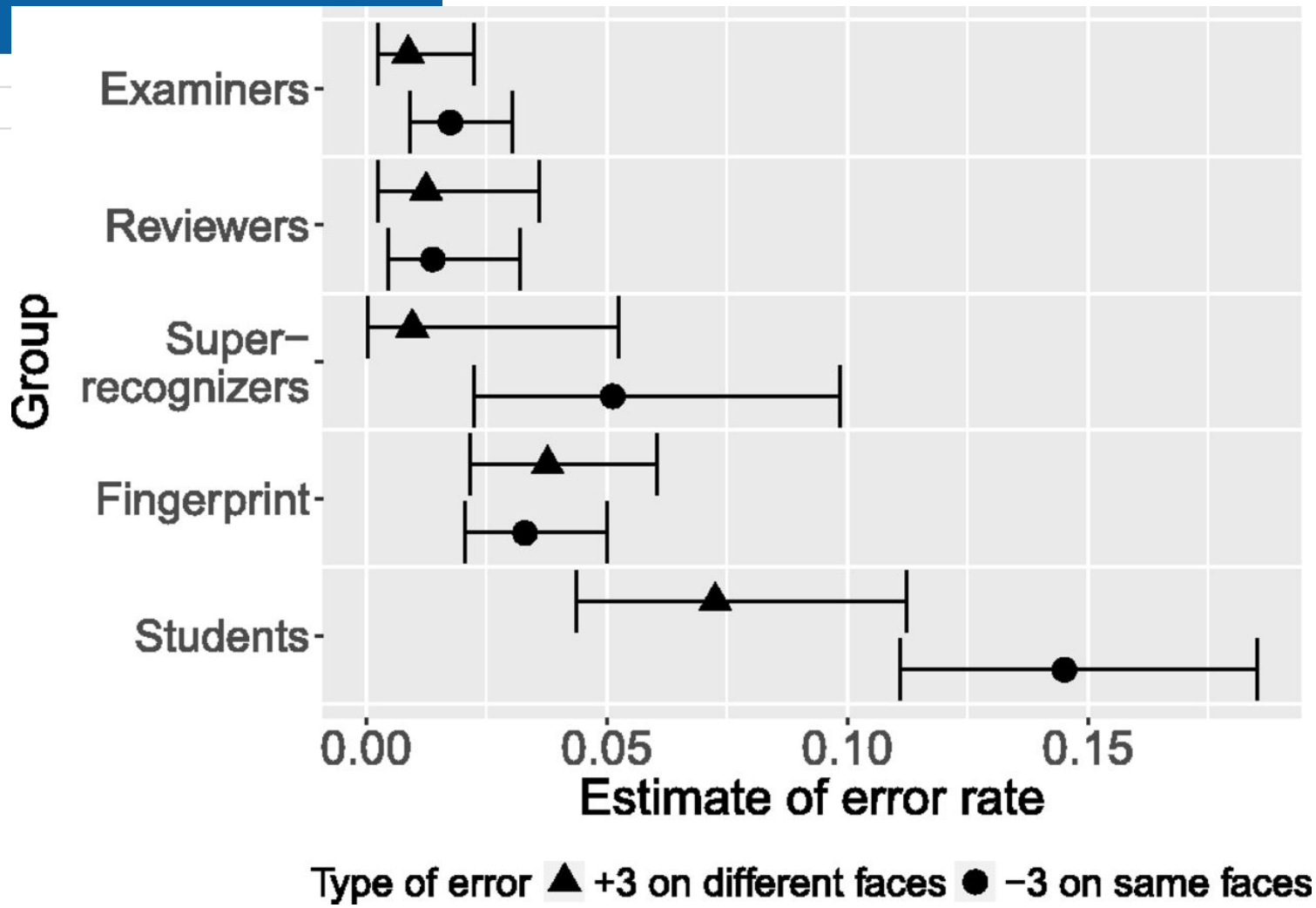
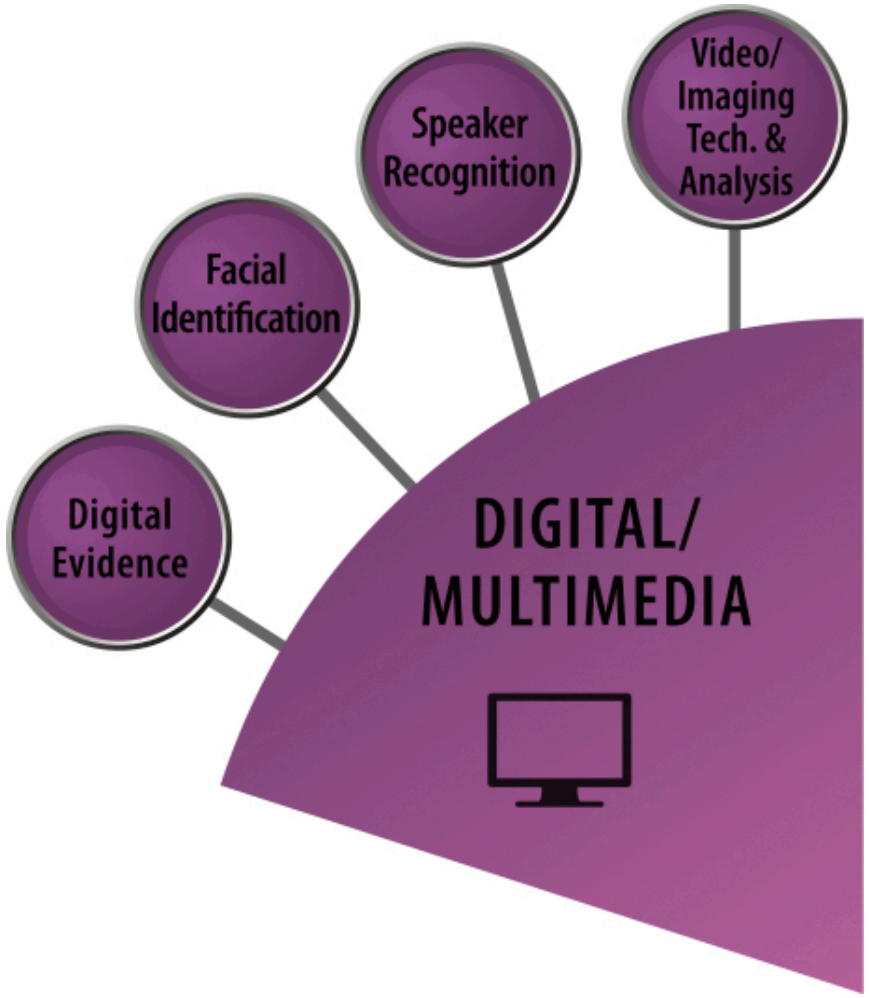




