



National Science & Technology Council
Subcommittee on Biometrics

Informational Overview

Duane Blackburn
NSTC Agency Representative (FBI)
Office of Science & Technology Policy

www.ostp.gov
www.biometriccatalog.org/NSTCWorkGroup



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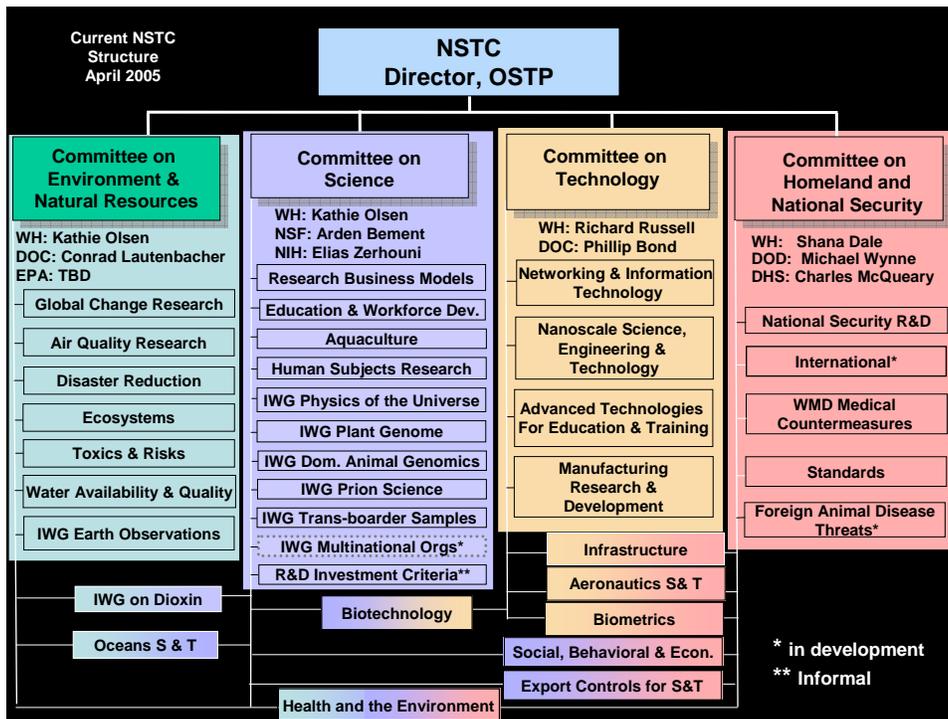


OSTP Roles

- Advise the President & EOP
 - Provide S&T analysis and judgment on major policies, plans, programs, & budgets
- Lead the interagency effort
 - Define (with OMB) R&D priorities to guide the agencies when developing their budgets
 - Work with agencies on high-level S&T policy issues
- Work with the private sector
 - Ensure Federal S&T investments contribute to economic prosperity, environmental quality, and national security.
- Collaborate on international S&T issues



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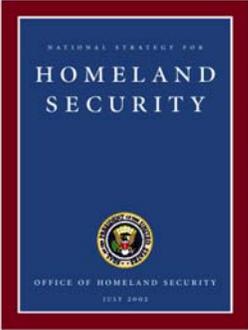
National Strategy for Homeland Security (July 2002)

Priority objectives

1. Prevent terrorist attacks within the U.S.
2. Reduce America's vulnerability to terrorism
3. Minimize damage and recover from attacks

Science & Technology initiatives (11)

3. Apply biometric technology to identification devices





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Science and Technology: A Foundation for Homeland Security (April 2005)

“Strategies for finding terrorists can be complicated by their efforts to disguise themselves among innocent civilians. As a counter to this, the implementation of biometric technologies ... shows great promise in improving the accuracy, consistency, and efficiency of identification devices”



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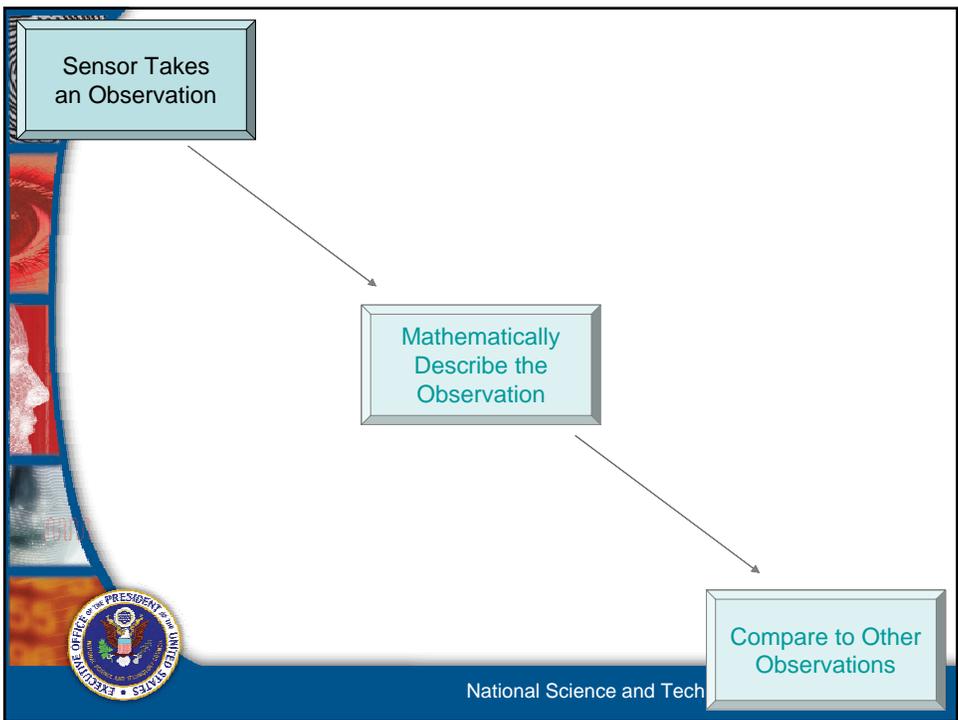
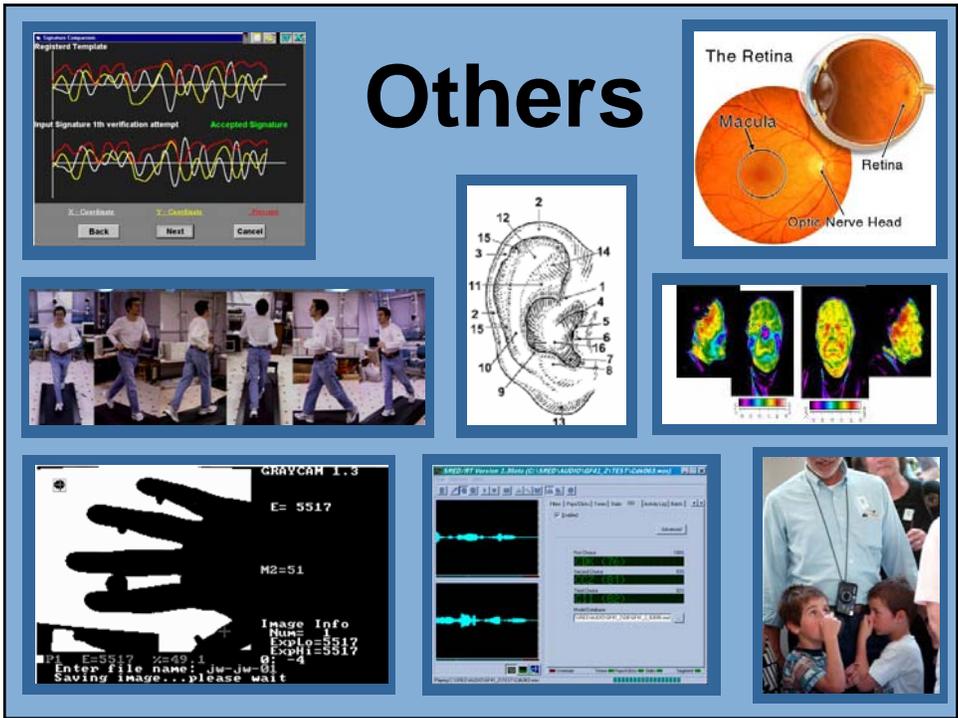
Biometrics

