Video/Imaging Technology and Analysis (VITAL) Subcommittee
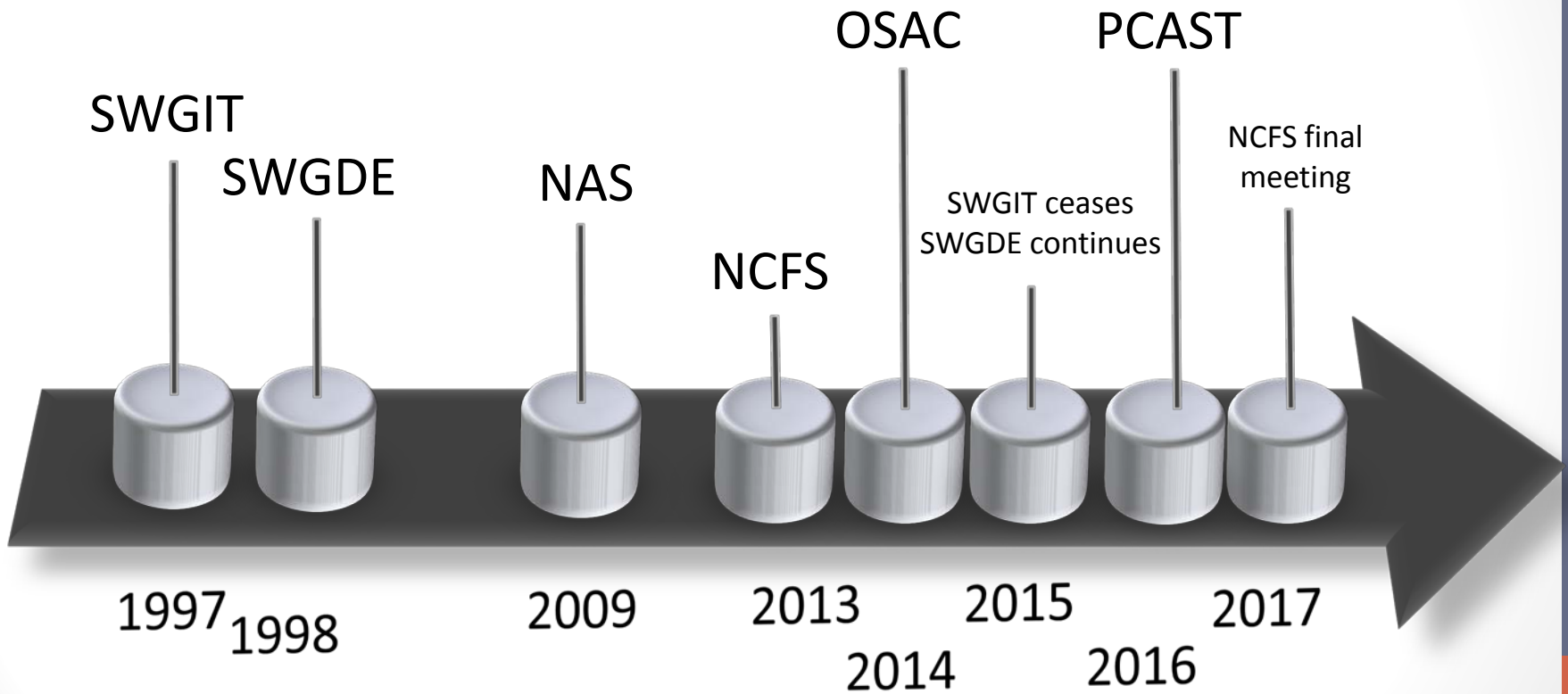
Christina Malone, Executive Secretary

