Latent Print Overview

Presentation to the National Commission on Forensic Science

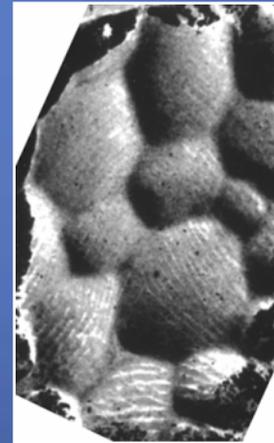## August 27, 2014

Melissa R. Gische

Physical Scientist/Forensic Examiner

FBI Laboratory

Friction Ridge Detail

Known Fingerprints

Latent Fingerprints

Comparison Process
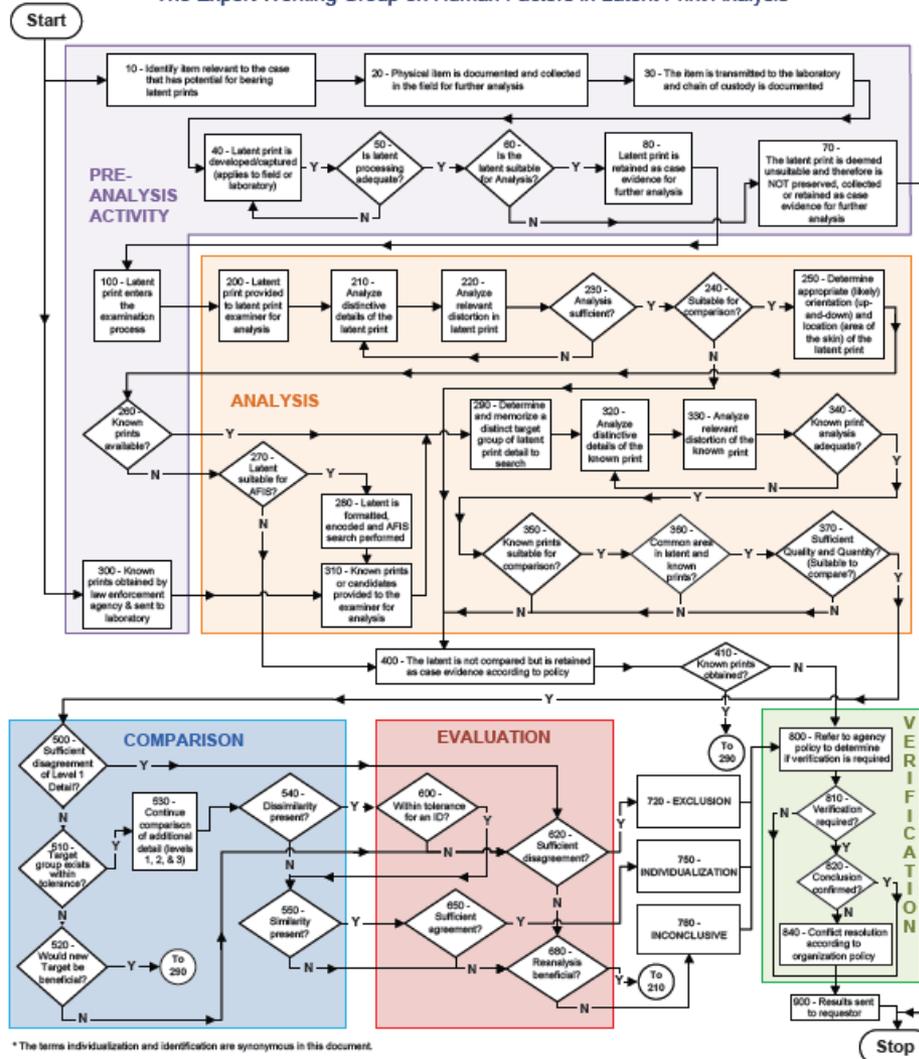
Analysis

Comparison

Evaluation

Verification

ACE-V

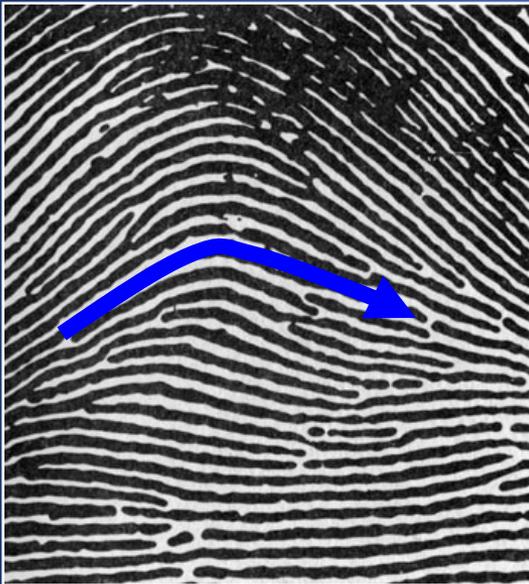The Latent Print Examination Process Map