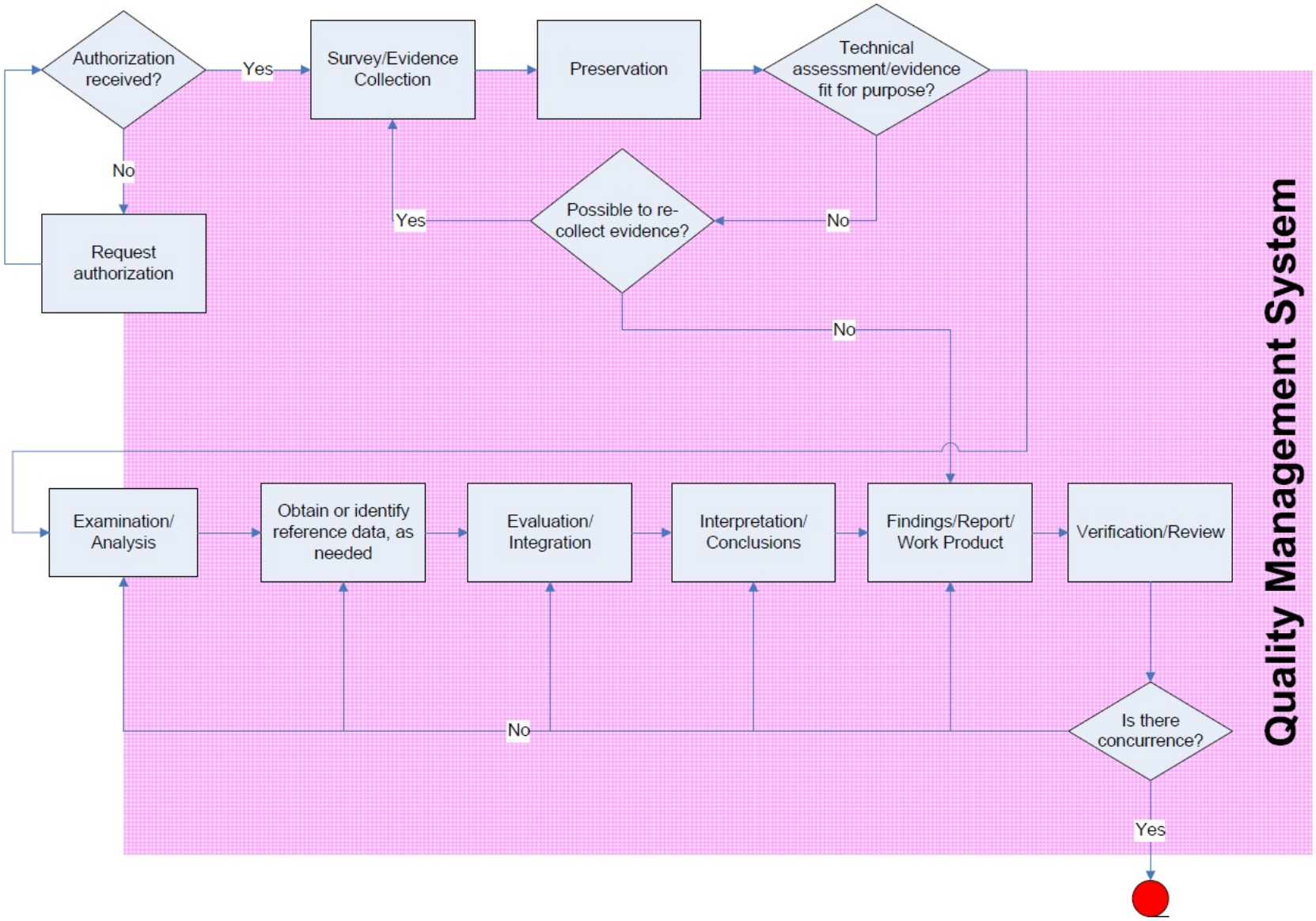
DMSAC Current Activities - Highlights

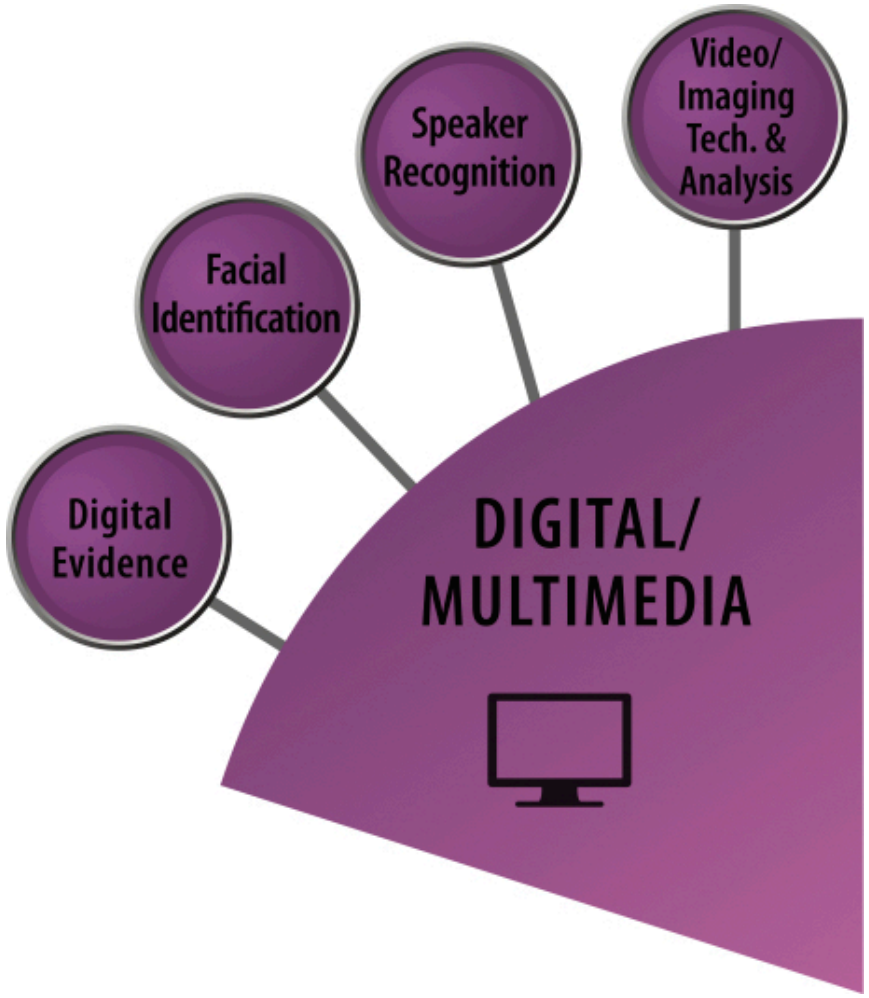
Road Maps - What standards are being worked? (*DE Example)

Process Maps – Provides pointers for what standards should be established. (*SR Example)

Different Processes Require Different Kinds of Standard (i.e., not all standards are the same, nor can they all be judged using the same metrics.)

DMSAC “Generic” Process Map





DMSAC Subcommittees

Facial Identification

Speaker Recognition

Video/Imaging Technology & Analysis

Digital Evidence

DMSAC Facial Identification Leadership

Lora Sims, Chair, Ideal Innovations, Inc.

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Jane Wankmiller, Executive Secretary, Northern Michigan University

DMSAC Facial Identification Members

