



# Priority Action Report

## Video/Imaging Technology and Analysis (VITAL) Subcommittee

Digital and Multimedia SAC  
Carl Kriigel Subcommittee Chair  
01 FEB 2016





# Subcommittee Leadership

| Position            | Name             | Organization                      | Term    | Email                           |
|---------------------|------------------|-----------------------------------|---------|---------------------------------|
| Chair               | Carl Kriigel     | Defense Forensic Science Center   | 3 years | Carl.Kriigel@gmail.com          |
| Vice Chair          | William Trenkle  | Dept of Health and Human Services | 2 years | William.Trenkle@hhs.gov         |
| Executive Secretary | Christina Malone | Defense Forensic Science Center   | 3 years | Christina.a.Malone.civ@mail.mil |

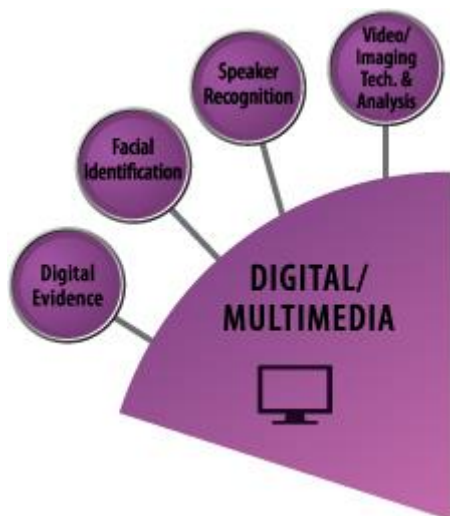


# Subcommittee Members



| #  | Name                    | Organization              | Term | Email  |
|----|-------------------------|---------------------------|------|--|
| 1  | Alice Thomas            | U.S. Secret Service       | 3    | <a href="mailto:alice.thomas@usss.dhs.gov">alice.thomas@usss.dhs.gov</a>     |
| 2  | Julie Carnes            | Target                    | 4    | <a href="mailto:Julie.carnes@target.com">Julie.carnes@target.com</a>         |
| 3  | Melody Buba             | FBI                       | 2    | <a href="mailto:Melody.Buba@ic.fbi.gov">Melody.Buba@ic.fbi.gov</a>           |
| 4  | Kimberly Meline         | FBI                       | 4    | <a href="mailto:Kimberly.meline@ic.fbi.gov">Kimberly.meline@ic.fbi.gov</a>   |
| 5  | David Witzke            | Foray Technologies        | 2    | <a href="mailto:dlwitzke@foray.com">dlwitzke@foray.com</a>                   |
| 6  | David Allen             | NIST                      | 3    | <a href="mailto:dwallen@nist.gov">dwallen@nist.gov</a>                       |
| 7  | Christopher Iber        | FBI                       | 4    | <a href="mailto:Christopher.iber@ic.fbi.gov">Christopher.iber@ic.fbi.gov</a> |
| 8  | Robert Sanders          | Wisconsin State Crime Lab | 2    | <a href="mailto:sandersrc@doj.state.wi.us">sandersrc@doj.state.wi.us</a>     |
| 9  | Douglas Lacey           | BEK TEK LLC               | 2    | <a href="mailto:doug@bekteklc.com">doug@bekteklc.com</a>                     |
| 10 | Wendy Dinova-Wimmer     | 2visualize, Inc.          | 4    | <a href="mailto:wadw@visualizeinc.com">wadw@visualizeinc.com</a>             |
| 11 | Kenneth James Hoerricks | Los Angeles Police Dept   | 3    | <a href="mailto:n2288@lapd.lacity.org">n2288@lapd.lacity.org</a>             |
| 12 | Robert Young            | City of Mesa, AZ          | 3    | <a href="mailto:Robert.young@mesaz.gov">Robert.young@mesaz.gov</a>           |
| 13 | Craig Thrane            | CT Image Analysis         | 2    | <a href="mailto:mjobigband@aol.com">mjobigband@aol.com</a>                   |
| 14 |                         |                           |      |  |
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| 17 |                         |                           |      |  |

# Discipline Description

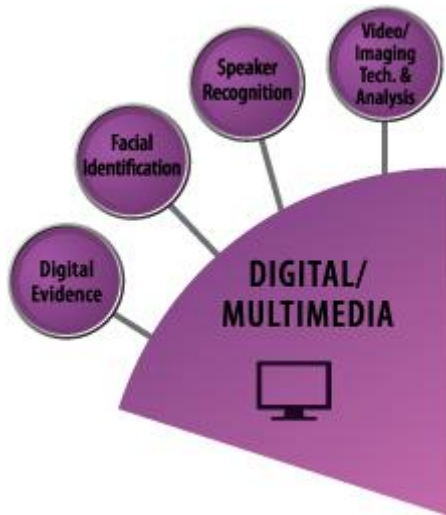


## The OSAC Subcommittee on **Video/Imaging Technology and Analysis (VITAL) (1/2)**

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.