IAI Conference, San Antonio, TX

July 31, 2018

Overview

- Brief History
  - How did we get here?
  - What happened to the SWGs? (SWGIT, SWGDE)?
  - What is different about OSAC?
  - Where do I go for best practices and standards today?
- VITAL Updates
  - Current members
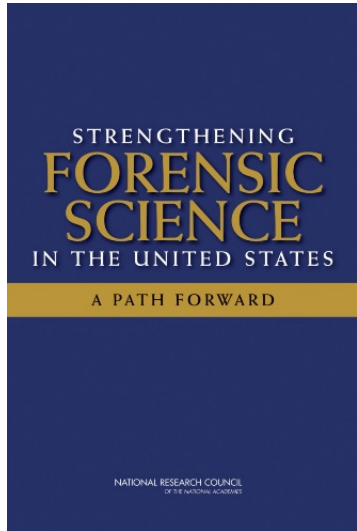 - Document status

A Timeline of Change

SWGIT

SWGDE

NAS

NCFS

OSAC

SWGIT ceases
SWGDE continues

PCAST

NCFS final meeting

1997 1998

2009

2013

2014

2015

2016

2017

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SWGIT and SWGDE

- Committees
- Joint Meeting
- Collaboration Documents

Change Happens: National Academy of Sciences Report (2009)

"The efforts of these groups are laudable. However, . . . it is not clear how [they] interact or the extent to which they share requirements, standards, or policies. Thus, there is a need for more consistent and harmonized requirements." (p.16)

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Change Happens: National Academy of Sciences Report (2009)

- SWG Chairs Meetings to improve the process
- Several ideas presented to support and improve the SWGs
- Thought to have a "Mother SWG"
- Centralized entity for all forensic science information

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# Change Continues: National Commission on Forensic Science (2013)

- Established to enhance the practice and improve reliability of forensic science and promote scientific validity, reduce fragmentation, and improve federal coordination of forensic science

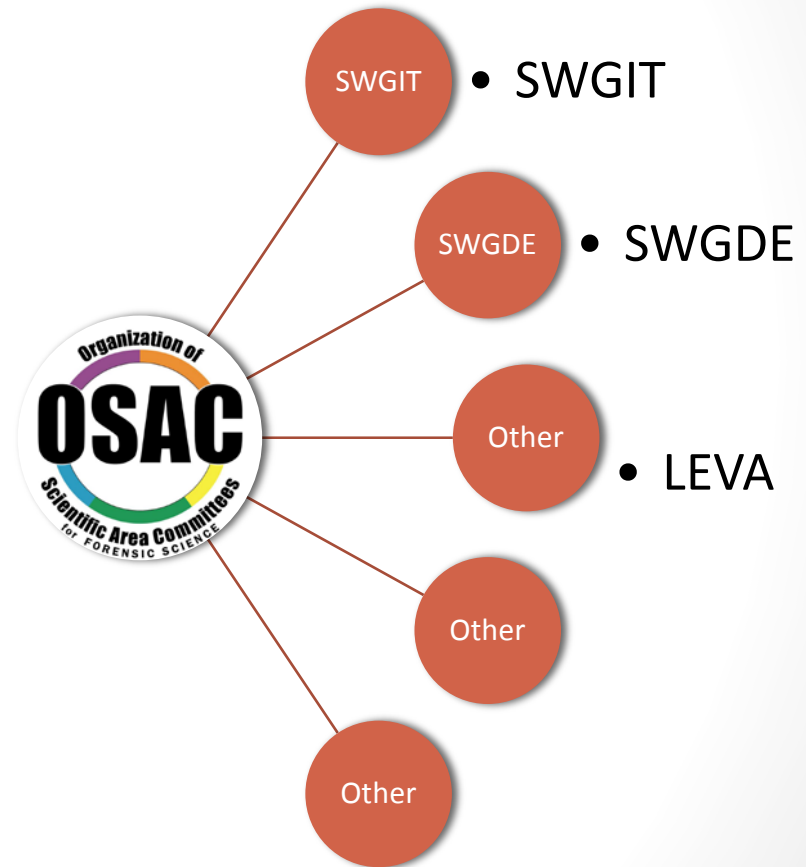Image retrieved from: https://www.nist.gov/topics/forensic-science/national-commission-forensic-science

Change Continues: SWGs and OSAC

- SWGs support and funding cut
- Torch was passed to the OSAC
- Some SWGs continued with other funding mechanisms

