Digital/Multimedia Scientific Area Committee HIGHLIGHTS

Richard W. Vorder Bruegge

September 30, 2020

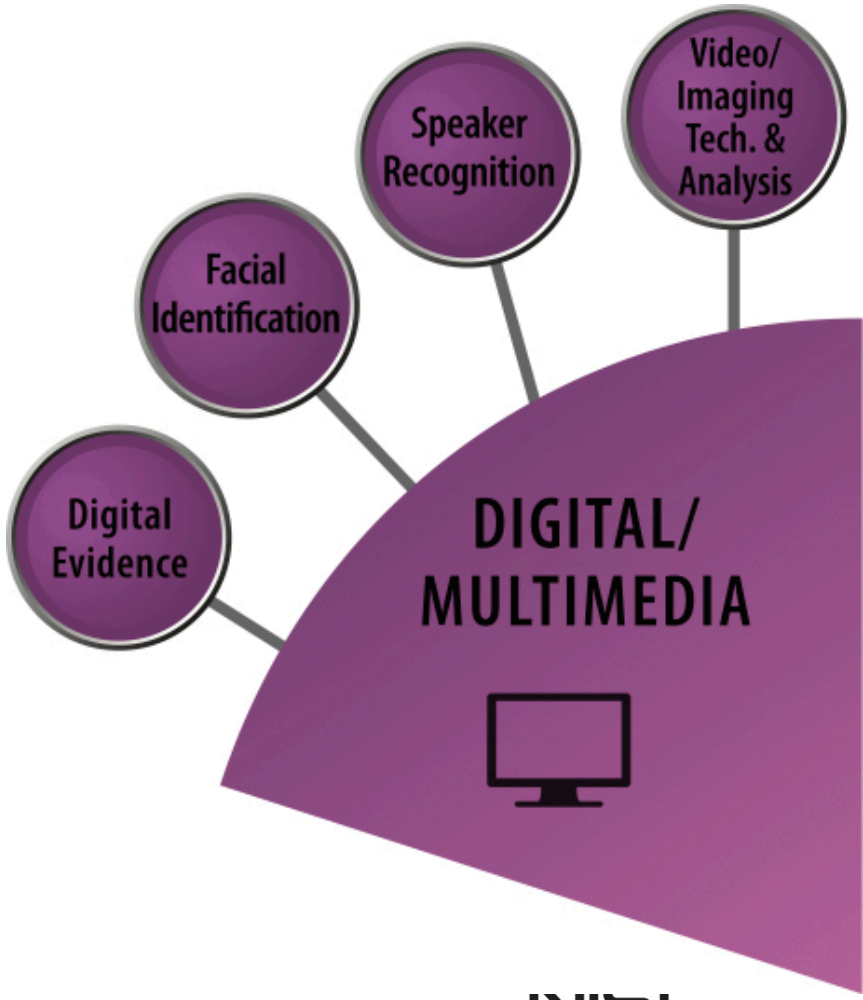
DMSAC Subcommittees

Video/Imaging Technology & Analysis

Speaker Recognition

Facial Identification

Digital Evidence



DMSAC

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

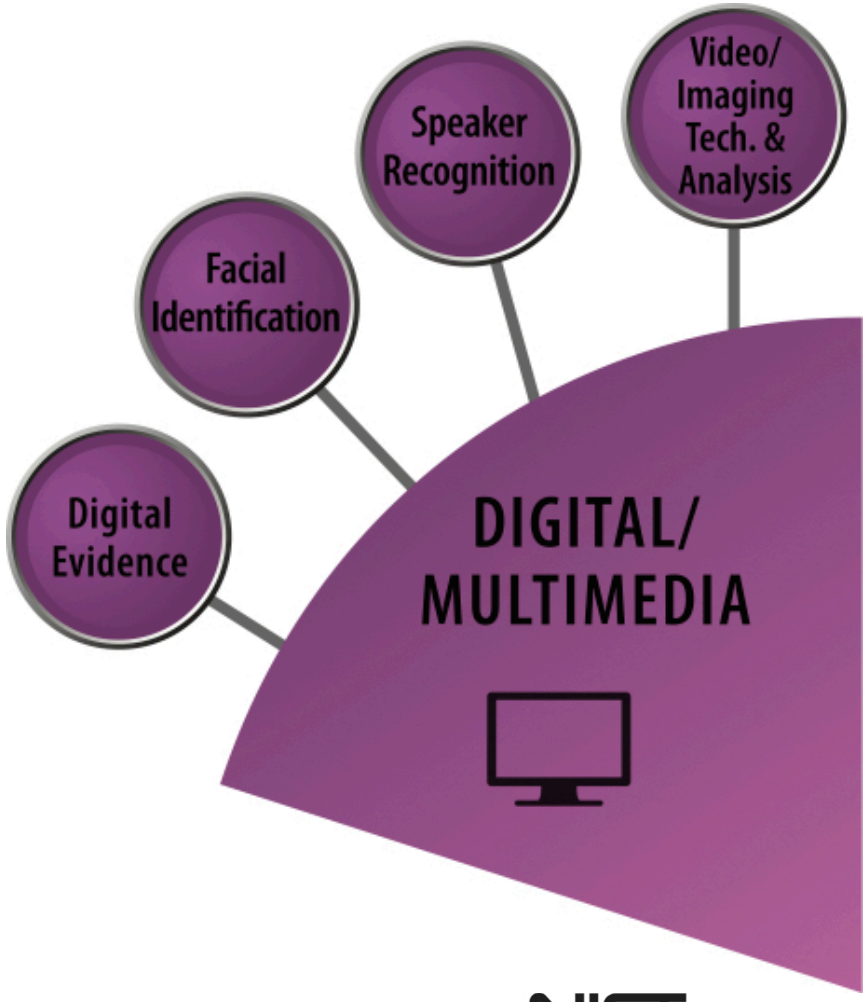
William Trenkle, Vice Chair, U.S. Department of Agriculture

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

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

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

Lam Nguyen, Chair, Digital Evidence, U.S. Department of Defense, Cyber Crime Center

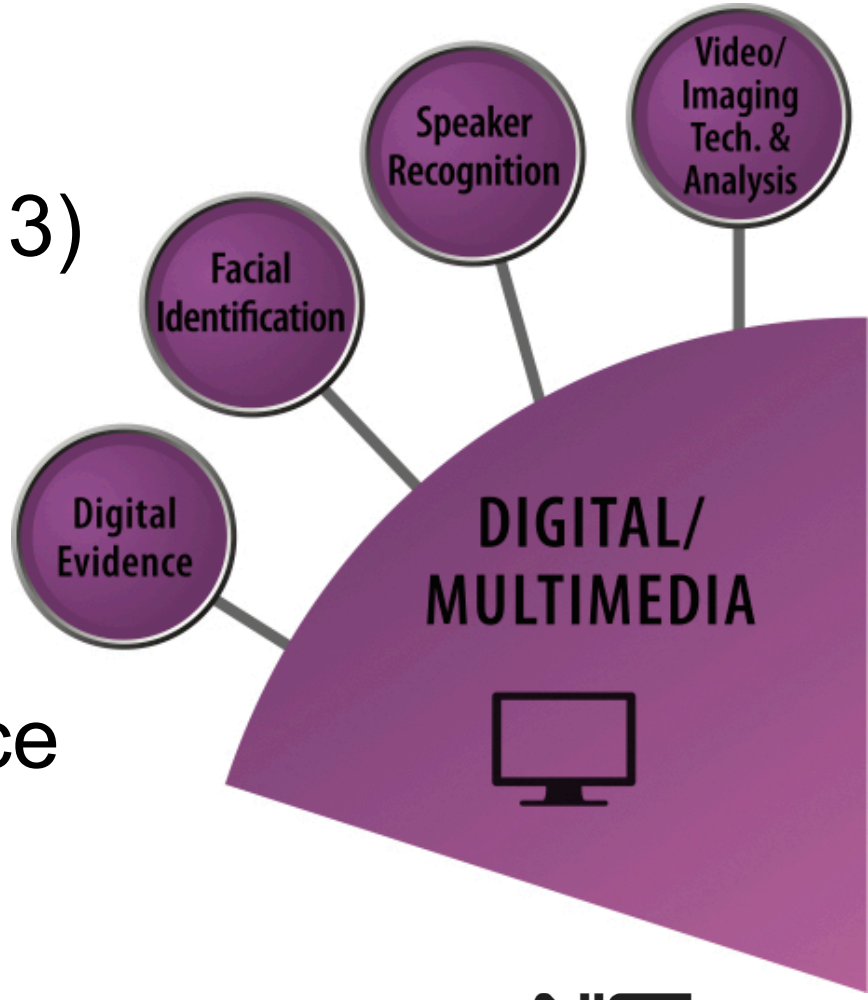


DMSAC Highlights in FY20

6 DMSAC Standards on the Registry
(Facial Identification, 3, Digital Evidence, 3)

DMSAC Source Conclusions Draft

Guidance on Non-routine Offsite Forensic Examination of Digital/Multimedia Evidence