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Neal Gieselman, Aware, Inc.

Leslie Kelly, Department of Defense

Steven B. Lee, San Jose State University

Ping Ma, University of Georgia

Allison Miller, Biometrics Operations Division (BOD)

Paul Moody, Palm Beach County Sheriff's Office

Emily Mullins, USG

Todd Putorti, New York State Department of Motor Vehicles, Division of Field Investigation

Kirt Simmons, D.D.S./Ph.D., Arkansas Children's Hospital

Debra Tennant, Federal Bureau of Investigation, Criminal Justice Information Services

Antonio Trindade, U.S. Customs and Border Protection, U.S. Border Patrol

Steven Wilkins, Pierce County (Washington) Sheriff's Department

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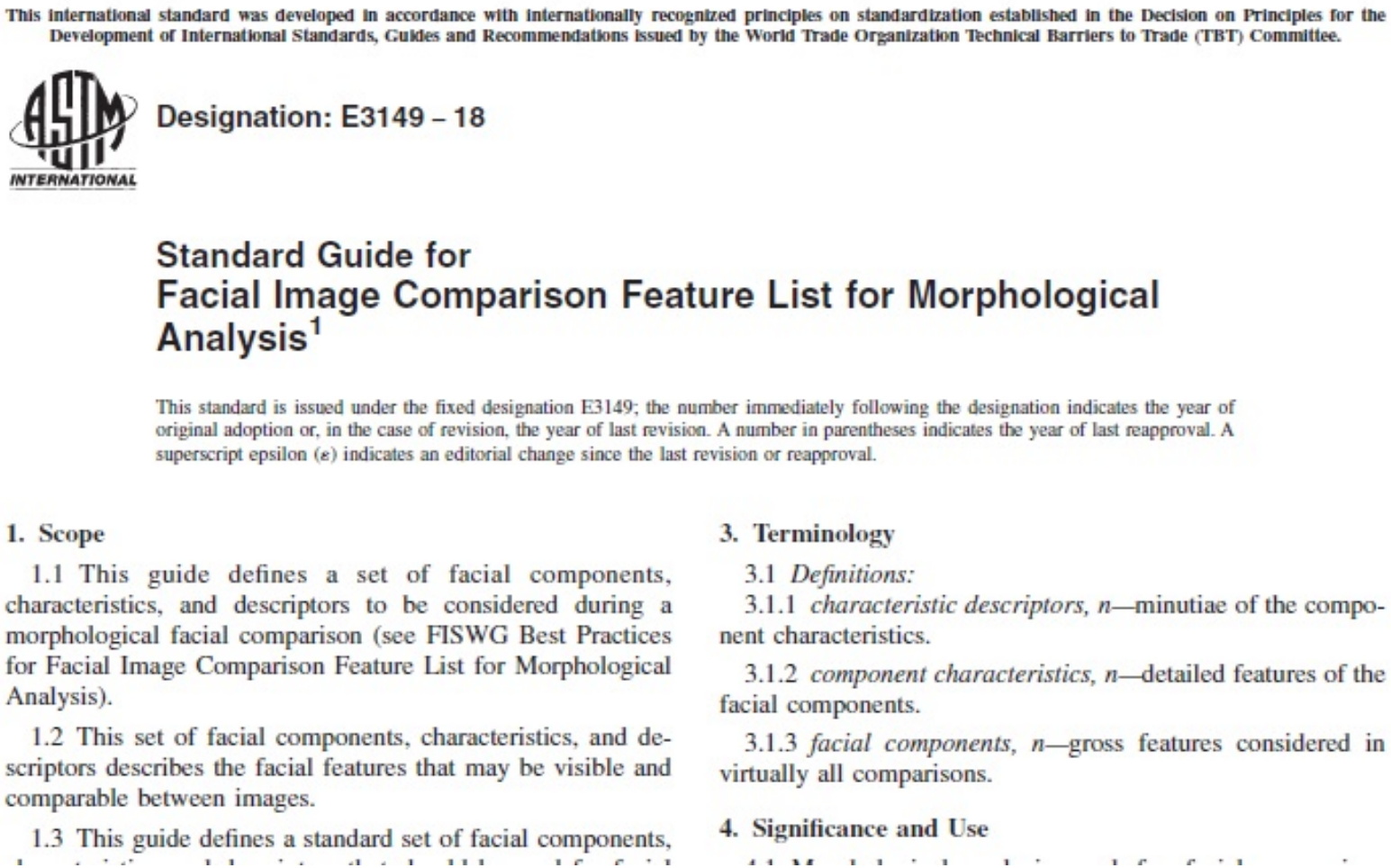
Standards on the Registry

