# Introduction to Biometrics and Biometric Systems

Terminal Learning Objective

- **Action:** Describe common Biometric collection and processing systems and associated equipment and capabilities.

- **Condition:** Given student handouts and class notes.

- **Standard**: Describe current Biometric Systems, equipment, and capabilities.

Administrative Data

- **Safety Requirements: None.**
- **Risk Assessment: Low.**
- **Environmental Conditions: None.**
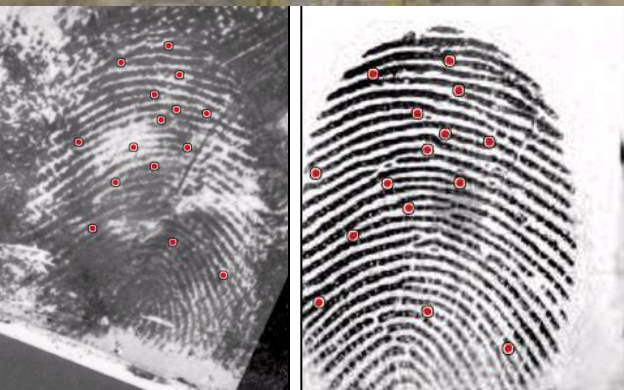- **Evaluation: Student Checks.**
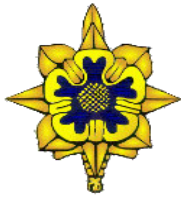
Agenda

- Overview of Biometrics
- How Biometrics Supports Your Mission
- Tactics, Techniques and Procedures
- Summary and Questions

How Does Biometric Technology Support Your Mission?

(U) 15 March, Fingerprint Match Made.
Initial Information given to NGIC by both the Biometric Management Office-Biometric Fusion Center (BMO-BFC) and FBI-Terrorist Explosives Device Analytical Center (TEDAC)

- **Name:** Ali Hasan, Makar Raheed

- **DOB:** 19700101

- **Date of Arrest:** 20031126

- **Arrest Charge:** Weapons

- **FBI Case #:** HQ-C1441327-1619-F01009600
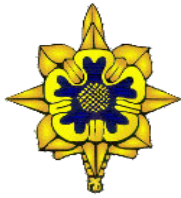
Biometrics Defined

- Bio (life) + Metrics (measurement)
  - Biometrics is the Measurement of Life
- 2 types of biometrics: Physiological and Behavioral
- Used to verify the identity or claimed identity of an individual
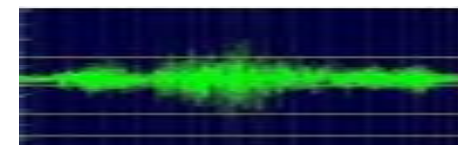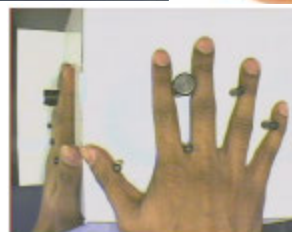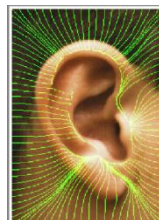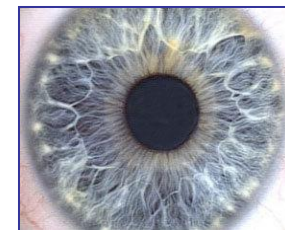
Current Biometric Modalities

Physiological

- **Iris Scan**
- **Finger** and Palm **Prints**
- **Hand/Finger Geometry**
- **Vascular Imaging**
- **Facial Recognition**
- **Voice Pattern**
- **Retina Scan**
- **DNA**
- **Odor, Earlobe, Sweat pore, Lips**

Behavioral

- **Signature**
- **Keystroke**
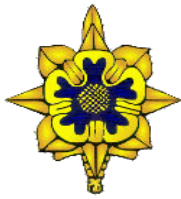- **Speech Recognition**
- **Gait**
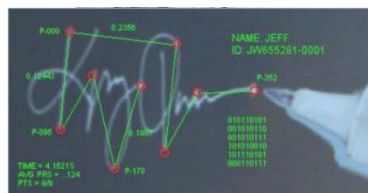
Origin of Current Biometric Systems

- Origin of Biometric Automated Toolset (BAT) and the Handheld Interagency Identity Detection Equipment (HIIDE):

    - US Forces in Kosovo lacked ability to positively identify Local National Hires (LNH); a LNH could be fired but could go to a different camp and get re-hired.

