

# Automated Face & Fingerprint Criminal Justice Resources

Presented 27 April 2016 at the  
Illinois Division, IAI 54<sup>th</sup> Annual Educational Conference  
by Ed German  
Macon County Sheriff's Office



# Presenter's Short Bio

- Has worked in human identification the past 45 years, including 36 years' service in three different US Government organizations.
- Certified Latent Print Examiner (IAI)
- Fellow of The Fingerprint Society
- Certified Biometrics Professional (IEEE)
- Has routinely interfaced with government laboratories on six continents, and lived/worked more than seven years as a forensic scientist in Asia and Europe.

## Presenter's Short Bio (Continued)

- Currently chairs the IAI Facial Identification Subcommittee and serves on the Friction Ridge Subcommittee of the Office of Scientific Area Committees for Forensic Science (OSAC).
- Now lives and works in his hometown of Decatur, Illinois (with his loving wife/high school sweetheart) ... where he follows in his mother's footsteps at the Macon County Sheriff's Office.



← Ed German's loving wife and his mother.

## Presenter's Short Bio (Continued)

- No personal success has ever been just my accomplishment...
- Each time, I leveraged information, training and other kindnesses shared with me directly or indirectly by other experts and organizations.

# Why Talk about Face Searches in Illinois?

In 2016, most Illinois law enforcement agencies have no facial identification experts and no plans (or extra money lying around) to begin such nonsense...

They are too busy solving crime with real forensic science to be bothered with pseudo-science like facial database searching and comparisons.



Before 9-11,  
biometrics such  
as face and iris  
usually stayed  
in their own  
lane and were  
of little concern  
to most forensic  
scientists.



Since 9-11,  
forensic experts  
have been  
surprised to  
find biometrics  
claiming to be  
important to  
help solve  
crime.



# Ignoring Biometrics is No Longer an Option

- In 2016, **every** first-world country's national forensic laboratory, and Interpol, have facial identification units searching large-scale biometric repositories including (at least) fingerprints and face.
- Facial identification automated searches are daily providing valuable forensic intelligence (intelligence = information) solving crime.

# Ignoring Biometrics is No Longer an Option

- Even with funding challenges, Illinois law enforcement can now leverage external facial identification resources while planning and training for future internal capabilities.
- This presentation is about how to leverage currently available biometric repositories (fingerprint and face) to help solve crime.