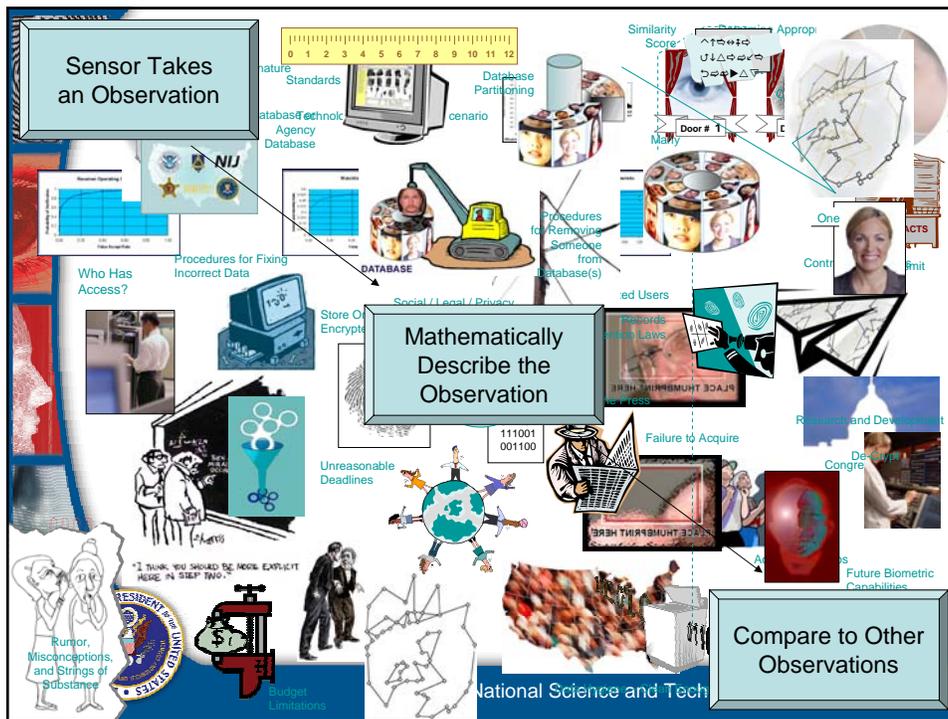
Automated methods of recognizing an individual based on their physical or behavioral characteristics



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Others





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Department of Defense
Automated Biometric Identification System

John Woodward
Director
Biometrics Management Office

www.biometrics.dod.mil

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Identity Dominance



Linked to
Previous
Identities

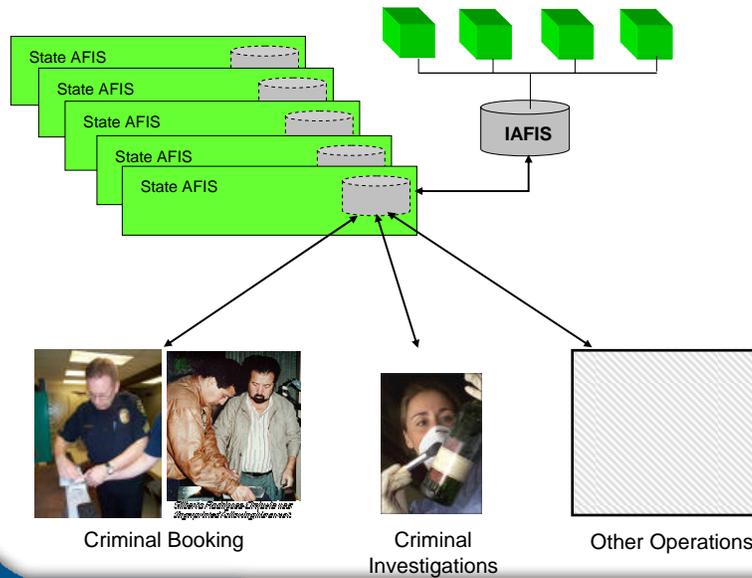
Past
Activities

- Previous identities
 - User of alias identities
 - User of alias "official" documents
- Previously detained?
- Previously arrested in U.S. or other countries?
- Matched to terrorist or crime activities?

