

# MorphoFACE for CBP

## User Guide Documentation

/ Version 1.0.5 Release 3/

/ June 22, 2017 /



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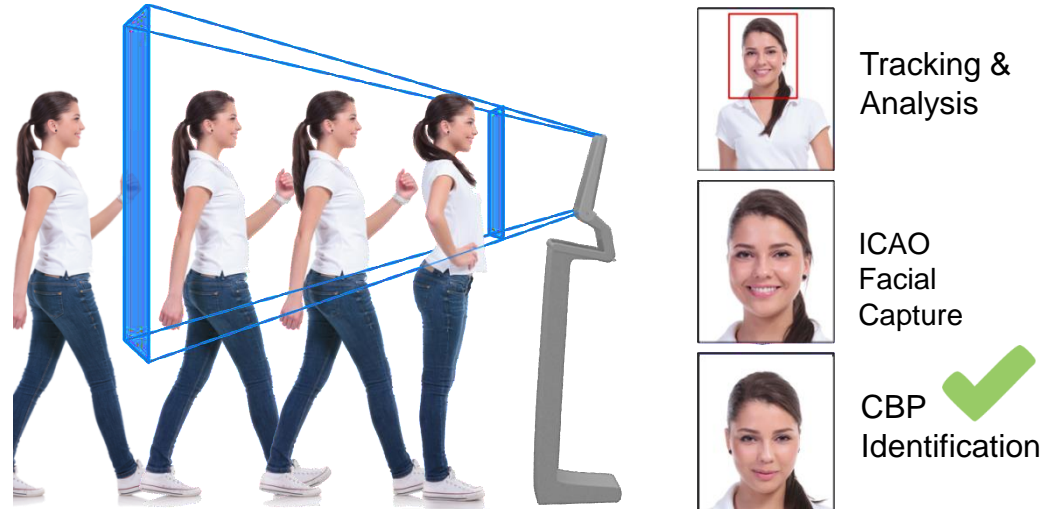
# QUICK START: SETUP & OPERATION

**Here are the essential steps to quickly get up & running with MorphoFACE:**

- 1. Properly place device facing passenger flow**
- 2. Plugin Ethernet (wired connectivity option)**
- 3. Plugin Power**
- 4. Automatically runs capture/matching software**
- 5. Configure WiFi access (wireless connectivity option)**
- 6. Configure operation: e.g. eye distance & quality thresholds (optional)**
- 7. Select Capture or Identify (1:N)**
- 8. Walk toward device to be identified**

# CONCEPT & BENEFITS

- MorphoFACE is designed to rapidly identify boarding passengers, while requiring no or minimal passenger delay or interaction
- It does this by continuously analyzing live video of passenger faces as they approach, tracks them, determines their order in line & decides which face shots will lead to highest possible matching accuracy
- In this way, passengers behavior & cooperation isn't connected or needed in achieving high identification rates



# DEVICE HARDWARE



## → MorphoFACE Capture Device

- Video cameras
- Touchscreen
- Processor & Storage
- AC Adapter
- Ethernet & WiFi
- Barcode scanner

# DEVICE PLACEMENT: AIR EXIT - FLOOR



## Floor – Free Standing Pedestal



- Do not face camera into direct sunlight or strong light source
- Place device where several passengers can freely move by it without touching it
- Face device towards on coming passenger flow

