DHS US-VISIT

Importance of Image Quality to US-VISIT and IDENT

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NIST Image Quality Workshop
November 7 and 8, 2007
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
US-VISIT Overview

US-VISIT's services assist decision-makers across federal, state and local government agencies identify, mitigate and eliminate security risks.
**IDENT:** “Automated Biometric Identification System”

**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
## Applications & Fingerprint Capture Types

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<th>Application</th>
<th>Purpose</th>
<th>Fingerprint Types</th>
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<td>US-VISIT</td>
<td>Entry (US Ports of Entry - POEs)</td>
<td>Two Print Flat</td>
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<td>Ten Print Initial Deployment (beginning Nov 07)</td>
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<td>Department of State</td>
<td>Identity Check for Visa Issuance, Border Crossing Card</td>
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<td>Border Patrol &amp; Inspections Various Law Enforcement Agencies</td>
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<td>Live Scan Rolled</td>
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<td>Inked Rolled</td>
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<td>Live Scan Rolled prints</td>
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<td>Credentialing</td>
<td>Identity Check of Credential Holders (GES)</td>
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<td>Mona Pass US Coast Guard (Mobile)</td>
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IDENT Capture Devices

10-print Rolled Devices
- IDENTIX TP3000
- CrossMatch ID1000

Single Finger Flat Device
- Cross Match Verifier 300
- IDENT User Display (Primary)

10-print Identification Flat Device
- Cross Match Guardian
- Identix ED 4100 Scanner
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
# Image Quality Assurance Process

<table>
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<tr>
<th>Capture Client</th>
<th>QA Process</th>
<th>Backend Process</th>
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| **Operator Training** | **Optimize Fingerprint Capture**  
  - Image Quality Monitoring | **Use of Repeat Visitor Data to Improve Quality**  
  - “Best Prints Substitution” |
| **Auto Capture** | **Image Quality Task Force Studies**  
  - Identify Problem  
  - Correct Problem | **Optimized Image Enhancement and Feature Extraction of Images Prior to Matching.** |
| **Image Quality Feedback** | **Biometric Support Center**  
  - Feedback from Examiners | **Use of Advanced Matching Algorithms for Poor Quality Prints** |
| **Enhanced GUI For Capture** |  |  |

**Image Quality Assurance Process**
Fingerprint Quality Monitoring

Application

Enforcement

US-VISIT

DOS/Bio Visa

CIS

All Sites in Application

IQ Reports

All Terminals in the Selected Site
Challenges to Biometric Industry

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

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

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