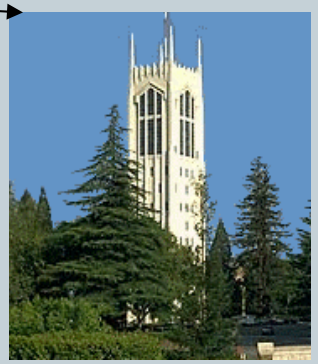
Use of Mobile Biometric Devices for Forensic Fingerprint Imaging

ANSI/NIST-ITL WORKSHOP
JANUARY 28-30, 2013
PRESENTED BY: NASELLO GARY

Eric Jones, Chief of Police

Introduction

City of Stockton, California



Introduction

City of Stockton, California

Population = 291,409

Square Miles = 79

Sworn Officers = 325 (1-15-13)

Patrol Vehicles = 150

- *Top 8 most dangerous City in US*
- *Port of Stockton Classified as a Level 2 Port of Entry*

Introduction

- A Quick History
  - Fusion was developed by 3MCogent for the Department of Defense as a joint effort to deploy a multi-model mobile biometric device overseas
  - Technology was identified as potential transfer to local law enforcement to capture latent fingerprints at crime scenes and identify persons of interest in near real-time
  - Field Latent Capture Pilot project was identified by Stockton Police Department as an opportunity to increase the number of cases investigated by reducing the time required to develop leads

Key Players

- Biometric Technical Work Group
- DHS S&T Patty Wolfhope, Chris Miles
- Sandia Labs Chris Aldridge, Mike Epstein
- Stockton Police Department
  - Police Chiefs Blair Ulring (ret.), Eric Jones
  - Project Management Tom Hennig, Erin Mettler
  - Lab Operations Capt. Aaron Rose, Darren Antonovich
  - Subject Matter Experts / Lab - Patricia Almeida, Candy Mazzoula
  - Subject Matter Experts / Field - Gary Nasello, Tatiana Shlafer

Persons Identified

- Ran 900+ field capture latent prints with auto & manual processing.
- 22 out of 93 crime scenes resulted in confirmed latent hits (26%)
- From the 22 crime scenes 117 out of 187 prints (63%) were confirmed latent hits against local arrest AFIS database
- BONUS - Hit on 7 of the 11 palm prints imaged (64%)

General Characteristics (1)

- Purpose:
  - Adapt war fighter technology for use by local law enforcement agency
  - Validate use of technology versus manual processing
  - Develop internal policy for use of mobile latent capture technology
- Desired matching capabilities:
  - Capture at numerous crime scenes with varying environments (surfaces, quality, lighting, etc)
  - Automated transmission to AFIS and lights out searching for potential matches
  - Testing for improved hit rates by changing procedure, angle, lighting and capture techniques

General Characteristics (2)

- Database characteristics:
  - 3M Cogent Automated Palm and Fingerprint Identification System
    - 400,000 prints from arrestees within San Joaquin County since 1990
    - Automated search of field capture latent print images via Cogent Latent Print Workstation
    - Search results verified manually by Latent Examiner
    - Results returned to Fusion and local custom-built website
    - Currently awaiting upgrade for AFIS system which will allow for enhanced secondary searching utilizing third level detail

Mobile Unit Description

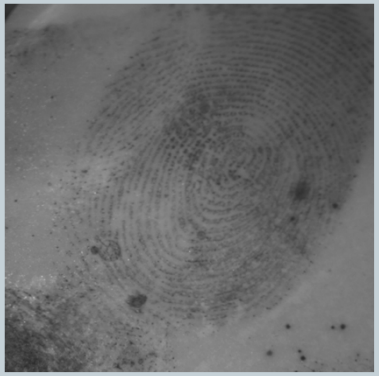
- Mobile Unit Data Captured:
  - 1-1 image capture assured when using tri-pod
  - Transmitting image to local AFIS system via secure 3-G cellular connection
- Form Factor / User Interface
  - Military grade 3M Cogent Fusion Multi Modal biometric capture device
  - Touch screen optional
  - Image quality listed during capture process
  - Lights to indicate processing state (yellow – captured / grey – transmitted / green – results available on web page)
  - Minimal training required to operate device
  - Web page results linked to local multi-agency records databases

