

APPROVED

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International Association for Identification



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AFIS Committee Minutes

The International Association for Identification (IAI) AFIS Committee convened in Charleston, WV, on 24 July 2000 for a business meeting. The AFIS Committee Co-Chair, Peter Higgins, took roll and presented the agenda for the meeting. These minutes reflect the key discussions and decisions from the meeting.

1 Committee Meeting Agenda

Role call and introduction of participants

Review of Agenda:

- Report on FBI/OHIO/US Customs study on "less than 10 fingers". - Tom Hopper and Mike Powers
- Report on West Virginia State AFIS – Tom Hopper
- Report on Minutiae based records for AAMVA – Peter Higgins
- Report on minutiae based records for IAFIS – Tom Hopper
- Interest in January 2001 meeting – All
- Report on latent use by others than the FBI – Steve Meagher
- Discuss studies and demonstrations of interest – to see if the committee will sponsor them – All
- Report on NAFIS – Dr. Fred Preston
- Report on Interpol-Europe sharing of digital fingerprint records – Roland Gander
- Demonstration of an attack on a single finger biometric system – Robert McGrath

New Business

- Discussion of next committee meeting to include location, purpose, etc. If the next meeting is in January, which day and which Coast are best for members?
- Other topics as proposed at the meeting.

2 Roll Call

Thirty one people attended the meeting. Ken Moses, Committee Co-Chair, was unable to attend the meeting due to a family wedding. A detail list with e-mail addresses is attached.

3 Miscellaneous New Business

The Committee Chair started the meeting with a brief report on several ad-hoc items.

- Review of AFIS Committee presentations at the conference and plans to introduce speakers.
- Review of comments on the proposed agenda and two new topics that had been suggested: Mike Lesko to address an APB Task Force and Phil Colby of Vermont's interest in criteria for adding ten print and latent images to an AFIS repository.

4 Business Session

4.1 Report on FBI/Ohio/US Customs Study on Using Less than 10 fingers for Applicant Background Checks

Mike Powers, from the Attorney General's office, State of Ohio, described their progress conducting background checks using WebCheck for state applicants. In 1998 Ohio started Webcheck for civilian background checks. Of the 450,000 civil checks done since then they have had a 2% hit rate. The searches are based on 2 fingers – flat impression. The FBI is studying whether this is acceptable for a gun check and other mandated uses of fingerprints.

Using staff on two shifts Ohio is able to process civilian background checks within one week of submittal. Before implementing WebCheck they were often running over the 45-day limit. He noted that WebCheck applications are generally returned within 3-5 days.

After initial implementation, they are currently thinking of having the applicants perform their own data entry and are reassessing the application of a fee-for-service. Future plans call for using the fingerprints imbedded in the magnetic stripe on driver licenses. If the applicant has not been a resident during the last five years they would have to submit a full set of fingerprints for verifications.

Tom Harper discussed the concerns regarding legacy systems and “less than 10 finger” systems. Many of these older systems did not address the 'less than 1 inch' question for fingerprints. He also discussed some problems with sequencing of prints and problems associated with running the test project with Ohio for only one year.

Higgins questioned whether or not Customs is also going to single print reader. Hopper then discussed relationships between FBI and INS. FBI wants to get away from Name checks and is exploring the need to get better fingerprint checking processes. The FBI wants to acquire the ability to handle flat impressions as well as rolled in IAFIS searches They recognize that they need backward compatibility to states running different systems. If FBI could accept 4 finger flats (from 2 hands) and 2 thumbs they could avoid the sequencing problems.

One of the biggest problems to accepting flat impressions is the cost of the scanners. Ohio's scanners are down to approximately \$1,200 each. In a live-scan environment costs are a critical component in the decision process. AFIS vendors want to see the potential financial value for this project before they will spend R&D money on development of this capability. The Congress wants to see more work done in this arena for the INS but there are no additional dollars at the federal level for this year.

The importance of quality flat impressions was discussed. Higgins noted that the INS has had terrible results with the flat finger impressions at the border crossings in California, not because the vendor's equipment is faulty, but, because the people taking the prints are not properly trained and do not take the time to capture quality prints. To expedite the processing of the thousands of individuals coming across the borders illegally, INS agents and Border Patrol officers often override the quality acceptance features of the fingerprint readers.

Roland Gander, Swiss National Police, indicated that their equipment will not permit processing to continue if the prints are not of an acceptable quality. The Swiss National Police take 10 prints and check on 2. If there is a hit, they then check on all 10 prints. They stopped running name searches 6 years ago and rely solely on the 2 finger checks with good results.

4.2 WV AFIS System

Hopper indicated that the state of West Virginia was in the process of buying their own AFIS system that will be housed, at least temporarily, in the FBI Clarksburg facility. The FBI converted approximately 500,000 cards for the WV system but the operation and population of the system will be the responsibility of WV officials. It is based on the FBI's A-109 Competition demonstration model's hardware and software.

