

Biometric Industry Perspective on PIV

ANSI/NIST Fingerprint Standard
Update Workshop

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International Biometric Industry Association

- Non-profit trade association founded in 1998
- Advances the collective interests of the biometric industry worldwide
- Corporate members include leading biometric manufacturers and solution providers



FIPS 201

- Implements HSPD-12 to provide Personal Identity Verification (PIV) of Federal employees and contractors
- SP 800-76 is a companion to FIPS 201 and specifies interfaces and data formats of biometric information

SP800-76 is currently in draft form

SP 800-76

- Describes preparation of biometric data suitable for transmission to FBI for background checks
- Provides requirements for formatting of biometric data on the PIV card

Primary design objective is interoperability

Biometrics Industry Perspective

- Use of fingerprint images for background checks is appropriate
- Use of fingerprint images for on-card storage is not appropriate

IBIA recommends the use of standards-based templates for on-card storage

Concerns Related to On-Card Fingerprint Images

- Limited storage space
- Performance impact
- Privacy issues

Storage Space

- 64K smart card has insufficient space to store images plus required applications and files at some agencies
- Two WSQ compressed fingerprint images require about 16K vs. 1.6K for templates
- DoD Common Access Card data model does not have space to store images
- 128K smart card that is FIPS 140-2 certified is at least two years away

Performance Impact

- Smart cards and access control readers do not have sufficient data transfer bandwidth and processing power to support authentication based on fingerprint images
 - Particular concern for physical access control
 - No commercially available PAC readers that read and match fingerprint images
- Timing estimates range from 8 to 50 seconds
 - PAC desired entry speed is 2 seconds.
- Rapid authentication is an HSPD-12 requirement

Privacy Concerns

- There are significant privacy risks to storing fingerprint images on the PIV card
- Original images can be easily manipulated and used for fraudulent purposes
- Templates provide more protection since they cannot be easily reverse-engineered to reveal the detailed fingerprint pattern
- Using images reduces security and raises privacy concerns

Template Interoperability

- ANSI/INCITS 358 provides a finger minutiae template format standard for data interchange
- Template interoperability is not yet established in widespread deployments
- Two limited prototype projects provide anecdotal evidence that template interoperability is being achieved
 - TSA Transportation Worker Identification Credential program
 - ILO Seafarer's Identification Document
- NIST has large-scale laboratory test underway to demonstrate template interoperability (MINEX04)
 - First results in early '06

Other PIV Considerations

- PIV guidance should support a concept of both reference and operational biometrics
- Agencies should be free to implement alternative biometrics in conjunction with the PIV card where appropriate
 - PIV acts as pointer to separate biometric authentication subsystem
 - Could utilize hand geometry, iris, etc.

Conclusions and Recommendations

- Fingerprint images are not an appropriate data format for on-card transaction authentication
- Industry will respond to the challenge to make template interoperability a reality
 - 14 companies are participating in MINEX04
- Delay final publication of SP 800-76 until further data confirms that template interoperability is achievable
- Publish PIV guidance that describes use of alternative biometrics

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