



# NATIONAL COMMISSION ON FORENSIC SCIENCE

**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce

## **Directive Recommendation: Automated Fingerprint Information Systems (AFIS) Interoperability**

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### **Subcommittee**

Interim Solutions

### **Commission Action**

On August 11, 2015, the Commission voted unanimously to adopt this work product.

### **Type of Work Product**

Policy Recommendation.

### **Recommendation**

The US Attorney General should support, recommend and fund interoperability of Automated Fingerprint Identification Systems (AFIS) as a national effort to improve public safety.

### **Background**

For over a century, the criminal justice system has relied on fingerprint technology to support public safety throughout the world to identify individuals suspected in criminal and terrorist events, among other uses. During a criminal investigation, latent fingerprints located, developed, and recovered from a crime scene are compared with fingerprint records of known individuals. Latent fingerprints from unknown sources, whether left behind as complete or partial fingerprints, can be searched with today's technology in an automated, electronic systems, called AFIS, which use image recognition algorithms that produce a list of potential candidates that share similar fingerprint features.

Since the 1970s, AFIS system design has been left to hardware and software vendors resulting in differing approaches to algorithm coding in recognizing images. The varying approaches to algorithm coding developed by vendors through the free market has resulted in incompatible proprietary systems. This lack of "interoperability" has created sophisticated, stand-alone AFIS systems that cannot share data.

When true interoperability is achieved, AFIS systems will have technical compatibility standards, interagency network connectivity, and quality assurance within and between systems. The lack of interoperability has not been hampered for technical reasons; it has been policy and practice that have prevented true interoperability.

### **Implementation Recommendations**

1. Standards for Interoperability

- a. Require that any AFIS system that is acquired using federal funding meet interoperability standards, such as the American National Standards Institute (ANSI) - National Institute of Standards and Technology (NIST) - Information Technology Laboratory standard (ANSI/NIST-ITL 1-2011 Update: 2013) using the Extended Feature Set (EFS), the Latent Interoperability Transmission Specification (LITS), and/or any interoperability standards developed in the future.
  - b. Make sufficient funds available to support procurement or upgrades of interoperable AFIS systems so that true interoperability can be achieved by October 1, 2020.
  - c. Recommend that future state and local AFIS systems consider, and Federal AFIS systems require, collection and reporting of data in a standard format (to be defined by the Organization of Scientific Area Committees (OSAC))
2. Interagency Connectivity
    - a. Review and revise policies to ease restrictions to state and local agencies' access to the Federal Bureau of Investigation's Next Generation Identification System (FBI NGI).
    - b. Direct that studies or pilot programs be conducted to assess the value of giving more agencies (whether federal, state or local) direct access to Department of Defense and Department of Homeland Security fingerprint databases.
  3. Quality Assurance  
Develop conformance testing criteria in collaboration with OSAC to verify AFIS system compliance to standards and make that a criterion for interagency connectivity.

### **Implementation Strategy**

The US Attorney General should support, recommend, and fund interoperability through collaboration, education, and outreach. The US Attorney General, with guidance from the National Commission on Forensic Science as well as the Organization of Scientific Area Committees, should ensure that decision makers and practitioners are aware of the importance of AFIS interoperability and how to achieve it, including its potential impact on privacy and state's rights issues. This should include proper governance, funding incentives, and the assignment of an appropriate DOJ entity for implementation responsibility.

### **References:**

1. National Science and Technology Council, Subcommittee on Forensic Science, "Achieving Interoperability for Latent Fingerprint Identification in the United States," April 2015  
[https://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/latent\\_fingerprint\\_report\\_may\\_2015.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/latent_fingerprint_report_may_2015.pdf)
2. National Institute of Justice, "Latent Fingerprint Interoperability Survey: A National Study of Automated Fingerprint Information Systems (AFIS) Maintained by Law Enforcement Agencies," August 2014  
<http://www.nij.gov/topics/forensics/evidence/impression/pages/survey.aspx>