

Latent Fingerprints

Evaluation of Latent Fingerprint Technologies (ELFT) Project

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Overview

- Introduction to Latent Fingerprints
- Latent AFIS Problems/Challenges
- ELFT Project Impact and Stakeholders

“Conventional Fingerprints”

Rolls (R)



Rolls (L)



IDENTIX TP600 1259

AL8004228 .LEX004229

Flats
(L,Tbs,R)



Latents Fingerprints (aka "Marks")





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IAD - Image Group

“Conventional” Fingerprints

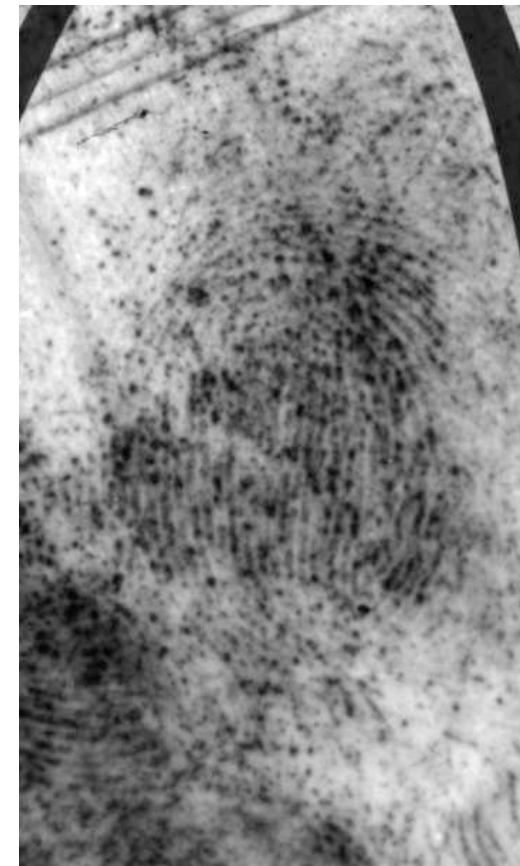
Right thumb (rolled - ink)

Right thumb (flat - ink)



Latent Fingerprint

Right thumb (“lifted” - powder)

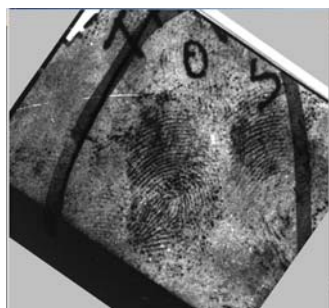


Automated Latent ID Problems?

- It's not very automated...

How Latent Identification works – 1

Latent print

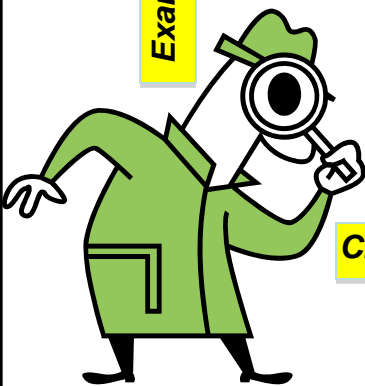
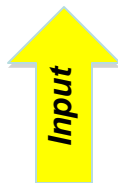
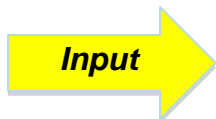