    - Biometrics Automated Toolset (BAT) introduced in Kosovo in 2001. BAT provided a concrete identification means.

    - HIIDE developed to provide an untethered, portable biometric collection and identification platform. Fielded to Army Spring 2007.

- BISA developed for Iraq to provide for a system of identifying, vetting, and tracking local national hires (LNH) and locally employed personnel (LEP).

What is BAT?

- Software program

  - **<u>Collect</u>** Biometric and other Identifying info

  - **<u>Save</u>** biometrics and info to database

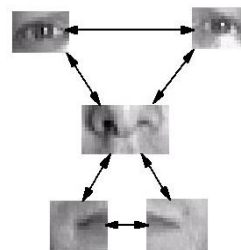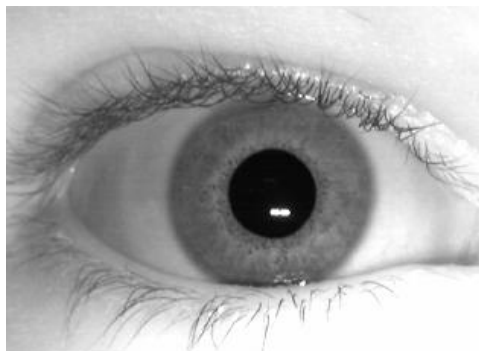 - **<u>Query</u>** and **Search** the database (currently 1.2 Mil and growing)

- **Current Uses**

  - Anti-terrorism/Force Protection Screening (AT/FP)

  - Detainee Operations

  - Sensitive Site Exploitation

  - Intelligence/High Value Target

  - Border Control/Port of Entry Operations

  - Population Census and Control

  - Civil Military Operations
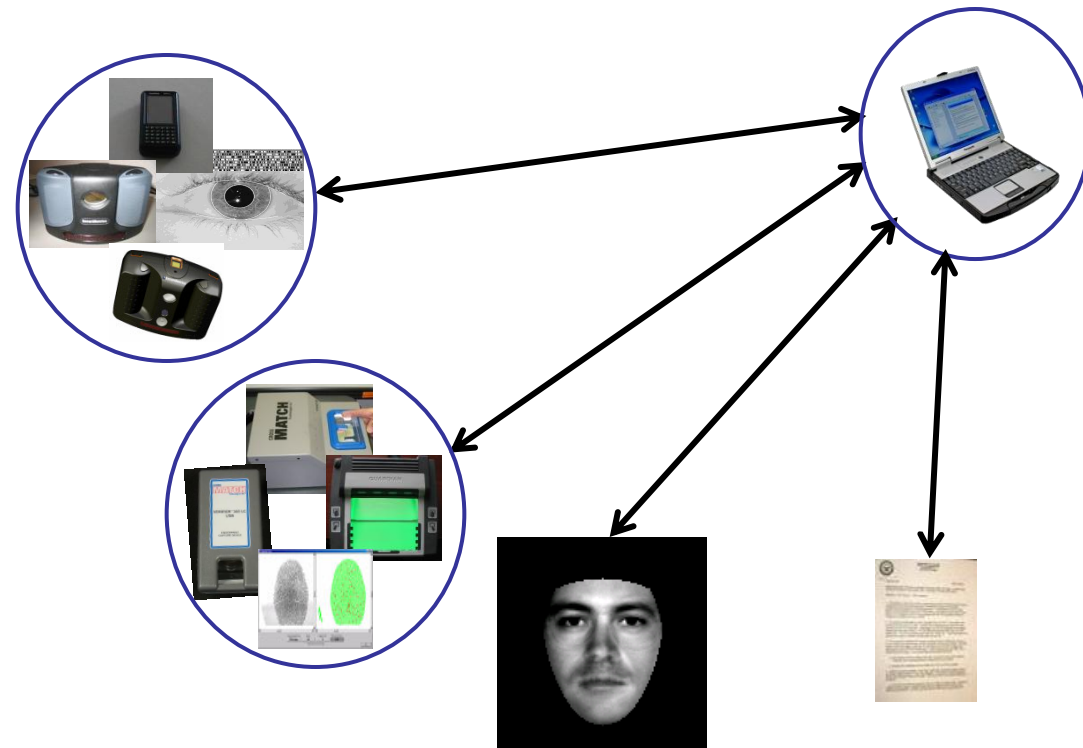
Three Biometrics Used by BAT

