FBI BIOMETRIC CENTER OF EXCELLENCE

Innovating Biometrics

NIST International Biometric Performance Conference

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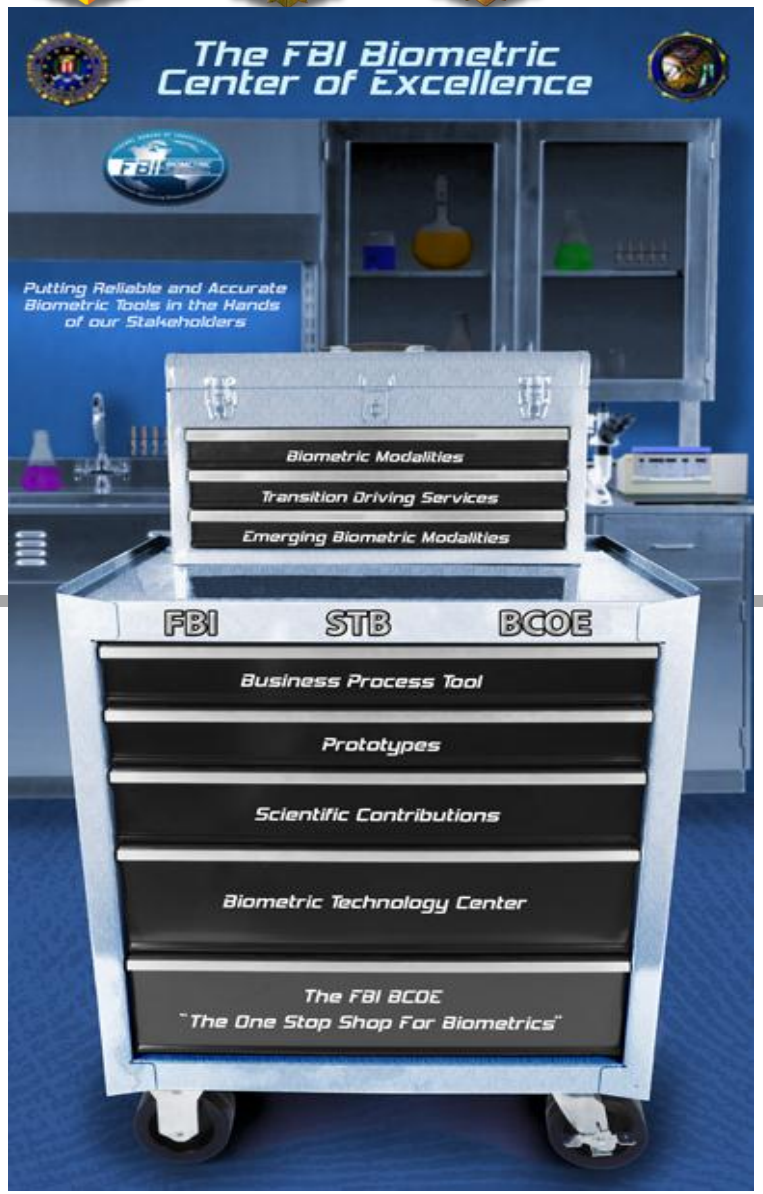
Biometric Services Section
Biometric Center of Excellence

FBI Biometric Initiatives

Integrated Automated Fingerprint Identification System	Next Generation Identification	Combined DNA Index System	Biometric Technology Center	Biometric Center of Excellence
System	System	System	Building	Program

FBI Biometric Initiatives



- **The Biometric Center of Excellence (BCOE)** is the FBI's program to explore new and enhanced biometric technologies for integration into operations.

- **BCOE Mission**
  - Foster Collaboration
  - Improve Information Sharing
  - Advance Adoption of Biometric and Identity Management Solutions

What Does the BCOE Do?

- Promote standards / Sponsor Standards Development
- Test and Evaluate Technologies
- Sponsor Research
- Develop Prototypes / Sponsor Pilots
- Develop Training
- Address Privacy/Policy

Collaboration is Key

BCOE Sponsored Projects

- Face
- Rapid DNA
- Tattoos
- Friction Ridge
- Voice Biometrics

Biometric Standards

- National Institute of Standards and Technology
  - Standards Development
  - Test and Evaluation
  - Biometric Web Services Interface Standards Support
  - Multiple Biometric Challenge Problems and Evaluation Support
- Scientific Working Groups
  - FISWG (face)
  - SWGFAST (friction ridge)
  - SWGDAM (DNA)

Automated Face Detection and Recognition (AFDAR) Prototype Software

- **Tool for forensic analysts to analyze video (and other media) and still images**
- **Return on Investment:**
  - Cost savings, crimes solved
- **Collaborating with other agencies regarding related projects and evaluation of AFDAR**

