Fingerprint Data Exchange

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Agenda

♦ Driving Needs
♦ History of Standards
♦ Use of Standards
♦ Challenge
Driving Needs

- Initially paper forms were sent from local police to state ID bureaus and then on to FBI
- Rapid processing & response required electronic transactions (1990s)
- International exchange required common paper format - 1995 Interpol effort abandoned for electronic exchange
History of Standards

♦ NIST view:

- Five Automated Fingerprint Identification Systems (AFIS) deployed at FBI by 1981
- State, local, & federal agencies acquired AFIS
- Differences in minutiae metrics
- Live-scan technology developed in the 80s
- Process fingerprints from dissimilar systems
- Common fingerprint data interchange standard to eliminate need for exchanging physical evidence
- Required for communication with the FBI’s IAFIS
History of Standards

- Data Format for the Interchange of Fingerprint Information
  - ANSI/NBS-ICST 1-1986: Minutiae-Based
  - ANSI/NIST-CSL 1-1993: Image-Based
  - ANSI/NIST-ITL 1a-1997: Facial & SMT
  - ANSI/NIST-ITL 1-2000: Higher Resolution
  - ANSI/NIST-ITL 1-2007: Irises, etc.
  - Working on XML version
Use of Standards

♦ ANSI/NIST Standard requires domain of interest implementation document:
  n FBI EFTS now EBTS (1994)
  n RCMP NIST-NPS-ICD
  n Interpol EFTS - based on UK Implementation
  n DoD EBTS - based on Iraqi National EFTS
  n State level EFTS documents

♦ These documents select:
  n Acceptable record types (e.g., gray scale 500 ppi images)
  n Compression technique
  n Textual data (biographic and demographic)
Use of Standards

✦ Use of EFTS first demonstrated in 1995 between Boston PD and FBI - pre IAFIS
✦ Between disparate vendor systems
   ✔️ IAI Cross-Jurisdictional Demonstrations
     ■ 1997 across Internet between factories
     ■ 1998 across NELETS between operational sites
✦ All demos were image based
Use of Standards

- NIST tested exchange of minutiae in 2006 to see the impact on reliability and accuracy (MINEX)
  - Not for Criminal Justice applications and definitely not for latents
Challenge

- Transactions with 1,000 ppi images are large even when compressed
  - Need images to perform verifications (other than lights out)
- FBI’s ULW permits exchange of latents at the minutiae level
  - Recommended that image accompany transaction
  - No test have been run to compare native performance to ULW submittals
Questions?