Iris Recognition

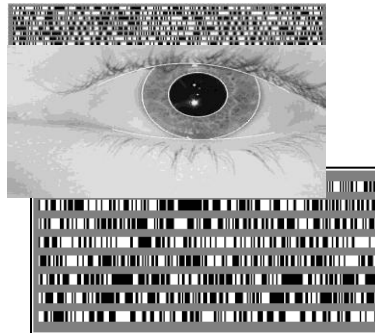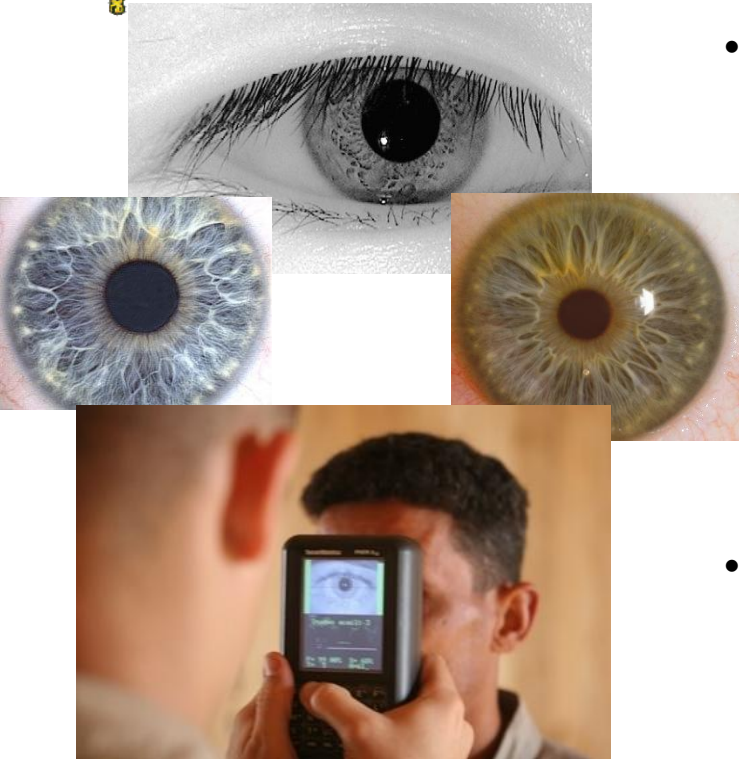- BAT incorporates a handheld Iris Recognition Device developed by Securimetrics, Inc.

  Scalable and fast, capable of providing real-time responses.

  Extremely accurate identification with a False Acceptance Rate of: 1:1.2 million.

- Represents each iris as a small, 512-byte Iris Code. An average jpeg photograph is 1.6Mb or 1,600,000 bytes.
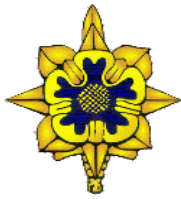
Fingerprint Recognition

- BAT incorporates a Fingerprint capture and identification engine developed by Neurotechnilogija

- One of the oldest and most recognizable biometric modalities.

- Extremely accurate identification.

- Searchable against FBI Automated Fingerprint Identification System (AFIS) database

- Searches on Flat and Rolled Prints

Facial Recognition

- **The Biometrics Automated Toolset incorporates a Face Recognition Engine developed by Lau Technologies, Inc.**

- **Ability to take photos from BAT and make 3D images**

- **Accuracy reduced by external variables such as light, distance from the subject and facial position.**

- **Represents faces as an extremely concise 128-byte "eigenface" template for minimal storage and improved search speed**

- **Used by the State Department to find duplicate visa applicants, by motor vehicle divisions, by law enforcement agencies and in Department of Defense initiatives.**
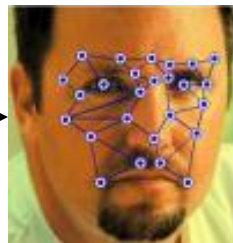
Handheld **I**nteragency **I**dentity **D**etection **E**quipment (**HIIDE**)

• Handheld, Tactical, Multi-modal, Biometric Enrollment and Identification Device

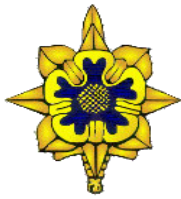• Tactical extension of the Biometrics Automated Toolset (BAT)

HIIDE System Description

- Collects Iris, Fingerprint, photograph and Biographical data

- Creates a "portfolio" that can be imported into the BAT system as a digital dossier.