OSAC

SWGIT ceases
SWGDE continues

2014 2015
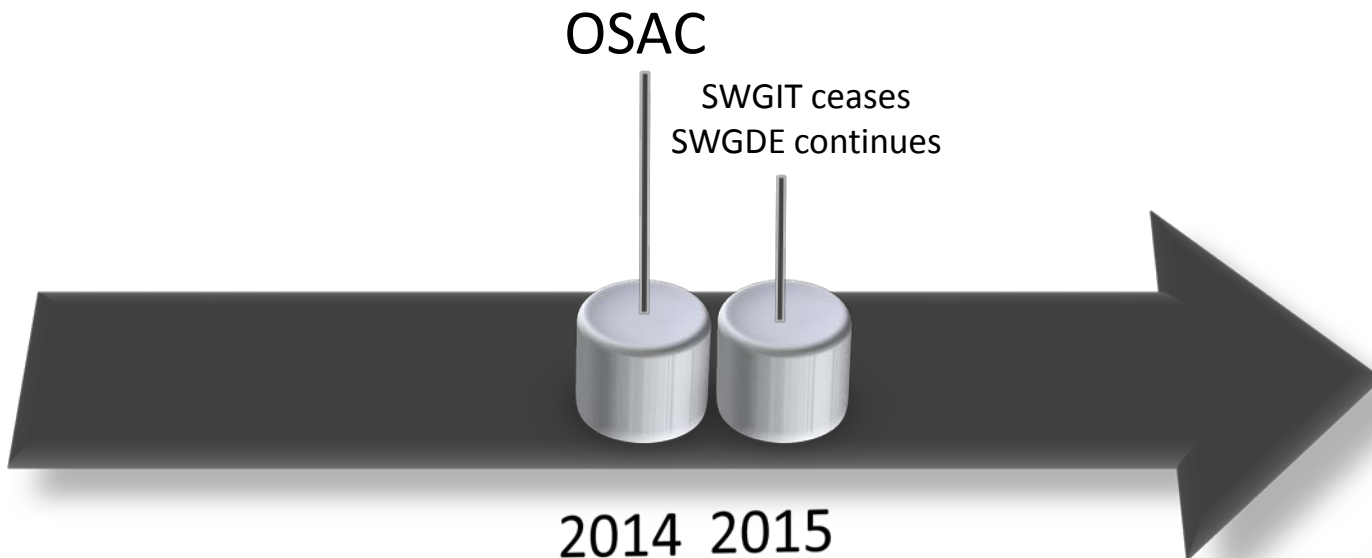
OSAC building on work of the SWGs

- Formal standards
- More resources
- Coordination among disciplines
- Broader basis for input and review
- More powerful voice in making recommendations
- Better enforceability

- SWGIT
- SWGDE
- LEVA

OSAC Process

- OSAC more robust lengthy process
- Variety of input and comment points (public, legal, HF, QA, research, statistics) and distribution of membership
- Collaboration across disciplines
- Centered on strengthening Forensic Science
- Encouraged to go to Standards Development Organization (SDO)
- Benefit: Unified consensus-based standard for widespread adoption

OSAC Working with a Standards Development Organization (SDO) Process Map

What Does This Mean to You and Members of the IAI?

- Who do I follow for standards and best practices?
- They appear to operate in the same space? (Video Analysis, Imaging Analysis, Forensic Photography)