Automated Latent Fingerprint Identification System

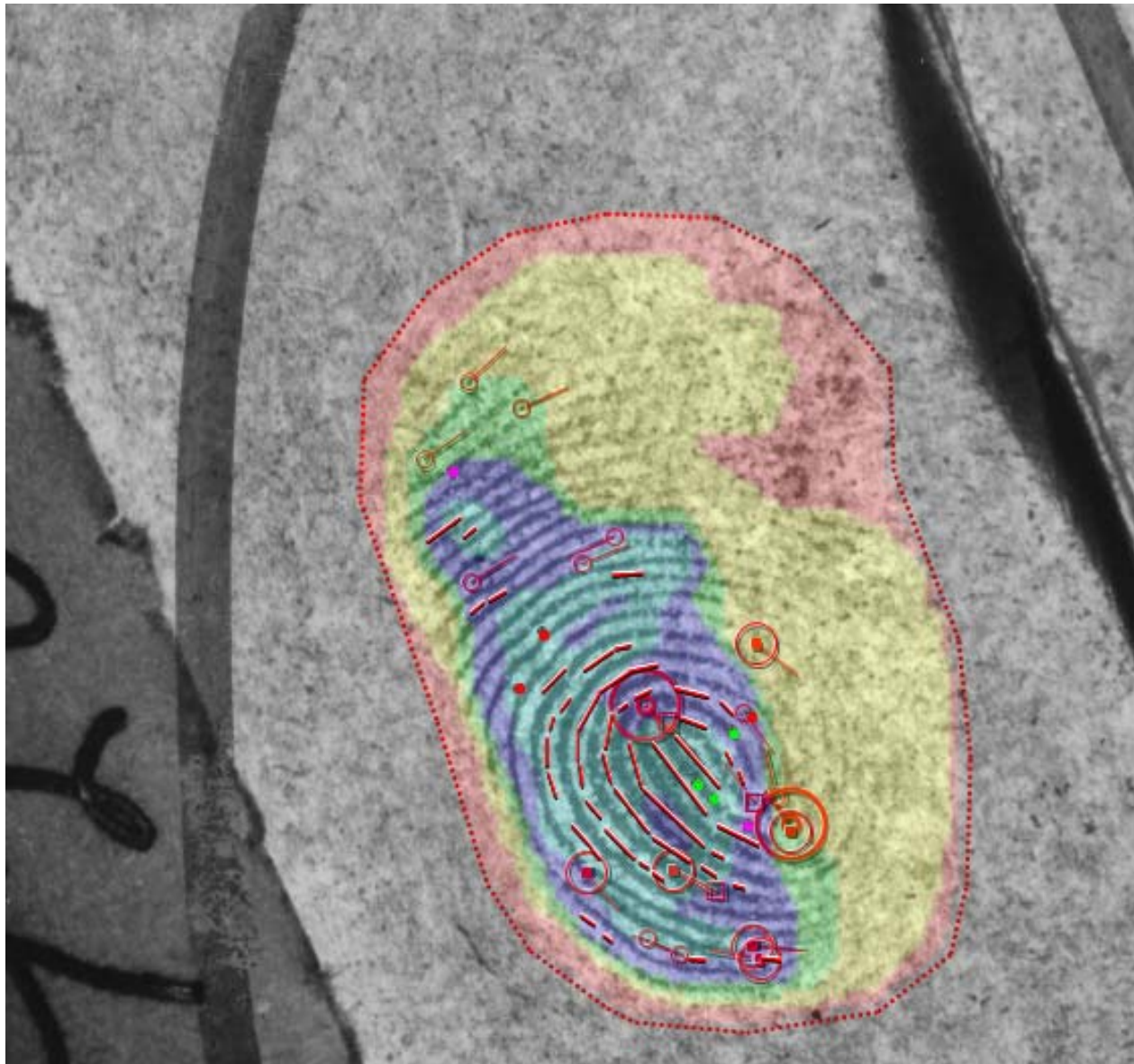


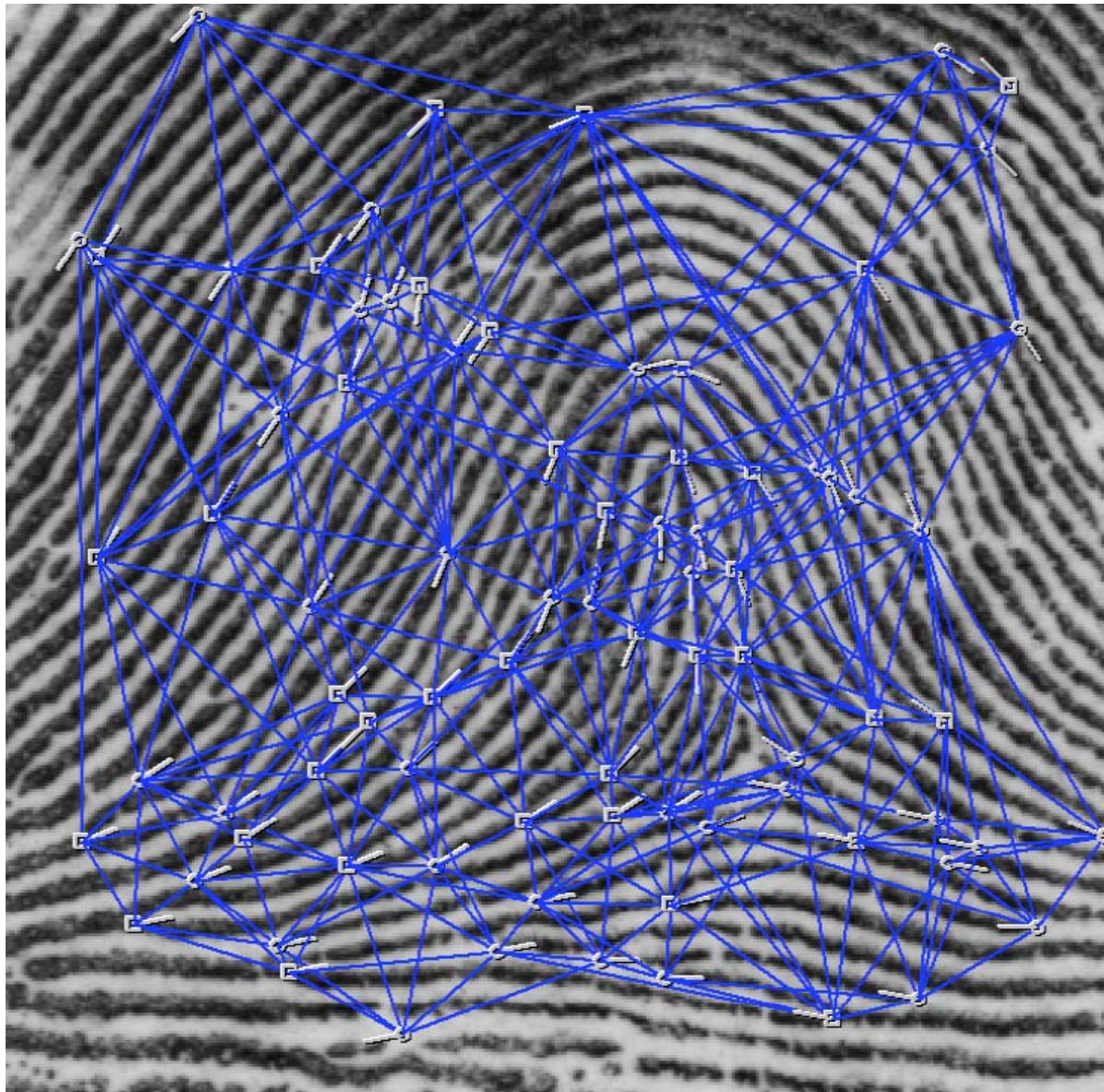
Candidate List

Rank	Subject	Score
1	0731	2903
2	1303	1805
3	3950	1754
...		
20	0121	350



Latent Examiner





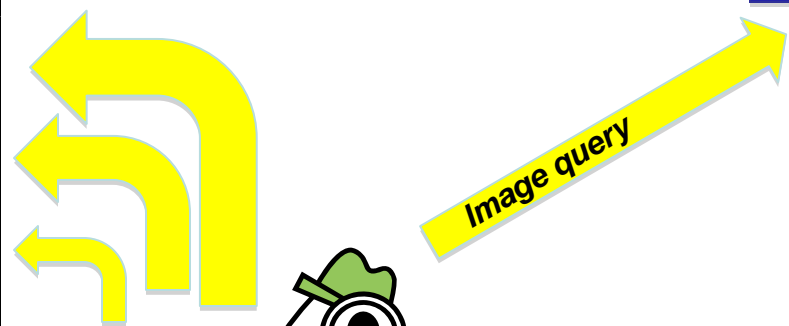
IAD - Image Group

How Latent Identification works – 2

Candidate List

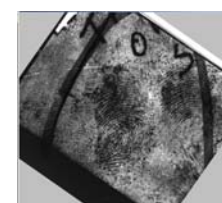
Rank	Subject	Score
1	0731	2903
2	1303	1805
3	3950	1754
...		
20	0121	350

AFIS

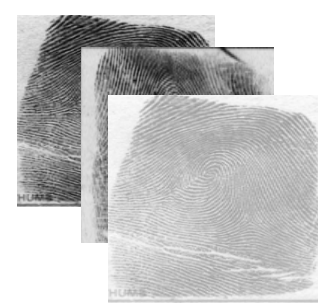
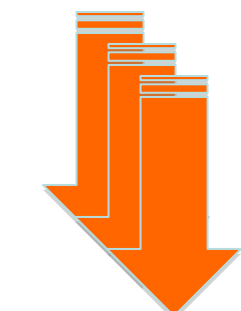


Latent Examiner
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Latent fingerprint