Facial Identification

ASTM E3149-18 Standard Guide for Facial Image Comparison Feature List for Morphological Analysis (Facial Identification Subcommittee, February 14, 2019)



This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: E3149 – 18

Standard Guide for Facial Image Comparison Feature List for Morphological Analysis[1]

This standard is issued under the fixed designation E3149; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide defines a set of facial components, characteristics, and descriptors to be considered during a morphological facial comparison (see FISWG Best Practices for Facial Image Comparison Feature List for Morphological Analysis).

1.2 This set of facial components, characteristics, and descriptors describes the facial features that may be visible and comparable between images.

1.3 This guide defines a standard set of facial components,

3. Terminology

3.1 *Definitions:*

3.1.1 *characteristic descriptors, n*—minutiae of the component characteristics.

3.1.2 *component characteristics, n*—detailed features of the facial components.

3.1.3 *facial components, n*—gross features considered in virtually all comparisons.

4. Significance and Use

Standards in Process – Registry Approval Pending

Facial Identification

- *ASTM E3148-18 Guidelines for Postmortem Facial Image Capture*
- *ASTM E3115-18 Guidelines for Capture and Equipment Assessment for Face Recognition Systems*

Standards in Process – about to go to SDO

Facial Identification

- *GUIDE FOR ROLE BASED TRAINING IN FACIAL COMPARISON*

Standards in Process – Under Development

Facial Identification

- *Guide for Facial Comparison Training to Competency*
- *Standard Guide for Training, Continuing Education & Professional Development*
- *Impact of Printing Effects on Facial Comparison*
- *Collection Standards for Subjects in Headwear*

Research Needs

Facial Identification

- Assessment of Accuracy of Facial Images from DNA
- Evaluation of Validity of Facial Comparison Training Methods
- Human Factors in Facial Comparison
- Post Capture Image Processing
- Establishing Physical Stability of Facial Features in Adults

DMSAC Speaker Recognition Leadership

David Marks, Chair, U.S. Federal Bureau of Investigation

John Hansen, Ph.D., Vice Chair, University of Texas

Patrick Gibbs, Executive Secretary, Leidos

DMSAC Speaker Recognition Members

David Farris, U. S. Government

Stephen Gibbs, U. S. Government

John Godfrey, Johns Hopkins University

Alysha Hiller, Federal Bureau of Investigation

Aaron Lawson, Ph.D., SRI International

Douglas Reynolds, Ph.D., MIT Lincoln Laboratory

Walter Andrews, Ph.D., Sierra Nevada Corporation

Kevin Farrell, Ph.D., Nuance Communication

Kenneth Marr, Federal Bureau of Investigation (retired)

