U.S. Department of Homeland Security
Washington, DC 20528

Homeland Security

OCT 15 2003

Steve Nash
Board Chair
International Association for Identification
Marin County Sheriff's Department
3501 Civic Center Drive
San Rafael, CA 94903-4163

Dear Mr. Nash:

The Department of Homeland Security (DHS) and the United States Visitor and Immigrant Status Indicator Technology (US-VISIT) program office values your interest in this program and appreciates this opportunity to respond to your inquiry regarding the utilization of two flat fingerprints versus ten rolled fingerprints as part of the visa application background check.

The use of biometrics to determine the eligibility of foreign nationals for admission to the U.S. is a key factor to the success of US-VISIT. We agree that the most accurate "data set" should be used to ensure reliable and accurate search results. However, this needs to be balanced with the cost of implementing such a data set. As such, US-VISIT has been working closely with the National Institute of Standards and Technology (NIST), the Department of State (DOS), and other affected government agencies to define the most appropriate approach for collecting biometrics for US-VISIT.

The early results of this collaborative effort were published in the report to Congress, *Use of Technology Standards and Interoperable Databases with Machine-Readable, Tamper-Resistant Travel Documents,* dated January 2003. This report was submitted jointly by the Attorney General, DOS, and NIST. It led to the following recommendations related to the use of fingerprints:

- To perform background identifications, ten plain image impressions should be used for enrollment and retention.
- Measurements indicate that a dual biometric system including two fingerprint images and a face image may be needed to meet projected system requirements for verification.

The report also noted that, while the Attorney General and the Secretary of State agreed to use a live-capture digital photograph and fingerprints for identity enrollment and verification, the exact number of prints required at identity enrollment has not been finalized. All (or a subset) of this biometric data could be matched against 10 or fewer flat fingerprints of immigrants and non-immigrants. Finally, the report stated that there was a need to conduct a detailed evaluation of the trade-offs involved with employing different numbers of flat fingerprints. Initial analysis indicated that a larger number of fingerprints better ensures establishment of a unique identity and reduces "false positive" identity exceptions, but it may also introduce operational issues at enrollment.

Since the issuance of the report, US-VISIT has continued to work with NIST, DOS, and the other agencies. The results of this additional work have led to the following joint decisions:

- Initially, DOS will capture and enroll two flat fingerprints as part of the visa application process.
- Over time, DOS will migrate from the enrollment of two flat prints to eight flat prints as part of the visa process. The migration to eight flat prints versus ten rolled prints is based on balancing the need for accuracy against the costs for implementation and training. DOS is currently formulating a plan for the migration to eight flat fingerprints.
- Two flat fingerprints will be captured at the port-of-entry for comparison against a biometric database. The biometric database will contain the baseline prints captured on visa enrollment as well as results from ongoing comparisons of the prints against biometric watchlists.

The implementation of this approach is based on NIST biometric standards and is supported by NIST. US-VISIT will continue to work with NIST as the program is implemented. This approach also addresses the interoperability need with the Federal Bureau of Investigation's Integrated Automated Fingerprint Identification System.

Should you have any further questions regarding this inquiry, feel free to contact my office. Once again, thank you for your inquiry and your interest in US-VISIT.

Sincerely,

Asa Hutchinson
Under Secretary
Border and Transportation Security

cc: James A. Williams
Director, US-VISIT Program Office

(b)(6)

From: (b)(6)
Sent: Friday, November 21, 2003 10:23 AM
To: (b)(6)
Cc: (b)(6)
Subject: RE: IDENT Metrics

That works for me. We will be in the middle of the move so it will be nice to be out of the office. See Monday!

(b)(6)

-----Original Message-----
From: (b)(6)
Sent: Friday, November 21, 2003 10:03 AM
To: (b)(6)
Cc:
Subject: RE: IDENT Metrics

(b)(6)

I think we are in agreement. I would recommend that before we brief (b)(6) we (you, (b)(6) and me) first sit down and go over our objectives and approach for the modeling effort. If you guys are in on Monday, lets try to have an initial meeting then. We can schedule some follow-ups after that. Can you come out here ((b)(2)Low (b)(2)Low) around 10:00 on Monday? If not, let me know a good time/place. Thanks.