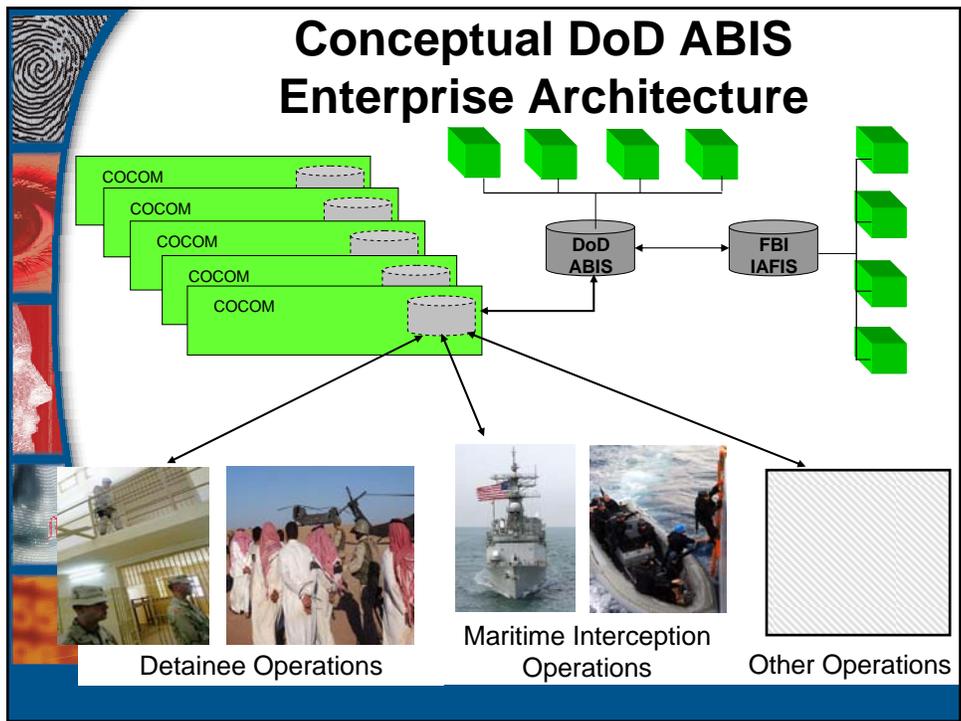
Bottom Line: Using only names and official documents...
 - We don't know.
 - We won't know in the future.
Paradigm Shift: We must leverage the power of biometric data.

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FBI's IAFIS Architecture



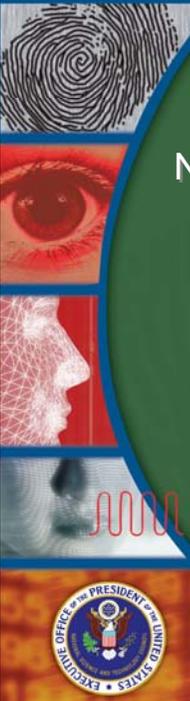
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Summary

- Biometric technologies are an enabling tool in the Global War on Terrorism
- Biometrics, and specifically the DoD ABIS, will improve the USG's ability to track and identify national security threats
- To maximize this capability, USG must embrace the concept of identity dominance and act with a sense of urgency


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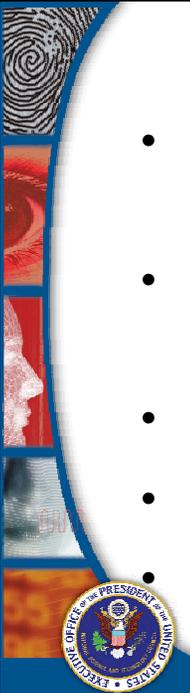
Department of Transportation

Jim Zok
Associate Administrator
Maritime Administration

<http://www.marad.dot.gov>



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Focus Programs

- Drivers License & Personal Identification Cards
- Advanced Vehicle/Driver Identification System (AVIDS)
- NAS Logical Access Control Pilot
- Mariner Administrative Card
- Smart Card Alliance Transportation Council



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DL/ID Reg. Neg. Committee

- Section 7212 of the Intelligence Reform & Terrorism Prevention Act of 2004
- To improve security
- Set recommendations for **minimum standards** for Driver's Licenses and Personal ID cards issued by States
- Through negotiated Rulemaking procedures
- Statutory Timetable
- Negotiated Rulemaking Committee recommendations to the Secretary of Transportation by September 17, 2005
- Final Rule by June 17, 2006



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AVIDS Components

EACH SYSTEM IS COMPRISED OF THE FOLLOWING:

ENROLLMENT

SQL server manages access roster and vehicle registration data. Enrolled persons are vetted using face or finger recognition.



IDENTIFICATION

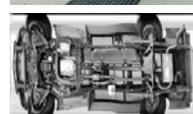
People and vehicles are identified at entry point by scanning one or more of the following:

Credential, fingerprint, RFID, & license plate



SCREENING

Vehicle weights, undercarriage images and fingerprints are automatically compared to enrollment data and alarms are generated.



ENFORCEMENT

Any type of bollard or barrier system can be integrated into AVIDS. Some choose to maintain a separate manual deployment.



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SCOP Smart Card Project Goals

- Reliably identify the Seaman
- Develop a system to maintain and track mariner training records
- Develop a single swipe sign on/off system
- Minimize fraudulent mariner documents
- Produce an interoperable secure card

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Department of Justice

Chris Miles
Senior Program Manager
National Institute of Justice

www.ojp.usdoj.gov/nij

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Justice Biometrics Research and Development

The Department of Justice maintains an active biometrics program in:

- Laboratory Research and Evaluations
- Criminal Justice System Scenario & Operational Evaluations
- Operational System Enhancements
- Standards Development



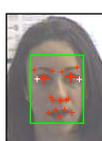
Hand



Corrections Access



Finger



Face



IRIS



School Access



Finger & Face



Wireless ID & Booking



Integrated Automated Fingerprint Identification System (IAFIS)



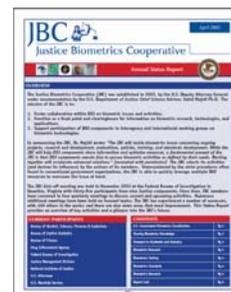
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Justice Biometrics Cooperative

The Justice Biometrics Cooperative (JBC) was established in 2003, by the U.S. Deputy Attorney General under recommendation of the U.S. Department of Justice Chief Science Advisor, Vahid Majidi, Ph.D.

The mission of the JBC is to:

1. Foster collaboration within DOJ on biometric issues and activities.
2. Function as a focal point and clearinghouse for information on biometric research, technologies, and applications.
3. Support participation of DOJ components in interagency and international working groups on biometric technologies.