Oscar Morales, U. S. Department of Defense

Christopher Cieri, Ph.D., Linguistic Data Consortium

Omid Sadjadi, Ph.D., National Institute of Standards and Technology

Alice Thomas, U. S. Secret Service

Pedro Torres-Carrasquillo, Ph.D., MIT Lincoln Laboratory

Standards in Process – at SDO

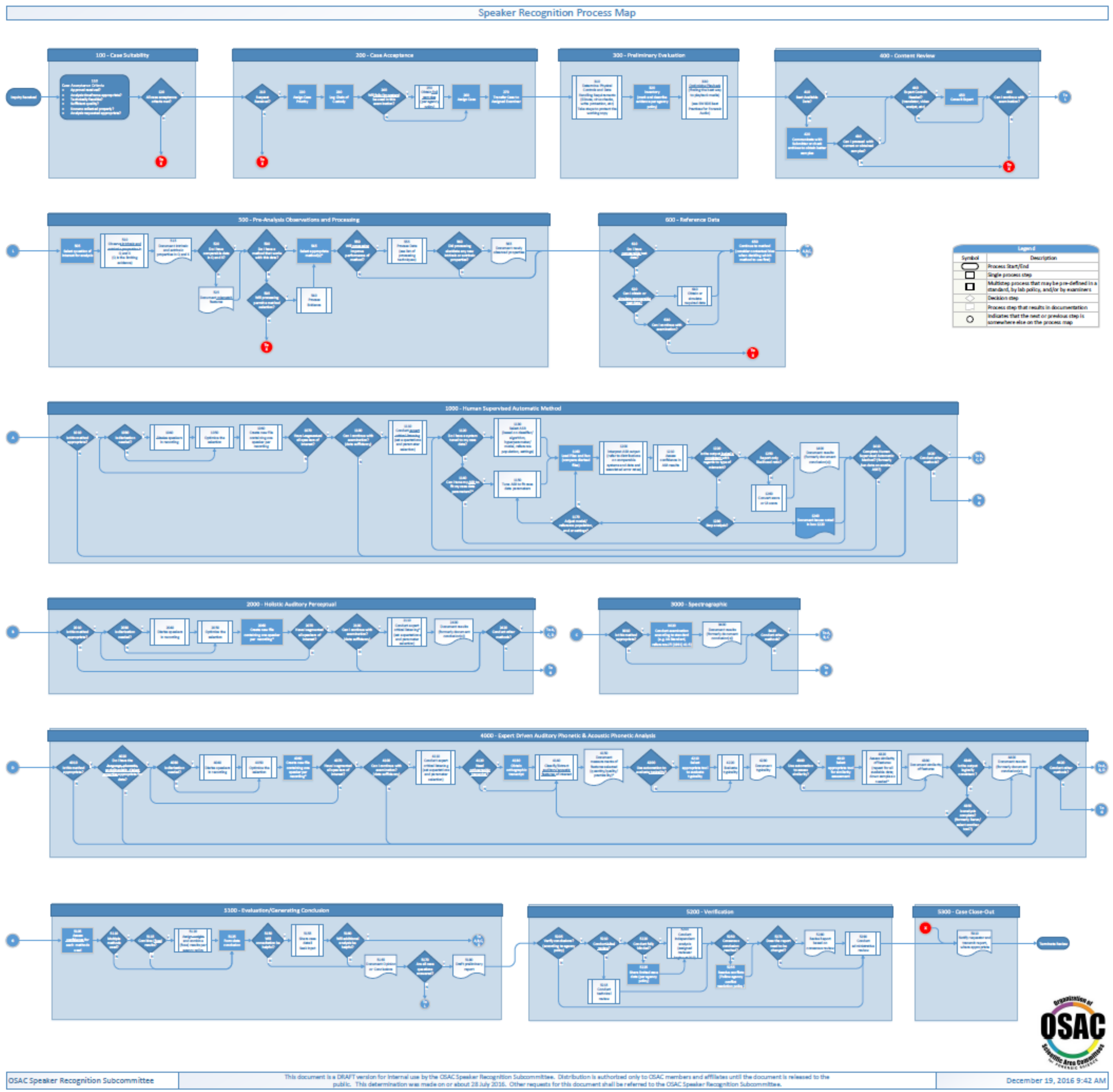
Speaker Recognition

- Guidelines for Electronic Transmission of Speech Files
- Guidelines for Collection of Audio at a Temporary Location

Technical Publications in Process

Speaker Recognition

- Foundational scientific literature for forensic speaker recognition
- Vocabulary Terms for Speaker Recognition
- Process Map*
- Best Practices for Forensic Human-Supervised Automatic Speaker Recognition: Pre-Processing and Relevant Population Data Selection


Speaker Recognition Process Map
100 - Case Suitability
200 - Case Acceptance
300 - Preliminary Evaluation
400 - Content Review
500 - Pre-Analysis Observations and Processing
600 - Reference Data
Legend
Symbol
Description
Process Start/End
Single process step
Multistep process that may be pre-defined in a standard, by lab policy, and/or by examiners
Decision step
Process step that results in documentation
Indicates that the next or previous step is somewhere else on the process map
1000 - Human Supervised Automatic Method
2000 - Holistic Auditory Perceptual
3000 - Spectrographic
4000 - Expert Driven Auditory Phonetic & Acoustic Phonetic Analysis
5100 - Evaluation/Generating Conclusion
5200 - Verification
5300 - Case Close-Out
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OSAC Speaker Recognition Subcommittee
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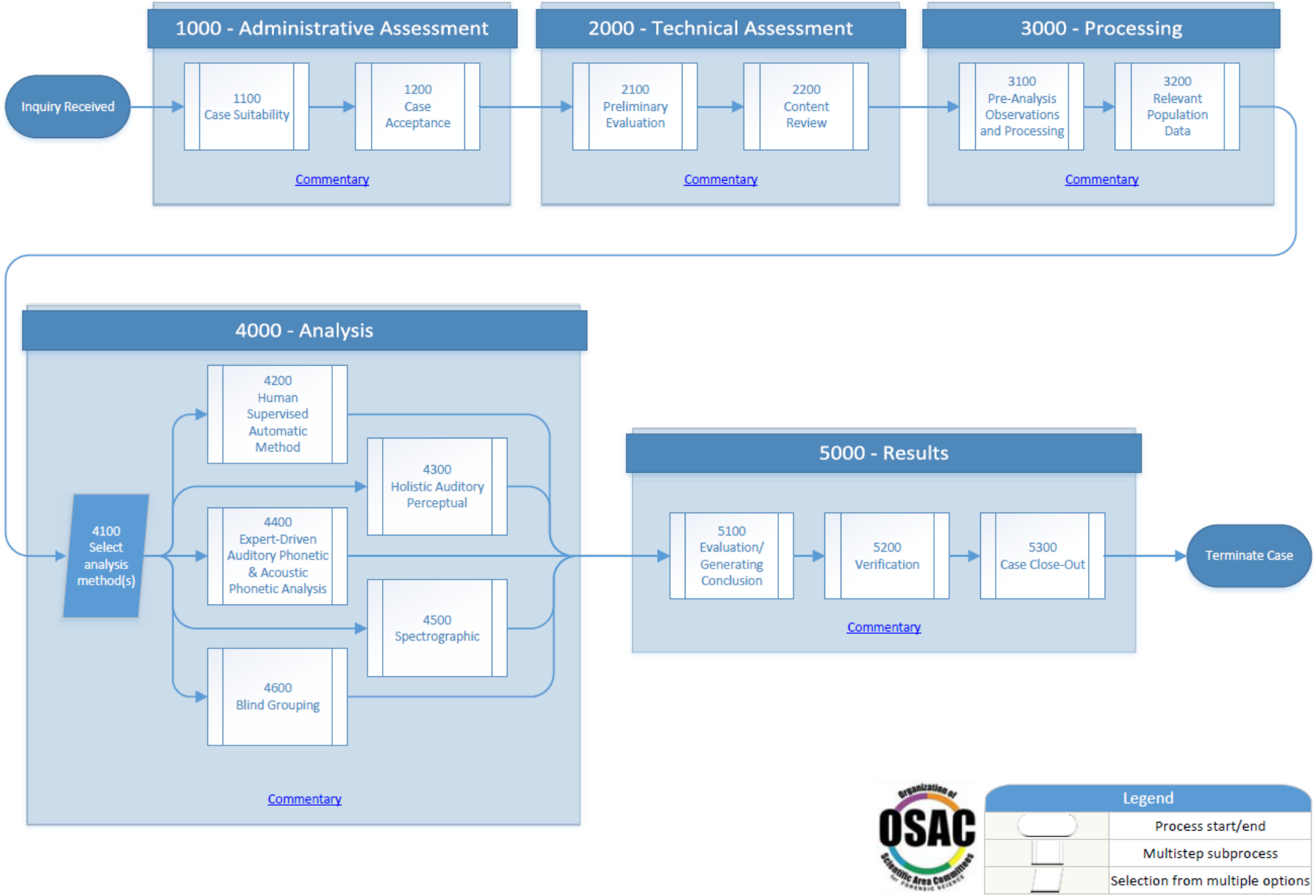