- Watch lists can be imported into HIIDE from BAT for on the objective identification.
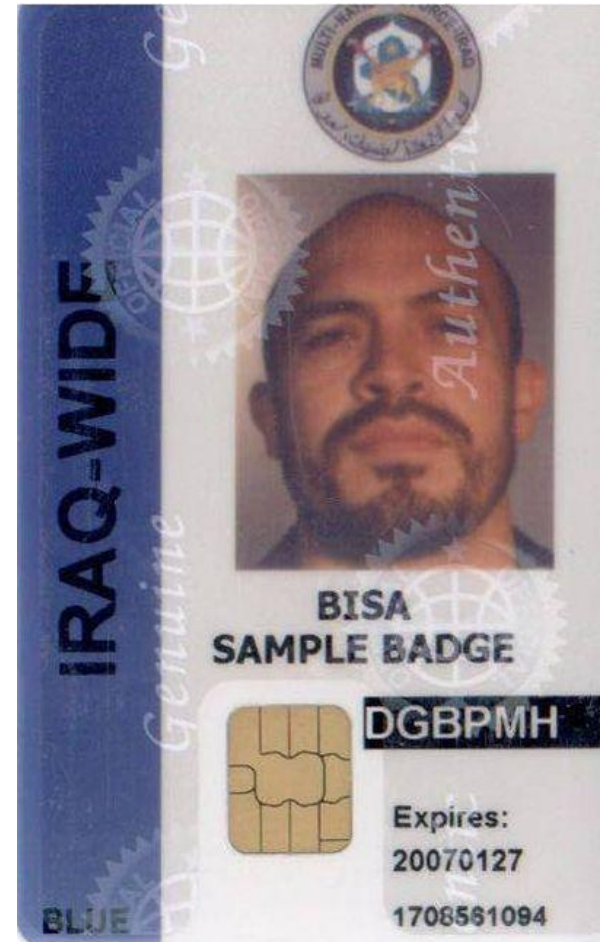
Biometric Identification System for Access (BISA)

- Collects biometric data and biographical information from all visitors
- Uses ID Badge and biometric to ensure person is who he/she says they are
- Vetted against other databases via NPRnet

BISA
SAMPLE BADGE

DGBPMH

Expires:
20070127
1708561094

IRAQ-WIDE

BLUE

Biometric Architecture

Other DOD Agencies/COCOMS

Interpol

DOS

DHS US VISIT

State

Local Govt

Detainees, LEPs, Persons of Interest

Main Server Qatar

Latents

BTF-West

55,000,000 +

Other Biometric data

DoD ABIS

IAFIS

SIPRNET
NIPRNET

Your role in collecting Biometrics

- Ties a person to their biometrics, not just their name

- Eases Identification of foreigners/possible enemies

- Collects other Intelligence information

- Database accessible/searchable by many

- Allows identification at the tactical level

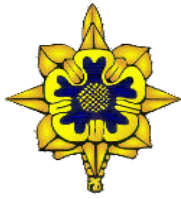- Provides information for criminal prosecution

Caution:
Data is only as reliable as the person who collected and entered it!
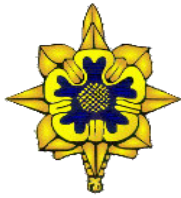
Summary

- Biometrics defined

- Purpose of Biometrics

- Core biometric functions

- Origin of current systems and architecture

- Mission; Tactics, Techniques and Procedures

- Biometric Modalities and Systems

Questions

BIMA

**BIOMETRICS
IDENTITY
MANAGEMENT
AGENCY**

TRAINING CERTIFICATE

This is to certify that _____

has completed the Introduction to Biometrics and Biometric Systems training.

_____
Signature

_____
Date