

DHS US-VISIT

Importance of Image Quality to US-VISIT and IDENT

Diane Stephens (US-VISIT)

***NIST Image Quality Workshop
November 7 and 8, 2007***



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*J. Faircloth/NIST XML Data Exchange Standards
Workshop/Sept. 2007*

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Keeping America's Doors Open and Our Nation Secure

US-VISIT Mission

Advancing the security of the United States and worldwide travel through information sharing and biometric solutions for identity management.

Biometrics-based technological solutions from US-VISIT enable the U.S. government to:

- Enhance the security of our citizens and visitors
- Facilitate legitimate travel and trade
- Ensure the integrity of our immigration system
- Protect the privacy of our visitors



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US-VISIT Overview

US-VISIT's services assist decision-makers across federal, state and local government agencies identify, mitigate and eliminate security risks.



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IDENT: “Automated Biometric Identification System”



Border Management



ENFORCEMENT

Highlights

- 74 Million People
- 225,000 Transactions/Day Capacity (current)
- Over 125 Million Transactions Since Jan, 2004
- Over 45,000 Wanted Criminals Identified
- NIST Certified Accuracy
- Matcher Power of over 160 Million Matches/Sec
- Inputs From Over:
 - 15,000 Users
 - 5,000 Work Stations
 - Over 200 Overseas Consular Posts
- Automated Sharing of fingerprints with FBI IAFIS



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Applications & Fingerprint Capture Types

Application	Purpose	Fingerprint Types
US-VISIT	Entry (US Ports of Entry - POEs)	Two Print Flat Ten Print Initial Deployment (beginning Nov 07)
Department of State	Identity Check for Visa Issuance, Border Crossing Card	Two Print Flat Ten Print Flat
Enforcement	Border Patrol & Inspections Various Law Enforcement Agencies	Two Print Flat Live Scan Rolled Inked Rolled Latent
Customs and Immigration Services	Identity Check for Asylum and Immigration Benefits	Live Scan Flat Live Scan Rolled prints
Credentialing	Identity Check of Credential Holders (GES)	Ten Print Flat
Mona Pass US Coast Guard (Mobile)	Coast Guard Interdictions	Two Print Flat



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IDENT Capture Devices

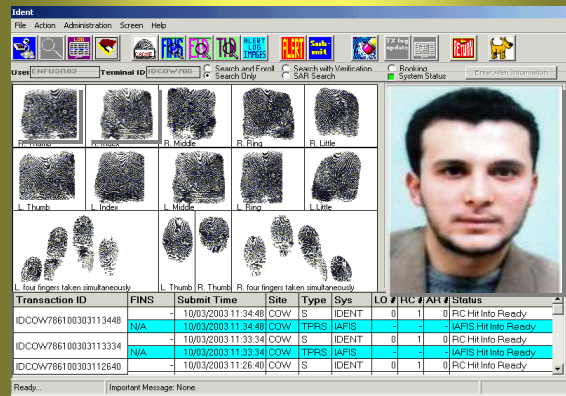
10-print Rolled Devices



IDENTIX TP3000



CrossMatch ID1000



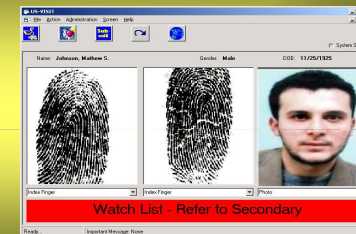
IDENT User Display (IDENT/IAFIS)



Single Finger Flat Device



Cross Match Verifier 300



IDENT User Display (Primary)

10-print Identification Flat Device



Cross Match Guardian



Identix ED 4100 Scanner



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Biometric Quality Challenges faced by US-VISIT

- Maintain/Improve Biometric Quality across all existing/emerging Operational environments
 - Growing Gallery and Search Transaction Volume
 - 2 Print to 10 Print Migration
 - Unattended operational mode
 - Environmental Impacts
 - Habituation/Non Habituation Impacts
 - Quality Control/Processing Throughput tradeoffs
 - Improved Facial Image Capture



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Image Quality Assurance Process

Capture Client

Operator Training



Auto Capture

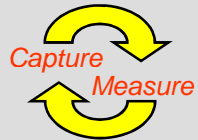


Image Quality Feedback Enhanced GUI For Capture



QA Process

Optimize Fingerprint Capture

- Image Quality Monitoring

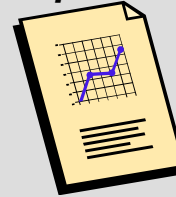


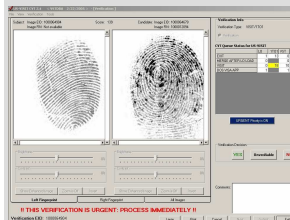
Image Quality Task Force Studies

- Identify Problem
- Correct Problem



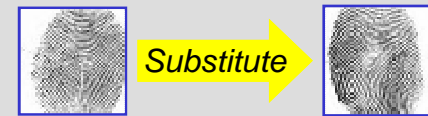
Biometric Support Center

- Feedback from Examiners

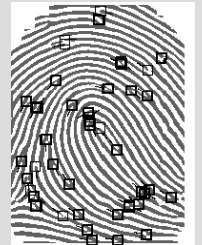


Backend Process

Use of Repeat Visitor Data to Improve Quality : "Best Prints Substitution"



Optimized Image Enhancement and Feature Extraction of Images Prior to Matching.



Use of Advanced Matching Algorithms for Poor Quality Prints



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Fingerprint Quality Monitoring

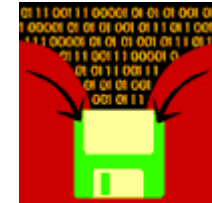
Enforcement

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DOS/Bio Visa

CIS

Application



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All Sites in Application



IQ Reports



All Terminals in the Selected Site



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Challenges to Biometric Industry

- q **Real Time Fingerprint Quality Check and Feedback**
 - o **Mitigate capture quality-capture time tradeoffs**
- q **Interoperability of Multiple Vendor's Image Quality Assessment Algorithms**
- q **Conformance to Image Quality Scoring Standards (e.g. 0-100) for interoperability**
- q **Improved Quality Facial Image Capture**
 - o **In real world uncontrolled lighting and background environments**



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DHS Road Map for the Future

- q **Implement DHS Best Capture Practices**
 - o **Ensure best quality fingerprint and face capture**
- q **Adopt Biometric Capture Standards**
 - o **Fast scanner/camera interchange capability**
 - o **Rapid Biometric capture technology refresh**
- q **Implement Multiple Biometric Fusion**
- q **10-Print Fingerprint Interoperability with other agencies (e.g. IAFIS) including International**
- q **Enhanced Latent Matching**



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