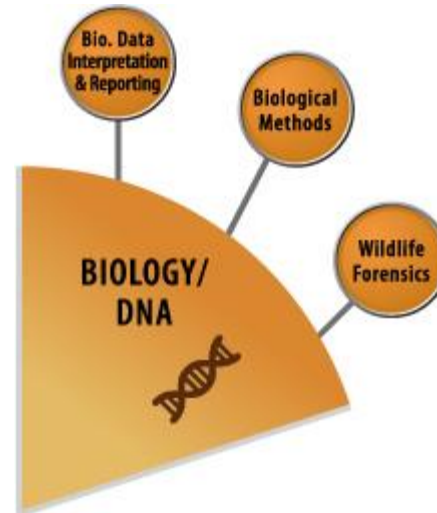
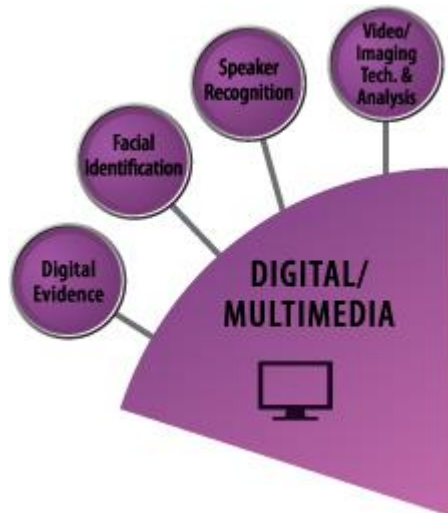
# Discipline Description



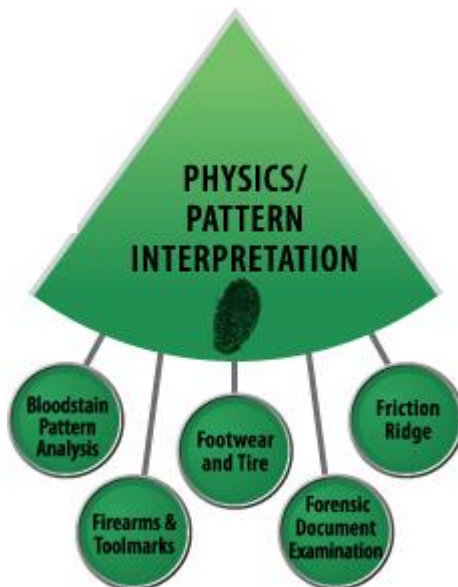
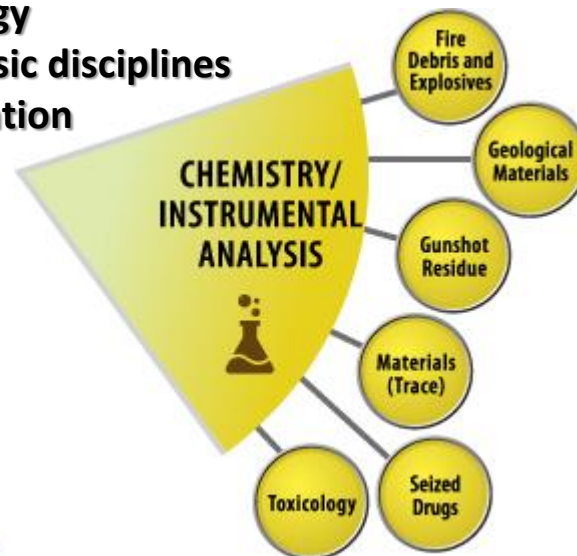
The OSAC Subcommittee on **Video/Imaging Technology and Analysis (VITAL)** (2/2)

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.