DMSAC Highlights in FY20

Standards on the Registry

Facial Identification

- ASTM E3115-17 *Standard Guide for Capturing Facial Images for Use with Facial Recognition Systems* (effective October 1, 2019).
- ASTM E3148-18 *Standard Guide for Postmortem Facial Image Capture* (effective October 1, 2019).
- ASTM E3149-18 *Standard Guide for Facial Image Comparison Feature List for Morphological Analysis* (effective February 14, 2019).

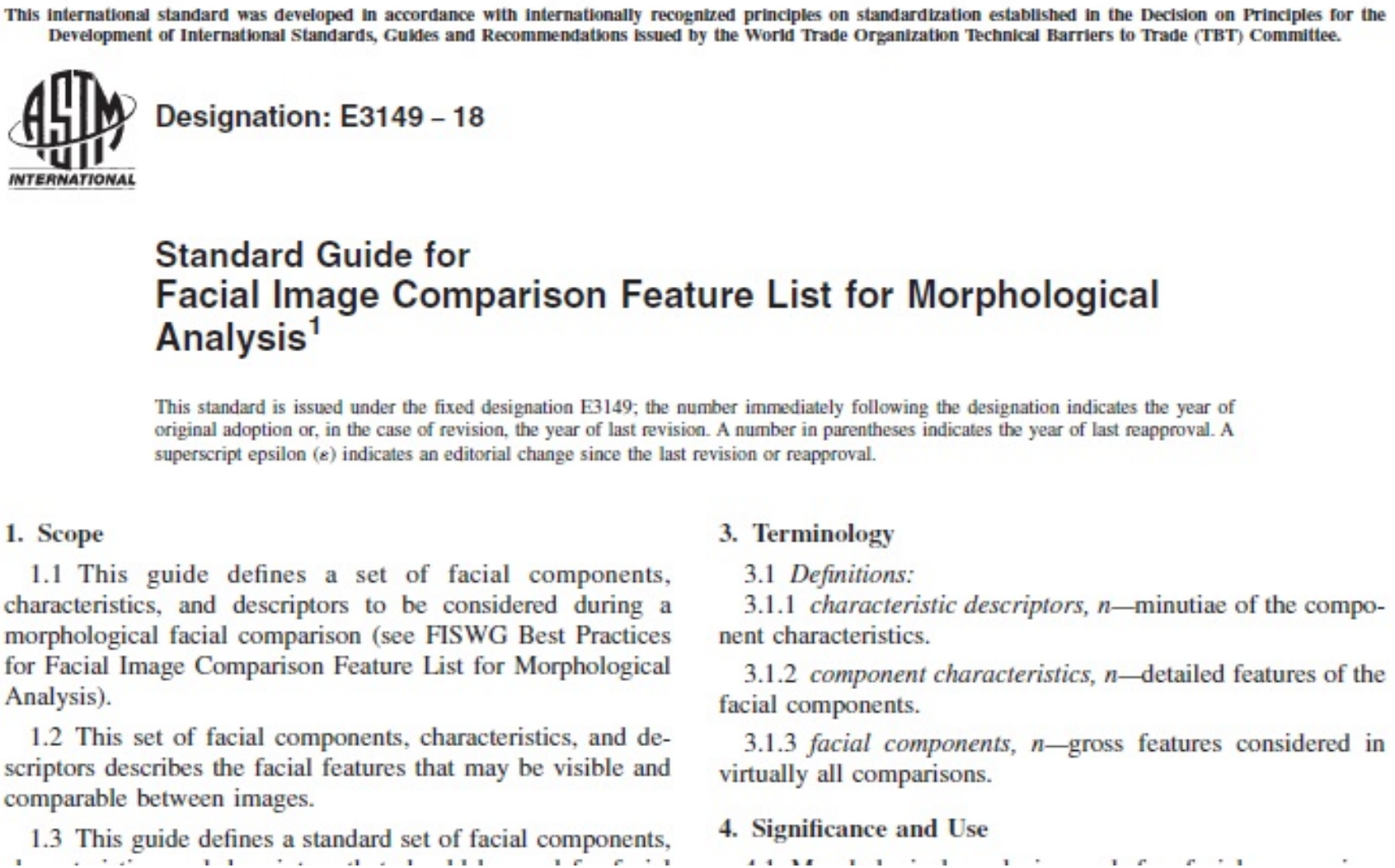
DMSAC Highlights in FY20

Standards on the Registry

Digital Evidence

- ASTM E2916-19e1 *Standard Terminology for Digital and Multimedia Evidence Examination* (effective July 7, 2020).
- ASTM E3017-19 *Standard Practice for Examining Magnetic Card Readers* (effective July 7, 2020).
- ASTM E3150-18 *Standard Guide for Forensic Audio Lab Setup and Maintenance* (effective July 7, 2020).

Standards on the Registry



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 on the Registry

Designation: E3115 – 17

Standard Guide for Capturing Facial Images for Use with Facial Recognition Systems[1]

This standard is issued under the fixed designation E3115; 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 is intended for use by practitioners who are choosing, setting up, and operating photographic equipment designed to capture facial images for use with an automated Facial Recognition System or used for manual comparisons by a trained facial examiner. This guide provides an overview of how to achieve the specifications defined in Annex E of ANSI/NIST-ITL-1-2011, Update 2015, for capturing facial images.

1.2 Annex E of ANSI/NIST-ITL-1-2011 defines a well-controlled capture environment and subject whereas this document will give guidance where tight controls in the capture environment and subject control cannot be achieved.

1.3 This guide addresses equipment considerations for two-dimensional (2D) conventional images. It does not address video, scanners, or three-dimensional (3D) capture.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E2916 Terminology for Digital and Multimedia Evidence Examination

2.2 *Other Biometric Standards:*

ANSI/NIST-ITL-1-2011, Update 2015 Data Format for the Interchange of Fingerprint, Facial and Other Biometric Information[3]

NIST Special Publication 500-280v2 Mobile ID Device Best Practice Recommendation, Version 2.0[3]

3. Terminology

3.1 *Definitions:*

3.1.1 For terms relating to digital and multimedia evidence, refer to Terminology E2916.

3.2 *Definitions of Terms Specific to This Standard:*

Standards on the Registry

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: E3148 – 18

Standard Guide for Postmortem Facial Image Capture[1]

This standard is issued under the fixed designation E3148; 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 The purpose of this document is to provide guidelines for capturing postmortem facial images of human remains in controlled (for example, morgue) and semi-controlled (for example, field) settings to facilitate automated facial recognition (FR) searches or manual facial comparisons that could contribute to forensic investigations.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the*

FISWG "Capture and Equipment Assessment for Facial Recognition Systems," Revision 1.0 (2011.05.05)[4]
ISO/IEC 19794-5 Biometric data interchange formats—Part 5: Face image data[5]
NAME Forensic Autopsy Performance Standards[6]

3. Terminology

3.1 *Definitions:*
3.1.1 For digital and multimedia evidence examination terms, see Terminology E2916.