# How is Fingerprint AFIS Similar to Facial Recognition Biometric Searching?



# Google Maps Road Overlays...

## AKA Feature Templates



# Google Maps Road Overlays...

## AKA Feature Templates

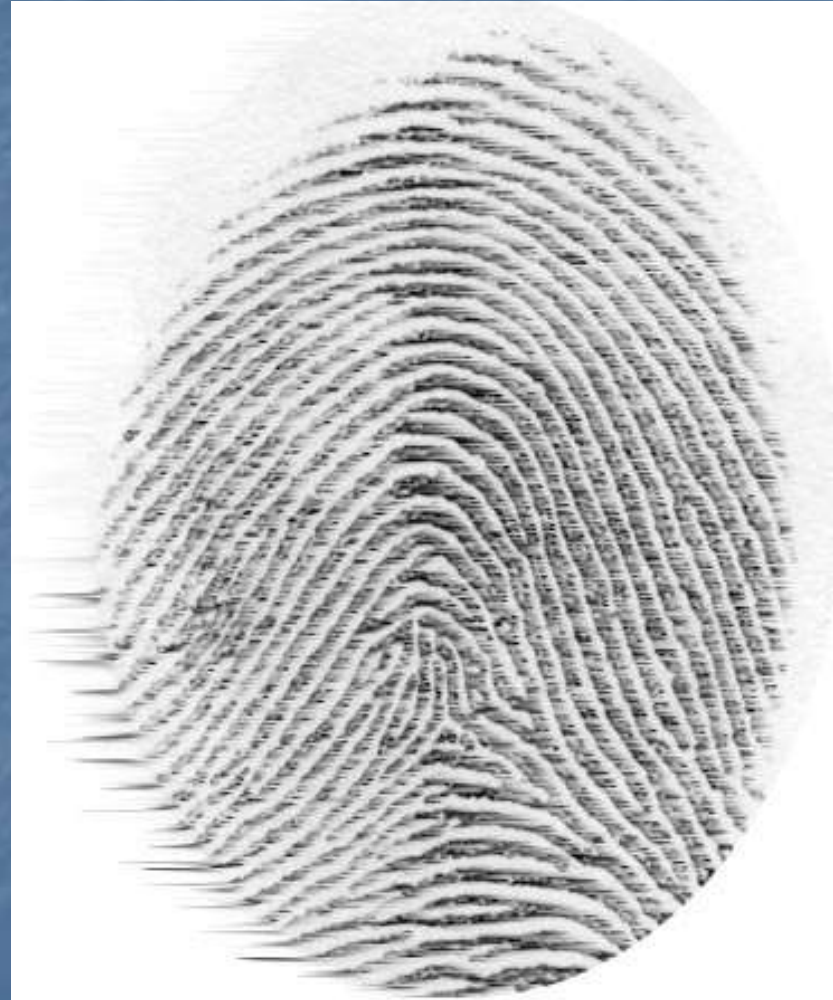