OSAC

SWGIT

Video Imaging Photography

SWGDE

ASTM
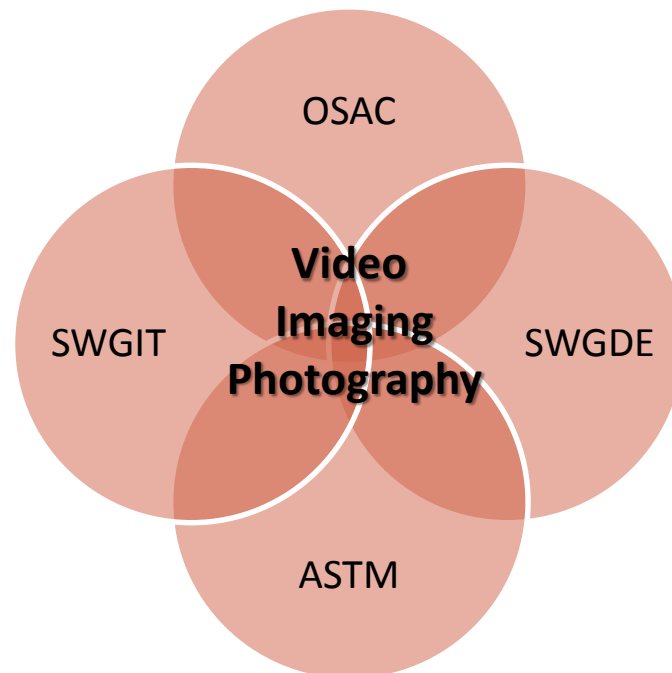
# What standards and best practices should I follow?

- Follow agency specific needs and policies
- **SWGIT**
  - Use as a solid reference until they are retired.
- **SWGDE**
  - New documents pertaining to Photo/Video/Image Analysis and revisions of SWGIT guidelines (which will become SWGDE documents)
  - Narrow Focus practices -Can address changes in technology more quickly (white papers, etc)
  - Address *procedures* for forensic science discipline
- **OSAC**
  - More robust documents/standards- forensic community wide consensus based standards
  - Address *strengthening* forensic science discipline with recommended research.
  - Wide focus
- **ASTM** – vetted standard guides/practice for Digital and Multimedia

Update 2018

Video/Imaging Technology and Analysis (VITAL) Subcommittee

Discipline Description
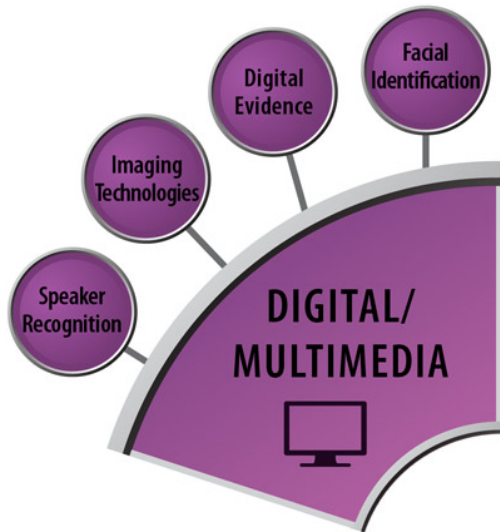
The OSAC Subcommittee on **Video/Imaging Technology and Analysis (VITAL)**

focuses on standards and guidelines related to the application of methods and technologies to

analyze information related to forensic imagery from a variety of systems.

This encompasses aspects of capture, storage, processing, archiving, quality assurance and training.

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Video/Imaging Technology and Analysis (VITAL)
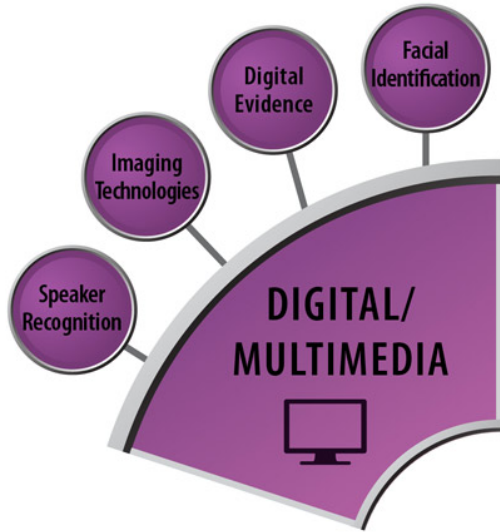
Major areas of interest include:

- **Photography** - forensic photographic acquisition and documentation

- **Image Analysis** - examine, evaluate, and render an opinion pertaining to an image and/or image-related data

- **Video Analysis** - the acquisition, examination and evaluation pertaining to a video and/or video-related data for rendering an opinion.