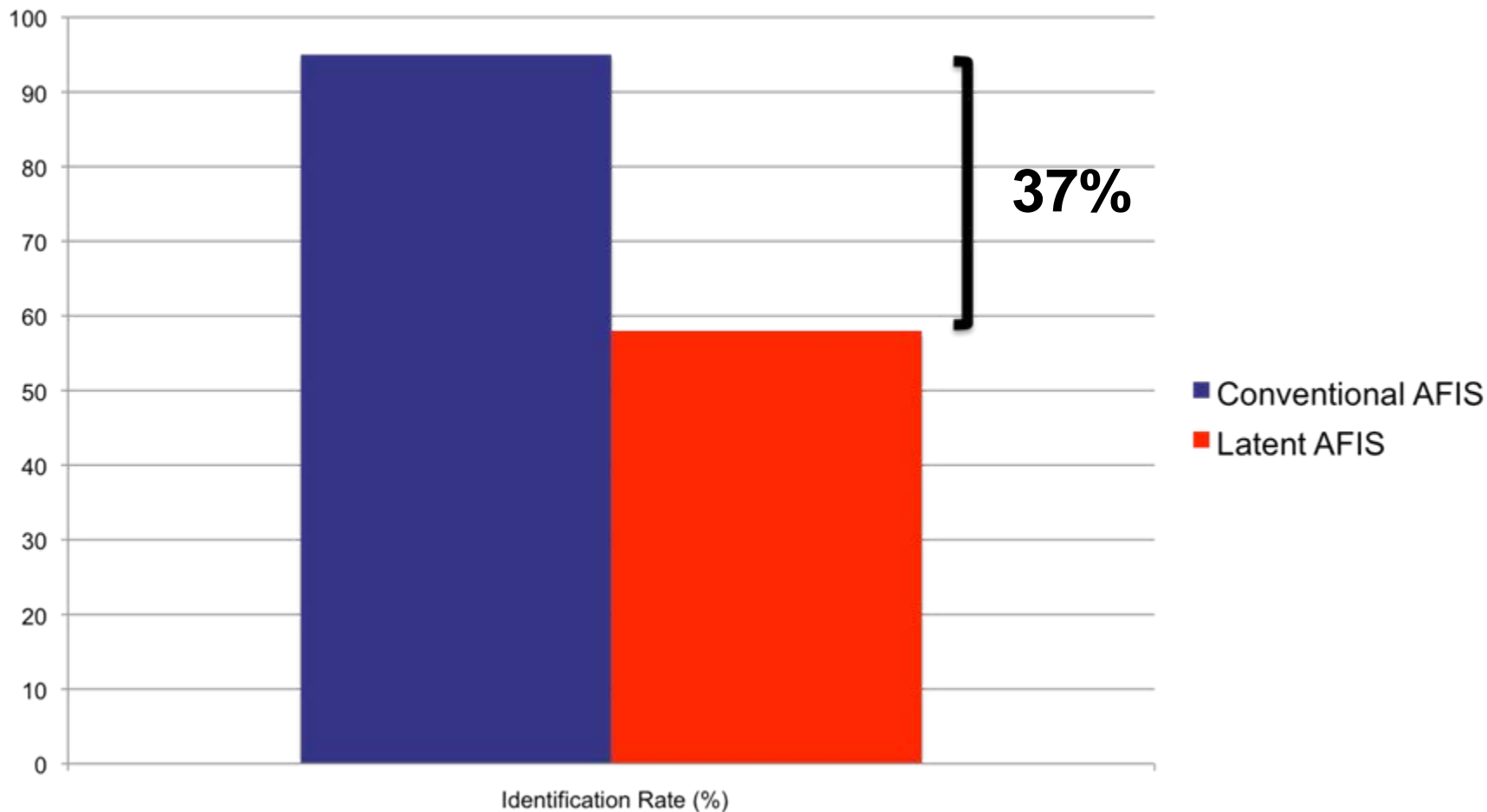


Candidate fingerprint



Automated Latent ID Problems?