3.2 *Definitions of Terms Specific to This Standard:*
3.2.1 *facial image capture, n—in facial identification*, the process of collecting a biometric sample from an individual by means of a sensor

Standards on the Registry

Designation: E2916 – 19$^{\epsilon 1}$

Standard Terminology for Digital and Multimedia Evidence Examination[1]

This standard is issued under the fixed designation E2916; 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.

ε[1] NOTE—Format correction was editorially applied to the definition of 'resolution' in April 2019.

1. Scope

1.1 This is a compilation of terms and corresponding definitions used in the examination of digital and multimedia evidence to include the areas of computer forensics, image analysis, video analysis, forensic audio, and facial identification.

1.2 Legal or scientific terms that generally are understood or defined adequately in other readily available sources may not be included.

1.3 *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.*

2. Referenced Documents

2.3 *ISO Standards:*[4]

ISO/IEC 10918-1:1994 Information Technology — Digital Compression and Coding of Continuous-Tone Still Images: Requirements and Guidelines

3. Significance and Use

3.1 This terminology includes general as well as discipline-specific definitions as they apply across the spectrum of image analysis, computer forensics, video analysis, forensic audio, and facial identification.

4. Terminology: Terms and Definitions

4.1 *Definitions:*

achievable resolution, resolving power, *n*—the measure of imaging system's practical limit to distinguish between separate adjacent elements, typically by imaging a known reference standard.

Standards on the Registry

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: E3017 – 19

Standard Practice for Examining Magnetic Card Readers[1]

This standard is issued under the fixed designation E3017; 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 Magnetic card readers, when used for illegal purposes, are commonly referred to as skimmers. This practice provides information on seizing, acquiring, and analyzing skimming devices capable of acquiring and storing personally identifiable information (PII) in an unauthorized manner.

1.2 *This standard cannot replace knowledge, skills, or abilities acquired through education, training, and experience and is to be used in conjunction with professional judgment by individuals with such discipline-specific knowledge, skills, and abilities.*

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accor-*

ISO/IEC 7812-1:2017 Identification Cards—Identification of Issuers—Part 1: Numbering SSystem
ISO/IEC 7813:2006 Information Technology—Identification Cards—Financial Transaction Cards

2.3 *SWGDE Standards:*[5]
SWGDE Best Practices for Chip-Off
SWGDE Best Practices for Computer Forensics
SWGDE Recommendations for Validation Testing
SWGDE Tech Notes Regarding Chip-Off via Material Removal Using a Lap and Polish Process

2.4 *ANSI Standards:*[6]
ANSI X4.16 Financial Services—Financial Transaction Cards—Magnetic Stripe Encoding

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this practice, refer to Terminology E2916

Standards on the Registry

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: E3150 – 18

Standard Guide for Forensic Audio Laboratory Setup and Maintenance[1]

This standard is issued under the fixed designation E3150; 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 sets forth recommendations for the creation of a forensic audio laboratory space as well as the configuration, verification, and maintenance of the equipment contained within the lab.

1.2 In designing and configuring an audio laboratory, it is important to consider the acoustical environment/room of the laboratory, as well as climate control. Other than having a viable location for the laboratory, computer hardware and software applications are the most important components of a laboratory.

1.3 *This standard does not purport to address all of the*

2.3 *AES Standard:*[4]

AES Recommended Practice for Audio Preservation and Restoration – Storage and Handling – Storage of Polyester-Base Magnetic Tape, AES Standard 22-1997, Reaffirmed 2008

2.4 *SWGDE Standard:*[5]

SWGDE Recommendations for Validation Testing

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms that may assist in interpreting this standard, refer to Terminology E1732.

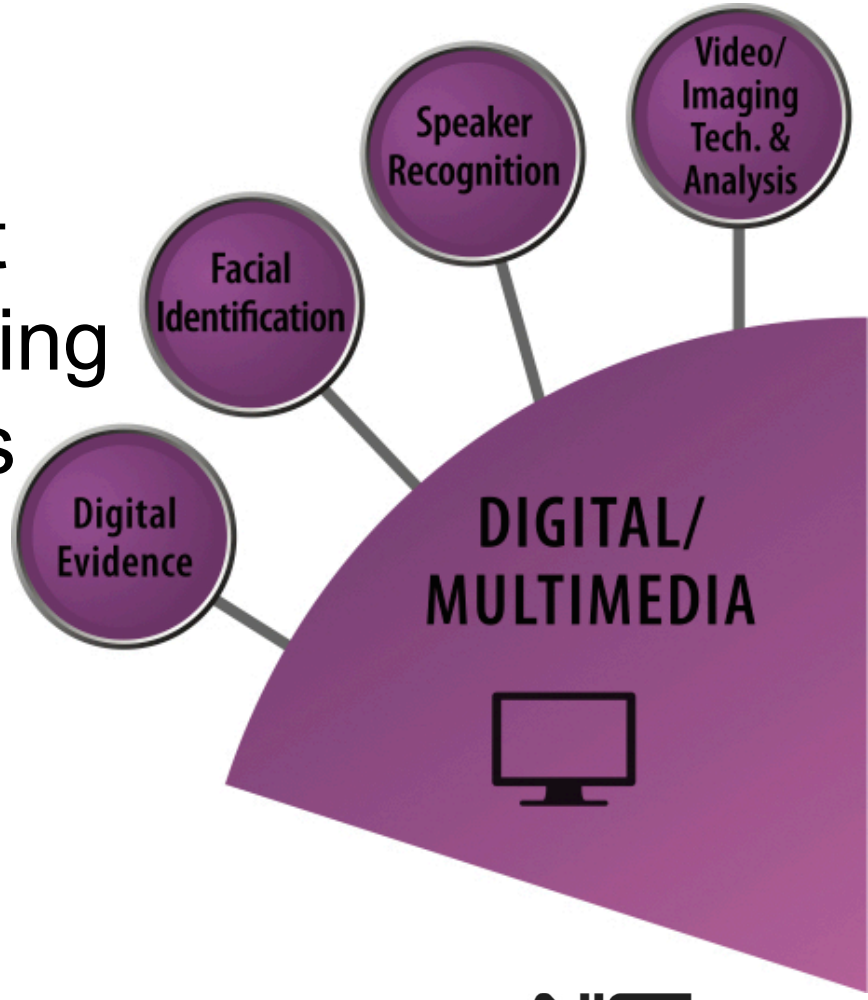
4. Significance and Use

DMSAC Source 'Conclusions' (Draft)

Targeted as an ASTM Standard Guide

Defines categories of results/opinions that shall be reached by a practitioner performing comparisons of people, objects, or scenes depicted in images.

"Support for" language…



Guidance on Non-routine Offsite Forensic Examination of Digital/Multimedia Evidence

Prepared by
OSAC Digital and Multimedia Scientific Area Committee

Published July 1, 2020

EXECUTIVE SUMMARY

The emergence of the COVID-19 has led to the implementation of social distancing, travel restrictions, and closure of non-essential facilities. To address these constraints, many organizations have implemented teleworking strategies. Individual organizations have varying abilities and resources to support remote operation and must carefully assess the associated risks. Remote processing is not appropriate for many forensic disciplines but can be feasible for the examination of digital/multimedia evidence. The forensic duplication of digital evidence helps to maintain evidence integrity while permitting remote analysis of working copies.. Encryption, virtual private networks (VPN), Remote Desktop Services (RDS), cloud computing, and secure file transfers can support a secure remote examination environment.

This document provides information on the background, risk mitigation tactics, nonroutine offsite options, and additional considerations for the forensic examination of unclassified forensic digital/multimedia evidence.

Guidance on Non-routine Offsite Forensic Examination of Digital/Multimedia Evidence

- Ability to Forensically Duplicate Digital/Multimedia Evidence makes remote processing possible – working copy = original.
- Must maintain integrity and confidentiality of data.
- Encryption & Remote Desktop Services enable secure transport and processing of evidence.

Offsite Forensic Examination of Digital/ Multimedia Evidence – Risk Mitigation

- Security – Physical Access, Network Access, Devices…
  NIST Special Publication 800-46rv (2016). Guide to Enterprise Telework, Remote Access, and Bring Your Own Device (BYOD) Security

- Testing Tools and Techniques (e.g., latency issues?)