# Quality and Quantity

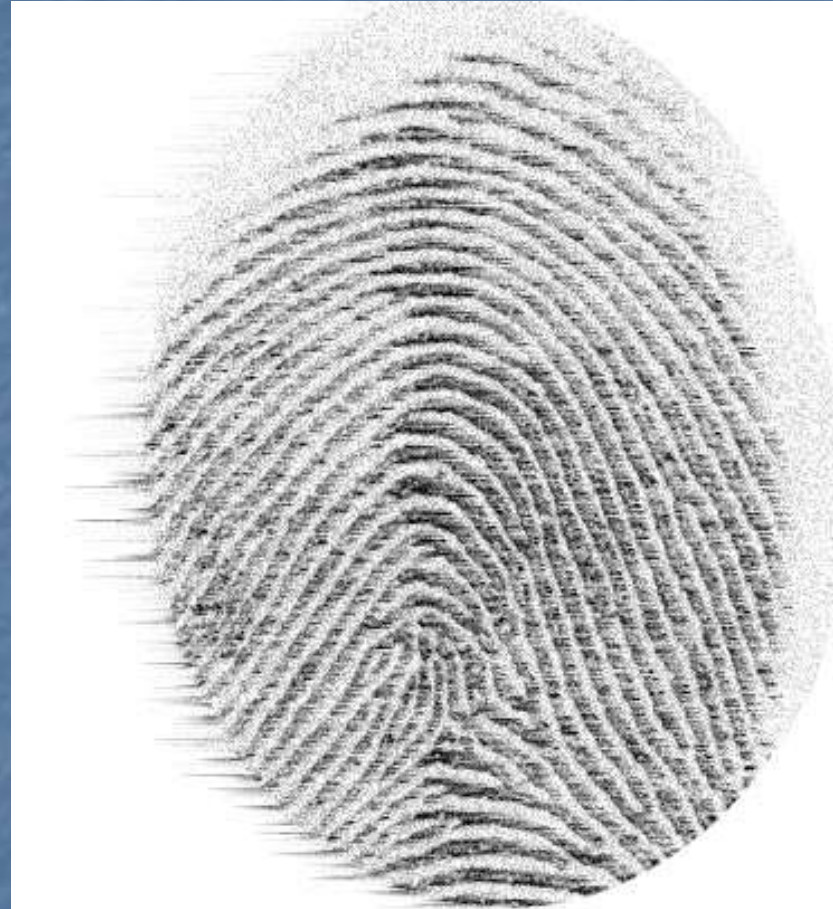


# Quality and Quantity





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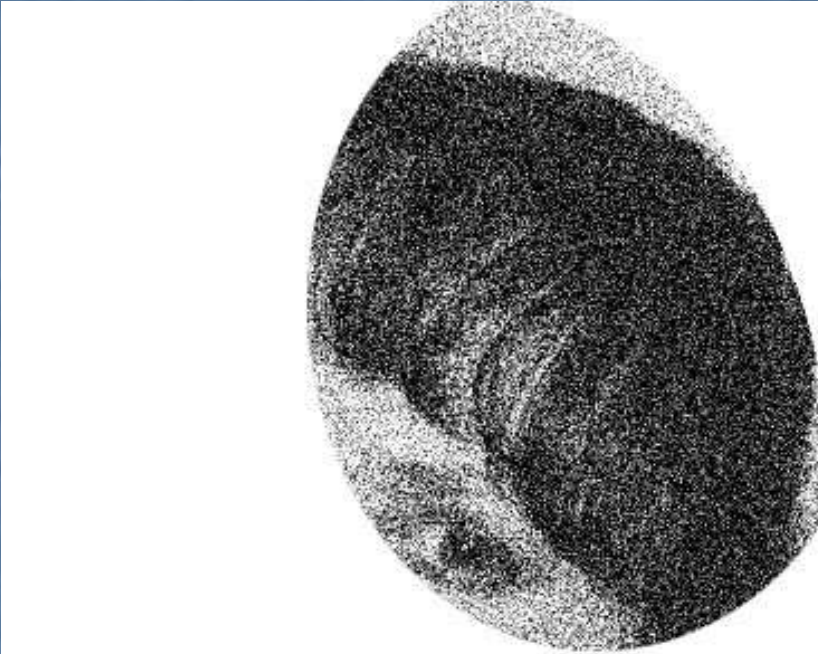


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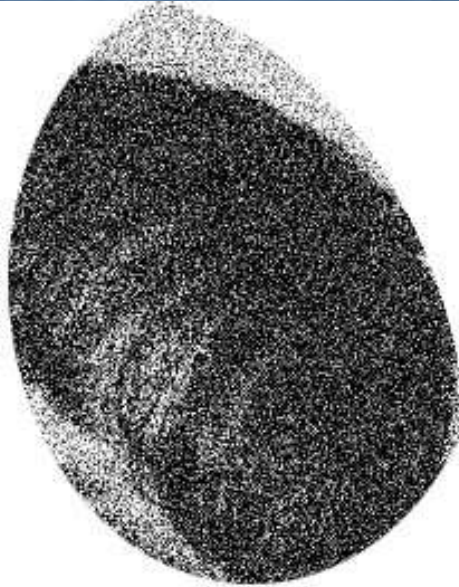


