National Institute of Justice

NIJ

Biometrics Quality:
Needs for Quality in DOJ

March 8, 2006

Christopher Miles
Senior Program Manager
202-616-1110
Christopher.Miles@usdoj.gov

What is Quality?

- Merriam-Webster Online Dictionary

  Main Entry: **¹quality** Pronunciation: `'kwa-li-tE`

  1 a : peculiar and essential character **:** NATURE

    b : an inherent feature **:** PROPERTY

    c : CAPACITY, ROLE

  2 a : degree of excellence **:** GRADE

    b : superiority in kind

- "Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives." -- Willa A. Foster

- "You don't get ahead by making products and then separating the good from the bad, because that's wasteful. It wastes the time of people who are paid wages, it wastes machine time, and it wastes materials."   -- W. Edwards Demin

Hollywood Biometric Quality

Misperceptions

- **100% match to any image at any angle**
- **Instantly recognizes any person**
- **Tied into a "super database" that knows who everyone is**
- **Available to and in use by law enforcement**

3

Real Biometrics Quality

Pinellas County Sheriff Office
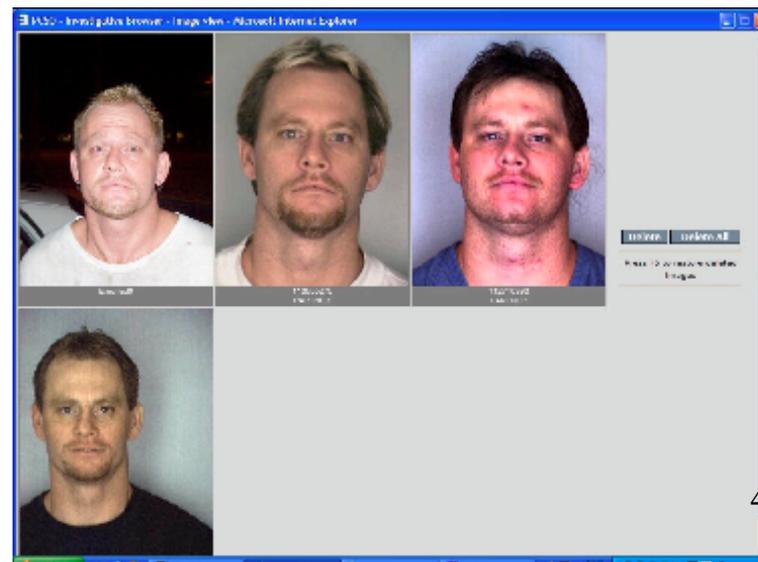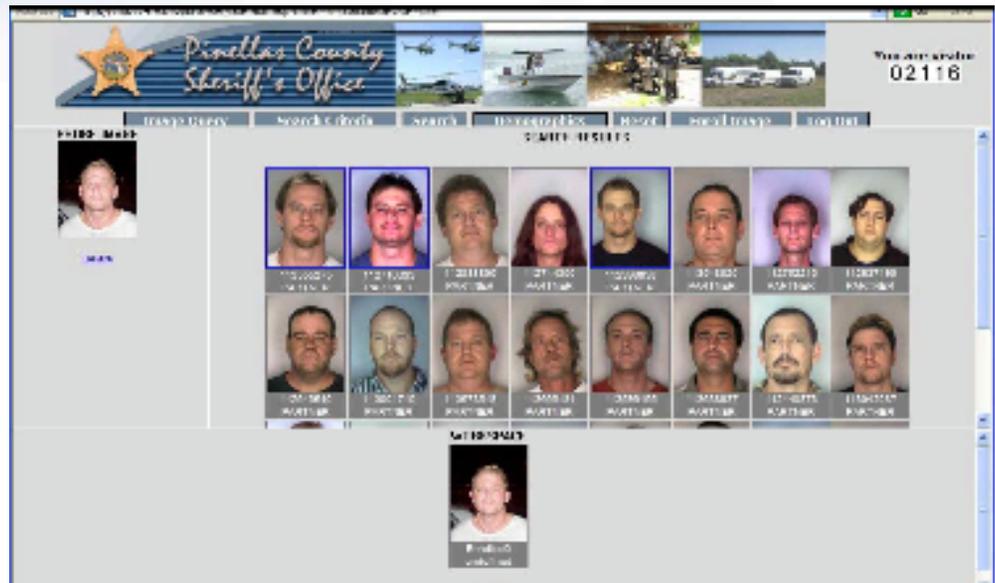Facial Recognition System
Mobile Identification System

