



## OSAC Research Needs Assessment Form

**Title of research need:** Determination of the size of the smallest detail required for tire and/or shoe comparisons.

**Keywords:** Shoe impression, tire mark, tire track, minimum resolution, digital imaging, digital capture, photography, fine detail, evidence

**Submitting subcommittee(s):** VITAL **Date Approved:** 1/28/16

*(If SAC review identifies additional subcommittees, add them to the box above.)*

### Background information:

#### 1. Description of research need:

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.

#### 2. Key bibliographic references relating to this research need:

“Effect of Photographic Technology on Quality of Examination of Footwear Impressions”, Herbert Blitzer, Richard Hammer, Jack Jacobia, *Journal of Forensic Identification, 2007.*  
“The Mount Bierstadt Study: An Experiment in Unique Damage Formation in Footwear”, T.W. Adair, J. Lemay, A. Mcdonald, R. Shaw, R. Tewes, *Journal of Forensic Identification, 2007.*

#### 3a. In what ways would the research results improve current laboratory capabilities?

Current research is limited to comparisons to film based capture methods (equivalent to 35mm film, but not 120mm film, etc.) Knowing a minimum resolution enables the purchase of appropriate equipment as well as capture settings.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

It is known that reproduction of fine detail is directly related to the capture settings. Understanding the lower limit of resolution required for comparison will enable VITAL to create appropriate guidelines and standards.

3c. In what ways would the research results improve services to the criminal justice system?

Images with insufficient resolution may prevent an examiner from being able to include or exclude a source from an examination. Without knowing what resolution is needed, images may be taken/recorded/captured at resolutions that are either too low which require recapture, or too high that use excessive amounts of storage.

4. Status assessment (I, II, III, or IV):

1

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	<b>I</b>	<b>III</b>
Existing current research is being conducted	<b>II</b>	<b>IV</b>

*This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.*

Subcommittee

Approval date: 1/28/16

*(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)*

SAC

1. Does the SAC agree with the research need? Yes  No

2. Does the SAC agree with the status assessment? Yes  No

*If no, what is the status assessment of the SAC:*

Approval date:

*(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)*