4.3 AAMVA Status

Higgins gave an overview of the status of the minutiae based fingerprint standard development effort being conducted by AAMVA. The AAMVA standards working group, headed by Goeff Slagle, AAMVA, and Creed Jones, Sagem-Morpho, has developed a set of criteria for the single finger reader that is compatible with the BioAPI and the ANSI Type 9 minutiae format.

4.4 FBI Minutiae Based Records

Hopper indicated that to date the FBI has 8-10 organizations that are submitting minutiae based latent records in a 'lights-out' basis. The FBI has found that it is only using 10% of their capacity to process latent prints. To improve the access rates, they are encouraging the use of e-mail with encrypted-modems for submittal. The FBI will make these encryption-modems available to states that wish to hook their latent processing directly to the FBI. In addition, the FBI intends to have implemented a Certificate Authority for NICS that will permit encrypted submittals. To date, only Texas has set up a direct connection for this function. Roy Weise, at the FBI in Clarksburg is the POC for these activities.

The encrypted-modems will allow latent shops to go directly to the FBI without going through the State's latent check process. Local latent shops could access the state's FBI mail box. They would submit the latent to the state AFIS and then go directly to IAFIS. Any ANSI/NIST standard format latent can be submitted.

Internet submittal is about 6 months away. The encrypted-modem will cost approximately \$1,000 seat but the FBI will pay this fee, at least initially. Once the digital certificate program is put in place, submission capability fees will probably drop to \$5.00 per seat but that capability is still in the future.

The FBI intends to implement the encryption system for gun checks in Wall Marts and other large distributors by the end of the year.

Peter Komarinski emphasized that local agencies will still have to check their state AFIS systems before going to IAFIS and asked whether the original number of inquiries per state is still in effect. Hopper indicated that the search restrictions in place before IAFIS was up and running were based on everyone having full access capabilities at the same time. Since this has not happened, the number of latent searches is not keeping up with capacity and therefore the FBI is not putting any limits on the number of submittals.

4.5 Latent Use for Purposes other than Category Crimes

At the January 2000 meeting Ken Moses discussed the possibility of submitting latent prints crimes that did not meet the FBI's criteria for category crimes on the premise that many of the crimes, e.g., burglaries and thefts, were the salary crimes for individuals who are eventually convicted of category crimes, e.g, murder, kidnapping, etc.

Hopper indicated that the FBI has no software that screens searches and that at this point the FBI will accept searches, regardless of the type of crime. They recently had a case in NY where prints for someone passing a bad check resulted in catching a 27 year old murder.

Meagher reiterated that although the FBI originally asked states to prioritize searches those priorities are not being used now and they are encouraging remote searches for any type of crime.

Meagher and Hopper presented the following statistics on IAFIS usage by organizations other than the FBI.

US Army Crime Lab	2 searches per latent - 30 cases
New York State	8,079 latents submitted – 54 idents made for 54 cases
Texas	190 searches -3 idents
Illinois	550 searches - 7 idents
FBI Latent Section	389 latent idents

Komarinski reported what have they done with RFES where they are finding that using IAFIS with State AFIS system improves quality greatly - different prints - different matching algorithms - different matchers, etc., all add up to more idents.

4.6 UK NAFIS Status

Dr. Preston reported that they are performing a phased roll out and they went live Sept 11, 2000 when NAFIS was hooked up to the national criminal history system. To date the system has been up and running 99% of the time.

In the criminal system there are approximately 750,000 10 print forms. (U.K. does not keep non-criminal 10 prints in the system.)

The UK has a national police force with 43 police forces throughout the England and Wales. At the present time 29 of the police forces are linked to NAFIS. They expect that all 43 will be on-line by April 2001. NAFIS is used for both 10 print and latent work. All searches are done at central station although the 29 remote locations have large cached databases where they can select where to look for latents. All 10 print records are checked against the full complement of national 10 print records.

Latent search time is down to 20 minutes and has resulted in a need to change their business processes as well as an increased interest in doing things differently. They had originally estimated that 5% of latent processing would be from local police agencies – it is actually running at approximately 15%. Processing of 10 print records is now running at 50 percent more than expected. Business practice changes have resulted in more speculative searching. In one area, the police force had so many hits that they didn't have enough police to arrest all of the suspects.

NAFIS has resulted in more than 17,000 idents from latents since September 1999. The system is processing approximately 1,500 latents per day. Approximately 85% of the first place hits are idents.

Because of the success rates, police are reopening old cases that have been put away and are searching the system & getting results. In one instance an individual in Wales, stopped for not wearing a seatbelt, was fingerprinted. The NAFIS search revealed that the individual was using an alias and that he was actually wanted for an armed robbery of £5.5 million.

A live-scan pilot was started in Sussex in June. They expect that it will be fully operational by the fall of 2000.

NAFIS uses a RAID technology storage system for its database of 4.5 million images. Recently they swapped out 5 terabytes of image storage for maintenance without any negative impact. The database is distributed across a number of different RAID machines to do approximately 2 million searches per second. Most of the 10 prints come in on paper and are scanned using Cogent scanners for both latent and 10 print work. Compression is in JPEG format.

