TWIC Reader Technology Phase

Deploying and Using TWIC Fixed Readers
Lessons learned

Bob Samuel
Senior Biometric Technology Product
MorphoTrak, Inc.
Lessons learned while participating in the current TWIC pilot being conducted at the Port of Brownsville.
## Current MorphoTrak, Inc. TWIC Installations

<table>
<thead>
<tr>
<th>Port</th>
<th>Application</th>
<th>System Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Brownsville, TX</td>
<td>TWIC Pilot</td>
<td>TSA Sanctioned Pilot</td>
</tr>
<tr>
<td>Port of Miami, FL</td>
<td>Cruise line</td>
<td>Early TWIC Adopter</td>
</tr>
<tr>
<td>KY River Port Henderson County, KY</td>
<td>Phosphate Manufacturer</td>
<td>Early TWIC Adopter</td>
</tr>
<tr>
<td>Port of Greenville, SC</td>
<td>Scott Petroleum</td>
<td>Early TWIC Adopter</td>
</tr>
</tbody>
</table>
Coal pile at the Port of Brownsville
Environment: Tough and Dirty
Lesson 1

The implementation of TWIC readers is similar to installing Prox card readers in large PACS systems

- Power and conduit
- Signal and data network wiring
- Mechanical including poles and boxes
- Environmental considerations
- Terminal location considerations

However, these aspects are more challenging:

- Computer and Network equipment
- Software installation and configuring
Lesson 1 continued

Simplified TWIC PACS system architecture.

Various enrollment, middleware, and utility software tools may be installed.
Lesson 1 continued

<table>
<thead>
<tr>
<th>Risk Group A: Bulk CDCs, &gt;1,000 passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IDENTITY VERIFICATION:</strong> Biometric match of fingerprint to template stored in TWIC at each entry.</td>
</tr>
<tr>
<td><strong>CARD AUTHENTICATION:</strong> Electronic communication to achieve a successful CHALLENGE/RESPONSE result at each entry.</td>
</tr>
<tr>
<td><strong>CARD VALIDITY CHECK:</strong> Update Hotlist WEEKLY.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Group B: HAZMAT, Crude Oil, 500–1,000 passengers.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IDENTITY VERIFICATION:</strong> Random biometric match of fingerprint to template stored in TWIC, at least one day a month, all other times as visual identity badge.</td>
</tr>
<tr>
<td><strong>CARD AUTHENTICATION:</strong> Electronic communication to achieve a successful CHALLENGE/RESPONSE result at each entry.</td>
</tr>
<tr>
<td><strong>CARD VALIDITY CHECK:</strong> Update Hotlist WEEKLY.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Group C: Non-HAZMAT, &lt;500 passengers MODU OSV.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IDENTITY VERIFICATION:</strong> Visual identity badge at each entry.</td>
</tr>
<tr>
<td><strong>CARD AUTHENTICATION:</strong> Check security features on card at each entry and electronic verification during annual inspections and random spot checks.</td>
</tr>
<tr>
<td><strong>CARD VALIDITY CHECK:</strong> Check expiration date at each entry, CG perform spot checks.</td>
</tr>
</tbody>
</table>

"Reader Requirements" are subject to change based on public comment and additional data collection from the TWIC reader testing pilot program ("pilot program"), currently underway as required by the Safety and Accountability for Every Port Act of 2006 (SAFE Port Act), Public Law No. 109-347, 120 Stat. 1884, 1889 (Oct. 13, 2006).
Lesson 1 continued

TWIC readers are not simple Prox readers!

Don’t assume that configuring a TWIC reader is a simple “Plug and Play” task.

Point to remember:
Depending upon the requirements of the PACS, middleware, and network architecture field installation can be complex.

Remedy:
TWIC systems must be set-up on the bench: configurations must be tested and documented before deployment to the field.
Lesson 2

Remember that TWIC cards are not Prox cards!

Don’t assume that TWIC cards operate the same way as simple Prox cards.

Points to remember:

Prox cards transmit 26 bits; TWIC card transmits over 27,000 bits

Prox cards are “Touch and Go”

TWIC Cards are “Touch and Hold”

Remedy:

Port operators, administrators, and contractors must have their own TWIC cards for set-up and test cycles.

This will speed-up the learning curve.
Lesson 3

It is not always the index fingerprint templates enciphered on the TWIC card.

Don’t assume that cardholders will try fingers for biometric authentication at the terminal.

Point to remember:
If at enrollment an index fingerprint cannot be enrolled with high enough quality another finger may be used.

Remedy:
Remember to instruct cardholders having problems authenticating to try other fingers.
Lesson 4

It is not obvious to all cardholders how to place their finger on the readers bio-sensor. Don’t assume that cardholders will understand how and where to place their fingers for authentication.

Point to remember:
The readers graphic display will indicate where the finger must be placed to be read.

Remedy:
Train the cardholder on finger placement upon registration.
Common Finger Placement Errors
Lesson 4 continued

Finger Rotation

Finger Angle
Lesson 5

Card applicants are not clearly instructed to remember their PIN at TWIC card issuance.