Match and Arrest
Date: October 1, 2004
Case Number: 04-239589
Summary: Dep Earl stopped subject with a bad tag. Dep. Earl felt he was using false name. Consent was given and Facial search on the subject was run to assist with confirmation of ID. The subject's identity was confirmed by a previous arrest record in the Hennepin County Sheriff's Office Partner Database. Post Miranda the subject admitted he was using his brother's identity. Subject was arrested and taken to PCSO Jail.

4

Real Biometrics Quality
Teacher-Parent Authorization Security System (T-PASS):
Evaluating School Use of Iris Recognition Technology

Received Positive Press from New Jersey News Media and other National News Reports

Interior System

Exterior System

<u>Plumstead, NJ Schools</u>
- **Eleven, Single-Eye LG Electronics IrisAccess 2200 Iris Recognition Cameras Evaluated**
  - **6 cameras within closed areas in 3 schools**
  - **5 cameras were located outdoors with fabricated protective closures**
- **9,412 transactions occurred in 3 months.**
- **78% (7300 transactions) were successful**
- **Unsuccessful attempts mostly due to camera capture errors (16%) and access attempts by unknown users (5.8%)**
- **Included an Evaluation of User Acceptance and Development of Training Materials**
- **Issues remaining include:**
  - **Tailgating (accepted users holding door open)**
  - **Ability to Capture Iris Outdoors (lighting)**
- **Report available at:**
  www.ncjrs.org/pdffiles1/nij/grants/208127.pdf
- **Follow-on Effort taking place in Freehold Borough**

5

Real Biometrics Quality
Biometrics in Corrections

Inmate Movement Control & Enhanced Inmate Accountability

- Multi-Phase effort at Naval Brig Facility in Charleston, S.C.
- Phase 1 - Design and Development Completed - Dec. 2001
  - Inmate Scheduling Software Created and Integrated with Biometrics
  - Facility Operational Policies and Procedures modified
- Phase 2 - Biometric Evaluation Completed in May 2002
  - Tested fingerprint, hand geometry, finger geometry reader, facial and iris recognition, and voice verification
  - Selected fingerprint and hand geometry based on cost, throughput time, user friendliness, and suitability to environment
- Phase 3 - Operational Evaluation in Progress
  - 19 Biometric Readers installed (5 fingerprint, 14 hand geometry)
  - 75% Reduction in Inmate Tardiness
  - Move to One-to-Many operation
  - 27 New One-to-Many fingerprint devices installed
- Phase 4 - Planned Evaluation in PA State Correctional Facility

