The UAE Iris Expellees Tracking and Border Control System

Biometric Consortium 2005, September 2005
Outline

- The Challenge ....
- The Solution ....
- The Technical Architecture ....
- The Future ...
The Challenge
Return of Expelled Foreigners

1. Foreigner “X” expelled from UAE
2. Foreigner “X” changes name and issues new passport
3. Foreigner “X” returns to UAE
Analysis

- Traditional computer lists depend on:
  - Name, date of birth etc...
- Information can be changed after expulsion
  - Different passport, new nationality ...
- Expelled person is back in the country!
Our Need

- A Biometric System to scan all incoming arrivals (with new visas) and to tell us if person was expelled before, in Real-Time.
Biometric Specifications

• A Biometric that:
  - Can identify a single person from a large population of people.
  - Does not change over time.
  - Fast to acquire and easy to use.
  - Can respond in real-time needed for mass transit locations (Airports.)
  - Safe and non-invasive (disease control)
  - Can scale in millions and maintain top performance.
  - Is affordable.
The Solution
Iris Recognition Technology

• Our research led us to IRT

  Iris Recognition is the only technology that produces a single person match out of a very large population in real-time
Figure 6. Detection error trade-off: Best of 3 attempts
# Iris Accuracy Tests

<table>
<thead>
<tr>
<th>Testing Body</th>
<th>Comparisons</th>
<th>False Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandia Labs, USA 1996</td>
<td>19,701</td>
<td>None</td>
</tr>
<tr>
<td>British Telecom, UK 1997</td>
<td>222,743</td>
<td>None</td>
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<tr>
<td>Sensar Corp., USA 1999</td>
<td>499,500</td>
<td>None</td>
</tr>
<tr>
<td>Joh. Enschede, NL 2000</td>
<td>19,900</td>
<td>None</td>
</tr>
<tr>
<td>Prof. John Daugman, UK 2000</td>
<td>2,300,000</td>
<td>None</td>
</tr>
<tr>
<td>National Physical Labs, UK 2000</td>
<td>2,750,000</td>
<td>None</td>
</tr>
<tr>
<td>Prof. John Daugman, UK 2002</td>
<td>9,200,000</td>
<td>None</td>
</tr>
<tr>
<td>UAE Iris Study, UK 2005 (September 2005)</td>
<td>200,000,000,000</td>
<td>None</td>
</tr>
</tbody>
</table>

The Application Overview

- Enroll Irises of all expelled foreigners
  - Multiple detached enrollment centers
  - Merge all Irises into one central Database

- Check Irises of all arriving passengers
  - Against the central Iris Database
  - If not found, person is cleared to go
  - Negative application
Implementation

Pilot Approach
(Installed three Enrolment Centers in Prisons and Deportation Centers)
Oct. to Dec. 2002 – 3 months
(Installed three recognition Stations in Abu Dhabi Int’l Airport and Central DB)

National Rollout
Jan. to Apr. 2003
20 Deportation Centers = 45 Cameras
Total = 130 Cameras

27 Border Centers = 85 Cameras
(8 Int. Airports, 10 Land Ports, 9 Sea Ports)
Our Partners

iridian technologies

IrisGuard Incorporated
The Architecture
Expellees Enrollment

Deportation Center 1

Expellee

Iris Station

Expellees Iris Database
Typical Deportation Center

System: 0001
Site: 1
Country: XXX

Iris Workstation
Iris Workstation
Iris Workstation
Iris Workstation

Iris Dispatcher

Iris Store

IEngine 1
IEngine 2

IExport

IMerge Remote
Central Expellee Iris Database

Central IT

Dept. Cntr. 1

Dept. Cntr. 2

Dept. Cntr. 3

Central Expellee DB

Border Pt. 1

Border Pt. 2

Border Pt. 3

Deportation Cntr. 1

UAE Iris Expellee Tracking System

September 2005

US Biometric Consortium 2005
Deportation Centers

Iris scan being performed on an amnesty-seeker at the Immigration Department in Abu Dhabi yesterday.

– GN pictures by Ahmed Kutty
Versatile Mounting – Wall
Integrated within Passport Control
Abu Dhabi Int’l Airport T1
Abu Dhabi Int’l Airport T1
Abu Dhabi Int’l Airport T2
Abu Dhabi Int’l Airport T2
Dubai Airport: Special Mounts
Dubai Airport: Passport Control
Dubai Airport: Sit-Down Service
Dubai Airport: Peripheral Devices
Dubai Airport: One Stop Service
The Search Operation

Frontal View (Idle)
Iris Capture: Auto Activate
Person Not Found

Cleared By Iris System
Person Found

Found By Iris System
Current Statistics

- Database size (IrisCode™): 799,566
- Number of nationalities: >152
- Searches carried out: 5,973,208
- Cross comparisons: 2,000,000,000,000
- Average searches per day: > 9,000
- Persons Caught: 48,813
- Average caught per day: 90-95
- Search speed, turn around time: < 2.0
  - Largest Database of Irises in the World
  - Most searched DB in the world
Current Averages in UAE

- **New Enrollments**
  - 1000 New Enrolls/day

- **Persons Checked**
  - 8,000 Searches/day against a DB of 790,024
  - 240,000 Searches/day against a DB of 790,024
  - 2,920,000 Searches/day against a DB of 790,024

- **Cross Comparisons**
  - 6.3 Billion/day
  - 189 Billion/month
  - 2.3 Trillion/year

- **Catches**
  - 90 Catches/day
  - 2700 Catches/month
  - 32,850 Catches/year

Iris Recognition *Is* Protecting Our Borders
Accuracy Findings in UAE

• Accuracy is compliant with theory
  - No false matches experienced till now
Ease of Use / Failure to Enrol

- Over 6,800,000 people used it so far.
- Not a single failure to enroll case.
- Used in transit areas, many people, in lines.
- Used by untrained people, first time users.
The Future
GCC Expellees List

- Apply the same system throughout the Gulf Cooperation Council – GCC
- Unified Expellees List
- Iris-Based
Conclusion: Lessons Learned

• Biometrics does enhance security through identification
• People are always the weakest link in security
• Several considerations: scalability, performance, vendor, interoperability, etc.
• Understand the problem, analyze, do an assessment need, pilot, implement.....

Biometrics is a new science:

Be bold and apply it like we did, it does work.
Thank You

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