Don’t assume that cardholders will remember their PIN.

Point to remember:

The PIN is required at enrollment to release picture from the card.

Data available from the card without the PIN includes: name, encrypted biometric, the biometric encryption key, the Federal Agency Smart Credential Number (FASC-N), the credential expiration date and more.

Remedy:

Cardholders must be reminded before they register in the PACS that they are required to know their PIN.
Lesson 6
Card applicants do not understand how to use their TWIC card.

Don’t assume that cardholders will intuitively understand how to use their TWIC card.

*Point to remember:*

*The TWIC card is not “Touch and Go”; it’s “Touch and Hold”*

*Finger placement on the bio-sensor is important.*

*Knowing the PIN is important.*

*Remedy:*

After registering the TWIC card, ask the cardholder to authenticate to the card biometrically on a TWIC reader that will be installed in the port facility.
Lessons Learned: Training is the Key

#1 The implementation of TWIC readers is similar to installing Prox card readers in large PACS systems, BUT MORE COMPLEX.

#2 Don’t assume that TWIC cards operate the same way as simple Prox cards.

#3 It is not always the index fingerprint templates enciphered on the TWIC card.

#4 It is not obvious to all cardholders how to place their finger on the readers bio-sensor.

#5 Card applicants are not clearly instructed to remember their PIN at TWIC card issuance.

#6 Card applicants do not understand how to use their TWIC card.
MorphoTrack
TWIC Reader Product Overview
# MorphoTrak TWIC Reader Product Range

## MorphoAccess Product Range

<table>
<thead>
<tr>
<th>Product Range</th>
<th>MA120W Series</th>
<th>MA5xx Series</th>
<th>MA5xx+ Series</th>
<th>OMA52x Series</th>
<th>MC250 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Obsole» June 2009</strong></td>
<td><strong>New</strong></td>
<td>Outdoor Ruggedized IP66</td>
<td>Outdoor Ruggedized IP66</td>
</tr>
<tr>
<td>Environmental usage</td>
<td>Indoor</td>
<td>TWIC and PIV Physical Access Control</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>End-use Applications</td>
<td>PIN PACS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICE Listed</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Functional - Specification Conformance Test (F-SCT)</td>
<td>N/A</td>
<td>Submitted</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Environmental - Specification Conformance Test (E-SCT)</td>
<td>N/A</td>
<td>N/A</td>
<td>Submitted</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>GSA APL</td>
<td>Yes</td>
<td>Yes</td>
<td>Pending</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>Biometric Sensor</td>
<td>500 dpi Optical Sensor (1.9 x 0.9 inch)</td>
<td>FBI I/Os Certified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authentication (1:1)</td>
<td>1:1 with card</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fingerprint Detection</td>
<td>N/A</td>
<td>Yes with OMNI21 versions</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Smart Card Reader/Writer Technology</td>
<td>PIV &amp; TWIC Data Models - MiFare compliant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Keypad</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Communications interfaces</td>
<td>Customizable Wiegand IN/OUT (MA1xx out only), RS422/RS485, Clock &amp; Data IN/OUT, Relay, Ethernet, Wi-Fi</td>
<td>Bluetooth, WiFi, GSM/GPRS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td>Dual Core ARM 9 @200MHz CPU with multi-threading capability</td>
<td>Intel PXA270</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications security</td>
<td>SSL on Wired TCP/IP</td>
<td>Windows Mobile 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating modes</td>
<td>Standalone, Proxy or Networked</td>
<td>Standalone or Networked</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory approvals</td>
<td>CE, FCC, and RoHS compliant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation conditions</td>
<td>Temperature: 14°F to +122°F</td>
<td>Temperature: 14°F to +122°F</td>
<td>Humidity: 10% to 80%</td>
<td>Humidity: 5% to 5%</td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td>External 9V to 16V (350mA typical @12V) or Power Over Ethernet (POE)</td>
<td>Li-ion Battery: 3000 mAh</td>
<td>Operating time: &gt; 8 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software applications</td>
<td>Morpho PIV-TWIC Connect and Morpho Access Remote Interface System for PIV and TWIC (MARIS)</td>
<td></td>
<td></td>
<td>Morpho Mobile TWIC</td>
<td></td>
</tr>
</tbody>
</table>
Your Questions and Comments?
Acknowledgement and Contact Information

Many of the “Lessons Learned” in this presentation are the result of the recent on-site experiences of MorphoTrak’s Senior Government Programs Manager, Consuelo Bangs.

Consuelo Bangs
Senior Government Programs Manager
MorphoTrak, Inc.
113 South Columbus Street
Suite 400
Alexandria, VA 22314

Direct: 703-797-2665
Cell: 703-786-7971
consuelob@morphotrak.com

Prepared and presented by:
Bob Samuel
Senior Biometric Technology Product

MorphoTrak, Inc.
1145 Broadway Plaza
Suite 200
Tacoma, WA 98402

Direct: 253-789-5173
Cell: 253-948-8805
bob.samuel@morphotrak.com
Thank You!