Available at: www.biometricscatalog.org

Current Participants are:

Bureau of Alcohol, Tobacco, Firearms & Explosives; Bureau of Justice Statistics; Bureau of Prisons; Drug Enforcement Agency; Federal Bureau of Investigation; Justice Management Division; National Institute of Justice; U.S. Attorneys; and U.S. Marshals Service



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DOJ Areas of Particular Interest in Biometrics

The JBC developed a prioritized list of biometric needs with broad application to State and Local agencies and to the Federal agencies of the Bureau of Prisons, Drug Enforcement Agency, Federal Bureau of Investigation, U.S. Attorneys, and U.S. Marshals Service.

Prioritized Applications of Biometric Technologies:

- Fast Capture of Rolled-Equivalent Fingerprints and Palm Prints
- Identity Fixing/Baselining of individuals such as:
 - Identify management across law enforcement, courts, and corrections
 - Common ID Card for DOJ Federal Employees and Contractors and extension of that Common ID Card to State and local Criminal Justice employees
- Identification from Video Surveillance
- Tracking of Evidence through a Chain of Custody
- Logical and/or Physical Access Control
- Real-time and/or Post Event Identification from Audio Surveillance.



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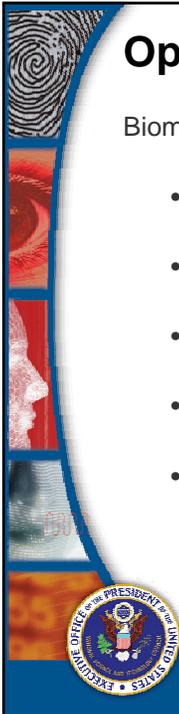
Department of Homeland Security

Brad Wing
Program Manager
US-VISIT

www.dhs.gov



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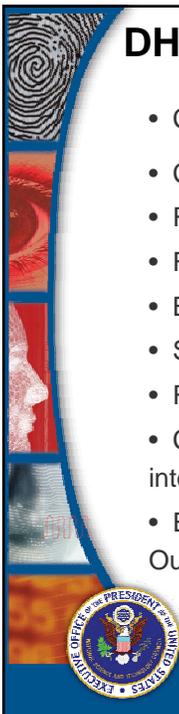
Operational Uses of Biometrics at DHS

Biometrics are used for

- Identity Verification
 - Port of Entry inspections, Benefits adjudication
- Investigation
 - Watch lists, Background checks
- Credentialing
 - Token issuance with biometric identifiers
- Security
 - Physical and logical access control
- Enforcement
 - Apprehending, managing and adjudicating violators

64 programs within DHS identified as employing biometrics

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DHS Biometric Coordination Group (BCG)

- Created to foster communication across DHS
- Chaired by US-VISIT Program
- Representatives from all DHS components
- Forum for discussion of biometrics projects in DHS
- Briefings on major international events
- Spearheads DHS Biometric Standards
- Review new biometrics projects for CIO
- Coordination of DHS positions for representation to interagency and international bodies
- Establish standard set of biometrics briefings and support for Outreach units
- Represents the DHS position on biometrics to the NSTC IWG on Biometrics

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Homeland Security Presidential Directives (HSPDs)

Legislation and Directives
Requiring Biometrics



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Legislation and Directives Requiring the Use of Biometrics

Examples

- Enhanced Border Security and Visa Entry Reform Act of 2002
- Intelligence Reform and Terrorism Prevention Act of 2004
- Homeland Security Presidential Directive 11 (HSPD-11)
- Homeland Security Presidential Directive 12 (HSPD-12)



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Enhanced Border Security and Visa Entry Reform Act of 2002

- All VWP Countries must issue ICAO-compliant biometrically enabled travel documents
- All U.S. issued travel documents to non-U.S. citizens must be tamper resistant, machine readable and include biometrics
- DHS must have the capability to read US-issued travel documents and ICAO-compliant Visa Waiver Program (VWP) travel documents that are tamper resistant and incorporate biometric and document authentication identifiers



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Intelligence Reform and Terrorism Prevention Act of 2004

Total of 55 references to biometric, two major areas:

- Aviation Security:
 - Airport Access Control Systems
 - Law Enforcement Officer Travel
 - Aviation Security R&D
 - Improved Pilot Licenses
- Border Entry Exit
 - Complete a biometric entry and exit data system as expeditiously as possible
 - Interoperability between DHS/DOS/DOJ





Homeland Security Presidential Directive 11

Comprehensive Terrorist-Related Screening Procedures

- Enhanced terrorist-related screening, both people and cargo
- Calls for the procedures to be coordinated and comprehensive
- Individuals must present a biometric identifier or other form of identification at particular screening opportunities. An example would be border crossings.



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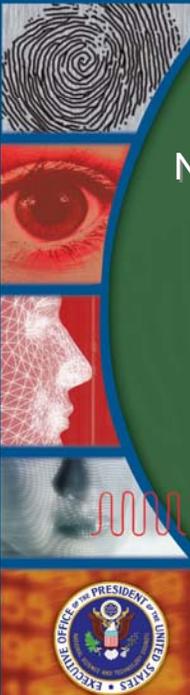


Homeland Security Presidential Directive 12

Policy for a Common Identification Standard for Federal Employees and Contractors

- Requires the Department of Commerce to develop a mandatory, government-wide Common Identification Standard for Federal Employees and Contractors
- The standard will result in interoperable Federal ID cards that contain biometric information, including a photo and fingerprints
- NIST recommends 10 flat fingerprints (could be accompanied by 10 rolled fingerprints)
- Eight months from the effective date of the published standard, all federal applications must implement the standard





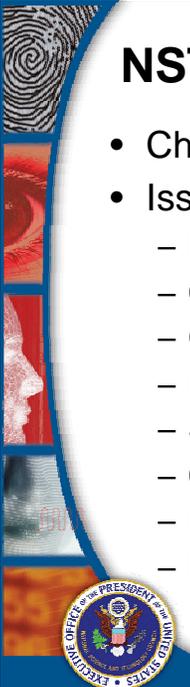
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Subcommittee Activities

Duane Blackburn
NSTC Agency Representative (FBI)
Office of Science & Technology Policy

www.ostp.gov
www.biometriccatalog.org/NSTCWorkGroup

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NSTC Subcommittee on Biometrics

- Chartered in Spring 2003
- Issues to address
 - Information Sharing
 - Coordination of Research Agendas
 - Gap Analysis
 - Funding
 - Standards
 - Coordination with Private Sector
 - International Cooperation
 - Privacy Policy

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Functions

- Enhances collaboration among Federal agencies on Biometrics activities
- U.S. Government's focal point and clearinghouse for information on biometrics research, technologies, and technical/policy issues
- Supports the coordinated participation of U.S. Government agencies in international working groups on biometric technologies