The Expert Working Group on Human Factors in Latent Print Analysis

- ACE-V defines the steps of the latent print examination process, as detailed in the process map developed by the Working Group:
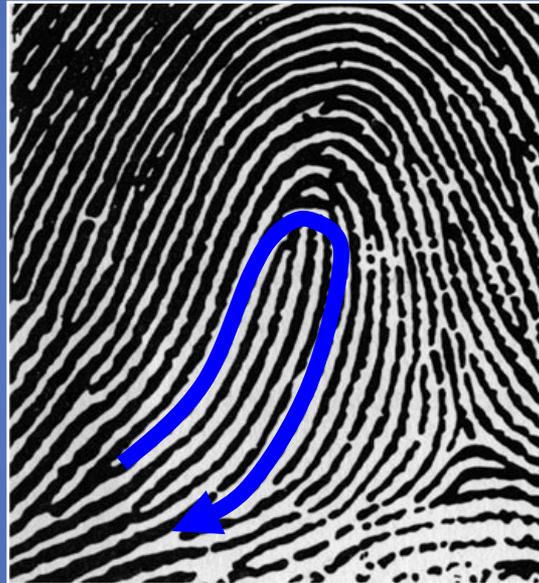 - Analysis
  - Comparison
  - Evaluation
  - Verification

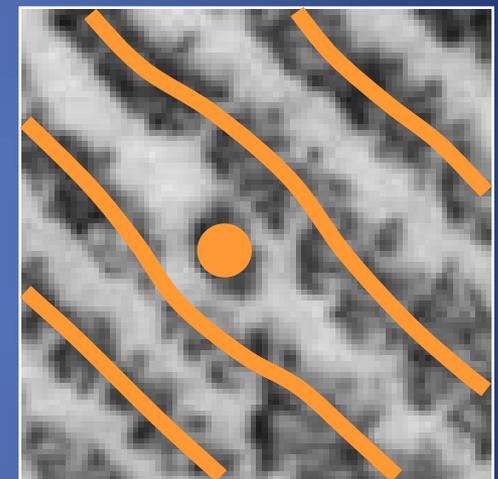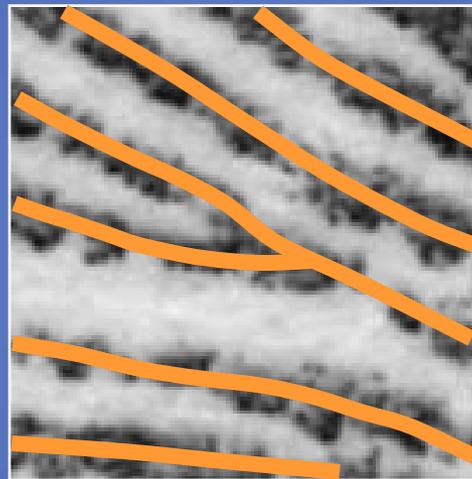# Three Basic Pattern Types

