

Latent Fingerprint AFIS Interoperability

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The National Research Council's report, *Strengthening Forensic Science in the United States: A Path Forward* (Recommendation 12) identified the need

“to launch a new broad-based effort to achieve nationwide fingerprint data interoperability.”

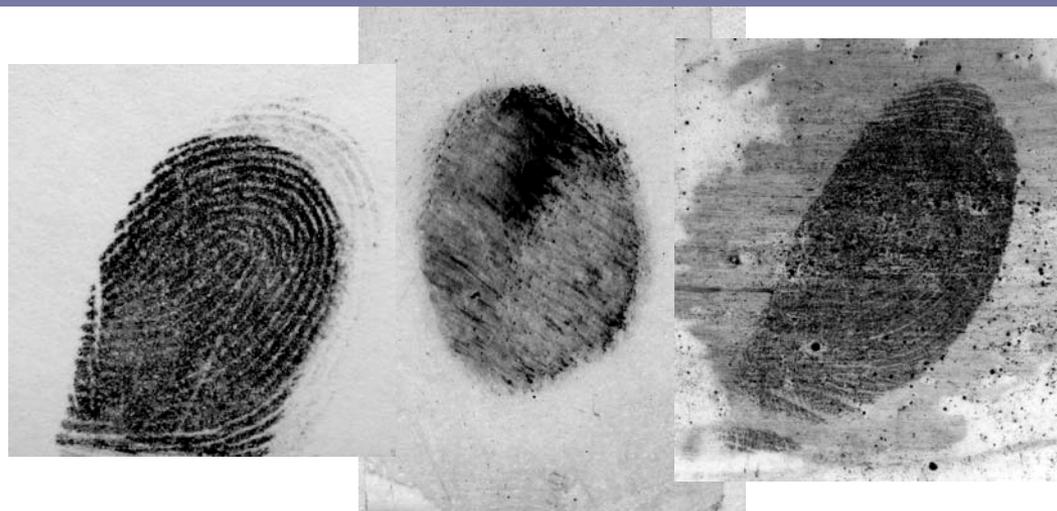
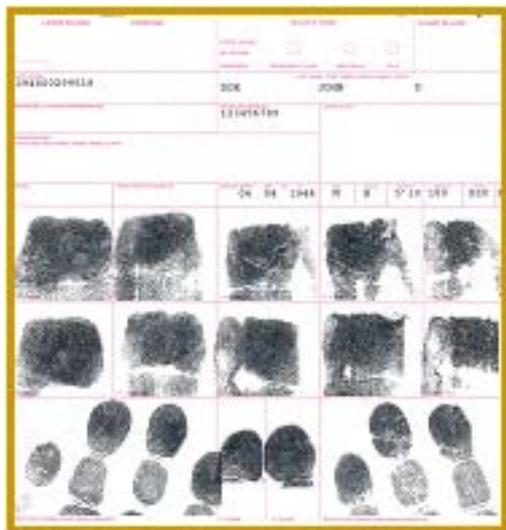
Federalism and AFIS Interoperability

- In the US, there are hundreds of latent fingerprint identification systems:
 - 35 state or multi-state AFISs
 - Hundreds of local AFIS
 - FBI Next Generation Identification (NGI)
 - DoD ABIS
 - DHS IDENT

- Subjects and prints vary among systems
 - State systems may or may not be supersets of local systems
 - NGI is not a superset of state systems

- AFIS interoperability is not an issue in countries with a single national system (e.g. UK, Australia)

Latent vs 10-print AFIS



“10-print” fingerprints

- From arrests and background checks
- Automated matching; little or no human intervention
- Interoperability is not a major concern

Latent prints

- From crime scenes
- Human examiners needed to search AFIS and make conclusions from AFIS responses
- Variety of impediments to interoperability

Defining Interoperability

“The capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little to no knowledge of the unique characteristics of those units.” - **International Organization for Standardization**

“The ability of two or more networks, systems, devices, applications, or components to work seamlessly and electronically without any special effort to share information on demand, when needed, and as authorized without loss of accuracy using standardized encoding.” - **SoFS AFIS Interoperability Task Force**

“Latent interoperability is the ability to exchange and process latent print data between two or more systems (similar or dissimilar), correctly and without loss of accuracy, and without user intervention by the recipient.” - **NIST/NIJ Latent Print AFIS Interoperability Working Group**

AFIS systems are considered interoperable if fingerprint data and candidate lists can be shared seamlessly and accurately across jurisdictions.