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Subcommittee on Biometrics Participants

- OSTP*
- DHS*
 - CIS
 - CBP
 - OCR
 - Privacy Office
 - S&T
 - TSA
 - USCG
 - USSS
- DOC (NIST)
- DOS
- GPO
- DOJ
 - BOP
 - FBI
 - JMD
 - NIJ
 - US Attorneys
- NSF
- Treasury (IRS)
- TSWG
- OMB
- DOD
 - BMO
 - ONR
- DOT
 - FAA
 - Maritime Administration
 - NHTSA
 - OGC
- Intel Community
 - CIA
 - ITIC
 - NSA

* Co-chairs



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Coordination Areas

Research and Development

- Fingerprint Recognition
- Face Recognition
- Iris Recognition
- Other
- Fusion

Research and Test Infrastructure

- Data Collection
- Infrastructure for RDT&E Data Sharing
- Test and Evaluation

System Considerations

- Human-System Interface
- Operational & System Vulnerabilities
- Middleware

Program Management Tools

- Social/Legal/Privacy
- Communications
- Decision Support Tools
- Application Description
- Standards
- Solicitations



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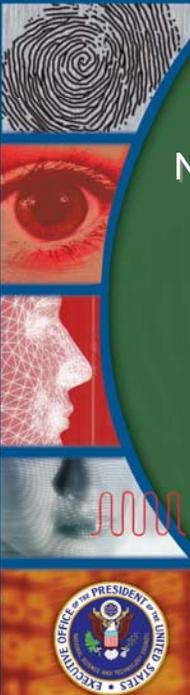
Fast Capture Fingerprint Initiative

Chris Miles
Senior Program Manager
National Institute of Justice

www.ojp.usdoj.gov/nij



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**Face Recognition Research
and Test Infrastructure**

Dr. Jonathon Phillips
Program Manager
National Institute of Standards & Technology

www.nist.gov



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Background



Baseline



July 2002

**Technology
Development**



May 2004 –
Aug 2005

**Independent
Evaluation**



Sep 2005 –
June 2006



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FRGC/FRVT 2005 Background



- Multi-Agency Funded Face Recognition Projects
 - Face Recognition Grand Challenge (FRGC)
 - Face Recognition Vendor Test (FRVT) 2005
- Managed by National Institute of Standards & Technology (NIST)
- Sponsors
 - Department of Homeland Security, S&T and TSA
 - Federal Bureau of Investigations (FBI)
 - Intelligence Technology Innovation Center (ITIC)
 - National Institute of Standards & Technology (NIST)
 - National Institute of Justice (NIJ)
 - Technical Support Working Group (TSWG)



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FRGC



Technology Developers

A4 Vision
Animetrics
Carnegie Mellon University
Cognitec
Cybula/AC Technologies
Geometrix
Identix
Neven Vision
New Jersey Institute of Technology (NJIT)
Old Dominion University
Rutgers University
Sagem
Samsung
Technion
University of Houston
University of Maryland
University of South Florida
Viisage

Evaluation Team

National Institute of Standards and Technology (NIST)

Colorado State University

Science Applications International Corp (SAIC)

The University of Texas at Dallas

University of Notre Dame



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FRGC Goal & Objective



The primary goal of the FRGC is to:

Promote and advance face recognition technology to support U.S. Government face recognition efforts



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FRGC Goal & Objective



The primary goal of the FRGC is to:

Promote and advance face recognition technology to support U.S. Government face recognition efforts

The primary objective of the FRGC is to:

Develop still and 3D algorithms to improve performance an order of magnitude over FRVT 2002

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FRGC Modes Examined

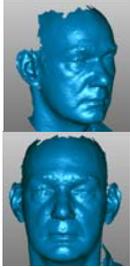





Single Still



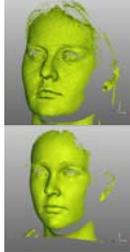
**Outdoor/
Uncontrolled**



3D Full Face



Multiple Stills



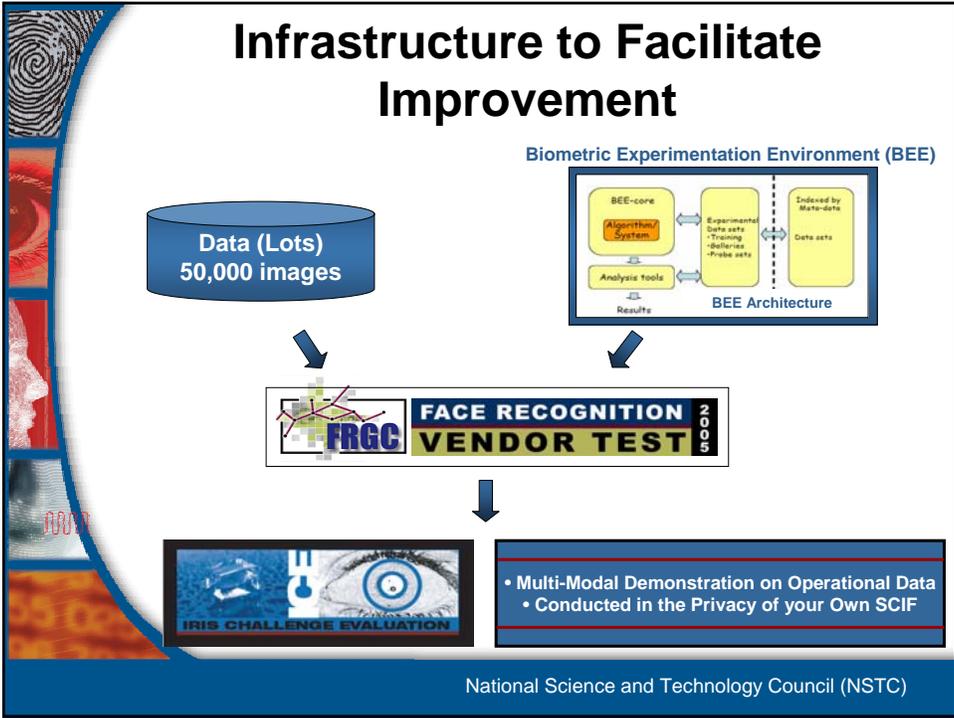
**3D Single
view**



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Performance Goals and Progress