- Environmental Conditions (e.g., privacy, standard workstations, acoustics, lighting…)

Offsite Forensic Examination of Digital/ Multimedia Evidence – Workstation Options

- Remote Workstation
- vs.
- Offline standalone processing (portable drives)
- vs.
- Cloud Computing

  NIST Special Publication 800-144 (2011). Guidelines on Security and Privacy in Public Cloud Computing

  NIST Special Publication 500-299 (DRAFT). Cloud Computing Security Reference Architecture

Offsite Forensic Examination of Digital/ Multimedia Evidence – Other factors

- Secure File Transfer Protocol – Mitigates unstable connections
- Well-being of onsite staff remains paramount
- Must consider local legal requirements for evidence (can it even be handled offsite?)
- Software licenses - does network license extend offsite?
- Quality Manuals should reflect potential for offsite work.

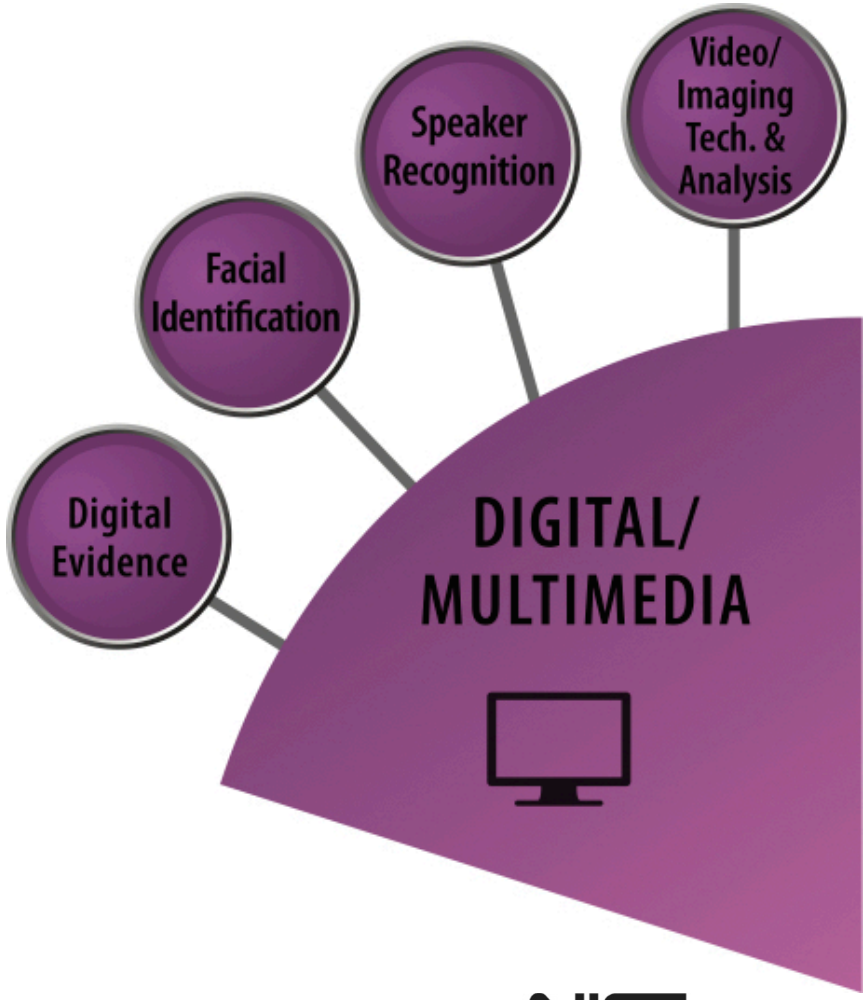
DMSAC Subcommittee Highlights

Video/Imaging Technology & Analysis

Speaker Recognition

Facial Identification

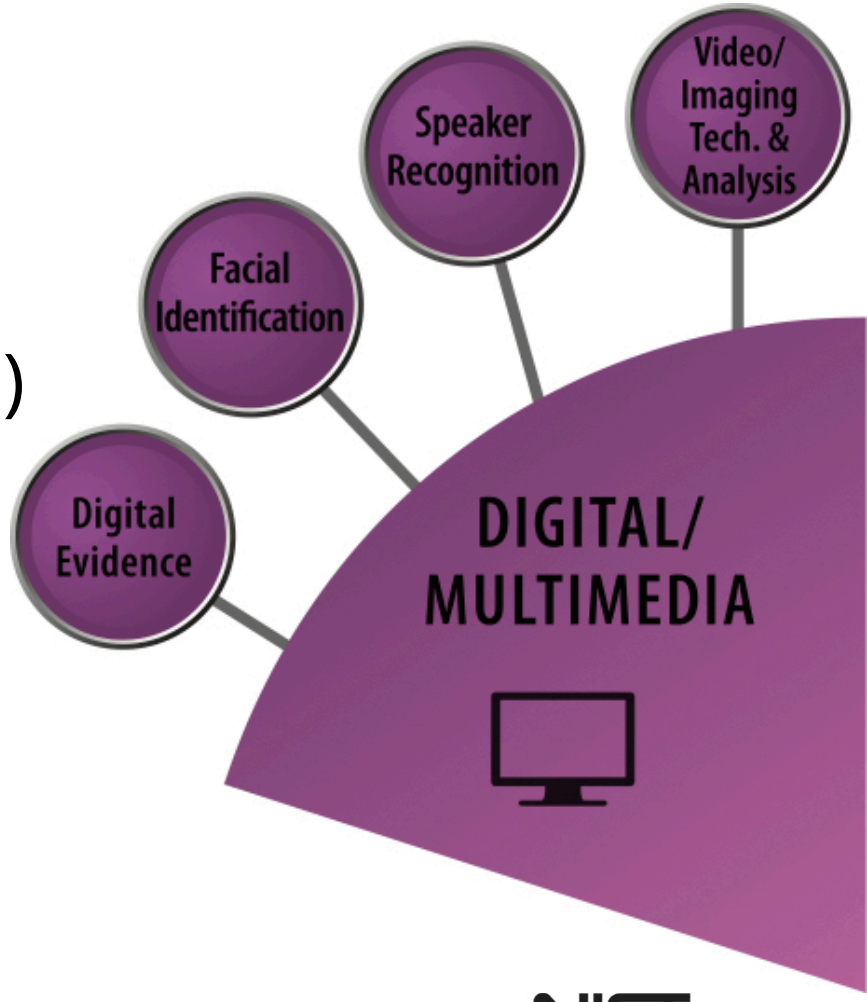
Digital Evidence



Speaker Recognition Subcommittee Key Progress/Plans

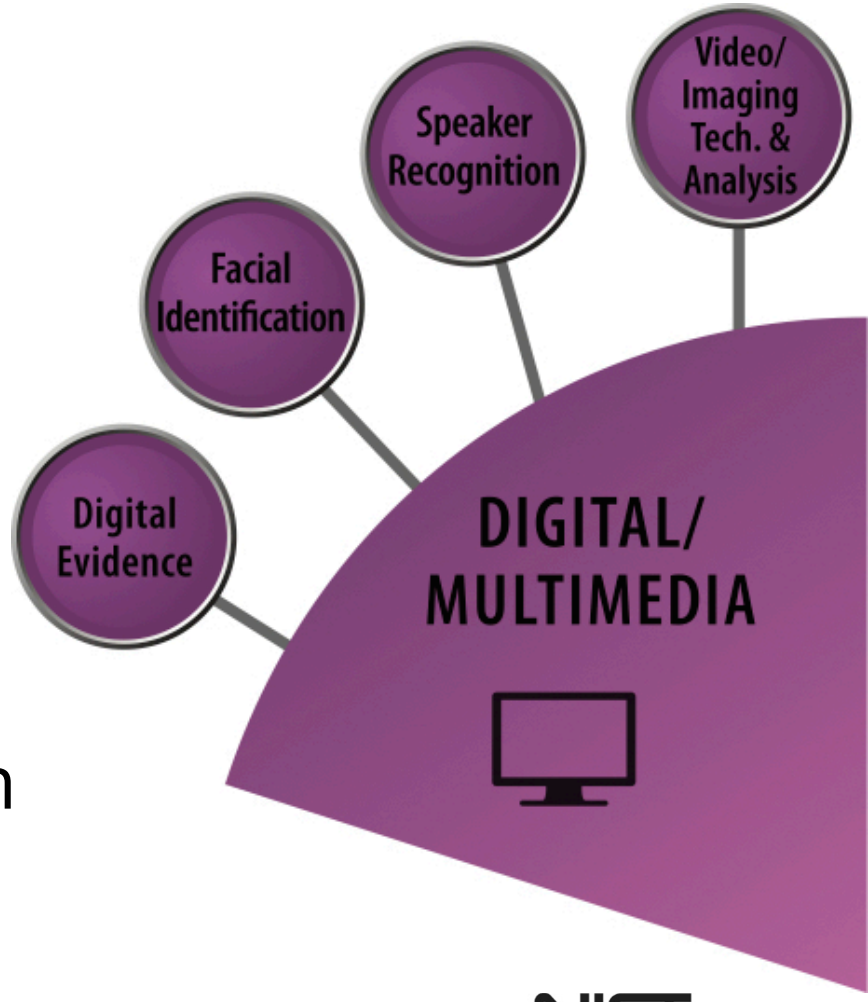
- Audio Collection at a Temporary Location (Standard)
  - Submitted to Audio Engineering Society SC-03-12 standards group (reconstituted)