Data Exchange Details

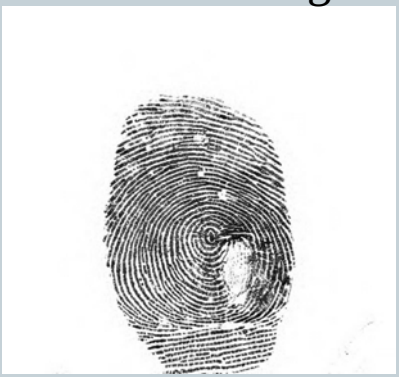
- Fingerprints to local AFIS for matching to mug shots and Records Management Systems
  - Unique identifier for the transaction and device
  - Field transaction results available without lab tech intervention
- Latent image transmitted
- Metadata requirements be analyzed as part of the Phase-II project implementation
- Latent image may not currently meet quality standards of ANSI/NIST-ITL in order to be usable and have enough associated metadata to ensure traceability to the employer and worker.

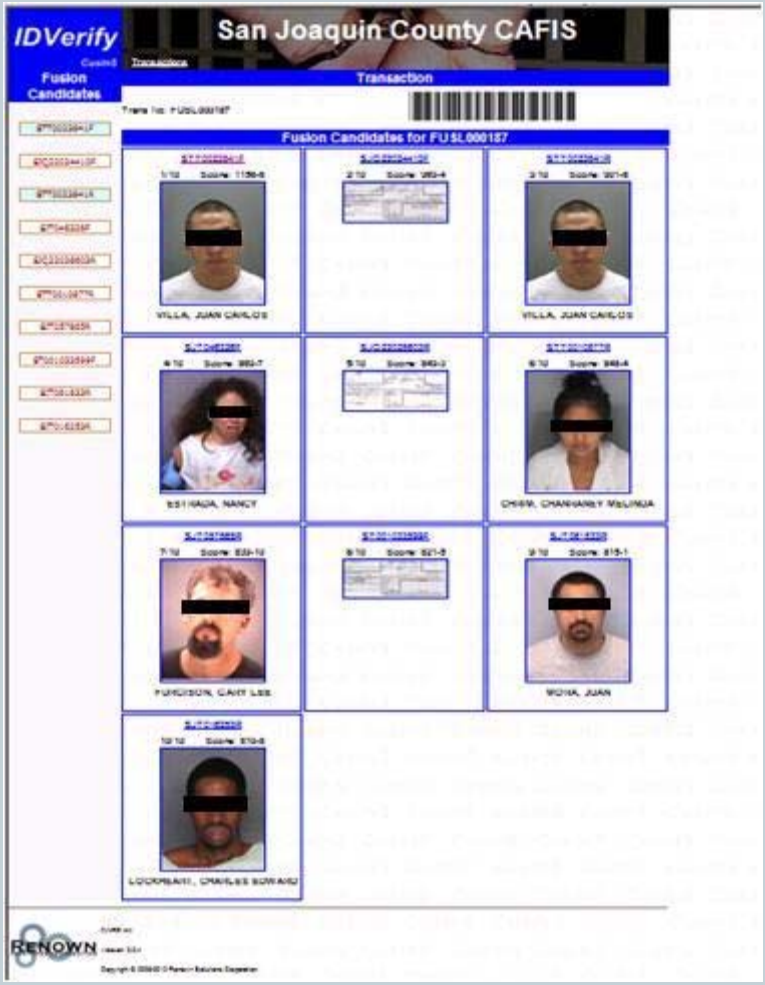
Image = Results = Arrest

Latent Image



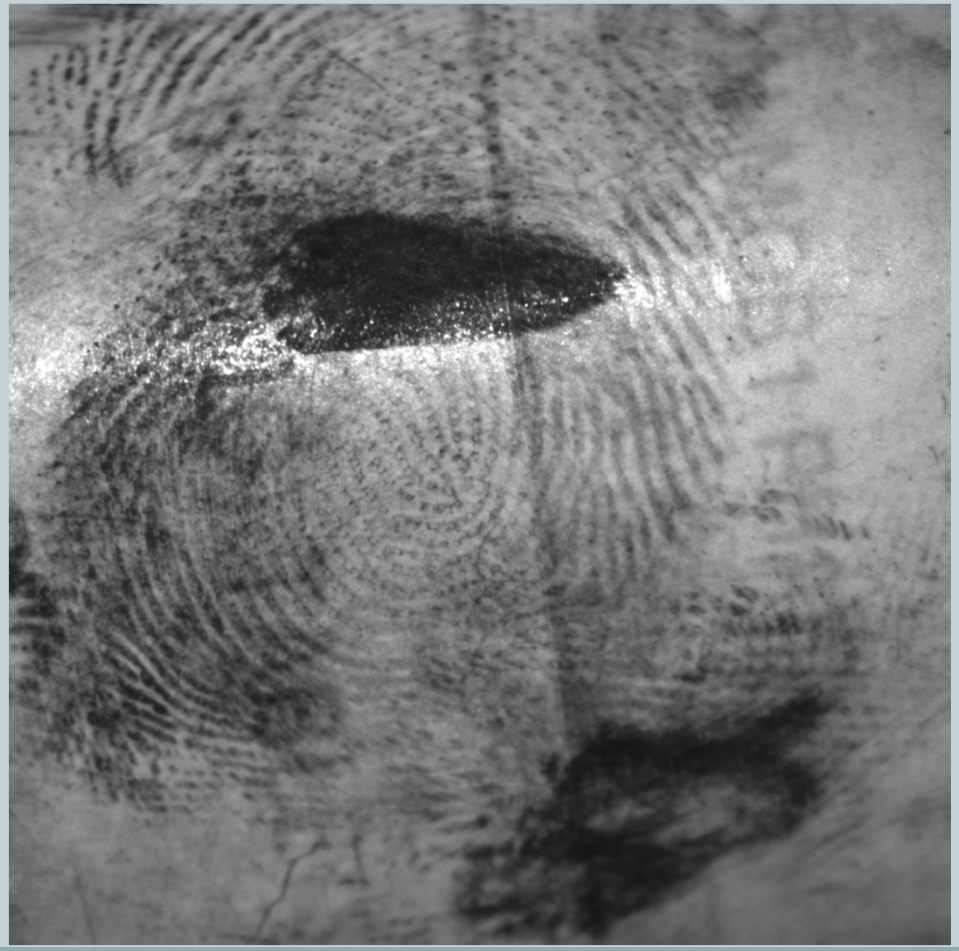
AFIS Hit Image





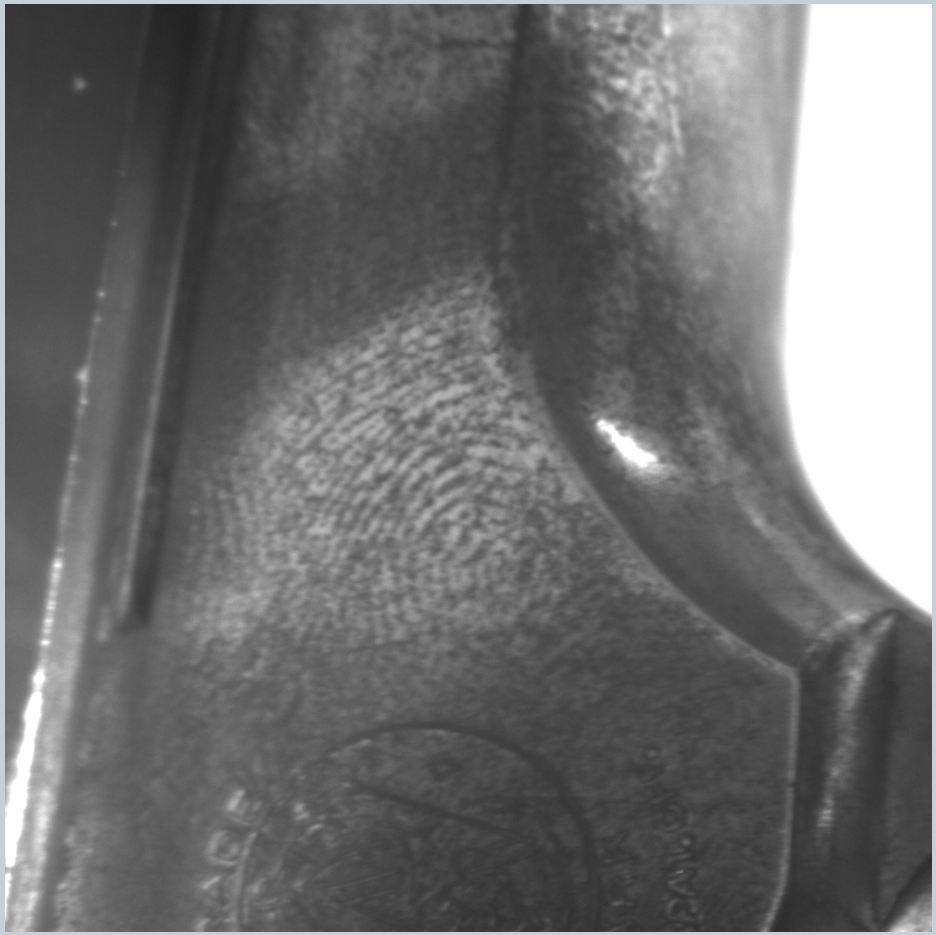
Other images resulting in arrests

SPD Case #11-44592 – Stolen Vehicle Arrest – Fusion ID FUSL000153



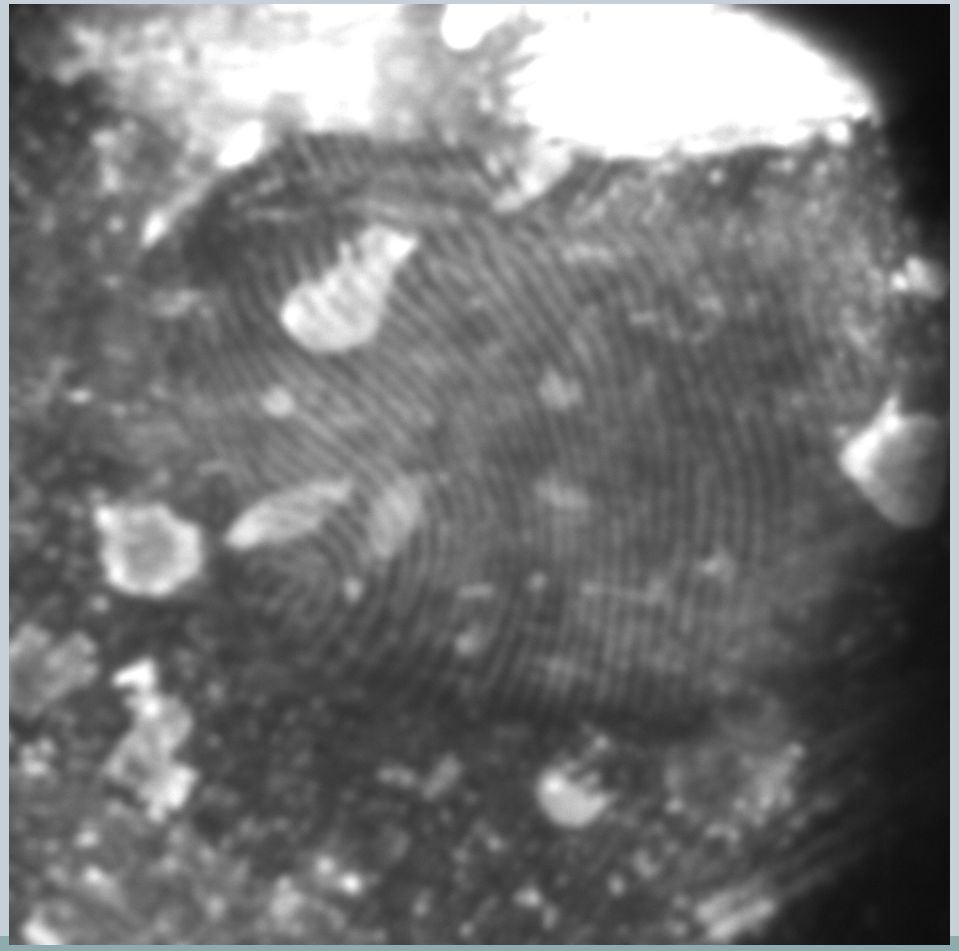
Other images resulting in arrests

SPD Case #12-13950 – Illegal possession of a firearm – Fusion ID #000579