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



# Summary of Standards/Guidelines Priority Actions

| Priority                  | Working Title of Document  |
|---------------------------|--|
| Imaging Task Group #1     | Guidelines for the Forensic Use of Photogrammetry                      |
| Imaging Task Group #2     | Standards for Image Authentication                                     |
| Video Task Group #1       | Best Practices for Data Retrieval from Digital Video Recorders (DVR)   |
| Photography Task Group #1 | Latent Print Evidence Photography                                      |
| VITAL Subcommittee #1     | Training Guidelines for Video Analysis, Image Analysis and Photography |





# Standards/Guidelines Development Priority 1 Document

Document Title: **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:** Chris Iber

**Task Group Chair Contact Information:**

[Christopher.iber@ic.fbi.gov](mailto:Christopher.iber@ic.fbi.gov)

**Date of Last Task Group Meeting:** 29JAN16







*Priority 1: Guidelines for the Forensic Use of Photogrammetry*

# Standards/Guidelines Development

## Priority 1 Document

### 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.





*Priority 1:* Guidelines for the Forensic Use of Photogrammetry

# Task Group/Subcommittee Action Plan

| Planned Actions | OSAC Process Stage (e.g., SDO 100) | Assignee | Estimated Completion Date |
|-----------------|------------------------------------|----------|---------------------------|
| SAC Approval    | SD0-100                            | Iber     | 1MAR2016                  |
| Forward to SDO  | SD0-300                            | Iber     | 1MAY2016                  |
|                 |                                    |          |                           |
|                 |                                    |          |                           |
|                 |                                    |          |                           |





# Standards/Guidelines Development Priority 2 Document

Document Title: **Standards 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

**Issues/Concerns/Safety:** Consideration will include vicarious trauma from evaluation of images that depict disturbing subject matter.

**Task Group Name:** Imaging Analysis

**Task Group Chair Name:** Chris Iber

**Task Group Chair Contact Information:**

[Christopher.iber@ic.fbi.gov](mailto:Christopher.iber@ic.fbi.gov)

**Date of Last Task Group Meeting:** 29JAN2016





# Standards/Guidelines Development Priority 2 Document

## 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





*Priority 2: Standards for Image Authentication*

# Task Group/Subcommittee Action Plan

| Planned Actions     | OSAC Process Stage (e.g., SDO 100) | Assignee | Estimated Completion Date |
|---------------------|------------------------------------|----------|---------------------------|
| SAC Approval        | SDO-100                            | Iber     | 1 MAR 2016                |
| Refine the document | SDO-200                            | Iber     | 1 AUG 2016                |
|                     |                                    |          |                           |
|                     |                                    |          |                           |
|                     |                                    |          |                           |





# Standards/Guidelines Development Priority 3 Document

Document Title: **Best Practices 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:** Julie Carnes

**Task Group Chair Contact Information:**

[Julie.carnes@target.com](mailto:Julie.carnes@target.com)

**Date of Last Task Group Meeting:** 29JAN2016





*Priority 3: Best Practices for Data Retrieval from Digital Video Recorders*

# Standards/Guidelines Development Priority 3 Document

## Key Components of Standard:

- Recognizing DCCTV Evidence and its Nature
- Types of Digital Video Recording Systems
- DVR Recordings
- Steps to Take Upon Scene Arrival
- Assessing the Recording System for Output





# Task Group/Subcommittee Action Plan

| Planned Actions | OSAC Process Stage (e.g., SDO 100) | Assignee | Estimated Completion Date |
|-----------------|------------------------------------|----------|---------------------------|
| SAC Approval    | SD0-100                            | Carnes   | 1MAR2016                  |
| Refine document | SD0-200                            | Carnes   | 1MAY2016                  |
|                 |                                    |          |                           |
|                 |                                    |          |                           |
|                 |                                    |          |                           |







# Standards/Guidelines Development Priority 4 Document

Document Title: **Latent Print Evidence Photography**

**Scope:** The scope of this document is to provide recommendations on the best practices for properly trained and qualified personnel to capture images of latent print evidence using a digital single lens reflex camera or a flatbed scanner that are suitable for comparison purposes.

**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.

**Issues/Concerns:** These recommendations take into consideration the minimum resolution requirements for utilizing the photographs for comparison purposes and the current state of the development of digital imaging.

**Task Group Name:** Photography

**Task Group Chair Name:** Robert Sanders

**Task Group Chair Contact Information:**

[sandersrc@doj.state.wi.us](mailto:sandersrc@doj.state.wi.us)

**Date of Last Task Group Meeting:** 29 JAN 2016





*Priority 4: Latent Print Evidence Photography*

# Standards/Guidelines Development Priority 4 Document

## Key Components of Standard:

- Recommended Photographic Equipment
- Photographic Procedures
- Latent Print Photography Protocol
- Camera Resolution Calibration
- Lens Considerations
- Flatbed Scanners





Priority 4: Latent Print Evidence Photography

# Task Group/Subcommittee Action Plan

| Planned Actions | OSAC Process Stage (e.g., SDO 100) | Assignee | Estimated Completion Date |
|-----------------|------------------------------------|----------|---------------------------|
| SAC Approval    | SD0-100                            | Sanders  | 1MAR2016                  |
| Refine document | SD0-200                            | Sanders  | 1AUG2016                  |
|                 |                                    |          |                           |
|                 |                                    |          |                           |
|                 |                                    |          |                           |





# Standards/Guidelines Development Priority 5 Document

Document Title: **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.