(b)(6)

-----Original Message-----
From: (b)(6)
Sent: Friday, November 21, 2003 5:55 AM
To: (b)(6)
Cc:
Subject: RE: IDENT Metrics

(b)(6)

I am impressed! From our 10 minute hallway discussion you captured what we have been doing with NIST and within IDENT! When would you like to get together on this I think it would be important to have (b)(6) and (b)(6) (NIST) to come and hear more about the modeling efforts. I will be out of the office Thursday and Friday next week and then in Atlanta the following week. So Monday through Wednesday I can be available.

A few weeks ago I had asked NIST to look into the ROC curves for the different IDENT quality scores. So from this we can take the average quality that we are gathering in Atlanta and plot what might be the expected false match rates to be plugged into the model. I can tell you that the 1:1 validation mismatch rate is so small (99.5) that it will not have an effect in the model. However, human error should be taken into consideration. This would be the case where the incorrect order of fingers are placed on the scanner and then there is a 1:1 mismatch. So this will have to be taken into consideration more so than the accuracy of the system. If we do not want to take the quality of the smaller set of images captured from the Atlanta pilot I have also asked Department of State to provide the quality of the images of the records that they are capturing right now for the visa issuance process.

Thanks
(b)(6)

-----Original Message-----
From: (b)(6)
Sent: Wednesday, November 19, 2003 1:42 PM
To: (b)(6)
Subject: IDENT Metrics

(b)(6)

Just to follow up on our discussion at this morning's US-VISIT status meeting (before we were so facilitatingly interrupted) - (b)(6) and I had a chance to talk very briefing in Atlanta yesterday about some IDENT statistics we'd like to incorporate into our POE models (expected false match rate for watchlist and expected false mismatch rate for 1:1 validation). I was thinking that matching algorithms aside, these may have some relation to image quality and that possibly if we need some vetted statistics to put into the models in order to forecast likely operational scenarios, then maybe (b)(6) could do that for us - if x% of sets of prints obtained at the Atlanta pilot have one or more print at quality levels 1-4, expect a false 1:n match rate of y and 1:1 mismatch rate of z; at quality level 5, a different percentage and different rate, at 6 a different percentage and rate, etc. Anyway, (b)(6) asked to have a meeting with us on our modeling approach and the kinds of data we plan on using as inputs. If you like, we can all sit down and go through what we were planning on doing with these models and what data we think we need. I think (b)(6) is out the rest of the week and (b)(6) is out on Monday but right now Tuesday looks open. Let me know if you'd like to have a meeting and if so what day/time you are available. Thanks.

(b)(6)

(b)(6)

From: (b)(6)
Sent: Thursday, September 04, 2003 7:43 AM
To: (b)(6)
Subject: Assistance for Self service checkout for Exit

(b)(6)

I am looking for some technical guidance from NIST ((b)(6)) on the following:

US-VIST is going to go with a concept of a self service checkout workstation for the travelers out of the country. The traveler will biometrically and biographically check them self out of the country. They way that we see this happening is that the individual will perform a document swipe of the passport or Visa and then present their biometrics (fingerprints) for submission to the IDENT database. There will be no watch list data checked on a real time basis (at this time) but we will be able to matchup the arrival record with a departure record biographically and also biometrically. This of course will be also verified with the airline departure manifests. The would like to have your feedback on the following:

We have made many statements about the feasibility of capturing more than 2 prints by 12-31. With that being said we are going to have to develop a new "Ident" client that will now be used by the general public. It is really not IDENT as we have always had an government employee walk the person through the proper capturing of fingerprints. Now we are requesting the traveler to do this on their own. This add some complexity to the scenario. What would be the technical limitations of having the workstation take the slap 4 prints and then segment out the index prints to the IDENT server?

How reliable can we get a segmenter to be on the local workstation?

How fast can the segmentor work locally?

Here is some of the items I see:

Ergonomics - Through the natural use of the slap print you will ergonomically force the hand to be in the best position to gather the highest quality of fingerprints presentable by the user.

Best quality- This will greatly reduce the possibility of tips or sides of fingers being presented through the ergonomics of the slap print.

Highest level of security- Though the highest quality of the fingerprints you will have the highest possibility of making identifications and then ensuring the highest level of security. This will make the transition to watch list searches.