Arch
~5%

Loop
~65%

Whorl
~30%

U.S. Department of Justice, Federal Bureau of Investigation. The Science of Fingerprints. U.S. Government Printing Office, Washington, DC. 1984

Individual Ridge Information

Ending Ridge
~ 55-65%

Continuous Ridge / **Dividing Ridge**
~ 14-26% / ~ 21-36%

Dot
~ 3%

Gutierrez-Redomero E., et al. (2011). Distribution of the Minutiae in the Fingerprints of a Sample of the Spanish Population. *Forensic Science International* 208: 79-90.
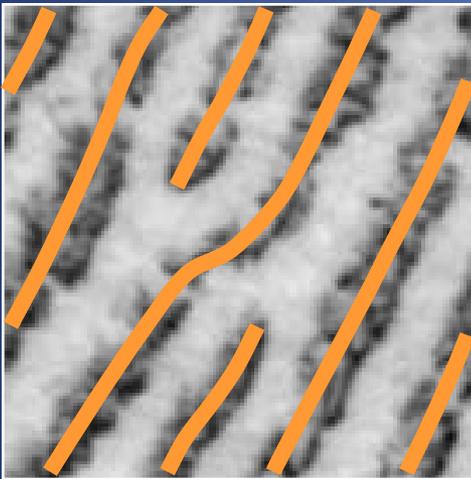
Individual Characteristic Information

- Single characteristics contain multiple types of information
  - Location
  - Type
  - Direction
  - Spatial Relationship
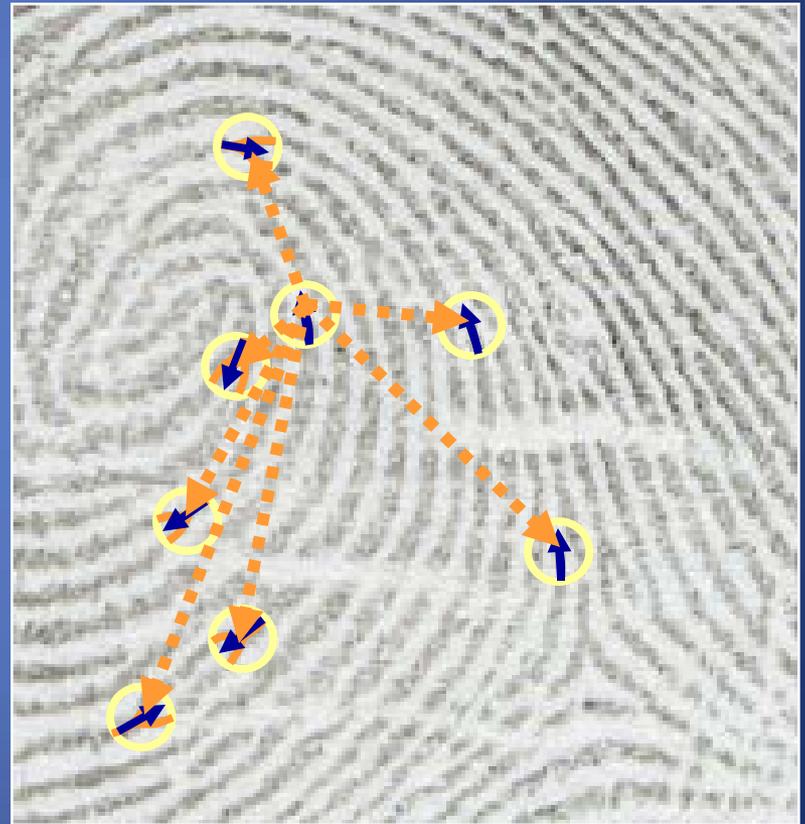
Analysis of Latent Print