U.S. Government Facial Recognition (FR) Legal Series

- **Tool for USG agencies to discuss current and future uses of FR technology, legal and policy challenges to its use, and strategies for mission-effective, legally permissible use**
  - First forum in series held 8/31/2011 – Information Gathering
  - Second forum held 11/2/2011- Interoperability
  - Third forum will be held 3/14/2012 – Privacy
- **Collaboration and Sharing Lessons Learned**

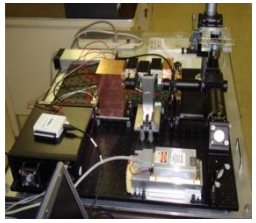
Facial Comparison & Identification Training Development

- **A tool for investigators and face examiners**
- **Proposed Course Options**
  - Introduction to Face Biometrics (4 hours)
  - Facial Identification Methods Overview (4 hours)
  - FBI Investigative Use of Face as a Biometric (8 hours)
  - Facial Comparison and Identification (2 days)
  - Advanced Facial Comparison (1 week)
- **Collaboration – Training being offered to and/or evaluated by other government agencies**

Rapid DNA Prototype

- **Tool for Law Enforcement – To use DNA at point of encounter for identification and to link to forensic profiles**
- **Return on Investment**
  - Cost Savings, Crimes Solved, Crimes Prevented
    - Next 6-18 months – Prototype Development, Testing, and Integration Planning
    - 2-3 years – Second Generation Prototype
    - 3-4 years – Pilot Testing in Crime Lab
    - 4 + years – Mature System Production
    - 4-7 years – Local Booking Station
- **Collaboration with DoD and DHS**



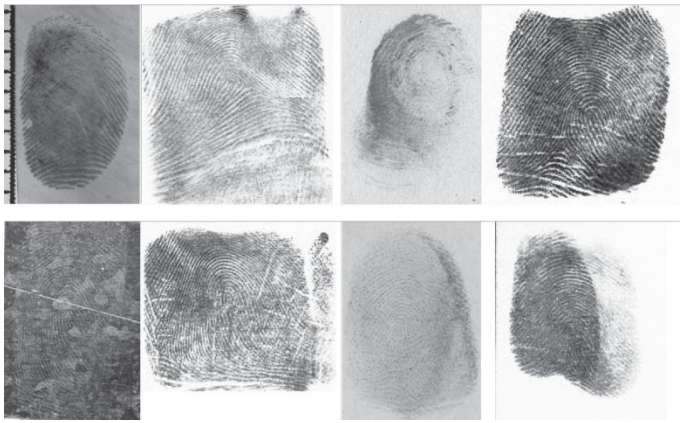
(Under Development R-DNA Systems)

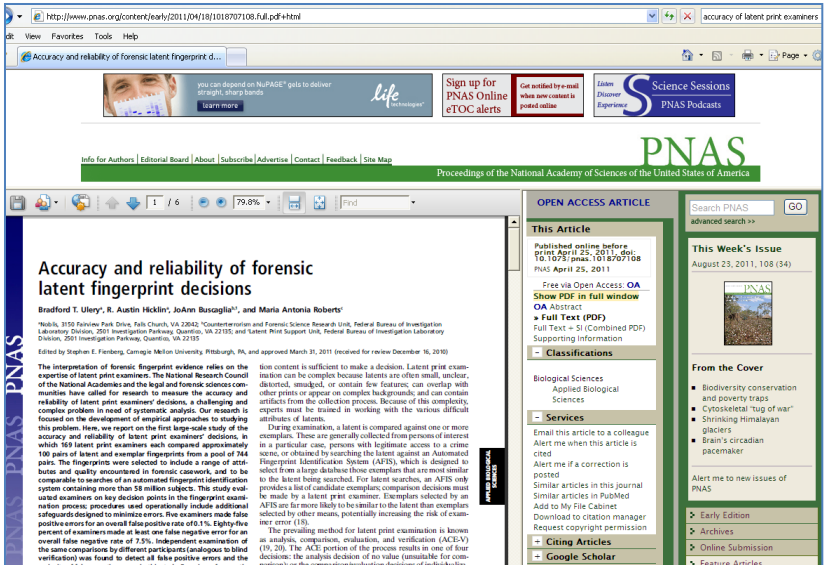
Tattoo | Graffiti ID Prototype

- **Tool for investigators and analysts to analyze symbols used in tattoos and graffiti for investigative purposes**
- **Return on Investment**:
  - Crimes solved (investigative leads)
- **Collaboration with academia and the National Gang Intelligence Center**