- Foundational scientific literature for human-supervised-automatic approaches to FSR (TechPub)
  - Responding to FSSB Comments



Speaker Recognition Subcommittee Key Progress/Plans

- Issues in Data Processing and Relevant Population Selection (Tech Pub)
  (In progress)
- Taxonomy of Mismatch Conditions for Forensic Speaker Recognition
  (In progress)
- Process Map of Recommended Practices in Forensic Speaker Recognition
  (In progress)



DMSAC Subcommittee Highlights

Video/Imaging Technology & Analysis

Speaker Recognition

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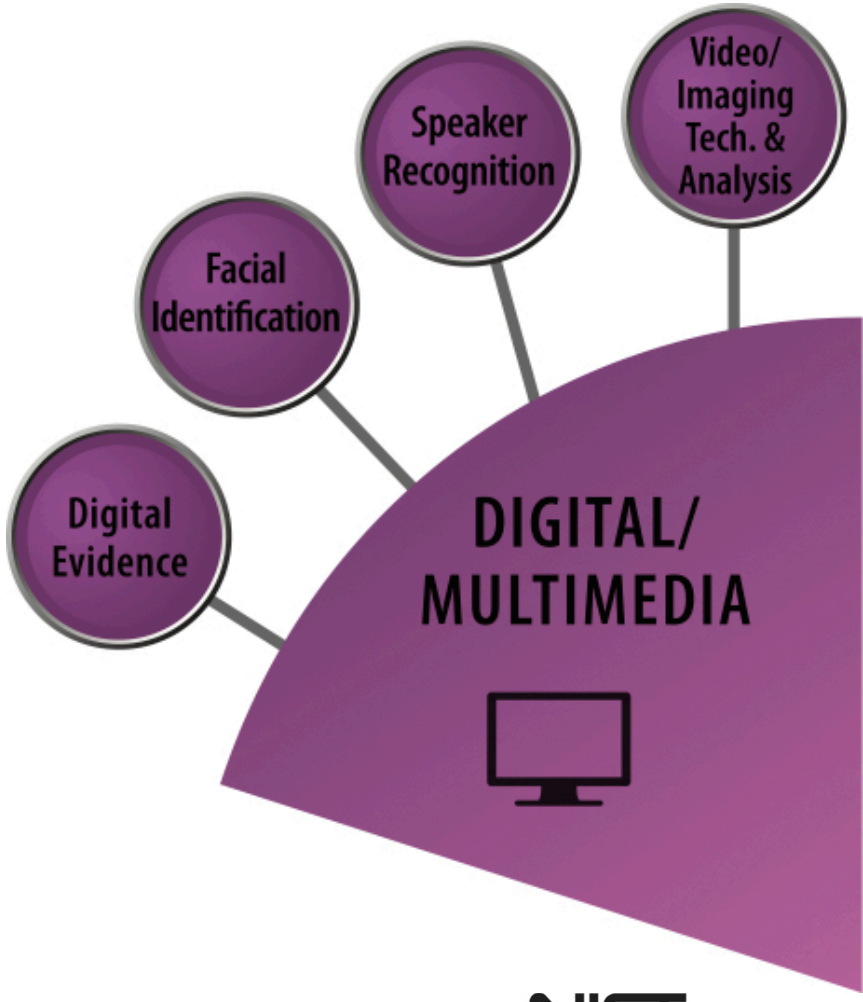
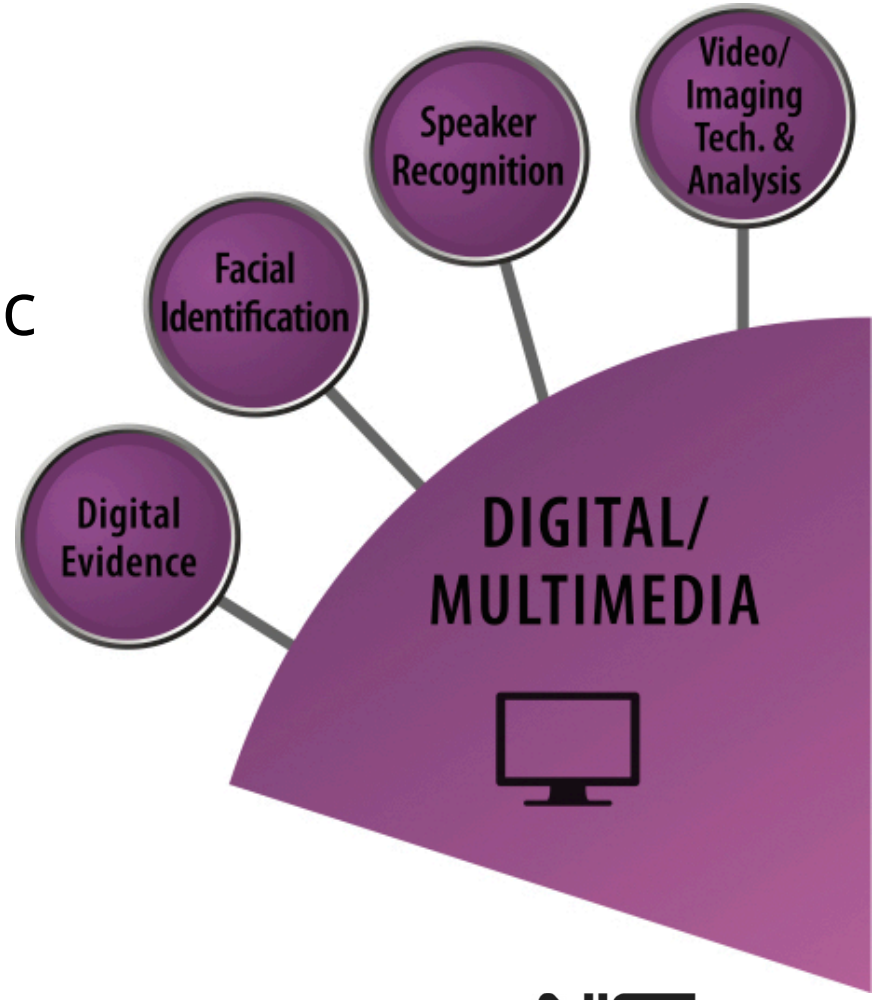