What does inadequate interoperability cost?

Washington Post, 17 November 2003

Preventing Future Sprees

As part of homeland security, many people in and out of government are defending sweeping and probably unconstitutional new powers of arrest and detention for federal law enforcement.

They are touting unwise delegations of federal powers to state and local police officers. But as the sniper case demonstrates, improvement of the coordination of law enforcement resources is vital to our security from terrorists and other criminals.

The fingerprints of Lee Boyd Malvo, now on trial for one of the sniper shootings, were in the FBI's database long before he left a fingerprint at the scene of the brutal robbery and murder in Montgomery, Ala., 11 days prior to the first Washington-area killing.

But Alabama did not send that fingerprint to the FBI until a month later, and then only because in a bizarre twist in the case, Mr. Malvo allegedly telephoned a hotline and suggested

that investigators contact Alabama authorities about the earlier crime.

Alabama is one of 15 states that have not installed a high-tech connection to the FBI's fingerprint system, which contains 45 million fingerprints. Law enforcement experts say there is no reason why states should not want the best possible connections to the FBI fingerprint system, especially when the federal government pays almost all the costs.

Law enforcement is only as strong as its weakest link. Thirty-five states are now fully linked to this extraordinary FBI resource. The other 15 states should be too. Rarely has there been such a vivid practical example of turning speculation over whether a serious crime could have been prevented into proof that it would have been prevented.

EDWARD M. KENNEDY
U.S. Senator (D-Mass.)
Washington

We cannot assess the true cost of the lack of interoperability — we have no way of knowing how many identifications could have been made, how many crimes could have been solved