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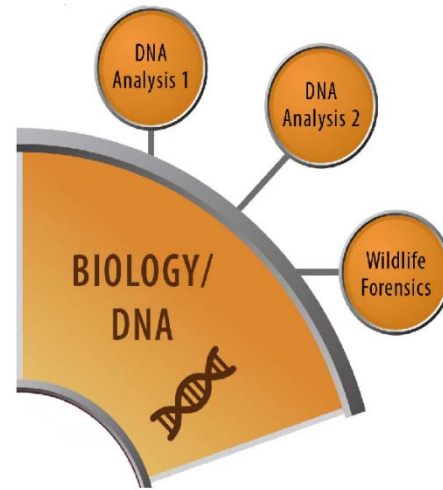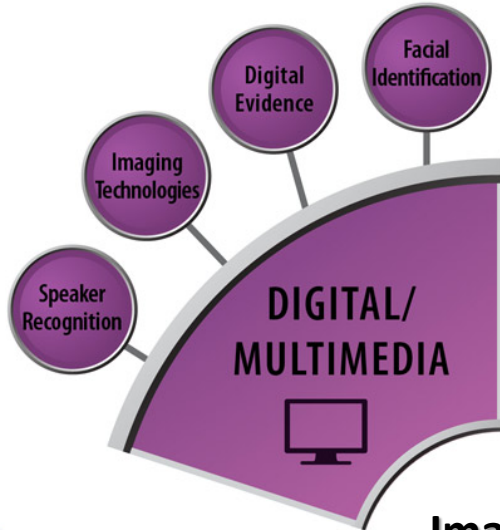
Imaging Technology
is embedded across all forensic disciplines
Used for Documentation
and
Analysis

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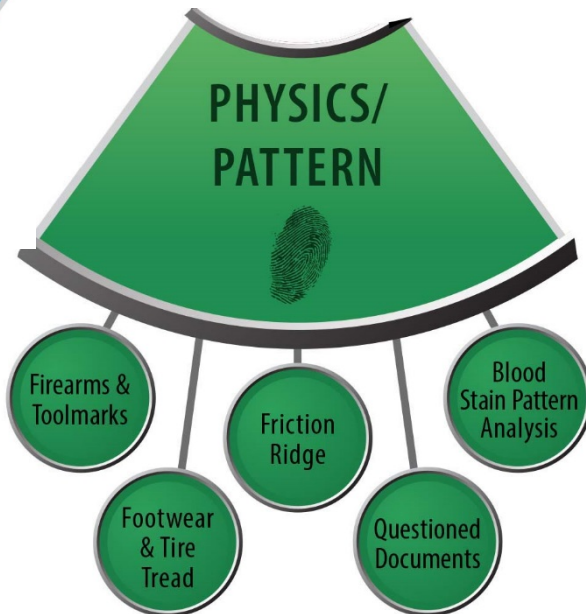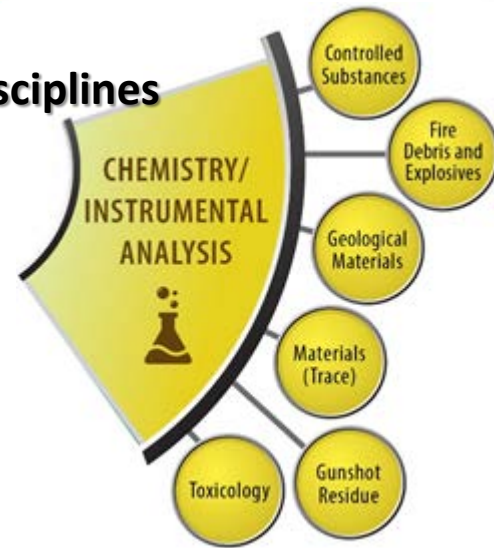
OSAC VITAL Members and Guests

Subcommittee Leadership

- Chair
  - Julie Carnes
- Vice Chair
  - William Trenkle
- Executtive Secretary
  - Christina Malone
- Photography Task Group
  - Keith Mancini, Chair
- Video Analysis Task Group
  - Jim Hoerricks, Chair
- Image Analysis Task Group
  - Christina Malone, Chair