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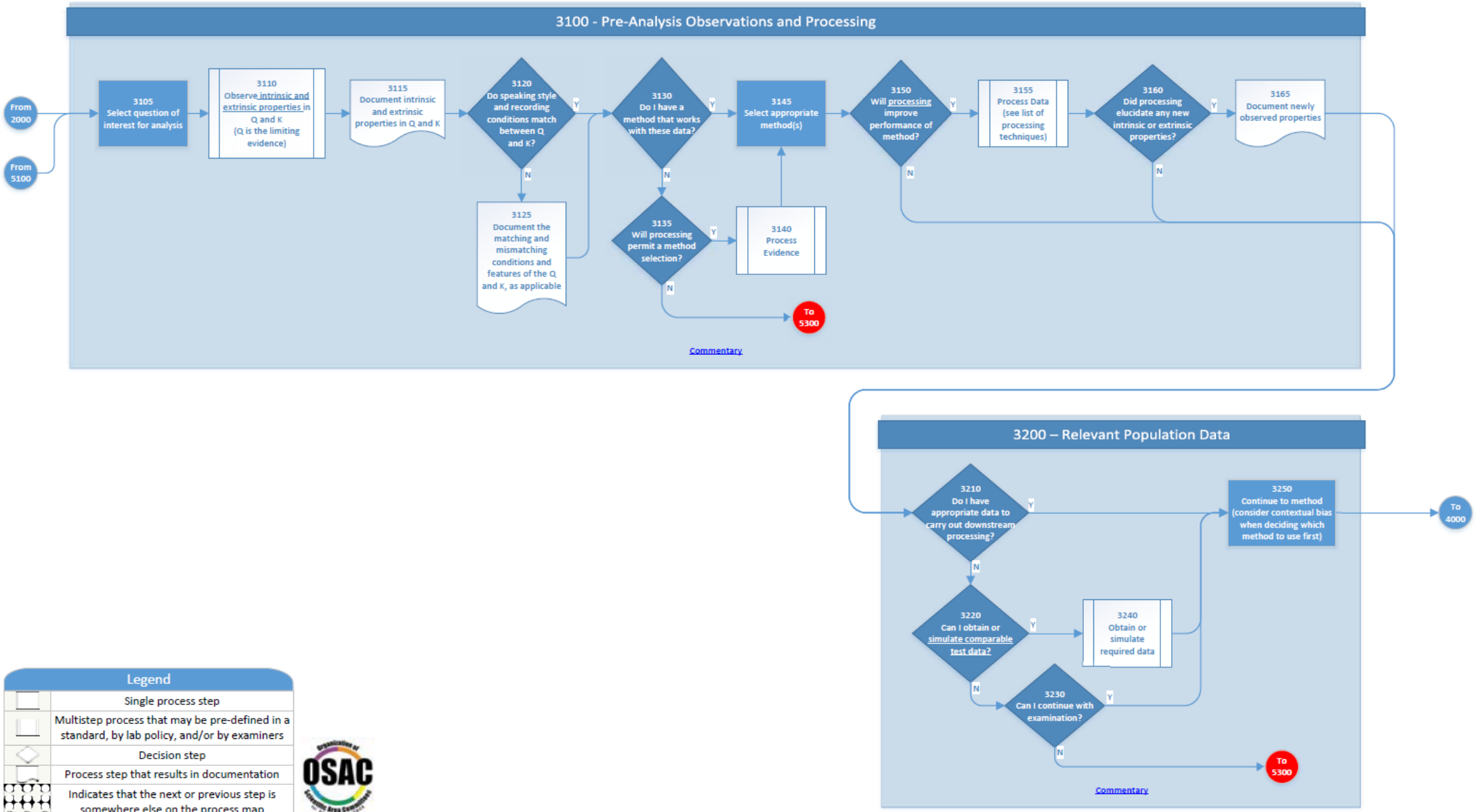