Video/Imaging Technology & Analysis Subcommittee - Key Progress/Plans

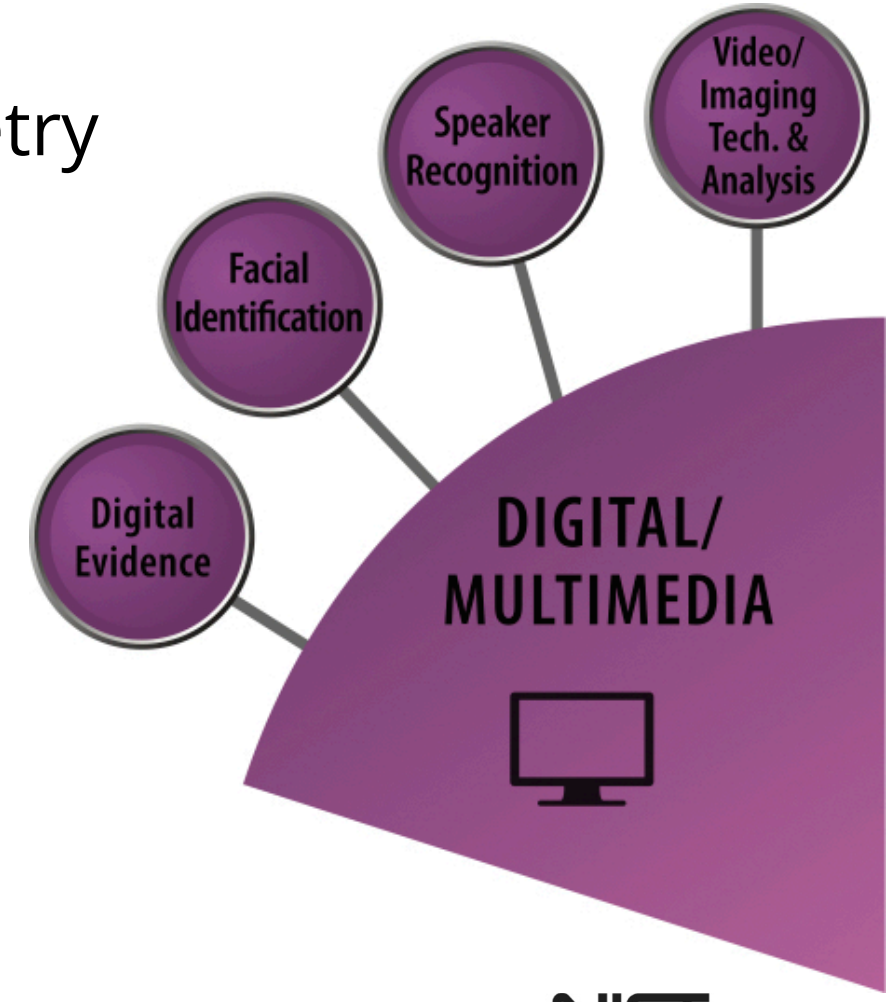
- Lead on Offsite Forensic Examination doc
- Key Participation in Source Conclusions doc
- Standard Guide for Developing Disciplines Specific Methodology for ACE-V
  (Submitted to ASTM)



Video/Imaging Technology & Analysis Subcommittee - Key Progress/Plans

- Standard Guide for Forensic Photogrammetry
- Standard Guide for Image Authentication
- Standard Guide for Forensic Digital Video Analysis

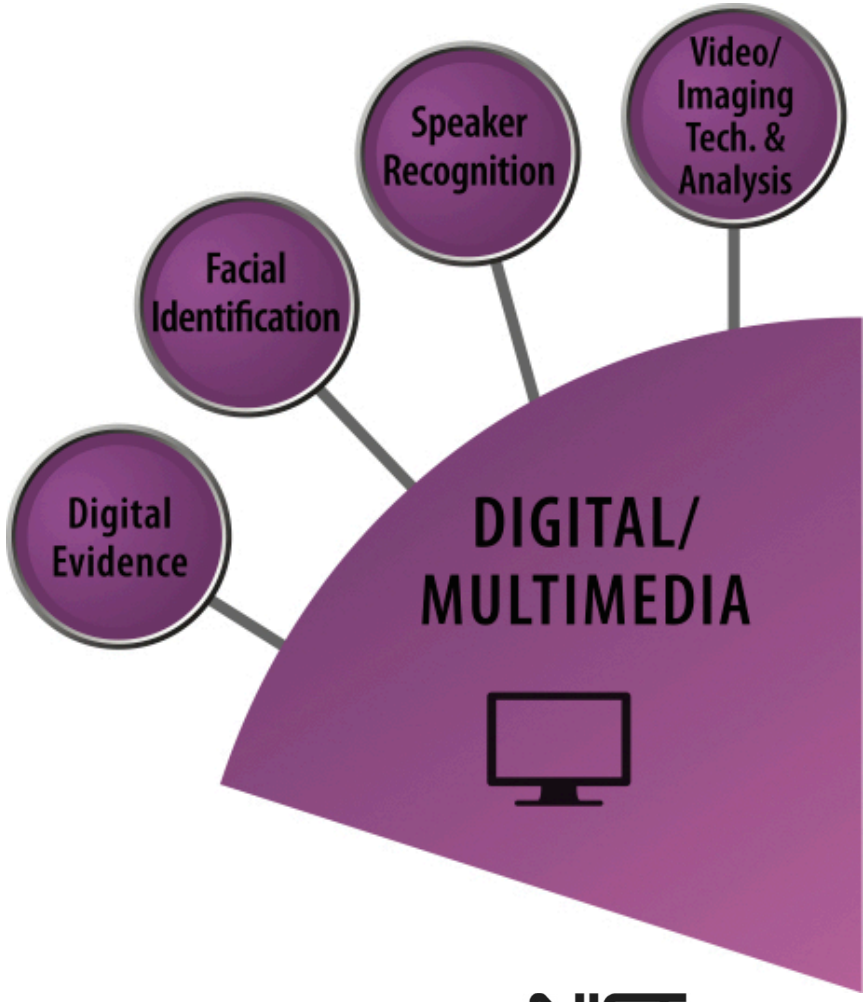
(All Balloted at SAC to Move to ASTM)



Video/Imaging Technology & Analysis Subcommittee – Submit to Registry in FY21

- Standard Practice for Data Retrieval from Digital CCTV System
- Standard Guide for Training Guidelines for Video Analysis, Image Analysis and Photography
- Standard Guide for Crime Scene Photography

(All Currently at ASTM)