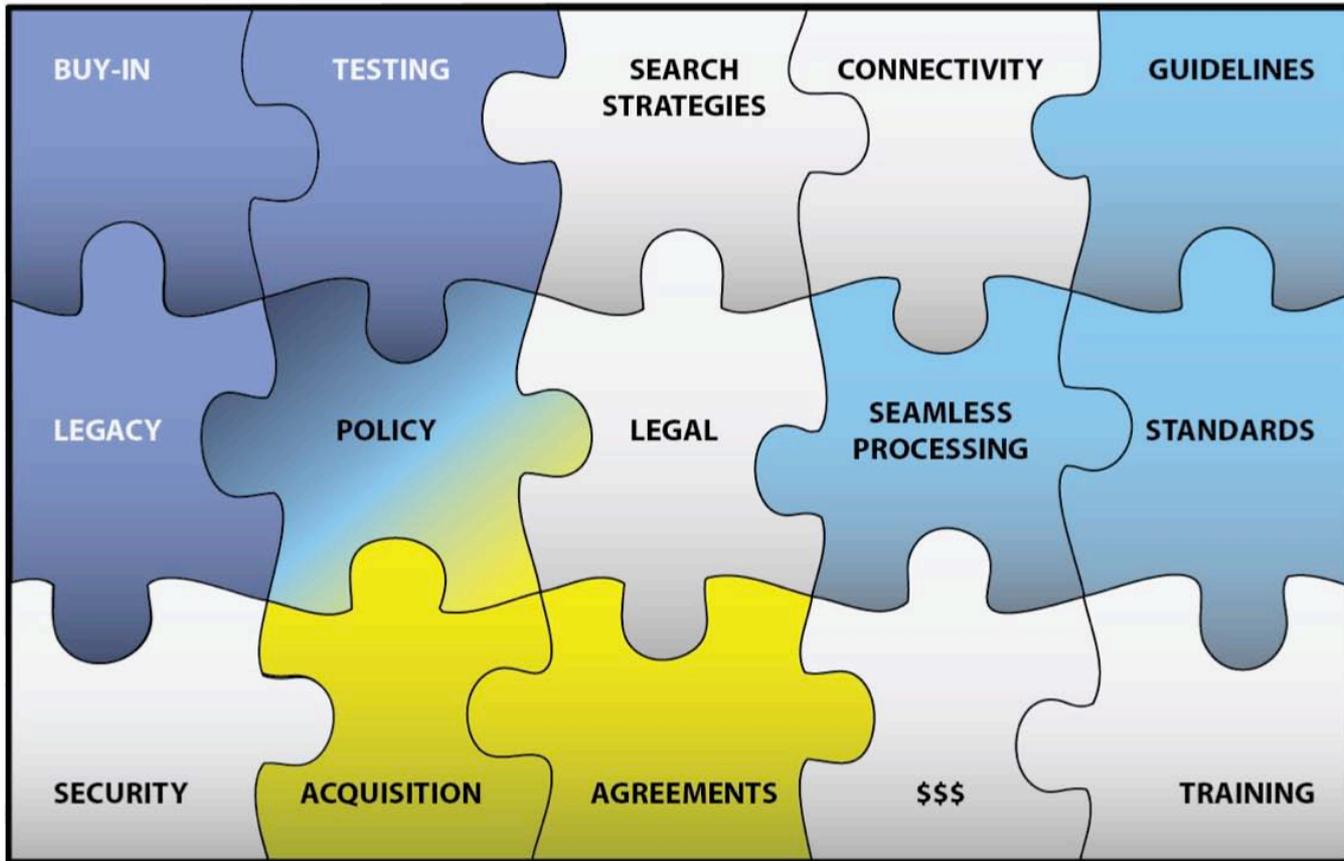
- In 2012, 53.2% of violent crimes in the US went unsolved

The only examples we have are anecdotal: notable as exceptions

- 2002 DC sniper
- Late 1990s, Resendez-Ramirez
- In 2014, King County (WA) had to get an exemption to rerun latents from 302 cold homicide cases against NGI
 - 115 latents from 84 cases identified 90 new subjects

Different aspects of latent interoperability

Latent AFIS Interoperability



Organizations addressing latent interoperability

Agencies

- FBI
- NIST
 - Information Technology Laboratory
 - Office of Law Enforcement Standards / Office of Special Programs
- NIJ

Multi-agency Working Groups

- Committee to Define an Extended Fingerprint Feature Set (sponsored by NIST/FBI, 2005-2011)
- Latent Print Interoperability Working Group (sponsored by NIST/NIJ, 2009-2011)
- AFIS Interoperability Task Force (sponsored by Subcommittee on Forensic Science, 2011-present)

Interoperability Status

- Great progress on standardization of formats
 - Extended Feature Set (EFS), Latent Interoperability Transmission Specification (LITS), FBI Electronic Biometric Transmission Specification (EBTS)
 - Evaluations by NIST show effectiveness of interoperable specifications
 - If systems are compliant, they are interoperable with each other and with NGI
- Improved capabilities lessen the technical barriers to interoperability
 - Higher accuracy, much more effective image-only searches, simpler feature sets
- NIST/NIJ have developed
 - Writing guides for MOUs (Memoranda of Understanding)
 - Writing guides for RFPs (Requests for Proposal)
 - Written documents and online training tools
- Implementation of interoperable systems
 - Recent AFIS acquisitions with EFS/LITS written into requirements
 - E.g. Western Identification Network (8-state AFIS); Orange County CA
 - Recent AFIS acquisitions without interoperability required
 - E.g. San Francisco, San Diego

Addressing latent interoperability

- The problem is no longer technical
- The problem is getting agencies to
 - Require that their systems are compliant with interoperable standards
 - Reduce policy barriers (real and perceived)
 - Take advantage of the capabilities that are already available to them

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