



***DRAFT FOR COMMENT***

## **STANDARD TERMINOLOGY OF FRICTION RIDGE EXAMINATION**

(To Replace: *Glossary*, ver. 2)

### **Preamble**

This document provides standard definitions for relevant terminology used in the friction ridge discipline. Common definitions found in other reference sources may not be included.

### **ACE-V**

The acronym for a scientific method; Analysis, Comparison, Evaluation, and Verification (see individual terms).

### **AFIS**

The acronym for Automated Fingerprint Identification System.

### **Analysis**

The first step of the ACE-V method. The assessment of an impression to determine suitability for comparison.

### **APIS**

The acronym for Automated Palmprint Identification System.

### **Appendage**

An attachment or connection within friction ridges.

### **Arch – plain**

A fingerprint pattern in which the friction ridges enter on one side of the impression and flow, or tend to flow, out the other side with a rise or wave in the center.

Standard Terminology of Friction Ridge Examination

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Posted:

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**Arch - tented**

A type of fingerprint pattern that possesses either an angle, an upthrust, or two of the three basic characteristics of the loop.

**Artifact**

1. Any distortion or alteration not in the original friction ridge impression, produced by an external agent or action.
2. Any information not present in the original object or image, inadvertently introduced by image capture, processing, compressions, transmission, display, and printing.

**Bias**

See cognitive bias, confirmation bias, and contextual bias.

**Bifurcation**

The point at which one friction ridge divides into two friction ridges.

**Blind verification**

The independent examination of one or more friction ridge impressions by another qualified examiner who has no expectation or knowledge of the conclusion of the original examiner.

**Bridge**

A connecting friction ridge between, and generally at right angles to, parallel running friction ridges.

**Characteristics**

Features of the friction ridges. Commonly includes minutiae, points, or ridge formation morphologies.

**Cognitive bias**

Influences that may affect the reliability and validity of one's observations and conclusions.

**Comparison**

The second step of the ACE-V method. The observation of two or more impressions to determine the existence of discrepancies, dissimilarities, or similarities.

**Competency**

Possessing and demonstrating the requisite knowledge, skills, and abilities to successfully perform a specific task.

### **Complete friction ridge exemplars**

A systematic recording of all friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, joints, tips, and sides of the fingers.

### **Complex examinations**

The encountering of uncommon circumstances during an examination (e.g., the existence of high distortion, low quality or quantity, the possibility of simultaneity, or conflicts among examiners).

### **Confirmation bias**

The tendency to search for data or interpret information in a manner that supports one's preconceptions.

### **Conflict**

A difference of conclusion that becomes apparent during the application of an examination methodology.

### **Consultation**

A significant interaction between examiners regarding one or more impressions in question.

### **Contextual bias**

The tendency to allow information or outside influences to interfere with the evaluation and interpretation of data.

### **Core**

The approximate center of a pattern.

### **Delta**

The point on a friction ridge at or nearest to the point of divergence of two type lines, and located at or directly in front of the point of divergence.

### **Deviation**

1. A change in friction ridge path.
2. An alteration or departure from a documented policy or standard procedure.

### **Discrepancy**

The presence of friction ridge detail in one impression that does not exist in the corresponding area of another impression.

**Dissimilarity**

A difference in appearance between two friction ridge impressions.

**Dissociated ridges**

1. Disrupted, rather than continuous, friction ridges.
2. An area of friction ridge units that did not form into friction ridges.

**Distortion**

Variances in the reproduction of friction skin caused by pressure, movement, force, contact surface, and so forth.

**Dot**

An isolated friction ridge unit whose length approximates its width in size.

**Edgeoscopy**

1. Study of the morphological characteristics of friction ridges.
2. Contour or shape of the edges of friction ridges.

**Elimination prints**

Exemplars of friction ridge skin detail of persons known to have had legitimate access to an item.

**Enclosure**

A single friction ridge that bifurcates and rejoins after a short course and continues as a single friction ridge.

**Ending ridge**

A single friction ridge that terminates within the friction ridge structure.

**Erroneous exclusion**

The incorrect determination that two areas of friction ridge impressions did not originate from the same source.

**Erroneous individualization**

The incorrect determination that two areas of friction ridge impressions originated from the same source.

## **Evaluation**

The third step of the ACE-V method wherein an examiner assesses the value of the details observed during the analysis and the comparison steps and reaches a conclusion.

## **Exclusion**

The determination by an examiner that there is sufficient quality and quantity of detail in disagreement to conclude that two areas of friction ridge impressions did not originate from the same source.

## **Exemplar**

The known prints of an individual, recorded electronically, photographically, by ink, or by another medium.

## **Fingerprint**

An impression of the friction ridges of all or any part of the finger.

## **Focal points**

1. In classification, the core(s) and the delta(s) of a fingerprint.
2. Another term for target group.

## **Friction ridge**

A raised portion of the epidermis on the palmar or plantar skin, consisting of one or more connected ridge units.

## **Friction ridge detail (morphology)**

An area comprised of the combination of ridge flow, ridge characteristics, and ridge structure.

## **Friction ridge examiner**

A person who analyzes, compares, evaluates and verifies friction ridge impressions.

## **Friction ridge unit**

A single section of ridge containing one pore.

## **Furrows**

Valleys or depressions between friction ridges.

## **Galton details**

Term referring to friction ridge characteristics attributed to the research of English fingerprint pioneer, Sir Francis Galton.

## **Henry Classification**

An alpha-numeric system of fingerprint classification named after Sir Edward Richard Henry (1850 - 1931) used for filing, searching, and retrieving tenprint records.