Independent Evaluations (Gold Standard)	Face Recognition Grand Challenge (Qualified Results)
 <p>Goal 98% To be measured by FRVT 2005</p> <p>Starting Point 80% Measured in FRVT 2002</p> <p>FAR = 0.1%</p>	<div style="margin-bottom: 20px;"> <p>99.99% Multi-Still (Jan 05)</p>  </div> <div style="margin-bottom: 20px;"> <p>99% High Resolution Still (Jan 05)</p>  </div> <div style="margin-bottom: 20px;"> <p>97% Three-Dimensional (Jan 05)</p>  </div> <div style="text-align: center;">  </div> <p style="font-size: small;">* First set of results after 4 months in a 12 month period</p>



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Iris Recognition R&D

Rick Lazarick
Program Manager
Transportation Security Administration

www.tsa.gov

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Iris Recognition Workshop

- Sponsored by Intelligence Community (Jan 05)
- Emphasis on less-than-cooperative subjects
- Two days with split topics:
 - Features and Algorithms
 - Optics and Sensors
- Primarily academic presenters



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Iris Recognition Workshop

Algorithms

Automated Iris Recognition:
Pushing the Envelope - R. Wildes

Iris Recognition: From Photons to
Identify - J. Matey

Understanding, Modeling, and
Processing Iris Data - N. Schmid

Iris Recognition Research at the
Univ of Notre Dame - P. Flynn

1D Iris Recognition and Partial Iris
Analysis - E. Du

Iris-@-a-Distance Recognition -
R. Hamza

Optics

COTS Iris Recognition
Performance and Approaches -
M. Thieme

Iris-at-a-Distance: Honeywell's
System Approach - T. Phinney

Iris Recognition: From Photons
to Identify - J. Matey

Iris Scanning at IVA Corp &
Securimetrics - D. Birkner

Extending the Imaging Volume
Using Excess SNR - R.
Narayanswamy



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Iris Recognition Workshop

Themes – Features/Algorithms

- “Segmentation – Segmentation – Segmentation”
- Disregard facial features & specular reflection
- Irrespective of eyewear or contacts
- Detect and track subjects, face/eye of subject of interest
- Correct for geometric distortion, motion smear
- Effects of blur, pupil dialation, head tilt on performance
- Can color contribute? Visible light w/o active illumination
- Inner iris more rich in pattern information



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Iris Recognition Workshop

Themes – Optics/Sensors

- Minimal constraint of motion and pose
- Indoor vs. outdoor
- Distance and resolution
- Eye safe illumination
- Lens issues – zoom mechanics, diffraction limits, wavelength
 - Large depth of field
 - Short exposure time
 - Efficient light gathering capacity
 - Wide field of view



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TSA - Iris Sensor Development

Approach

- Issue BAA - solicit industry and academic ideas in the form of project proposals (short and long term)
- Evaluation of the most promising proposals
- Award of several concept feasibility or demonstration grants in Phase 1
 - short duration, low cost efforts which will result in evidence of technical progress and a detailed proposal for additional follow-on work for Phase 2 in the following FY



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TSA - Iris Sensor Development

Objectives

Significantly improved iris recognition sensors, whose performance has been optimized for some or all of the following metrics:

- Reduced failure to enroll rate
- Adaptability to user position
- Adaptability to user pose angle
- Tolerance to user motions
- Rapid data capture
- Reduced sensor cost
- Improved capture volume



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TSA - Iris Sensor Development *Milestones*

- May 2005 – Issue BAA soliciting Phase 1 proposals
- June -July 2005 – Phase 1 evaluations and awards
- Feb-March 2006 – Phase 2 awards

Participation by other Federal agencies is highly encouraged:

- 1) Review and refine requirements
- 2) Proposal evaluation
- 3) Phase 2 sponsorship



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Social / Legal / Privacy

Peter Sand
Director of Privacy Technology
Department of Homeland Security

www.dhs.gov



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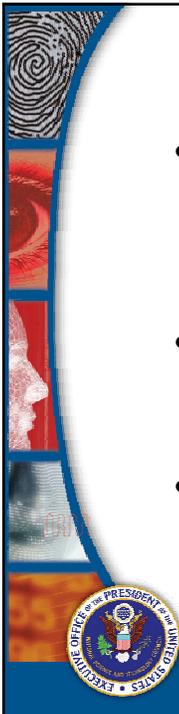


Social/Legal/Privacy Analyses

- Technology Exists in Two Frameworks
 - Scientific: Make it work
 - Social: Make it work for People
- Benefits Privacy Framework
 - “Personal Information”
 - “Appropriate Use”
 - Communication: Align Expectations



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Social/Legal/Privacy Analyses

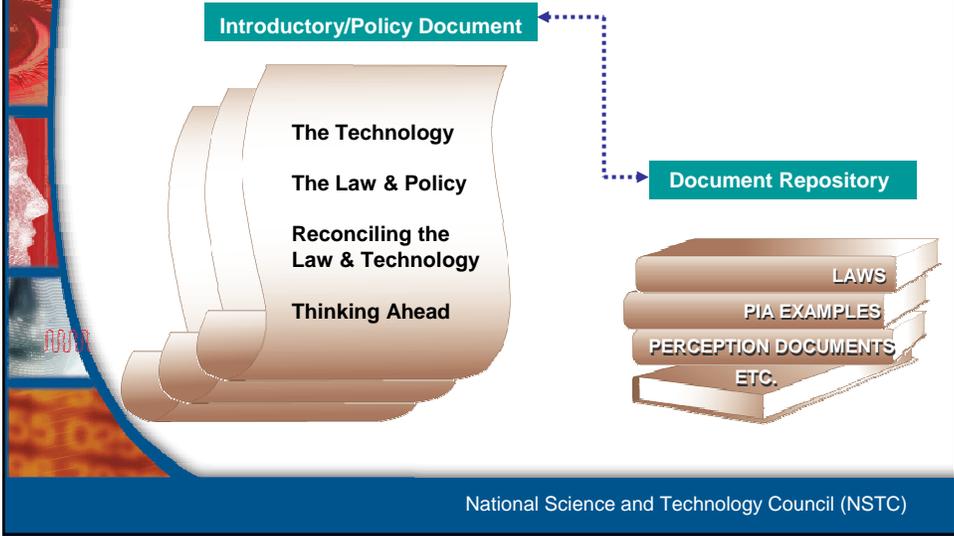
- The Law: Clarity & Transparency
 - Freedom of Information Act: FOIA
 - Privacy Act of 1974: SORN
 - E-Government Act of 2002: PIA
- Best Practice
 - Plan Ahead
 - Do it Anyway
- Resources
 - IWG Subgroup
 - DHS Privacy Office