DMSAC Subcommittee Highlights

Video/Imaging Technology & Analysis

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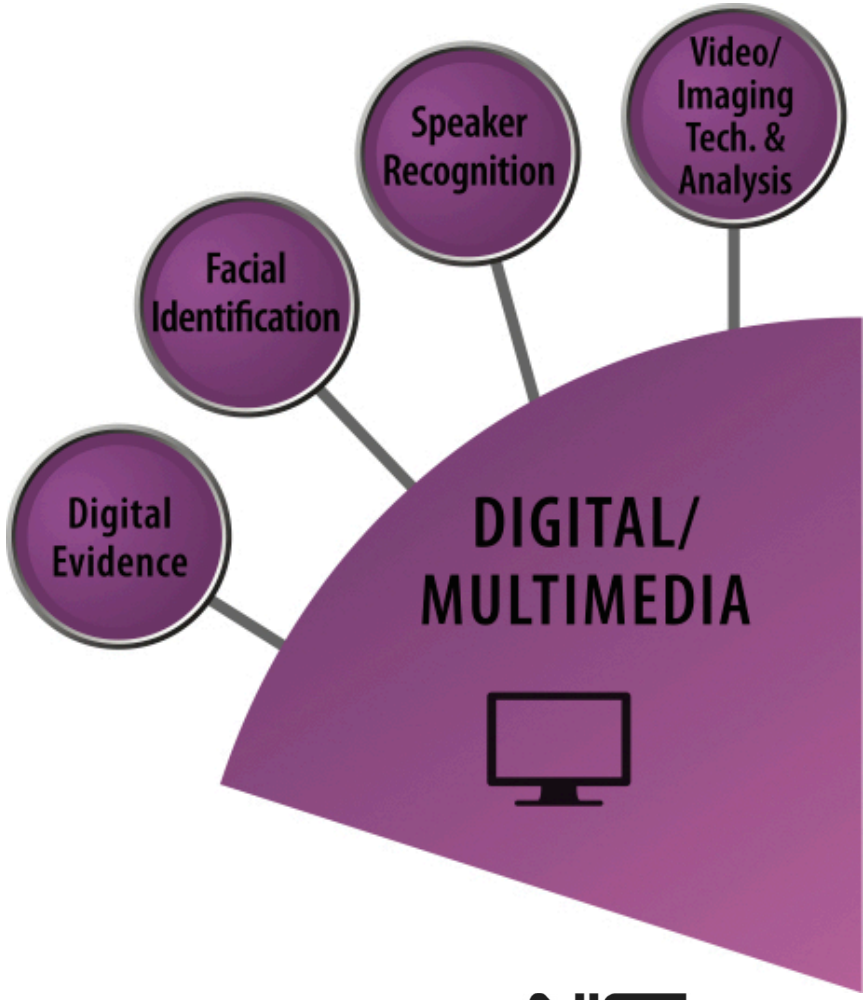
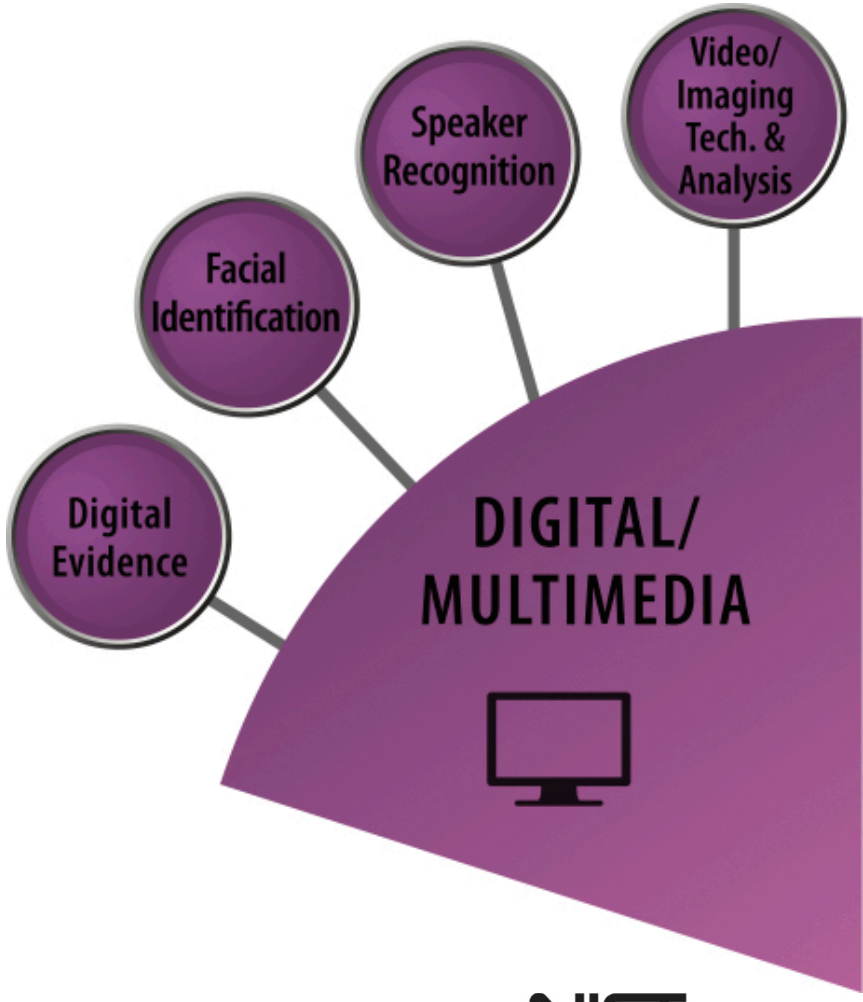


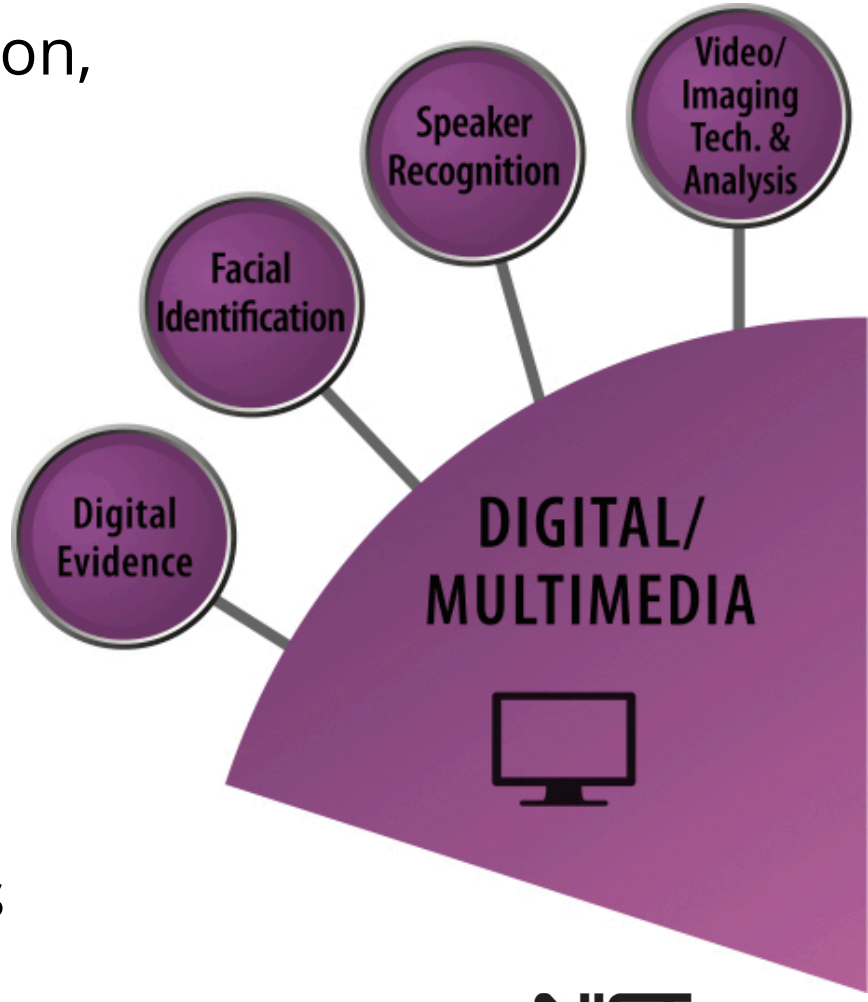
Digital Evidence Subcommittee Progress/Plans

- 3 Standards Placed on Registry
- 2 ASTM Standards considered for revision/ updating (Mobile Device Forensics & Error Mitigation)
- DME Accreditation Task Group formed to create framework of standards and quality management practices.
  Will engage practitioners and end users.



Digital Evidence Subcommittee Progress/Plans Key Documents for 2021

- Best Practices for Mobile Device Evidence Collection, Preservation, Handling, and Acquisition
- Minimum Requirements for Testing Tools used in Digital and Multimedia Forensics
- Best Practices for Archiving Digital & Multimedia Evidence
- Best Practices for Mobile Device Analysis
- Technical Note on Internet of Things (IoT) Devices



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Video/Imaging Technology & Analysis