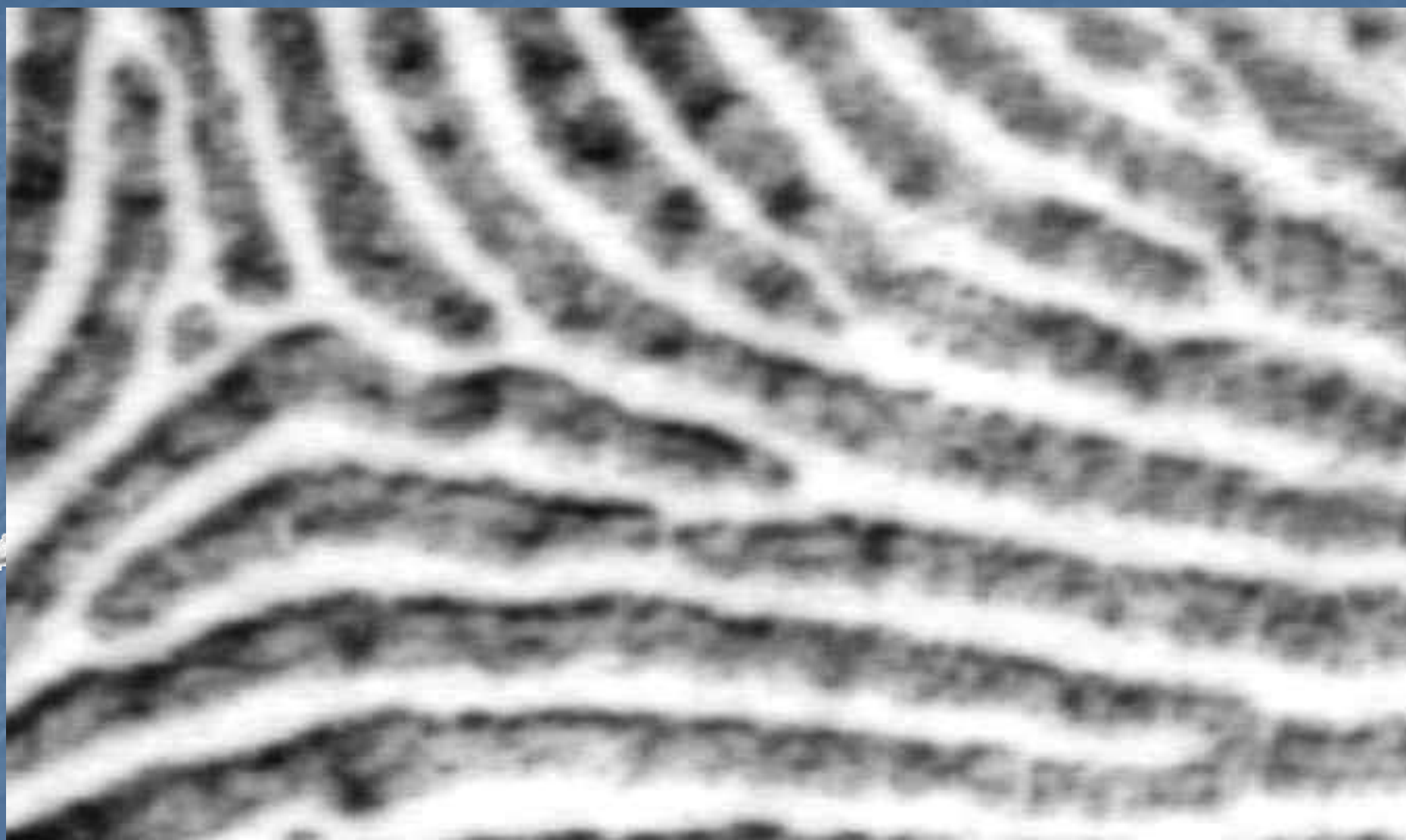


# Quality and Quantity

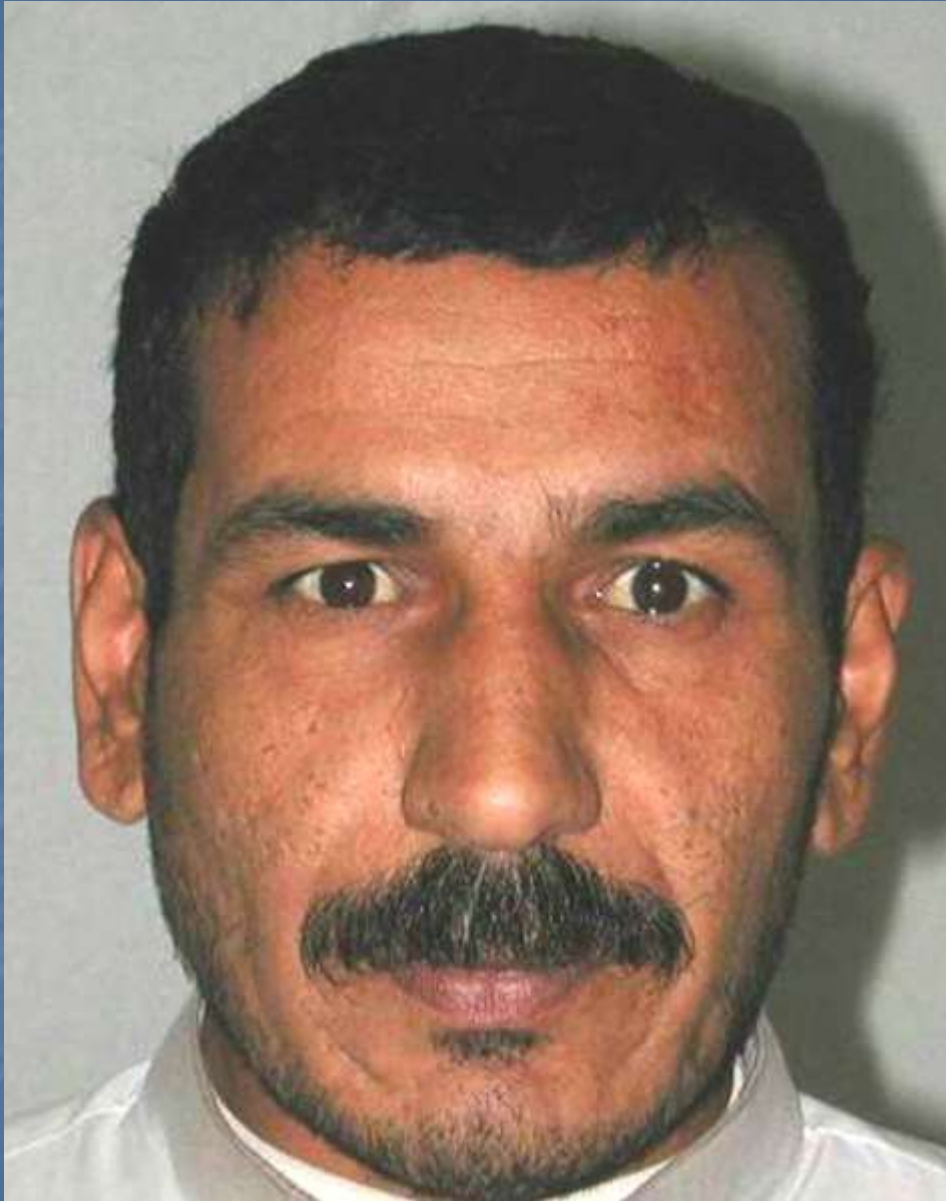