Subcommittee Members and Affiliates

First Name	Last Name	Role	Organization	Task Group	Term End
Mike	Baker	Member	Sacramento Police Department	Video Analysis	2020
Melody	Buba	Member	FBI	Video Analysis	2019
Julie	Carnes	Member	Target	Video Analysis	2020
Wendy	Dinova-Wimmer	Member	Adobe	Image Analysis	2018
Catalin	Grigoras	Affiliate	University of Colorado	Video Analysis	2020
Paul	Hartzell	Affiliate	Hennepin County Attorneys Office	Video Analysis	n/a
Jim (Kenneth)	Hoerricks	Member	Amped Software, Inc.	Video Analysis	2020
Christopher	Iber	Member	FBI	Image Analysis	2018
Carl	Kriigel	Affiliate	Defense Forensic Science Center	Image Analysis	n/a
Douglas	Lacey	Affiliate	BEK TEK LLC	Video Analysis	n/a
Christina	Malone	Member	Defense Forensic Science Center	Image Analysis	2020
Keith	Mancini	Member	Westcherster County Forensic Lab	Photography	2018
Aaron	Matson	Member	Wisconsin State Crime Lab	Photography	2020
Kimberly	Meline	Member	FBI	Image Analysis	2018
Amanda	Noxon	Affiliate	Michigan State Polic	Image Analysis	2018
Ruth	Philips	Affiliate	Metropolitan Police Service	Video Analysis	n/a
Margaret	Pinson	Affiliate	US Departement of Commerce	Video Analysis	n/a
Matthew	Steiner	Affiliate	New York Police Department	Photography	n/a
Dorothy	Stout	Affiliate	Resolution Video, Inc.	Video Analysis	n/a
Rand	Swartz	Member	District IV Medical Examiner	Photography	2019
Andrew	Taravella	Affiliate	Houston Police	Photography	n/a
Alice	Thomas	Affiliate	US Secret Service	Video Analysis	n/a
William	Trenkle	Member	US Departement of Agriculture	Image Analysis	2019
John	Twomey	Member	US Secret Service	Photography	2020
Jesus	Valenzuela	Member	Seattle Police Department	Video Analysis	2020
Ernie	Van der Leest	Affiliate	Third Chair Digital Forensics	Video Analysis	n/a
Robert	Young	Member	City of Mesa	Photography	2020

VITAL Summary of Priority Actions

Task Group	Working Title of Document
Photography	• Standard Guide for Latent Print Evidence Imaging Resolution • Training Guidelines for Video Analysis, Image Analysis and Photography • Crime Scene Photography
Image Analysis	• Guidelines for the Forensic Use of Photogrammetry • Standard Guide for Image Authentication
Video Analysis	• Guidelines for Data Retrieval from Digital Video Recorders (DVR) • Guidelines for Video Analysis

VITAL Summary of Priority Collaborations

- OSAC Digital Evidence Subcommittee collaboration on Testing Tools
- OSAC Bloodstain Pattern Analysis Subcommittee collaboration on Photography
- OSAC Fire Debris and Explosives Subcommittee collaboration imaging/photography
- OSAC Forensic Document Examination collaboration on image capture
- OSAC wide collaboration on Source Conclusions
- OSAC wide collaboration on Training/Education
- OSAC wide collaboration on ACE methodology
- SWGDE collaboration on joint projects – video, imaging, and photography

Standards/Guidelines Development
Task Group Updates

Photography Task Group

1. Training Guidelines for Video Analysis, Image Analysis and Photography
2. Standard Guide for Latent Print Evidence Imaging Resolution
3. Crime Scene Photography

Training Guidelines for Video Analysis, Image Analysis and Photography

- **Scope:**
  - This document recommends topics and guidelines for training within the disciplines of video analysis, image analysis and photography as a supplement to the "Standard Practice for Forensic Scientist Practitioner Training, Continuing Education and Professional Development Programs."