Real Biometrics Quality
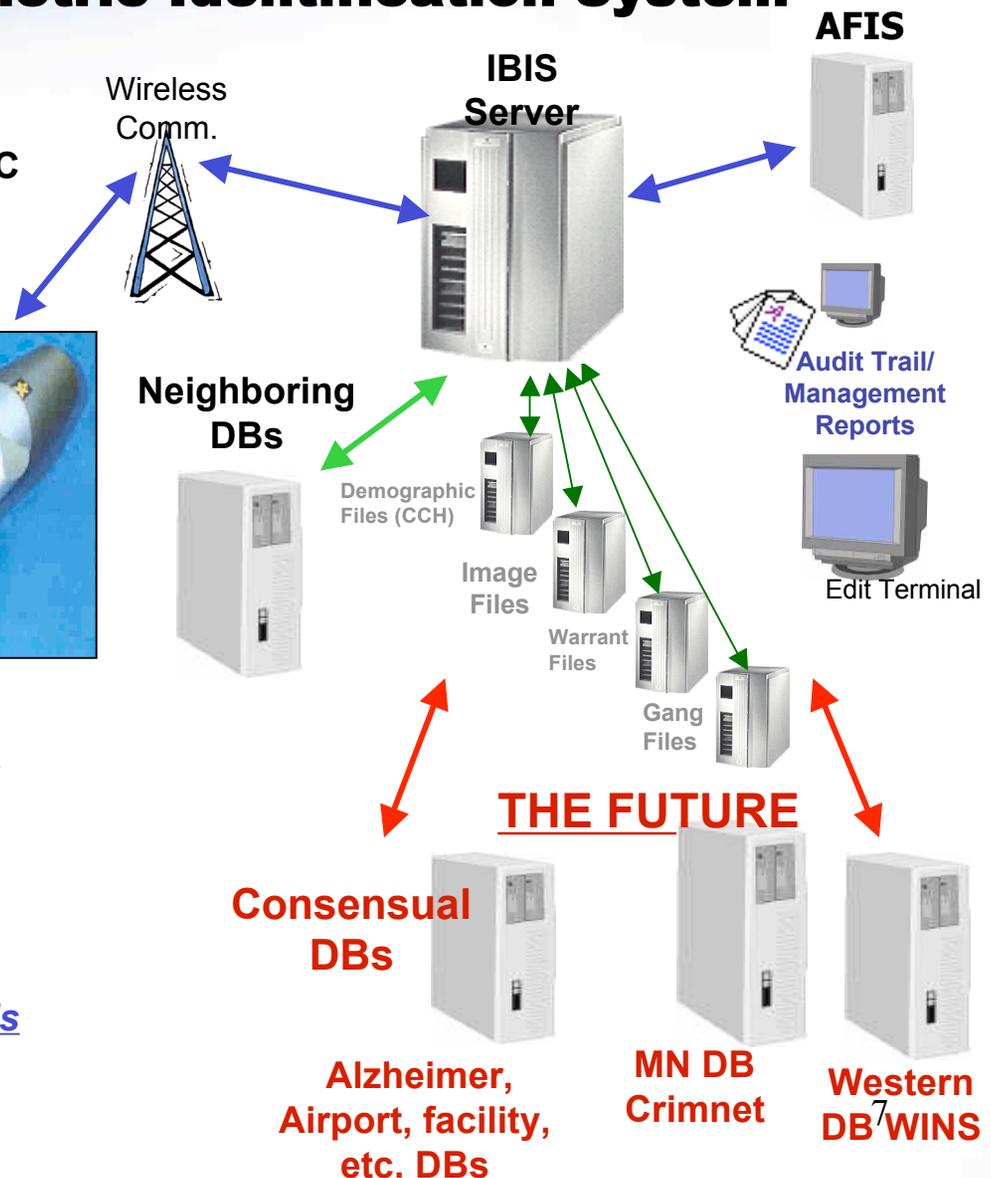## Mobile Integrated Biometric Identification System

AFIS

Remote Data Terminal (RDT) Features

- **Optional RF Connection from RDT to car's PC**
- **Adaptable to Existing Car PCs**
- **IQS Equivalent Fingerprint Capture**
- **Camera With Real-Time Display**
- **Supports Fingerprint Biometrics and in the future Facial**
- **Configurable (PCMCIA) Wireless**
- **Single Hand Operation**

Wireless Comm.

IBIS Server

Neighboring DBs

Demographic Files (CCH)

Image Files

Warrant Files

Gang Files

Audit Trail/ Management Reports

Edit Terminal

Performance

- **Average Capture Times:** *75 seconds*
- **Average Hop Times**
  - Handheld to Central Site   38 seconds
  - Central Site Processing   73 seconds
  - Central site to RDT   36 seconds
- **Average End-to-End Time:** *147 seconds*

THE FUTURE

Consensual DBs

Alzheimer, Airport, facility, etc. DBs
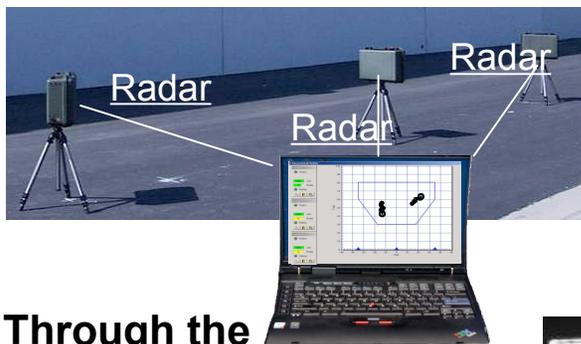
MN DB Crimnet