# Quality and Quantity









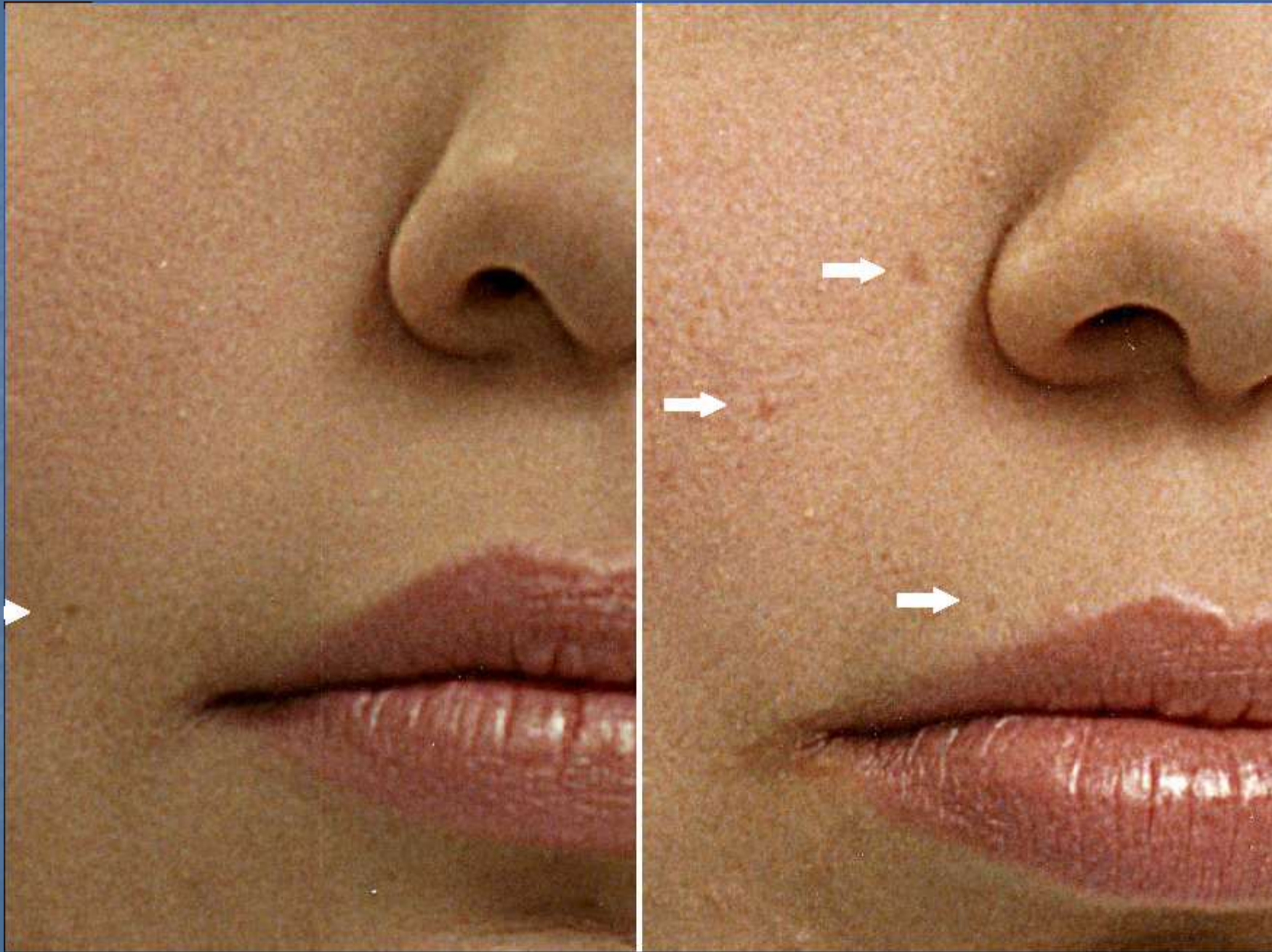
































# Long Range Challenge (for