- **Objective/rationale:**
  - This document will provide guidelines and recommendations to assist organizations in **designing a training program** for forensic video analysts, image analysts, and photographers **to ensure competency in the completion of forensic tasks and analyses.**

> **Task Group Name:** Photography
> **Task Group Chair Name:** Keith Mancini
> **Task Group Chair Contact Information:**
> kam8@westchestergov.com
> **Date of Last Task Group Meeting Update:** 18JUN18

Training Guidelines for Video Analysis, Image Analysis and Photography

Key Components of Standard:

- Job Categories
- Training Topics

Current Status:

- Revised based on feedback from Legal Resource Committee and Quality Infrastructure Committee
- Has been approved within VITAL, currently at DMSAC

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Standard Guide for Latent Print Evidence Imaging Resolution

- **Scope**:
  - The scope of this document is to provide recommendations on the resolving power standards that enables recording of **level 3 details of latent print** evidence that are suitable for comparison purposes **using a digital camera, a flatbed scanner, or other image capture device**. These recommendations take into consideration the minimum resolution requirements for utilizing the photographs for comparison.

- **Objective/rationale:**
  - The purpose of this document is to describe a procedure to ensure that a digital imaging system (camera/scanner) can capture a latent print image at an **achievable resolution that enables recording of level 3 details.**

Task Group Name: Photography
Task Group Chair Name: Keith Mancini
Task Group Chair Contact Information:
kam8@westchestergov.com
Date of Last Task Group Meeting Update: 18JUN18

Standard Guide for Latent Print Evidence Imaging Resolution

Key Components of Standard:

- Summary of Practice
- Significant and Use
- Recommended Photographic Equipment
- Recommended Protocol for Verifying the Resolving Power of Digital Cameras Used to Photograph Latent Print Evidence
- Recommended Protocol for Verifying the Resolving Power of Scanners Used to Scan Latent Print Evidence
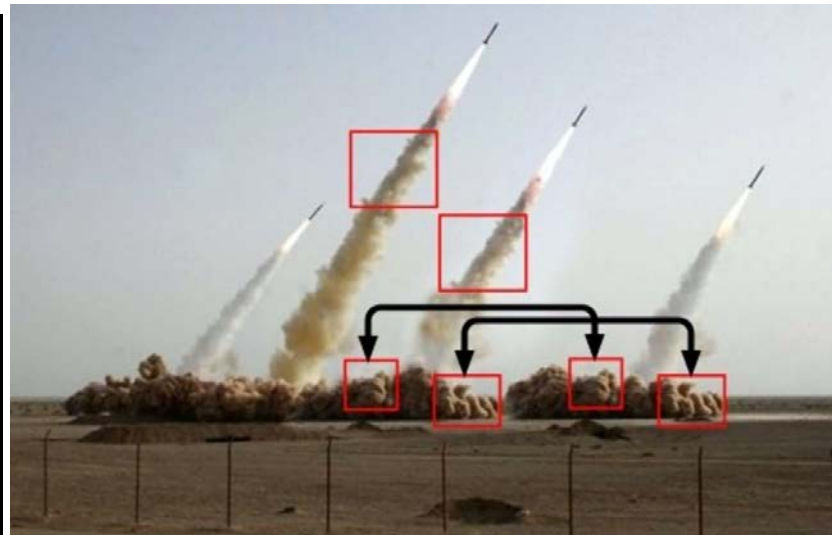
Current Status:

- Revised based on feedback from Legal Resource Committee and Quality Infrastructure Committee
- Has been approved within VITAL, currently at DMSAC

Image Analysis Task Group

1. **Guidelines for the Forensic Use of Photogrammetry**
2. **Standards for Image Authentication**

http://www.forensicvideoservices.co.uk/

Guidelines for the Forensic Use of Photogrammetry

- **Scope:**
  - Photogrammetry involves the process of **obtaining dimensional information as regards objects and people depicted in imagery.**
  - For forensic purposes, photogrammetry provides information including, but not limited to, the **heights of individuals, velocity of vehicles, and/or lengths of objects.**

- **Objective/rationale:**
  - Document provides personnel with guidelines regarding appropriate practices when performing photogrammetric examinations for forensic purposes.