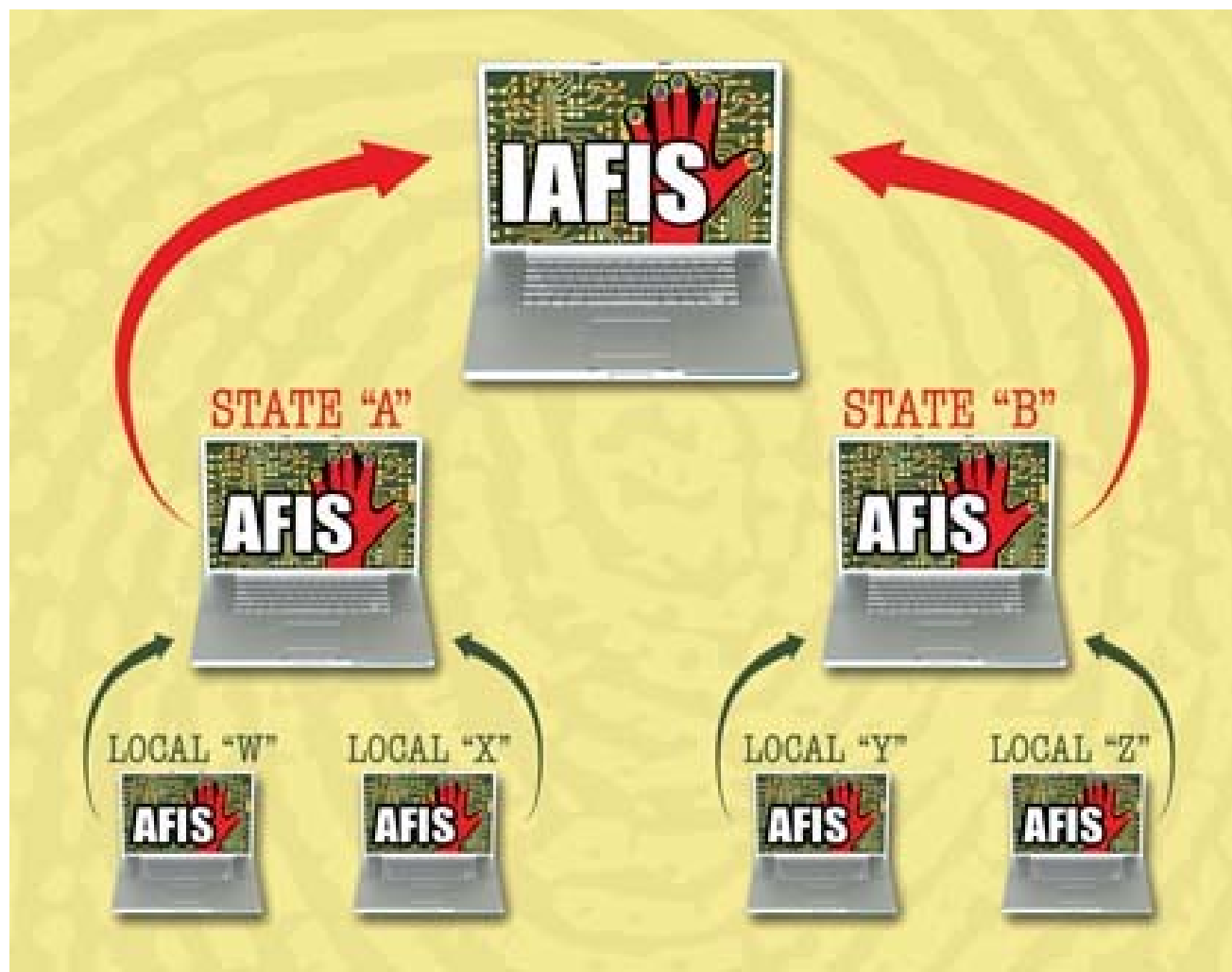
- It's not very automated...
- It's relatively inaccurate