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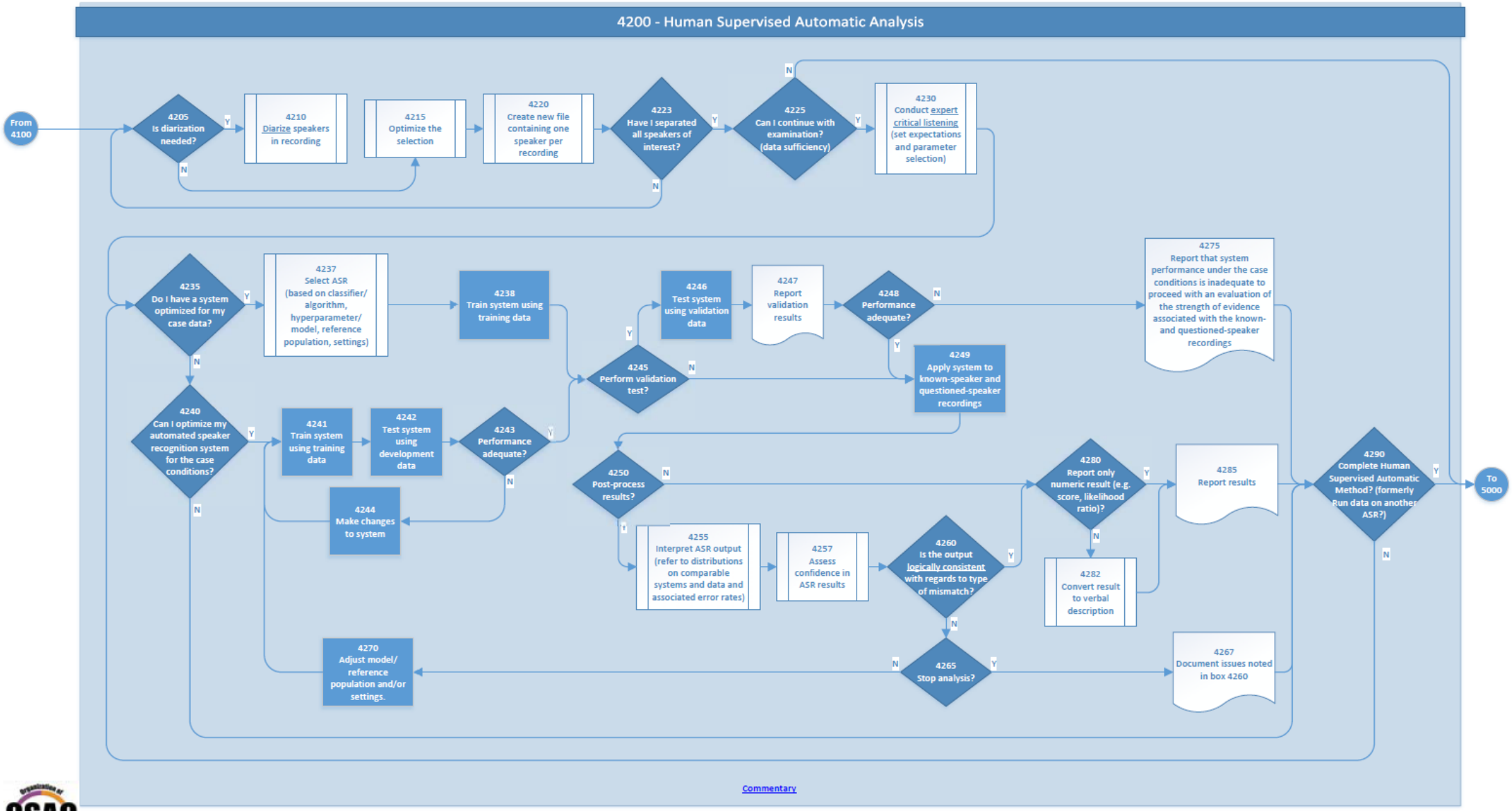


DMSAC Digital Evidence Leadership

John Duckworth, Chair, U.S. Postal Service Office of Inspector General

Ryan Pittman, Vice Chair, NASA Office of Inspector General Computer Crimes Division

Andrew Neal, Executive Secretary, TransPerfect Legal Solutions

DMSAC Digital Evidence Members

Joshua Brunty, Marshall University

Ovie Carroll, U.S. Department of Justice

Joseph Cassilly, State's Attorney for Harford County, MD

William Eber, Defense Cyber Crime Center, Air Force Office of Special Investigations

Sabrina Feve, U.S Attorney's Office, Southern District of California, Department of Justice

Daren Ford, Weld County (Colorado) Sheriff's Office

David Hallimore, Recorded Evidence Solutions, LLC

James Holland, Wal-Mart Stores, Inc.

Mary Horvath, U.S. Federal Bureau of Investigation

James Lyle, Ph.D., U.S. National Institute of Standards and Technology

David Papargiris, Iron Mountain

Mark Phillips, Johnson County (Kansas) Sheriff's Office Criminalistics Laboratory

