Bradford Wing
Biometric Standards Coordinator
Information Technology Laboratory
National Institute of Standards and Technology
Why use Standards?

- Ensure consistency in data definition
  - Meaning of the data
  - Usefulness of the data
- Transfer relevant information with the biometric sample(s)
- Enable data to be collected and used by different types of systems using systems from multiple vendors (facilitate interoperability)
A Brief History

- **Original focus:**
  - law enforcement organizations
    - sending fingerprint minutia to the FBI (starting in 1986)

- **Expanded to include other law enforcement**
  - Military
  - Intelligence
  - Homeland Security
    - INTERPOL
    - RCMP (Canada)
    - Bundeskriminalamt (Germany)
    - US DoD
    - US-VISIT
    - EU Visa
    - Others
A Brief History

- Data Sent
  - Mugshots
  - Scar Images
  - Needle Marks
  - Tattoos
  - Fingerprint
  - Palmprint
A Brief History

- Revisions (Traditional binary encoding)
  - 1993
  - 1997
  - 2000
  - 2007

- Revisions (XML encoding)
  - 2008
  - 2011
Locations Of ANSI/NIST-ITL Installed Systems

Blue: National and International System Use
Red: State / Provincial / Local System Use
Application Profiles

- Tailoring of a standard to meet a specific user’s needs
- Make optional fields / subfields / information items mandatory or state they not to be used
- Add specific user-defined fields
- Specify combinations of records to be used for standard transmissions, such as enrolling a criminal suspect into a database
FALCON Rapid ID

- 2,655 active devices
- 75K+ transactions first six months 2010
- Two Modes:
  - Two finger (1:N) search
  - One finger (1:1) verification
- Response time target <1m
- Fingers -- 2,3,7,8
- Users
  - Department of Corrections
  - Florida Highway Patrol (every patrol Trooper)
  - Fish & Wildlife Commission
  - Department of Environmental Protection
  - Sheriffs Offices & Police Departments
NIST

National Institute of Standards and Technology

- Better quality
- Smaller size
- INTERPOL recommended standard for fingerprint transmission

Countries sending NIST files
The Biometric Center of Excellence (BCOE) is the FBI program for exploring new and advanced biometric capabilities to solve crimes and protect national security.

The BCOE focuses on:

- Biometric Interoperability Program: Establishes interoperability between the FBI IAFIS and other biometric systems.
- Next Generation Identification (NGI) Program: Enhances the current IAFIS and offers state-of-the-art biometric identification services.

The FBI Biometrics Today is illustrated through a diagram that showcases the integration of various biometric technologies and systems, including biometric databases, interoperability, and collaboration with different government agencies and partners.
- New Modalities
  - DNA
  - Plantar (Footprint)
  - Iris Compact Formats
  - Images Of Additional Body Parts (Besides Face)
New Data Formats
- Geo-Positioning Location
- Information Assurance Features
- Associated Contextual Images
- Audio Clips
- Visual Clips
- Electropherograms
- Metadata

Logs:
- Data Handling Logs
- Original Representation(s)
Latent Friction Ridge Extended Feature Set Markups

- Cores
- Deltas
- Distinctive Characteristics
- Minutiae
- Dots
- Incipient Ridges
- Creases & Linear Distortions
- Ridge Edge Features
- Pores & Ridge Edgefields
Forensics:
- Universal latent workstation automated annotation
- Images of the body (beyond face, iris and friction ridges)
- 3D anthropomorphic facial image markup fields
Additional Information

- Type-98 (Information Assurance record) Best Practices document
- EFS Profile Specifications
- DNA list instructions
- DNA kit ID list
- DNA loci (expanded beyond CODIS)
- XML Biometrics domain (Note: This is part of the National Information Exchange Model – NIEM)

(http://www.nist.gov/itl/iad/ig/ansi_standard.cfm)
New Projects

- Voice Biometrics
  - March 9 Full-day session at NIST
  - First draft of Type 11 record completed based upon work of the FBI/NIST Investigatory Voice Biometrics Interagency Group
  - FBI to do the update to the ANSI/NIST-ITL XML schema
  - Will be presented as a supplement to ANSI/NIST-ITL 1-2011 for voting
Conformance Testing
- NIST developing test assertions for selected record types
- Will be published as a reference document available on the home page for the standard:

http://www.nist.gov/itl/iad/ig/ansi_standard.cfm
New Projects

- Dental Forensics
  - Working with the American Dental Association to base Type-12 record upon their Spec 1058
  - Meetings held in Argentina, Washington, D.C. and Atlanta, Georgia
  - Coordinated with the SWGDVI (Scientific Working Group for Disaster Victim Identification)
  - FBI to do the update to the ANSI/NIST-ITL XML schema
  - Will be presented as a supplement to ANSI/NIST-ITL 1-2011 for voting
FOR FURTHER INFORMATION:

Brad Wing, NIST, Information Technology Laboratory
Brad.Wing@NIST.GOV
301 975 5663

HTTP://WWW.NIST.GOV/ITL/IAD/IG/ANSI_STANDARD.CFM