Law Enforcement and Intel Communities)

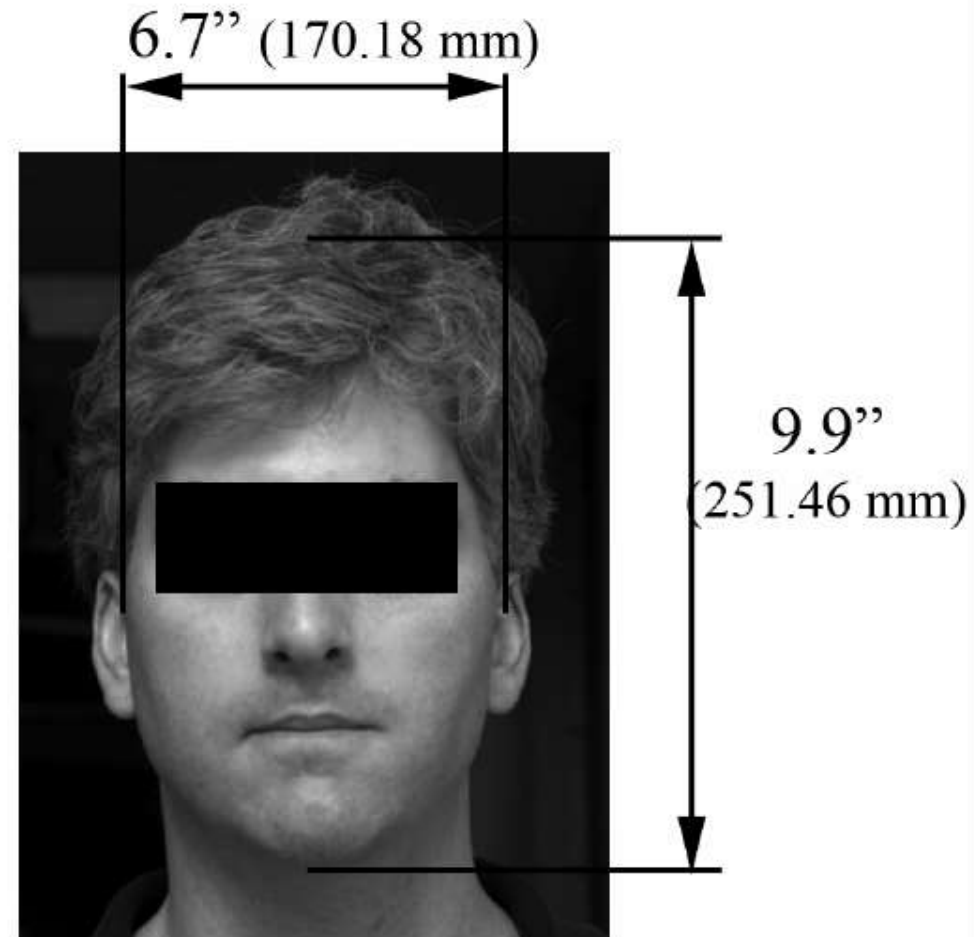
## ■ LINKABLE/SEARCHABLE DATABASES:

- Multiple agencies, states, and jurisdictions have, or are building, known offender databases, but systems not necessarily compatible or shareable.
- Quality of images usually poor
  - » 640 x 480 is NOT GOOD ENOUGH FOR ID!
  - » JPEG damages images
- ANSI/NIST STANDARD WILL IMPROVE QUALITY AND HELP DATA SHARING



**GOAL:**  
**Resolution**  
**on Face**  
**= 0.1 mm**  
(Requires  
~ 1700 x 2515  
pixels on face)

Adult Males in U.S.  
99th percentile height & width



# Face Repositories to Search

- Local/State Automated Biometric Databases
- Next Generation Identification (NGI) FBI Office Search
  - Request local FBI Office to open a “cooperative case”
  - When appropriate, request that faces are searched in NGI and other datasets of the more than 500 million faces the FBI can search... including 16 state DMVs (as of Apr 2016), US State Department Passport/Visa faces, US military collections and more).
  - Search responses are typically a “possible match” investigative lead or no match found



# Face Repositories to Search

- FBI CJIS NGI Direct Submission Face Search
  - Direct submission through your state's AFIS/ABIS
  - Illinois' state AFIS does not yet handle NGI face transactions
  - When direct NGI search is available – FBI CJIS' Universal Face Workstation software can be used to prepare searches and adjudicate search response candidate lists (similar to FBI Universal Latent Workstation software)

## Other Face Repositories to Search (Cont.)

- IL Sec'y of State does DMV face searches for law enforcement
- Other US and Foreign Databases
  - The IAI's restricted access membership rosters are your outreach phonebooks for other law enforcement/government fingerprint and face repositories

# Fingerprint Repositories to Search

- FBI CJIS' Next Generation Identification (NGI)
  - Much greater accuracy than prior IAFIS software
  - Automatically Searches Criminal and Civil Files
  - Latent Fingerprint Feature Searches (LFFS) include automatic Latent Fingerprint Image Searches (LFIS) with scores merged to improve LFFS candidate lists



# Fingerprint Repositories to Search (Cont.)

- Local AFIS
- Your State AFIS
- Other Local AFIS
- Other States' AFIS
- Regional AFIS Databases
  - WIN, NCR, NOVARIS

# Fingerprint Repositories to Search (Cont.)

- Department of Homeland Security (DHS has America's largest AFIS database... visa applicants, legal and illegal immigrants, and more)
  - Any US law enforcement agency may submit latent prints
  - Only major cases (serious crimes)
  - Submit 500 or 1000 ppi TIF or JPG images
  - Email image and request details from official law enforcement email account to [bsc@ice.dhs.gov](mailto:bsc@ice.dhs.gov)

# Fingerprint Repositories to Search (Cont.)

- Interpol
  - You **CANNOT** submit images via your regular law enforcement agency email.
  - Send request and images via FBI LEO.gov email (aka LEEP) to `usncb.state.mailbox@usdoj.gov`
  - Additional details for contact are online at `onin.com/interpol`

<https://www.justice.gov/interpol-washington/services-law-enforcement-agencies>



# Fingerprint Repositories to Search (Cont.)

- Other US and Foreign Databases
  - The IAI's restricted access membership rosters are your outreach phonebooks for other law enforcement/government fingerprint and face repositories

Attempting to merge biometric systems with typical forensic operations can cause square peg to round hole problems...

Ensure success by planning and training to standards.



# Questions?

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