**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.

**Issues/Concerns:** Training topics introduced in this document may not fit the needs of individual organizations when job specific duties are limited to a subset of those listed. Each organization should determine the minimum training guidelines for examinations performed.

**Task Group Name:** VITAL Subcommittee Task Groups

**Task Group Chair Name:** Carl Kriigel

**Task Group Chair Contact Information:**

Carl.Kriigel@gmail.com

**Date of Last Task Group Meeting:** 29JAN2016



*Priority 5:*

Training Guidelines for Video Analysis, Image Analysis and Photography

# Standards/Guidelines Development Priority 5 Document



## Key Components of Standard:

- Categories of Training
- Job Categories
- Training Sources
- Training Evaluation and Documentation





*Priority 5:*

Training Guidelines for Video Analysis, Image Analysis and Photography

# Task Group/Subcommittee Action Plan

| Planned Actions | OSAC Process Stage (e.g., SDO 100) | Assignee | Estimated Completion Date |
|-----------------|------------------------------------|----------|---------------------------|
| SAC Approval    | SD0-100                            | Kriigel  | 1MAR2016                  |
| Refine Document | SD0-200                            | Kriigel  | 1AUG2016                  |
|                 |                                    |          |                           |
|                 |                                    |          |                           |
|                 |                                    |          |                           |



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# Standards/Guidelines Reviewed For Technical Merit

| Title  | Developing Organization | Status*      | OSAC Process Stage (e.g., RA 100) |
|--|-------------------------|--------------|-----------------------------------|
| Standard Guide for Forensic Digital Image Processing                   | ASTM                    | SAC Approved | RA-500                            |
| Guidelines for the Forensic Use of Photogrammetry                      | SWGIT/SWGDE             | Evaluating   | SD0-100                           |
| Standards for Image Authentication                                     | SWGIT                   | Evaluating   | SD0-100                           |
| Best Practices for Data Retrieval from Digital Video Recorders (DVR)   | SWGIT                   | Evaluating   | SD0-100                           |
| Latent Print Evidence Photography                                      | SWGIT                   | Evaluating   | SD0-100                           |
| Training Guidelines for Video Analysis, Image Analysis and Photography | SWGIT/SWGDE             | Evaluating   | SD0-100                           |





# Research Gaps Identified

## Vehicle Comparison Study

- To date, research in photographic comparison has focused on human identification, particularly faces.
- Image analysts are often requested to compare vehicles to determine whether a vehicle depicted in surveillance video or capture images is the same as a vehicle linked to a suspect, or alternatively, determine the Make, Model and Year of the questioned vehicle.
- The study would determine the accuracy of examiners in making these types of comparisons/determinations, particularly at varying degrees of “Quality” within submitted imagery.

# Research Gaps Identified

## Software Validation Repository

- Accredited digital evidence laboratories (DELs) are required to validate software used for any purpose, including enhancement, processing, and analysis.
- DELs spend significant amounts of time to test and validate software used in analysis, however, to date no effort has been made to standardize the process used for testing and validation.
- Few DELs share lists of previously validated software or information related to their testing procedures.

# Research Gaps Identified

## Factors Affecting Image Quality When Extracting a Still from Video

- Images extracted from video sources appear to differ in quality when the same video data is visualized on different computer systems using the same extraction technique as well as different extraction techniques.
- Research is needed to determine if computer hardware is a factor affecting image quality when extracting images from video.

# Research Gaps Identified

## Determination of the size of the smallest detail required for tire and footwear comparisons

- Only anecdotal evidence exists of the minimum resolution required when recording shoe and/or tire impressions and marks.
- Without knowing the size of the smallest detail required for comparison, there is no way to verify if the current, arbitrary standards for recording such impressions are valid or if those standards can be used in OSAC documents.
- Research exists for latent prints, but not for tires/shoes.

# Additional Items of Interest

## Future Work

- Video Analysis Evidence Handling Guidelines
- Training Document
- Photographic Comparisons document range of conclusions is being reviewed at DM and Pattern SAC level

## VITAL Collaboration Activities

- American Academy of Forensic Sciences (AAFS)
- International Association for Identification (IAI)
- Law Enforcement Video Association (LEVA)
- International Association of Forensic & Security Metrology (IAFSM)



# 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





# Questions