## **IAFIS**

The acronym for Integrated Automated Fingerprint Identification System, the FBI's national AFIS.

## **Identification**

1. In some forensic disciplines, this term denotes the similarity of class characteristics.
2. See Individualization.

## **Incipient ridge**

A friction ridge not fully developed that may appear shorter and thinner than fully developed friction ridges.

## **Inconclusive**

During Evaluation, the conclusion reached that neither sufficient agreement exists to individualize nor sufficient disagreement exists to exclude.

## **Individualization**

The determination of an examiner that there is sufficient quality and quantity of detail in agreement to conclude that two friction ridge impressions originated from the same source.

## **Known print (finger, palm, foot)**

A recording of an individual's friction ridges with black ink, electronic imaging, photography, or other medium on a contrasting background.

## **Latent print**

1. Transferred impression of friction ridge detail not readily visible.
2. Generic term used for unintentionally-deposited friction ridge detail.

## **Level 1 detail**

Friction ridge flow and general morphological information.

## **Level 2 detail**

Individual friction ridge paths and friction ridge events; for example, bifurcations, ending ridges, and dots.

### **Level 3 detail**

Friction ridge dimensional attributes; for example, width, edge shapes, and pores.

### **Lift**

An adhesive or other medium on which recovered friction ridge detail is preserved.

### **Loop - ulnar**

A type of pattern in which one or more friction ridges enter upon either side, recurve, touch or pass an imaginary line between delta and core and flow out, or tend to flow out, on the same side the friction ridges entered. The flow of the pattern runs in the direction of the ulna bone of the forearm (toward the little finger).

### **Loop - radial**

A type of pattern in which one or more friction ridges enter upon either side, recurve, touch or pass an imaginary line between delta and core and flow out, or tend to flow out, on the same side the friction ridges entered. The flow of the pattern runs in the direction of the radius bone of the forearm (toward the thumb).

### **Major case print**

1. A systematic recording of the friction ridge detail appearing on the palmar sides of the hands. This includes the extreme sides of the palms, joints, tips, and sides of the fingers.
2. See Complete friction ridge exemplars.

### **Mark**

1. Term commonly used in the United Kingdom and some Commonwealth countries to designate a latent impression.
2. See Latent print.

### **Matrix**

The substance that is deposited or removed by the friction ridge skin when making an impression.

### **Minutiae**

See Characteristics.

### **Missed identification**

The failure to make an identification (individualization) when, in fact, both friction ridge impressions are from the same source.

**NGI**

The acronym for Next Generation Identification, the updated version of IAFIS.

**Original image**

An accurate replica (bit-for-bit value) of the primary image.

**Phalange**

All segments and joints of a finger, including the proximal, medial and distal phalanx.

**Phalanx**

A segment of the finger or toe separated by joints.

**Poroscopy**

A study of the size, shape, and arrangement of pores.

**Primary image**

The first recording of an image onto media.

**Proficiency**

The ongoing demonstration of competency.

**Qualitative**

The clarity of information contained within a friction ridge impression.

**Quantitative**

The amount of information contained within a friction ridge impression.

**Ridge flow**

1. The direction of one or more friction ridges.
2. See Level 1 detail.

**Ridge path**

1. The course of a single friction ridge.
2. See Level 2 detail.

**Ridge unit**

See Friction ridge unit.

**Short ridge**

A single friction ridge beginning, traveling a short distance, and then ending.

**Simultaneous impression**

Two or more friction ridge impressions from the same hand or foot deposited concurrently.

**Source**

Specific area of friction ridge skin.

**Spur**

A bifurcation with one short friction ridge branching off a longer friction ridge.

**Stand-alone**

A segment of a simultaneous impression that has sufficient information to arrive at a conclusion of individualization independent of other impressions within the aggregate.

**Substrate**

Surface upon which a friction ridge impression is deposited.

**Suitable (sufficient)**

The determination that there is adequate quality and quantity of detail in an impression for further analysis, comparison, or to reach a conclusion.

**Target groups**

In ACE-V, the areas selected for comparison purposes.

**Technical review**

Review of notes, documents, and other data that forms the basis for a scientific conclusion (see *ASCLD-LAB 2008 Manual*).

**Tenprint**

1. A generic reference to examinations performed on intentionally recorded friction ridge impressions.
2. A controlled recording of an individual's available fingers of an individual's available fingers using black ink, electronic imaging, photography, or other medium on a contrasting background.

### **Trifurcation**

The point at which one friction ridge divides into three friction ridges.

### **Type lines**

The two innermost friction ridges associated with a delta that parallel, diverge, and surround or tend to surround the pattern area.

### **Verification**

The final step of the ACE-V method. A review and independent analysis of the conclusion of another examiner.

### **Whorl - accidental**

1. With the exception of the plain arch, a fingerprint pattern consisting of two different types of patterns with two or more deltas.
2. A pattern that possesses some of the requirements for two or more different types of patterns.
3. A pattern that conforms to none of the definitions.

### **Whorl - central pocket loop**

A type of fingerprint pattern that has two deltas and at least one friction ridge that make, or tends to make, one complete circuit, which may be spiral, oval, circular, or any variant of a circle. An imaginary line drawn between the two deltas must not touch or cross any recurving friction ridges within the inner pattern area.

### **Whorl - double loop**

A type of fingerprint pattern that consists of two separate loop formations with two separate and distinct sets of shoulders and two deltas.

### **Whorl - plain**

A type of fingerprint pattern that consists of one or more friction ridges that make, or tends to make, a complete circuit, with two deltas, between which, when an imaginary line is drawn, at least one recurving friction ridge within the inner pattern area is cut or touched.