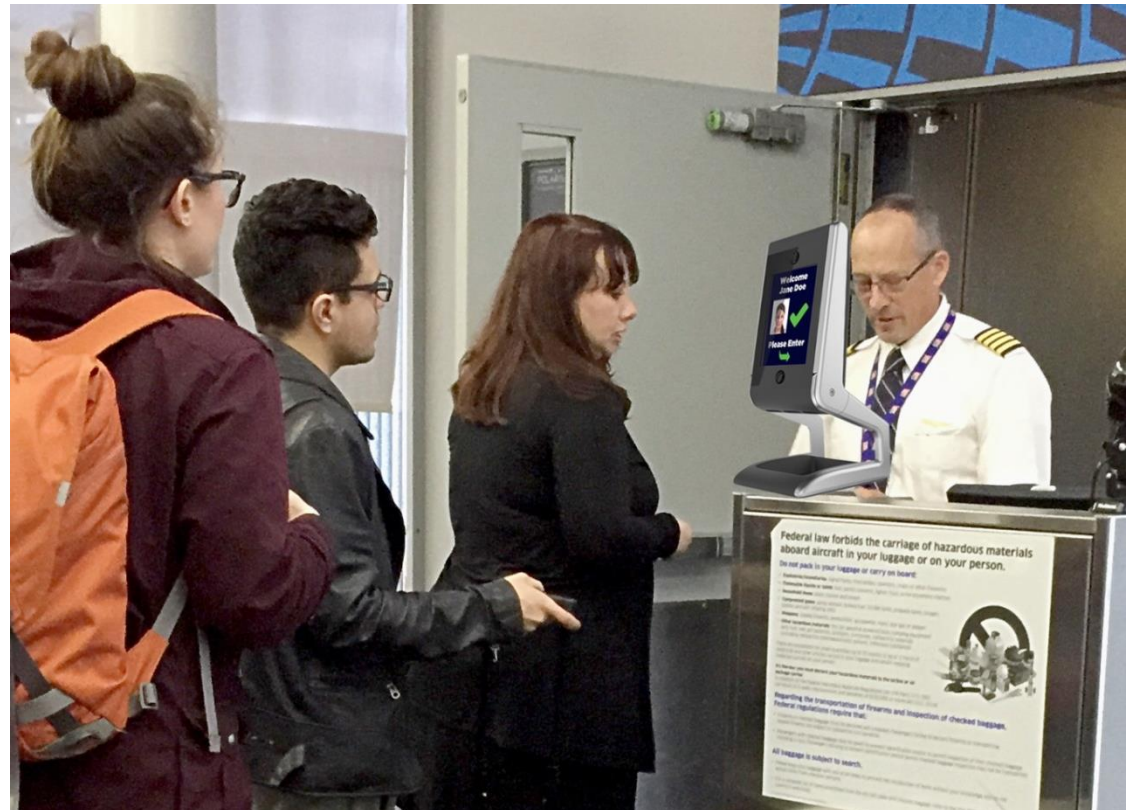


# DEVICE PLACEMENT: AIR EXIT – COUNTER TOP



## Counter Top – Boarding Gate Desk

- Do not face camera into direct sunlight or strong light source
- Place device where several passengers can freely move by it without touching it
- Face device towards on coming passenger flow





# STARTUP & SHUTDOWN

Device startup & shutdown is accomplished by doing the following:

## → Startup

- Plug in both power adapters
- Device will power up & run automatically

## → Shutdown

- Access & use the “Shutdown” button on the Configuration UI

The screenshot shows the MorphoFace CBP Configuration UI. It includes fields for Matcher URL, Username, Password, Token Refresh, Proxy, and Port. There are also settings for Capture Mode (On the Move, Interact), Eye Distance, BioQuality, Enhance/Normalize photo, Timeout, UI hold time, PhotoDate, and Token. At the bottom, there are checkboxes for Show live video tracking, Show current best shot, Log face captures, and Show display log. Below these are buttons for Minimize, Close, Shutdown, and Reboot. The version information at the bottom reads: MorphoFace CBP Version 1.0.5 6/23/2017 (c) MorphoTrak 2017 All Rights reserved. An orange arrow points from the 'Shutdown' button in the UI to the 'Shutdown' button in the list of actions.