Western DB WINS

7

NIJ's Sensors and Surveillance Portfolio

The National Institute of Justice maintains an active program in Sensors, Surveillance and Biometrics:
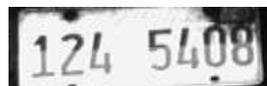
- **Studies, Analysis, and Modeling**
- **Laboratory Research and Evaluations**
- **Criminal Justice System Scenario & Operational Evaluations**
- **Standards Development**

Radar

Radar

Radar

Through the Wall Surveillance (TWS)

T23 5465

124 5408

Other Sensor and Surveillance Technologies

Biometrics (BIO)

Concealed Weapons Detection (CWD)

8

Research and Development Objectives

Goals and Objectives:

- Provide the criminal justice community with improved sensor and surveillance technologies in the areas of biometrics (BIO), concealed weapons detection (CWD), through the wall surveillance (TWS), and other miscellaneous sensors to meet their specific needs.

SSU Practitioner Priorities Addressed:

- NIJ Technology Working Group Committees (April 2005 - Present)
- Justice Biometrics Cooperative (2003 – Present)
- White House Office of Science and Technology Policy (OSTP) National Science and Technology Council (NSTC) Subcommittee on Biometrics (2003 – Present)
- NIJ Law Enforcement and Corrections Technology Advisory Committee (LECTAC) Priorities and Subcommittee 2003-04 Recommendations
- *Inventory of State and Local LE Technology Needs to Combat Terrorism* (published 1998 by TriData Systems)
- National Tactical Officers' Association (NTOA) TSWG Priority List

DOJ Needs in Biometrics

Prioritized Operational Needs for Biometric Technologies:

- Expedited Capture of Rolled-Equivalent Fingerprints & Palm Prints
  - Inmate processing; border security checks; and background security checks for employment & ID issuance
- Confirming and Fixing the Identity of Individuals
  - Inmate processing; ID of visitors to correctional facilities; confirmation of ID of those with multiple, false, and/or no documentation; mortuary identification; wants and warrants verification; sex offender tracking; employee background checks; and queries across Criminal Justice Information System (CJIS) databases.
- Identification of People from Video and Audio Surveillance
  - Preventing unauthorized access on school campuses; ID of individuals in secure or controlled areas; detecting altered appearances; detecting gang activities; and ID and authorization of communications system users

10

DOJ Needs in Biometrics (Cont.)

Prioritized Operational Needs for Biometric Technologies:

- Collection of Biometrics in Field Environments
  - Improved officer safety in routine duties (i.e. traffic stops); eliminating mis-ID of innocent subjects; cost & time savings of reduced transportation & processing for ID; fusion of biometric identifiers; and better performance for existing devices
- Controlling Physical and Logical Access
  - Facilities (Corrections, Courts, Schools); sensitive/controlled areas; evidence or weapons storage; controlled substance/ medication distribution; communication devices; computer systems; and training certification

Potential Technologies

Particular Technologies of Interest:
- Temporal Processing of Facial Images
- Evaluation of Iris Recognition
- Fusion of Facial & Iris, Facial & Finger, and/or Finger & Iris
- Processing of High Resolution 2D Facial Images
- Evaluation of Facial Recognition and/or Voice/Speaker Recognition Performance
- HDTV (720p) Security and In-car Cameras and Recorders
- Low-Cost High-Resolution Camera and Computer Modules

Generic Requirements for All Operational Needs:
- Ruggedized High-Capacity Mass Data Storage Devices
- Technologies Meeting Open Standards
- Technologies Meeting Interoperability Needs

Resources on the Web

- National Institute of Justice (NIJ)
  Home Page: **www.ojp.usdoj.gov/nij**

- NIJ Publications
  www.ojp.usdoj.gov/nij/sciencetech/publications.htm

- Justice Technology Information Network (JUSTNET)
  Home Page: **www.justnet.org**

- Justice Information Center (National Criminal Justice
  Reference Service)
  Home Page: **www.ncjrs.org**

One Final Quote

"There is a better way...Find it!"

[Instead of, "If it ain't broke, don't fix it."]

-- Thomas A. Edison

Thank You

**Chris Miles
Senior Program Manager,
Research and Technology Development Division
Christopher.Miles@usdoj.gov
202-616-1110**