Next Generation Identification (NGI) Encoding
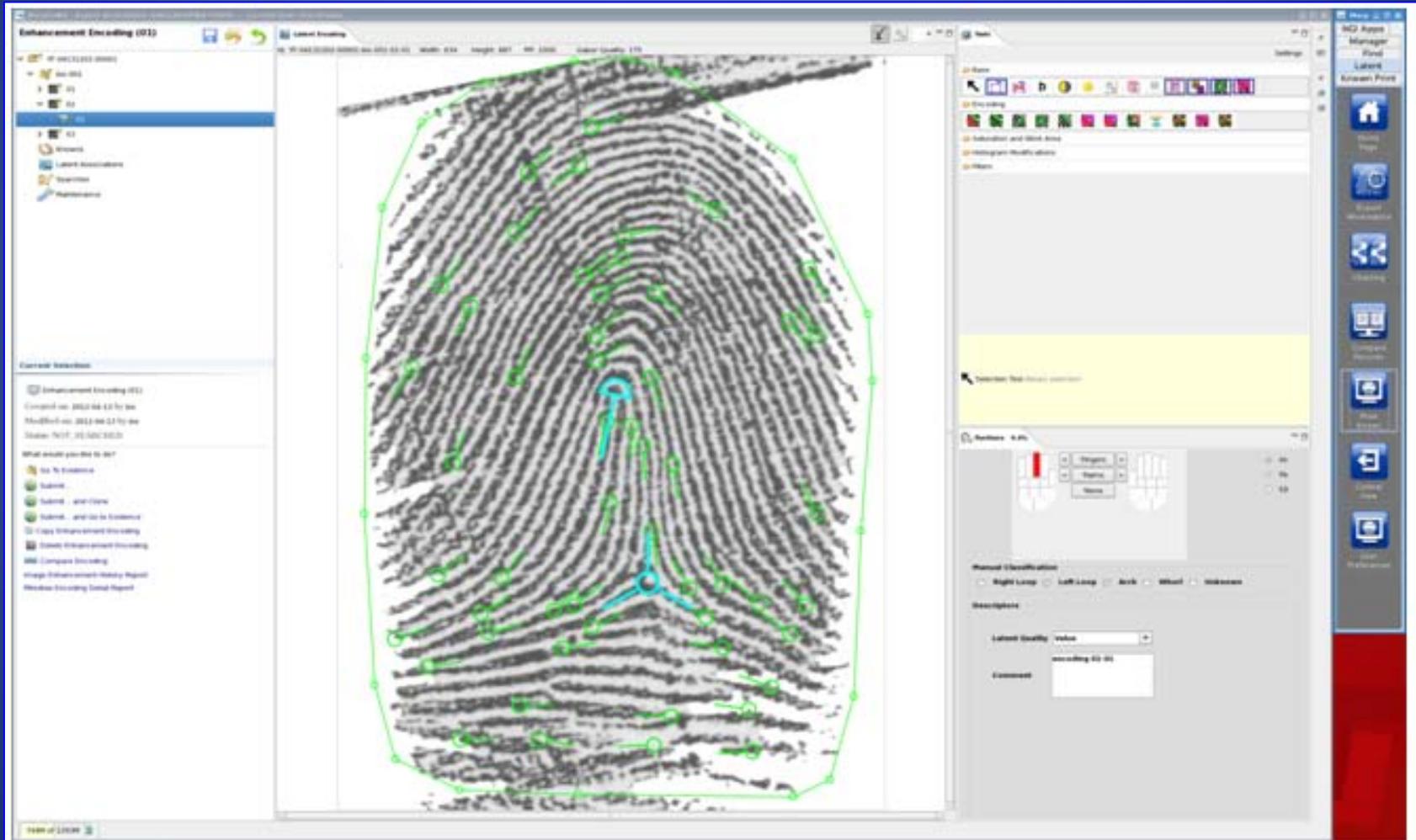
Analysis of Known Prints