# RUNNING & TERMINATING CAPTURE SOFTWARE

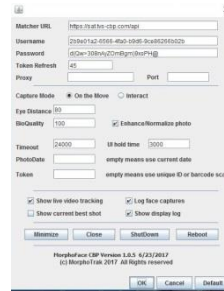
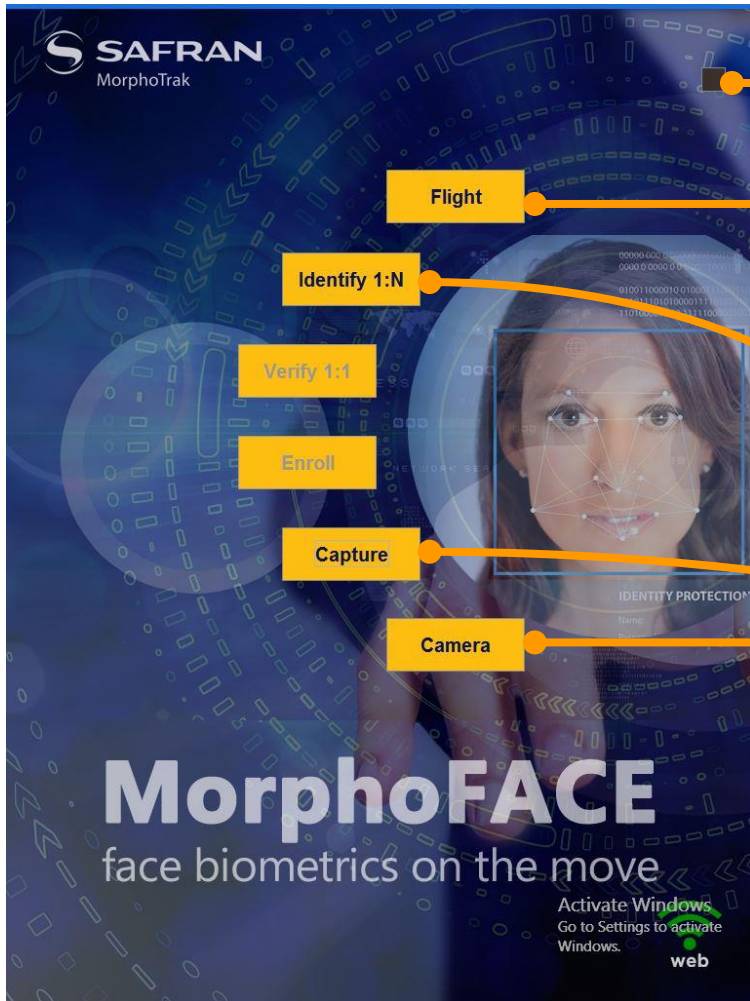
→ The MorphoFACE capture software will automatically run upon device power up, but the following steps can be taken to manually start the software if desired:

- Enter “C:\Morpho\MFaceCBP\MFaceCBP.jar” into the Windows search/run input
- Double click on “MFaceCBP.jar” in the folder “C:\Morpho\MFaceCBP\”

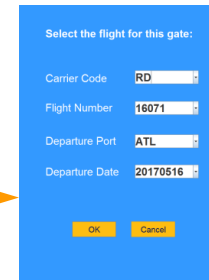
→ The MorphoFACE capture software can be terminated by pressing the “Close” button on the Configuration UI

The screenshot shows the MorphoFace CBP Configuration UI. It includes fields for Matcher URL, Username, Password, Token Refresh, Proxy, and Port. There are also settings for Capture Mode (On the Move or Interact), Eye Distance, BioQuality, Enhance/Normalize photo, Timeout, UI hold time, PhotoDate, and Token. At the bottom, there are checkboxes for Show live video tracking, Show current best shot, Log face captures, and Show display log. Below these are buttons for Minimize, Close, ShutDown, and Reboot. The version information at the bottom reads: MorphoFace CBP Version 1.0.5 6/23/2017 (c) MorphoTrak 2017 All Rights reserved. At the very bottom are OK, Cancel, and Default buttons.