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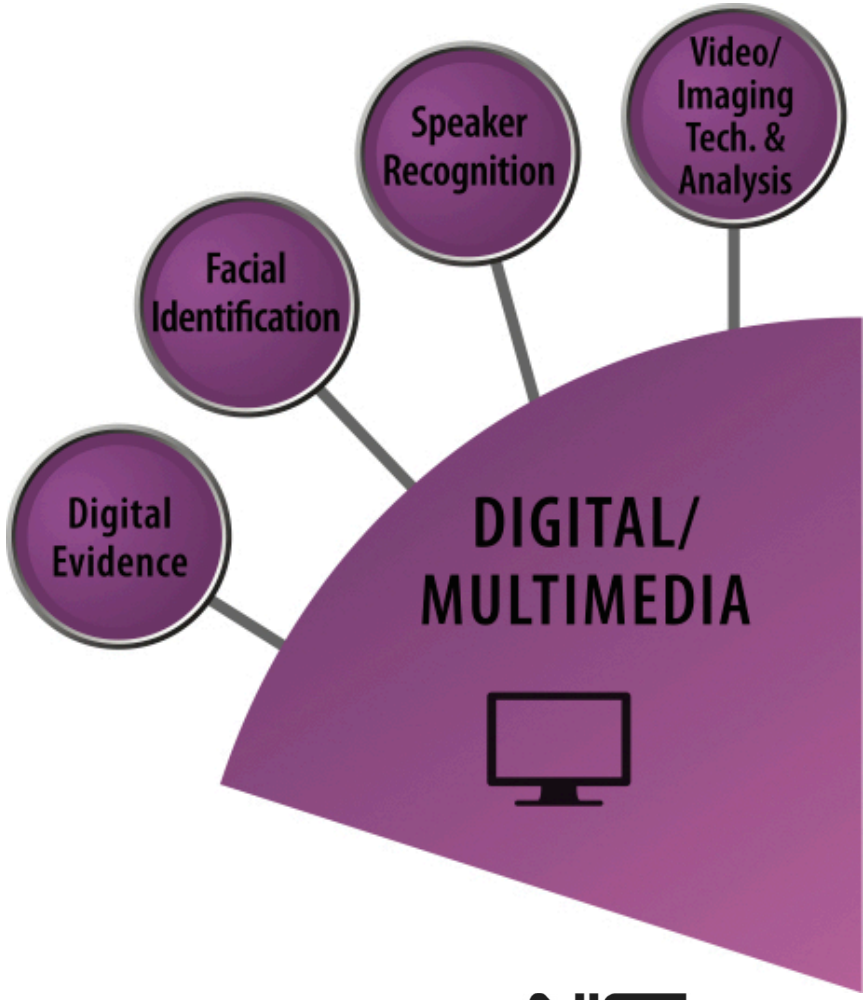
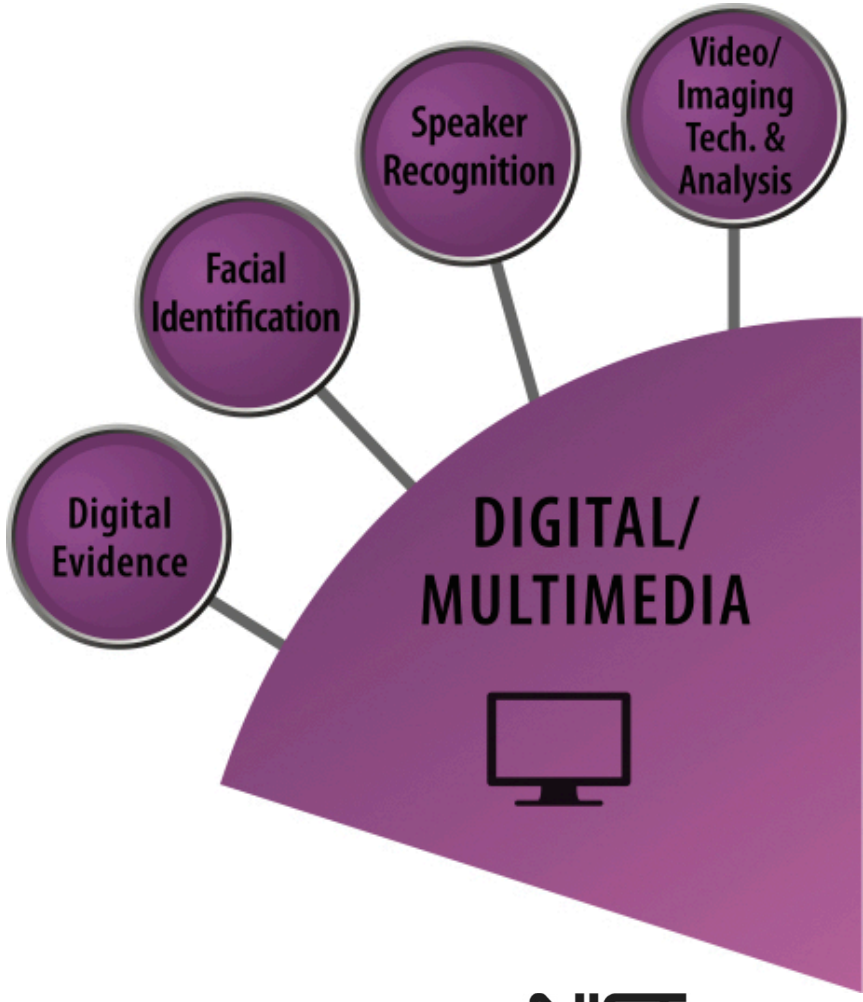


Facial Identification Subcommittee Progress

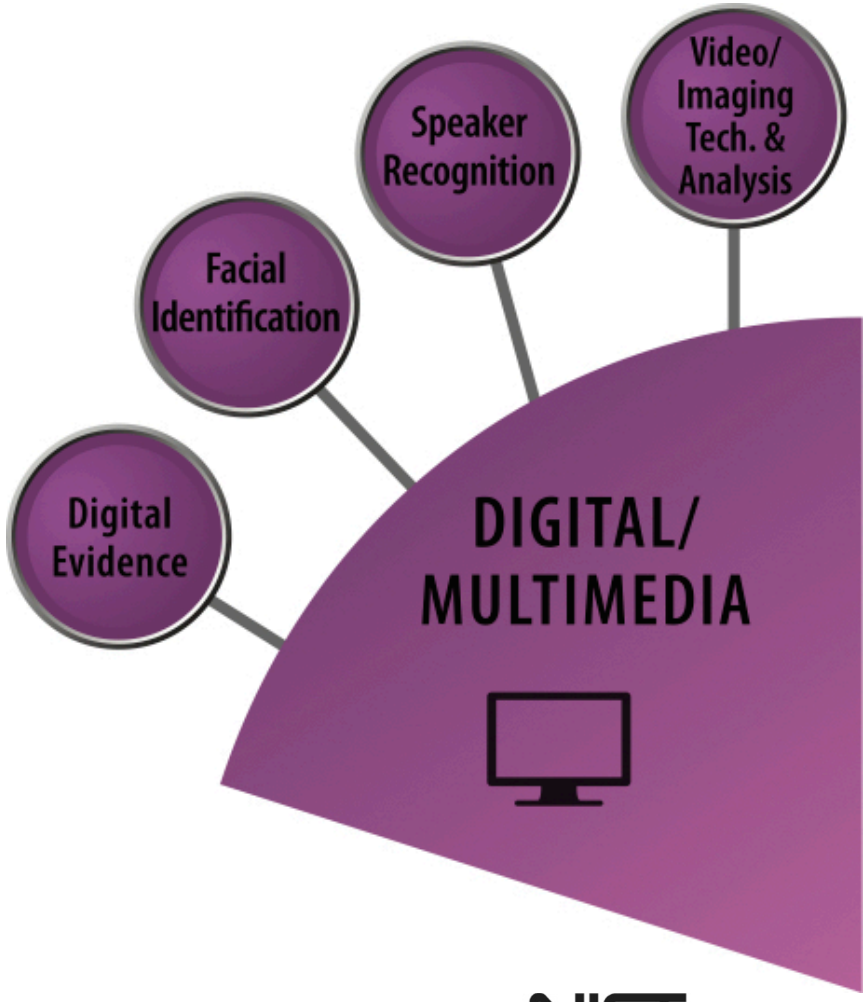
- 3 Standards on Registry
- Sent to ASTM – Standard Guide for Role Based Training in Facial Comparison
- Physical Stability of Facial Features of Adults – in OSAC 2.0 STRP Pilot
- At SAC ballot: “Image Processing to Improve Facial Recognition Searches”



Facial Identification Subcommittee Progress/Plans

Standards being prepared for immediate processing in OSAC 2.0 as STRP or non-STRP:

- Standard Guide for Facial Comparison Overview and Methodology
- Guide for Facial Comparison Training of Examiners
- Guide for Facial Comparison Training of Reviewers
- Guide for Facial Comparison Training of Assessors



DMSAC Q&A?