Comparison

MOVE TO EVALUATION

Comparison

Comparison

MOVE TO EVALUATION

NGI Comparison & Evaluation Screen

Decision buttons

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Determining Sufficiency

Sufficiency Graph
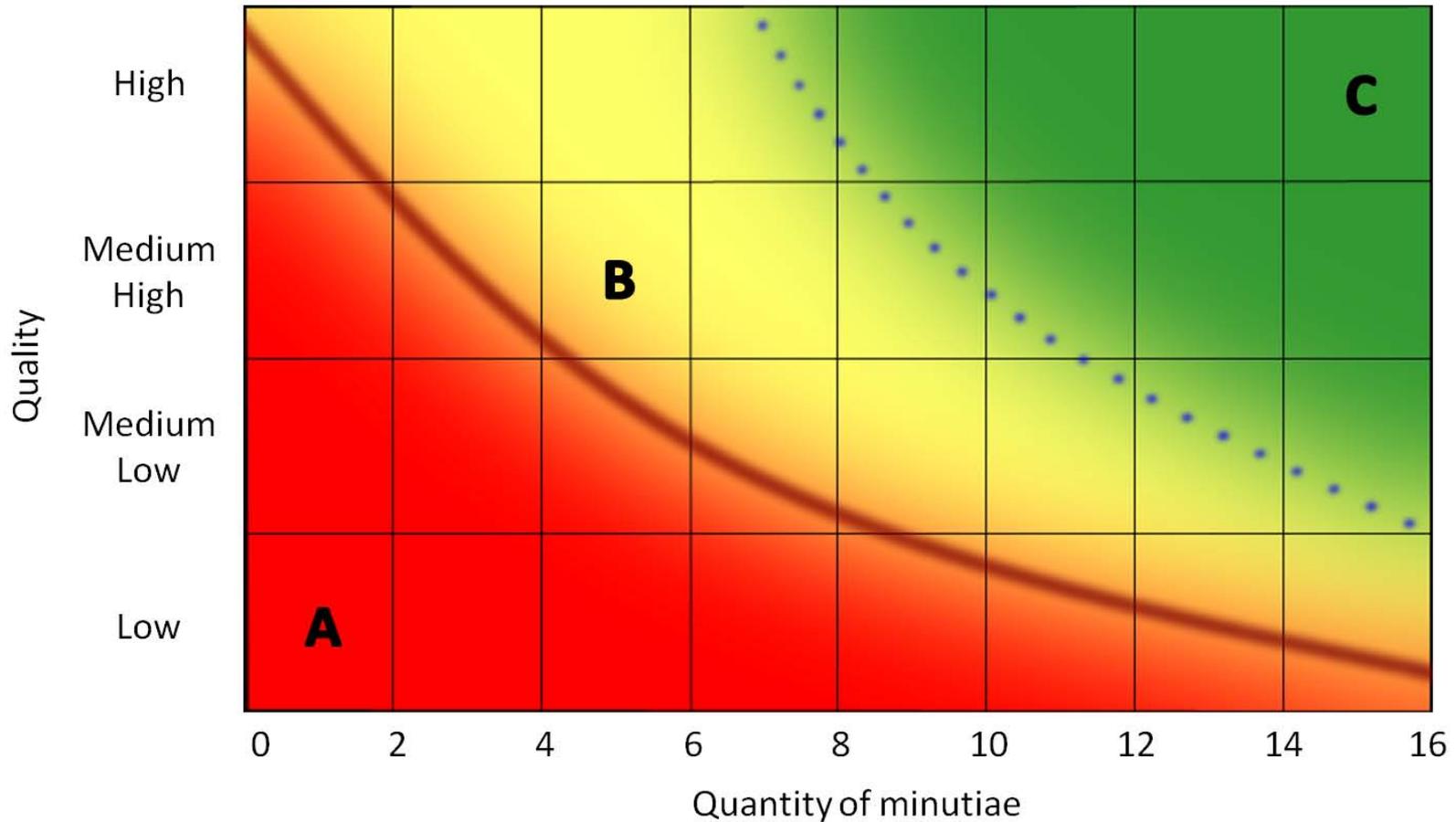
This graph does not suggest or endorse the use of minutiae counts as the sole criteria for a decision threshold
SWGFAST Document #10 Standards for Examining Friction Ridge Impressions and Resulting Conclusions Ver. 2.0

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