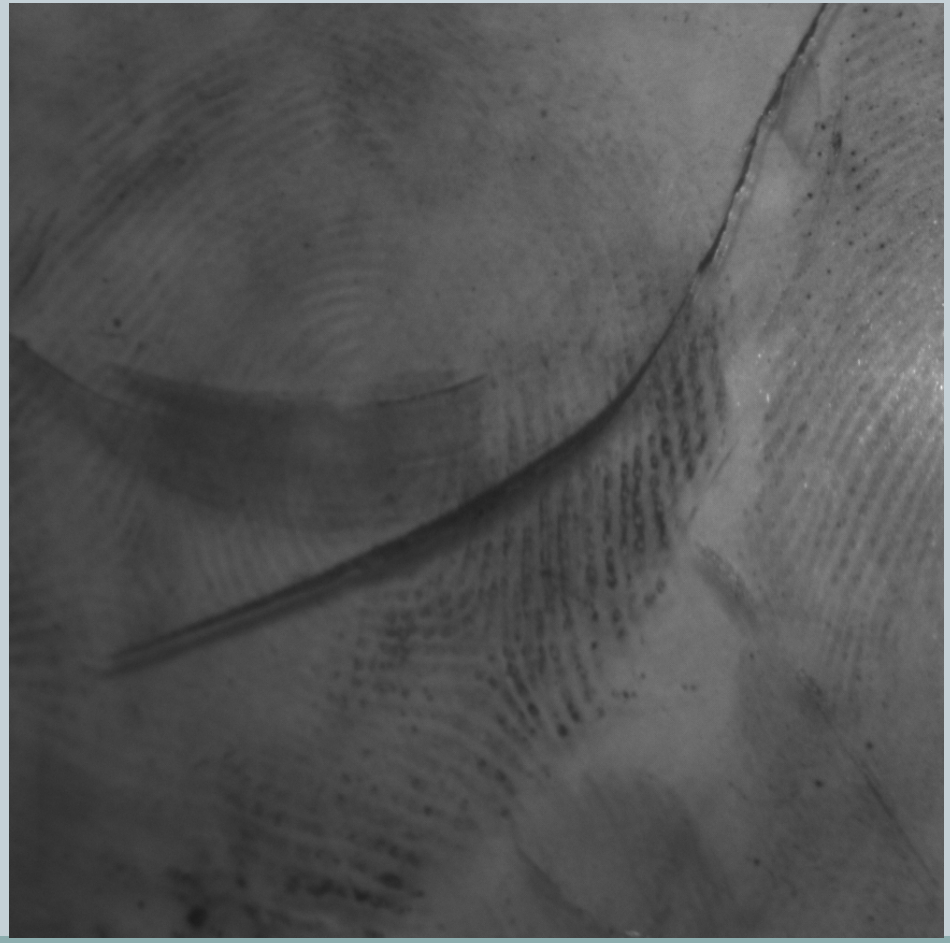
Other images resulting in arrests

SPD Case #12-18768 – Assault with a deadly weapon – Fusion ID #000629



Other images resulting in arrests

SPD Case #12-22128 – Homicide – Fusion ID #000629



Lessons Learned

- Lighting is the most significant factor in capture high quality detail from field latent prints
- Camera angle and curved surfaces must always be reduced as much as possible.
- Location of latent will often create a difficult capture angle for the field technician.
- Battery charge can occasionally create problems. Always keep a charge.
- Reflections from shiny surfaces can create hot-spots in the photo image.

Future Plans

- Increased use of Fusion
- Include Geo code, time and date stamp with transactions
- Develop standards for use of device
- Testing lighting, surface and camera angle
- Tracking results
- Testing other device if available
- Adoption of formal use policies
- Documentation of court related actions
- Continued coordination with District Attorney