Limits the need of training- By not having to handle the exemptions and the sequence of which the fingerprints are captured this will make the user experience easier.

Eases development- By limiting the help screen functions needed to train the user this will simplify the development effort required by the contractor. However it should be pointed out that a segmentor will need to be used locally to extract the fingers out the fingers.

Thanks
(b)(6)

(b)(6)

From: (b)(6)
Sent: Tuesday, November 18, 2003 10:42 PM
To: (b)(6)
Subject: Atlanta update

(b)(6)

Please pass this to your internal team to keep them in the loop.

All has been great in the pilot in Atlanta! It should be noted that this is a pilot and pilots and made to find and solve the issues prior to going live! And that is what we are doing here!

Here are the stats of the first two days:

205 people the first day with 7 false positive* (this was without feedback loaded) once feedback was loaded and the records run through again there were no more false poistives that needed to be refered to secondary. But this also helped test out the examiners and the systems that are used to process the potential hits!

220 people were processed the next day and here there were no false positives.

As for the quality of the system we are finding the autocapture is doing a great job.

Score	Total	Running Percentage	
1	202	29.97%	29.97%
2	112	16.62%	46.59%
3	134	19.88%	66.47%
4	112	16.62%	83.09%
5	30	4.45%	87.54%
6	14	2.08%	89.61%
7	12	1.78%	91.39%
8	58	8.61%	100.00%
Total	674		

This was done prior to all flights being completed and is for one finger.

So we are learning a lot. It is pretty nice that we have a 1.5 months left and we have a functional system that we can no optimize!

Thought you might like to hear this!

(b)(6)

Sent from BlackBerry Wireless Handheld

(b)(6)

From: (b)(6)
Sent: Monday, July 21, 2003 7:04 AM
To: (b)(6)
Subject: FW: Mitretek October 2000 Study

Attachments: Ident IAFIS IQS.TIF

Ident IAFIS IQS.TIF

(b)(6)

Can you take a look at this report and provide an analysis. If this is the case I would like to provide comments for the record. This is widely used report for the IDENT/IAFIS folks.

(b)(6)

-----Original Message-----
From: (b)(6) cogentsystems.com]
Sent: Friday, July 18, 2003 12:28 PM
To: (b)(6)
Subject: Mitretek October 2000 Study

> (b)(6)
>
(b)(5)

>
> The attached document provides the pages of the Mitre report regarding the above discussion.

>
>
> > <<Ident IAFIS IQS.TIF>>
>

MITRETEK SYSTEMS

Innovative Technology in the Public Interest

IDENT/IAFIS Engineering/System Development Study (E/SDS)

Image Quality Study (IQS)

(b)(5)

Withheld 7 pages under Exemption (b)(5) - draft containing predecisional information and annotations

(b)(6)

From: (b)(6)
Sent: Friday, October 17, 2003 2:37 PM
To: (b)(6)
Subject: RE: Report outline

(b)(6)

Here are my comments and questions on the outline.

I would really like to have section on the projected scalability of the system.

Would it be of use to look at the performance of the system in a mixed media environment (rolled and Flat)? Lets take the scenario that we have put in place for the watch list search. We are going to be taking a flat print of the subject at DOS/Entry/Exit and running it through a mixed bag of records that make up the watch list to include downloaded rolled prints from the FBI and also records that have been promoted from the US-VISIT flat database into the watch list. I would say the majority of the search would be performed against rolled candidates. Should we look at the system accuracy of flat to rolled prints?

It would also be helpful to have a section on what improvements will be achieved if 8 flat prints are captured and then the same with 10 flat prints. There has been a big push from the FBI and DOJ to get DOS to do the enrollments overseas with 10 prints versus just doing the 8. What does it buy us in accuracy of the system?

These are my thought but all in all it looks good!

Why did you not make the OSTP meeting? We used your name in vein many times!!!! I am in all next week except I may have to make a trip the FBI to present on US-VISIT (you are more than welcome to attend!)

(b)(6)

-----Original Message-----
From: (b)(6)
Sent: Wednesday, October 15, 2003 3:54 PM
To: (b)(6)
Subject: Report outline

A proposed outline is attached.