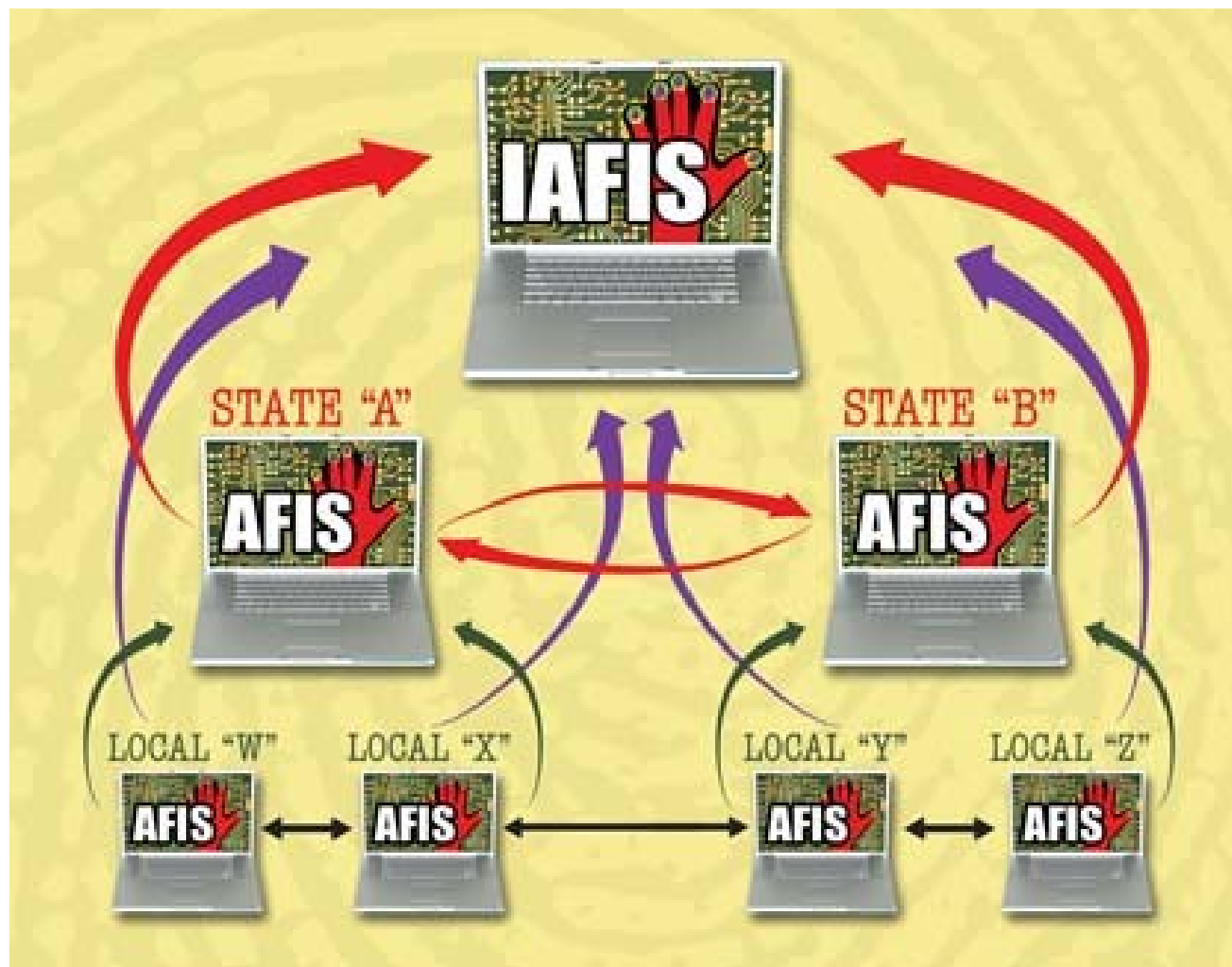
Automated Latent ID Problems?

- **It's not very automated...**
- **It's relatively inaccurate**
- **It's generally non-interoperable**

AFIS Interoperability: Now



AFIS Interoperability: Future



What is ELFT ?

- I. The world's only open technology evaluation series focused on *automated* latent fingerprint identification systems (AFIS)
- II. An interactive effort between NIST and the latent fingerprint software community to improve accuracy and interoperability, and reduce reliance on human examiners

ELFT Impacts

- **Closing performance gap with conventional print AFIS**
- **“Lights out” latent matchers and latent quality metrics**
 - **Quickly launch more searches (reducing backlog)**
 - **Enabling Mobile Biometric applications & devices**
 - **Examiners free to focus on “difficult” latents**
 - **Level-of-effort directed manual processing**
- **Standardized interoperable latent feature sets**
 - **Increased use of cross-jurisdictional searches**
 - **De-coupling of latent workstation from AFIS server**

Stakeholders

- **Latent AFIS technology Users (Gov't & LE):**
 - “Which system is best for my application?”
 - “How to optimize performance & workload?”
- **Latent AFIS technology Developers:**
 - “Which algorithms work best?”
 - “Where to focus my development time?”
- **General Public:**
 - “Keep criminals & terrorists off the streets!”

For More Information...

Web → <http://fingerprint.nist.gov/latent>

Email → latent@nist.gov