Friction Ridge

- **Tool for Latent Print Examiners to Support Courtroom Testimony**
  - Study of Accuracy of Latent Print Examiners – The Black Box Study
  - Report available at http://www.pnas.org/content/108/19/7733



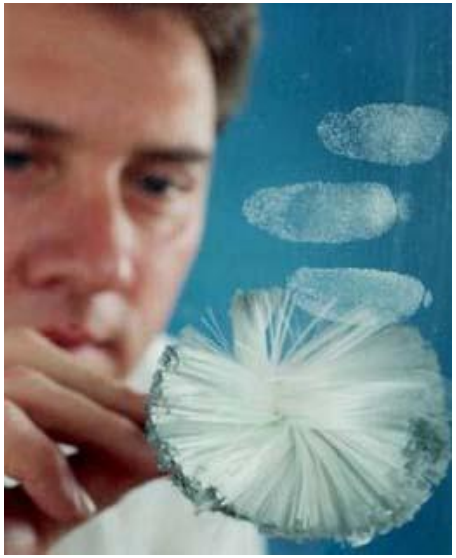


Voice Biometrics

- Continuing to Enhance Voice Biometrics Technology Accuracy
  - Algorithm Enhancement by MIT Lincoln Lab
  - Software/Hardware Integration by Air Force Research Lab
- Progressing toward a Forensic Voice Data Format Standard
- Launched a new research project to establish a "Scientific Foundation" for voice biometrics by a team of scientists at MIT, Univ of Southern Calif, and Haskins Laboratories: 2014

Collaboration | With Academia

Applied Research



- **Automatic Detection of Altered Fingerprints Project**
  - **Return on Investment:** Solve crimes
- **Latent Fingerprint Enhancement Project**
  - **Return on Investment:** Expedite latent casework/reduce back logs – Solve crimes, cost savings
- **Friction Ridge Support Services Project**
  - **Return on Investment:** Training tool software prototype, friction ridge software prototype

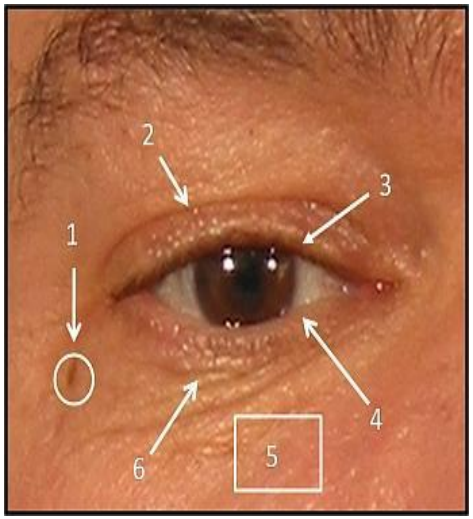
Collaboration | With Academia

Applied Research

- **Biometric Collection Project**
  - **Return on Investment:** In-house “pristine” datasets for use in testing
- **Epithelial Cell Presence in Human Scent Evidence Project**
  - **Return on Investment:** Admissibility of DNA identifications in court
- **Handwriting Collection Project**
  - **Return on Investment:** Validation of forensic case work, court admissibility, solve/prevent crimes, identify terrorist networks

Collaboration With Academia

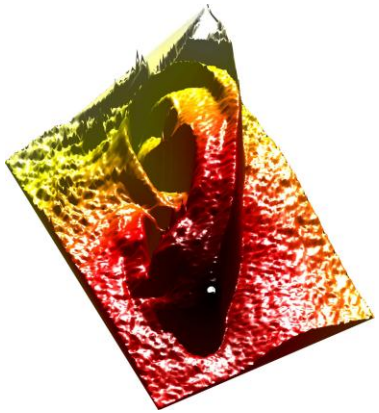
Applied Research



- **Periocular Features Project**
  - **Return on Investment:** Solve crimes and provide additional investigative tool
- **Face and Component Face Analysis Project**
  - **Return on Investment:** Statistical models for forensic based ID and automatic biometrics

Collaboration With Academia

Applied Research



- **2012 Twins Day Festival Collection Effort Project**
  - **Return on Investment:** In-house “pristine” datasets for use in testing
- **2D and 3D Ear Patterns Project**
  - **Return on Investment:** Solve crimes and provide additional investigative tool

Privacy

- The FBI is committed to ensuring compliance with privacy laws, policies, and procedures
- Biometrics protect privacy by
  - Positively identifying subjects
  - Clearing those wrongly accused
- Protection of individual privacy rights and civil liberties is a top priority for the FBI

Looking Forward

Keeping an eye on….

- Ear
- Hand Images
- Scent
- Cardiac Signature

Online Resource: www.BiometricCoE.gov

- Visit our Web site

  or

- E-mail us at BiometricCoE@LEO.gov

Questions / Answers

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