Paul Reedy, District of Columbia Department of Forensic Sciences

Marcus Rogers, Ph.D., Purdue University

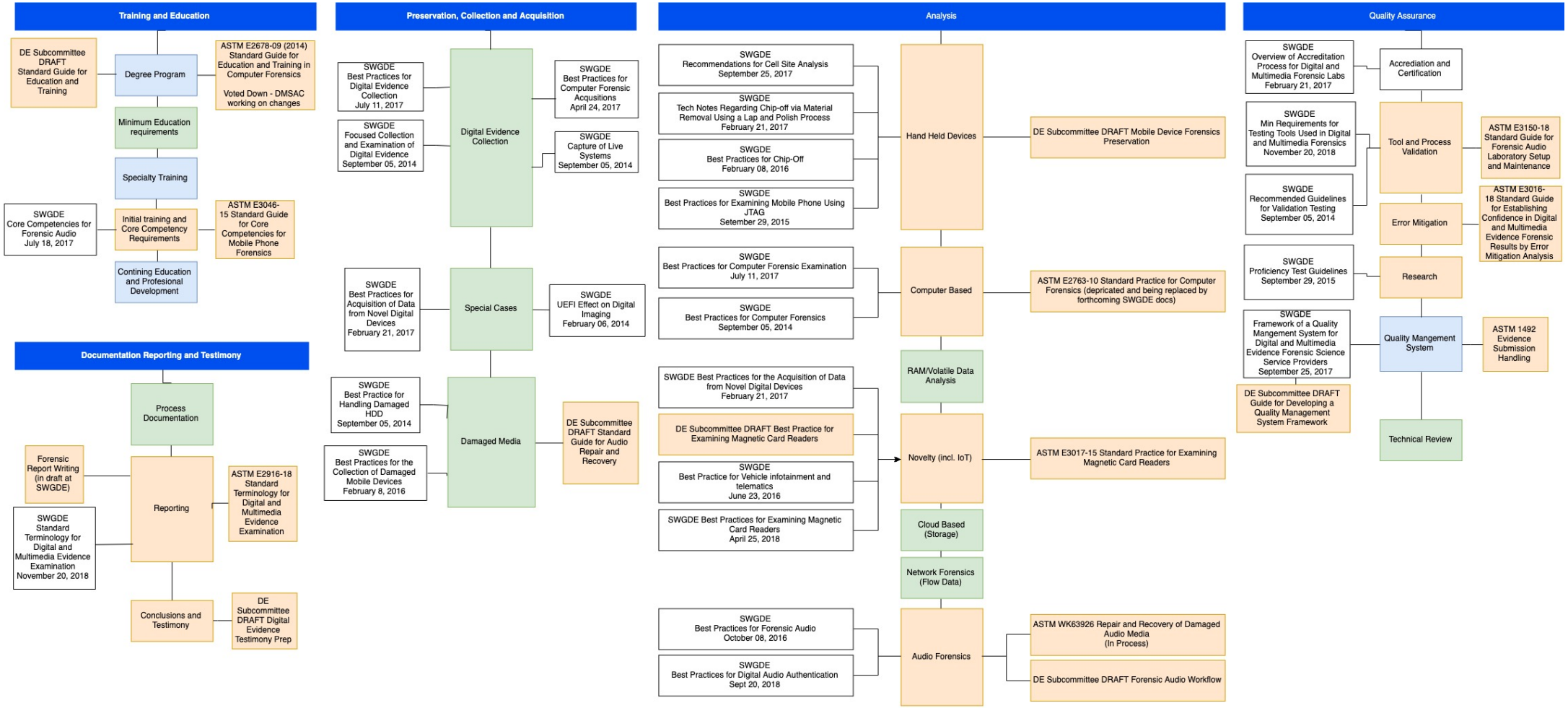
Brian Russell, U.S. Fish & Wildlife Service

David Shaver, U.S. Army

Jay Varda, U.S. Homeland Security Investigations

Steve Watson, VTO Labs

Digital Evidence Roadmap



Standards in Process – at SDO

Digital Evidence

- *ASTM E2678-09(2014) Standard Guide for Education and Training in Computer Forensics (Revision of this existing standard)*
- *ASTM WK63926 Repair and Recovery of Damaged Audio Media*
- *ASTM WK66298 Forensic Audio Examination Workflow*
- *ASTM WK67924 Core Competencies for Forensic Audio*
- **ASTM E3017-15 Standard Practice for Examining Magnetic Card Readers*

Standards in Process – Under Development

Digital Evidence

- *Digital Evidence Testimony Preparation*
- *Quality Management System Framework*
- *Digital Evidence Tool Testing*
- *Standard Guide for Education and Training in Computer Forensics*
- *Forensic Report Writing (SWGDE)*
- *Preservation of Evidence from Mobile Devices*

Research Needs

Digital Evidence:

- Scientific Analysis of Hash Authentications
- Mobile Application Triage Tool
- De-Duplication of Digital Forensics Artifacts from Disparate Sources or Tools
- Internet of Things, User Artifacts
- Digital Forensics Tool to Support Virtual Machines and Virtual File Systems

DMSAC Video/Imaging Technology & Analysis Leadership

Julie Carnes, Chair, Target

William Trenkle, Ph.D, Vice Chair, US Department of Agriculture

Christina Malone, Executive Secretary, U.S. Army Criminal Investigation Laboratory, Defense Forensic Science Center

Video / Imaging Technology and Analysis Members

Mike Baker, Sacramento Police Department

Brian Brill, Mountain Graphix

Melody Buba, U.S. Federal Bureau of Investigation

Marla Englander Carroll, Forensic Video & Audio Associates, Inc

Wendy Dinova-Wimmer, Adobe

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Matthew Steiner, NYPD Crime Scene Unit

Rand Swartz, National Autopsy Assay Group

Andrew D. Taravella, Houston Police Department

John Twomey, U.S. Secret Service

Jesus R. Valenzuela, Seattle Police Department

Robert Young, City of Mesa (Arizona) Police Department

Standards on the Registry

Video / Imaging Technology and Analysis (VITAL)

ASTM E2825 – Standard Guide for Forensic Digital Image Processing

This standard is under review for placement on the OSAC Registry.

Standards in Process – at SDO

VITAL Standards at ASTM

- Standard Training Guidelines for Video Analysis, Image Analysis, and Photography (WK66417)
- Standard Guide for Latent Print Evidence Imaging Resolution (WK66357)
- Standard Practice for Data Retrieval from Digital CCTV Systems (WK61709)

Standards in Process – Under Development

VITAL – Under Development

- Standard Guide for Content and Source Authentication
- Standard Guide for Forensic Photogrammetry
- Standard Guide for Forensic Digital Video Analysis
- Standard Guide for Crime Scene Photography

Research Needs

VITAL – Research Needs

- Determination of the Size of the Smallest Detail Required for Tire and or Shoe Comparisons
- Factors Affecting Image Quality When Extracting a Still from Video
- Software Validation Repository
- Vehicle Comparison Study

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Organization of Scientific Area Committees for Forensic Science

Thank you

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