Task Group Name: Image Analysis
Task Group Chair Name: Christina Malone
Task Group Chair Contact Information:
christina.a.malone.civ@mail.mil
Date of Last Task Group Meeting Update: 18JUN18

Guidelines for the Forensic Use of Photogrammetry

Key Components of Standard:

- Provide personnel with recommendations regarding appropriate practices when performing photogrammetric examinations as a part of forensic analysis.

- Provides basic information, including the evidentiary value of photogrammetric examinations, common questions asked of forensic photogrammetry, and ways to report results including the reporting of estimation of uncertainty and mitigation of same.

- Multiple methodologies for photogrammetric examinations, and thus, does not particularly espouse any one methodology.

Current Status:

- Received feedback from Legal Resource Committee and Quality Infrastructure Committee

- Revision in progress

Standard Guide for Image Authentication

- **Scope**:
  - Image Authentication is a subtask of Image Analysis. This document addresses issues specific to Image Authentication.
  - Questions involved in authentication include **issues of image manipulation, image creation, and consistency with prior knowledge about the circumstances depicted.**

- **Objective/rationale**:
  - This document will provide personnel with guidance regarding practices appropriate when performing image authentication as part of image analysis.

Task Group Name: Imaging Analysis
Task Group Chair Name: Christina Malone
Task Group Chair Contact Information:
christina.a.malone.civ@mail.mil
Date of Last Task Group Meeting: 18JUN18

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Standard Guide for Image Authentication

Key Components of Standard:

- Provenance of the image
- Metadata Analysis
- Photo Response Non-Uniformity (PRNU)
- Detection of Manipulation
- Detection of Image Creation
- Detection of Staging
- Continuity Issues
- Image Processing

Current Status:

- Draft complete
- Will be sent to Legal Resource Committee, Quality Infrastructure Committee and Human Factors Committee

Video Analysis Task Group

1. **Guidelines for Data Retrieval from Digital Video Recorders (DVR)**
2. **Guidelines for Video Analysis**

www.lenvica.com

www.businessinsider.com

Guidelines for Data Retrieval from Digital Video Recorders (DVR)

- **Scope:**
  - This document is intended to provide procedures for the **collection of data from digital video recorders (DVRs) that ensure playback while maintaining best evidence.**

- **Objective/rationale:**
  - This document will provide the **best methods for the retrieval** of video/audio data evidence and any associated metadata.
  - These best practices, guidelines and recommendations are intended to provide responding law enforcement personnel guidance in securing and collecting data from DCCTV systems.
  - This will ensure that best methods are utilized to retrieve the recorded data and maintain its integrity.

> **Task Group Name:** Video Analysis
> **Task Group Chair Name:** Jim Hoerricks
> **Task Group Chair Contact Information:** osac@hoerricks.com
> **Date of Last Task Group Action:** 18JUN18

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Guidelines for Video Analysis

- **Scope:**
  - This document is intended to provides a structured workflow for practitioners processing and analyzing digital video evidence.

- **Objective/rationale:**
  - This document will provide the best methods for the **scientific examination or evaluation of video**.
  - These best practices, guidelines and recommendations are intended to provide analyst with procedures to work with video evidence.

Task Group Name: Video Analysis
Task Group Chair Name: Jim Hoerricks
Task Group Chair Contact Information: osac@hoerricks.com
Date of Last Task Group Action: 18JUN18

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Guidelines for Video Analysis

Key Components of Standard:

- Categories of a Forensic Workflow
- Evidence Documentation
- Processing
- Restoration
- Image Clarification
- Output
- Reporting
- Archiving

Current Status:

- Revision within task group

How Can You Participate?

- The VITAL subcommittee invites participation on task group work
- 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 **Video & Imaging Technology and Analysis Subcommittee** (VITAL)
- Subcommittee can reach out to activate applicant names to become affiliates on task group work
- Next in-person meeting:

> 10-14 December, 2018 – Phoenix, AZ

Questions?