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Social/Legal/Privacy Analyses

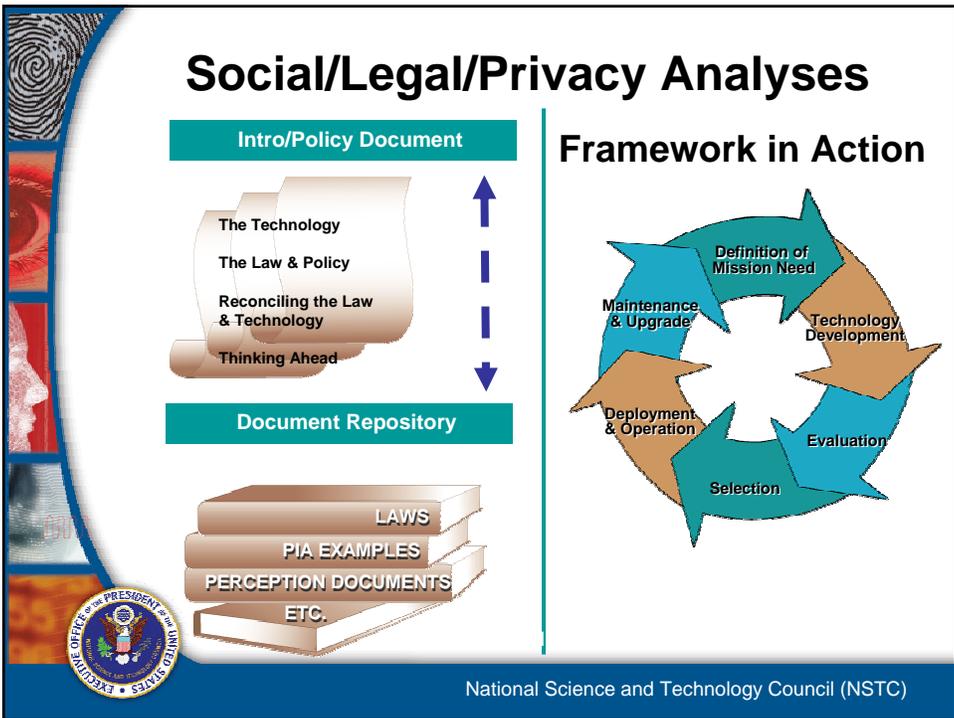
Framework in Action



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Social/Legal/Privacy Analyses

Framework in Action



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Biometric Standards

Fernando Podio
Program Manager
National Institute of Standards & Technology

www.nist.gov



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Overview

- NIST Strategy and Tactics to Accelerate Biometric Standards Development
- National and International Standards Organizations
- Status of the Biometric Standards Programs
- Market Adoption Examples



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NIST History in Biometric Standardization

- For decades, NIST has been involved with the law enforcement community in biometric testing and standardization:
 - (eg., *ANSI/NIST-ITL 1-2000 Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information*).
- In the past six years, NIST has intensified its work in biometric standardization working with consortia & other fora.
- After 9/11, NIST championed the establishment of formal national and international biometric standards development bodies as the best environments to support deployment of standards-based solutions and to accelerate the development of the required standards.



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NIST Strategy & Tactics

User requirements:

- Need strong personal authentication for Homeland Defense and other applications (e.g., commercial, government)
- Need high performance, interoperable systems & a comprehensive set of data interoperability, performance, conformance & quality standards – Others?
- Time is a compelling factor (later migration from proprietary systems to standards-based solutions will be prohibitively difficult and expensive)

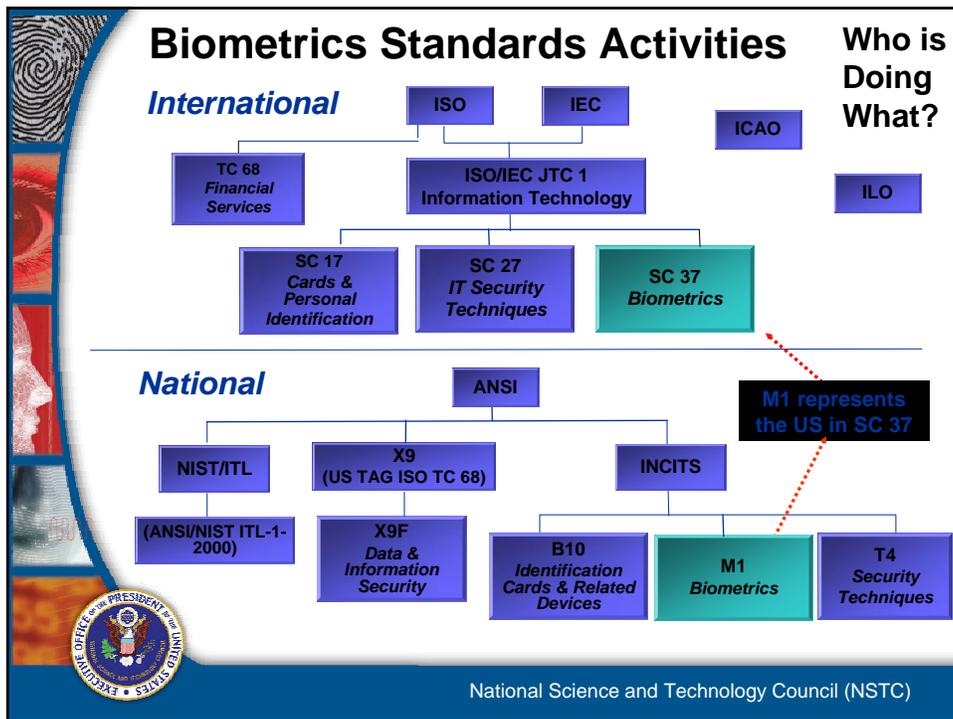
Strategy:

- International standards are the ultimate goal, national standards can usually be developed faster – do so (graceful migration anticipated).
- Organize & lead standards groups (INCITS M1 & JTC 1 SC 37)
- Experimental implementations (e.g., conformance testing engines)

Tactics:

- Leverage from work of biometric standards “incubators” (e.g., Biometric Consortium) & support fast processing of their specs.
- Push the envelope on speed
- Work with industry and users
- Select good officers & technical editors for the standard projects.