4.7 Interpol-Europe -- Sharing of Digital Fingerprint Records

Roland Gander, Swiss National Police, presented a brief overview of the status of Digital Fingerprint Records Sharing by Interpol and the European police communities. He reported that a Sagem-Morpho system was installed in April and initial testing is completed. The second round of tests is scheduled to begin soon. However, the interface capability for electronic submission is not yet available.

The Interpol standard is based on ANSI/NIST and the UK implementation document. To-date 9 countries have FITS (Fingerprint Image Transmission Stations) (Switzerland has one). The 10 print/latent/photo stations from Bull -- make it easy to transmit images.

Another project EuroDac - for refugees - allow all states to check other applications for refugees to prevent duplicate records and missed identifications.

4.8 Vulnerability of Single Finger Scanners

Robert McGrath and David Hall, Printrak International gave a demonstration of how they easily, and cheaply, bypassed a single finger biometric access control device by lifting a fingerprint from a single finger reader and using the lifted print to gain access to the "protected" system. They pointed out that the consequences of having just one person having bad experience with fingerprint access devices casting doubt on the entire process.

There was a brief discussion of the attack and other studies:

- Using a \$39.00 software package (Fingerprint Kit) they were able to hack into a demonstration system at all three levels of security.

- Problem will be at ATMs where there is no supervision -
- Three years ago – the US Government performed tests on how to beat biometrics -- virtually all of them can be beaten under the “perfect” conditions. Big difference between not being identified and convincing the machine your are someone else.
- Iris Scan errors – easy to make your eye look different so the system will not recognize you. Hard to make a mis-identification when you want it to conclude that you are someone other than yourself.
- Bio Consortium and some vendors/academicians are looking at additional physiological tests to verify *liveness* of users of biometrics

4.9 IAFIS Interface Taskforce Report

Mike Lesko reported on the IAFIS Interface Task Force established by the APB. The issues are centered around fingerprint submittals that meet state processing criteria but are rejected by the FBI. The Task Force is dealing with 10 print side of CJIS to address the problems. They have asked states for fingerprints that should have been accepted by the FBI. So far they have identified several problems:

- Sequence Checking problems – a design problem with the displays at technical search stations at FBI. The FBI has adopted a policy to not reject on this criteria.
- Bandaged rejects - UP in type 2 records - Criminals - FBI will verify a bandaged fingerprint but will not add it to databases.
- Non criterion offenses - Legal said regulations won't let them be searched.
- Data Quality Issues - CCS & ORI tables - changes have been worked and are better.
- Retention Code problems - SRA & S responses not provide enough information to match up; ERR message not always consistent; Text code and descriptor don't always match.
- Infrastructure/routing issues - states need IP addresses at the FBI having trouble getting the FBI to authorize these.
- States having problems having requests routed through the system based on the ORI.
- Large number of fingerprint submittals originally rejected were resubmitted and accepted because problems were resolved.

4.10 Fingerprint Quality for Inclusion in Databases

Phil Colby, Vermont DPS, had asked Higgins to raise the following Issue

Is there a quality threshold below which fingerprints and latents should not be added to databases? They performed a study of hit rates for all three states that share the same AFIS and all were very different. Why will that be? Higgins made the observation that the real use of AFIS technology is to catch liars and solve unknown latents. That depending on the sequence of use – before or after a name search, etc. can greatly drive perceived performance.

Phil thought that maybe his state was throwing things away because they were being too tough on what it was they were adding to the repository or running latent searches on. Peter Komarinski suggested going to Thursday lecture on this very topic. After the meeting Higgins got Komarinski and Colby together via e-mail to discuss Komarinski's lecture and handouts.

5 Future Business

Suggestions for January 2001 Meeting were discussed and there was strong support for continuing the tradition.

5.1 Scanning Quality Issues

Mike Lesko suggested that the Committee conduct a study of the 1000 vs 500 ppi issue. Is 500 ppi really a problem for latent images? What is the real difference in accuracy? Fred Preston suggested that the committee should look at the business impact of going to 1000 ppi as well as the accuracy issues.

Meagher indicated that the study should take into account the increased rate of inconclusive comparisons as a result of 500 ppi vs 1000 ppi, especially when inked cards are not available. Image quality either in ink or live scan formats is the more compelling of the issues. The ppi issue may take a back seat if capture quality is better. Meagher noted that the IAI Fingerprint Committee took an opposite view of this problem than the AFIS committee took.

Steve estimates that only approximately 30 percent of latent fingerprints in a case are suitable for AFIS searching - to increase that number we will have to up the resolution and improve the algorithms.

Bunbury acknowledged that quality is huge issue. After some discussion Higgins suggested that perhaps the committee might do a study of quality from different AFIS vendors looking at a common algorithm for quality. Komarinski noted that rescanning their 10 print card database generally improves quality of the resultant digital database. This of course can not help live scan image records.

Frederick Biarnes noted the need for a tool that will force people to take better prints and for end to end accuracy tests. While Burzinski said the issue is training and some sort of recognition for good prints – perhaps a TQM type process is also needed.

IAI – AFIS COMMITTEE MEETING – JULY 24, 2000 – Charleston, WV**PARTICIPANT LIST**

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