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M1 Biometrics (US)

- INCITS is the major standards organization in the US responsible for the development of Information and Communication Technology (ICT) standards.
- M1 is the INCITS committee for biometrics, established November 2001.
- Members of US Government agencies in M1:
 - National Security Agency (NSA)
 - National Institute of Standards and Technology (NIST)
 - Department of Defense Biometrics Management Office (DoD BMO)
 - Department of Defense Defense Information Systems Agency (DISA)
 - Department of Justice (DOJ)
 - Department of State (DOS)
 - Department of Homeland Security (DHS)

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INCITS M1 Standards

Approved Data Interchange Formats

INCITS 377*
Finger Pattern-Based Interchange Format

INCITS 378*
Finger Minutiae Format For Data Interchange

INCITS 379
Iris Recognition Format for Data Interchange

INCITS 381
Finger Image Format for Data Interchange

INCITS 385*
Face Recognition Format for Data Interchange

Conformance Testing Methodologies for the Data Interchange Formats (Under Development)

Generalized Testing Methodology - Part 1

Conformance Testing Methodology for INCITS 377

Conformance Testing Methodology for INCITS 378

Conformance Testing Methodology for INCITS 379

Conformance Testing Methodology for INCITS 381

Conformance Testing Methodology for INCITS 385

Other Data Interchange Formats and Related Standards (Under Development)

INCITS 395
Signature/Sign Data

INCITS 396
Hand Geometry Interchange Format

Biometric Sample Quality

A challenge: supporting the development of standards with a set of experimental implementations (e.g., conformance testing engines).

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INCITS M1 Standards

Approved Biometric Application Profiles

INCITS 383
Verification & Identification of Transportation Workers

INCITS 394
Biometric-Based personal Identification for Border Management

Other Biometric Application Profiles (Under Development)

Point of Sale Biometric Identification

DoD Implementations

Commercial Biometric Physical Access Control

Performance Testing & Reporting Standards (Under Development)

Part 1 – Framework

Part 2 – Technology Testing and Reporting

Part 3 – Scenario Testing and Reporting

Part 4 – Operational Testing and Reporting

Part 5 – Framework for Biometric Device Performance Evaluation for Access Control

Approved Interface Standards

INCITS 358
BioAPI Specification V1.1

INCITS 398
Common Biometric Exchange Formats Framework (CBEFF) – NISTIR 6529-A

Conformance Testing Methodology (Under Development)

Conformance Testing Methodology for INCITS 358 (BioAPI Specification V1.1)

Accelerated pace of development: demanding schedule for technical editors, other officers, and experts.

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JTC 1 SC 37 - Biometrics

- Responsible for the development of a portfolio of international standards (similar to the INCITS M1 portfolio).
- 21 Member countries, 6 Observers, 11 Liaison Org.
- M1 represents the US in JTC 1 SC 37
 - Major contributor to SC 37 (provides some of the officers including the chair, M1 national documents and new projects).
- Four data interchange standards close to approval as ISO standards (finger minutiae, finger image, face recognition, iris recognition).
- Two interface standards (BioAPI and CBEFF) may be approved as ISO standards in the fall of 2005.



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Market Adoption Examples

- International Civil Aviation Administration (ICAO):
 - Within requirements for biometrics into passports and other Machine Readable Travel Documents (MRTD):
 - » Requires conformance to JTC 1 SC 37 standards: **Facial recognition** format, *Finger Interchange Formats*, *Iris Interchange Format* and *CBEFF*.
- International Labor Office of the United Nations
 - Within requirements for a Seafarer's ID Card:
 - » Specifies the use of some of the standards under development in JTC 1 SC37 (**finger minutiae**, **finger image** and *CBEFF*).



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Market Adoption Examples

- DHS / TSA:
 - Within Phase III- Prototype Phase of the TWIC program:
 - » Requirements for INCITS M1 biometric standards, as applicable, such as *INCITS 383 - Application Profile - Interoperability and Data Interchange - Biometric Based Verification and Identification of Transportation Workers*
- DHS – Facial Recognition Standard:
 - » Uses INCITS / M1 approved INCITS 385 (**face recognition format**) as the basis for the DHS standard (extracts portions to provide guidelines for specific users).
- DISA - DoD IT Standards Registry (DISR):
 - » *INCITS 358-2002, BioAPI Specification & CBEFF*



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National Science & Technology Council

Subcommittee on Biometrics

Additional Activities

Duane Blackburn
NSTC Agency Representative (FBI)
Office of Science & Technology Policy

www.ostp.gov
www.biometricscatalog.org/NSTCWorkGroup



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Test & Evaluation

- Test Plan Review
- Testing
- International Biometrics Evaluation Review and Validation (IBERV)



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Multi-Biometric

Category	Modality	Algorithm	Biometric Trait (e.g. body part)	Sensor
Multi-modal 	2 (always)	2 (always)	2 (always)	2 (usually)
Multi-algorithmic	1 (always)	2 (always)	1 (always)	1 (always)
Multi-instance 	1 (always)	1 (always)	2 instances of 1 trait (always)	
Multi-sensorial 	1 (always)	1 (usually)	1 (always, & same instance)	1 (usually)
Repeated Instance 	1	1	1	1



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Data & Metadata Collection

- Lack of data significantly limits RDT&E activities
- Increased accuracy = need for even more data
- Solution isn't forthcoming (yet)
 - Researchers like being able to publish with less work
 - Academics don't like to collect data; difficult, time-consuming and not academically "interesting"
 - USG hasn't shown an interest in funding it



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Biometric Vulnerabilities

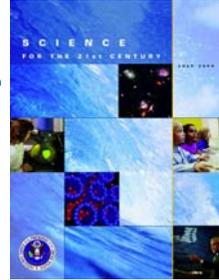
- Draft Classification Guide distributed for comment (how to handle data)
- Upcoming workshop to discuss
 - May 24, 2005
 - Linthicum, MD



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Better Communications is a Necessity

"Promoting a scientifically educated and aware public is necessary if we are to make the appropriate decisions about the nation's R&D investments, guide the adoption and debate the societal implications of new science and technologies, and reap the maximum benefits from our investments."



The system has an error rate of 1 in 200 million!

...would have prevented 9/11.

...an industry poised to take off. Contact us to help with all your biometric needs.

...Passport ID Technology Has High Error Rate"
Washington Post
-7/8/04

Face recognition can track you everywhere you go.

Face recognition doesn't work.



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National Science & Technology Council Subcommittee on Biometrics

Questions & Demos



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