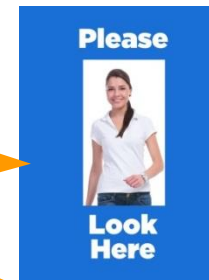
# USER INTERFACE OVERVIEW



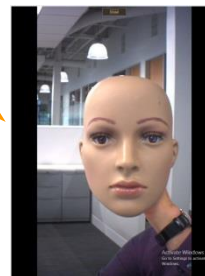
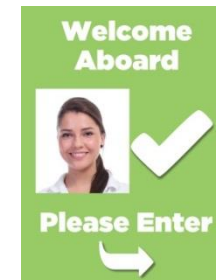
## Configure UI



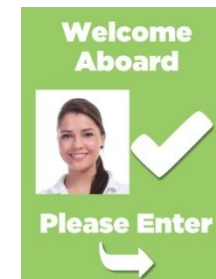
## Flight Selection UI



## 'On the Move' Mode UI



## 'Interact' Mode UI



# CONFIGURATION UI

The screenshot shows the MorphoFACE Configuration UI. Callout letters are placed as follows: A is next to the Username field; B is next to the BioQuality field; C is next to the Timeout field; D is next to the Eye Distance field; E is next to the PhotoDate field; F is next to the UI hold time field; G is next to the 'Show live video tracking' checkbox; H is next to the 'Log face captures' checkbox; I is next to the version information at the bottom; J is next to the OK button; K is next to the Minimize button.

Matcher URL:

Username:

Password:

Token Refresh:

Proxy:  Port:

Capture Mode: ☒ On the Move ☐ Interact

Eye Distance:

BioQuality:  ☒ Enhance/Normalize photo

Timeout:  UI hold time:

PhotoDate:  empty means use current date

Token:  empty means use unique ID or barcode scan

☒ Show live video tracking ☒ Log face captures

☐ Show current best shot ☐ Show display log

Minimize Close ShutDown Reboot

MorphoFace CBP Version 1.0.5 6/23/2017  
(c) MorphoTrak 2017 All Rights reserved

OK Cancel Default

A

## Web service URL & login for matcher

B

## Capture operating modes

On the move – send best shot for matching as soon as capture criteria met

Interact – wait for user interaction (bar code scan, touch screen) before sending best shot for matching

C

## Best shot capture criteria

Minimum eye distance & ICAO quality for face capture

Timeout (millisec) where upon the best face captured is send for matching even if it hasn't passed the capture criteria

D

## Enhance & normalize face photo before matching

E

## Photo Date & Token overrides for testing purposes

F

## The time duration (millisec) to keep the match response on screen

G

## Show live video tracking during the 'capturing' state

## Show the most current best shot as they occur

H

## Log face captures to files in 'capture' folder

## Show display log

I

## Software version information

J

Ok applies & uses the changes for when "Identify" or "Capture" are run. Cancel discards any changes back their values before.

K

## Minimize, close/exit MorphoFACE software.

## Shutdown or Reboot MorphoFACE device.

# FLIGHT SELECTION UI

Select the flight for this gate:

Carrier Code

Flight Number

Departure Port

Departure Date

OK

Cancel

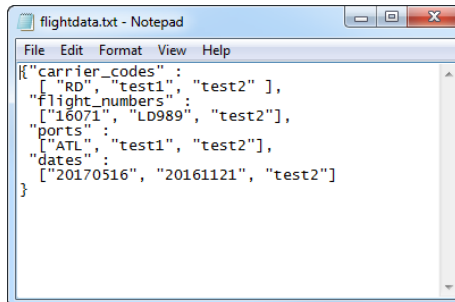
Agent selects which flight the device will be performing identification for

This information is sent, with the captured face photo of the passenger, using the 'identify' web service to perform matching of the passenger against the gallery or manifest for the flight

Drop down menus make it easy for an agent to quickly pick from available flights

An existing value can be selected or any text value can be typed in

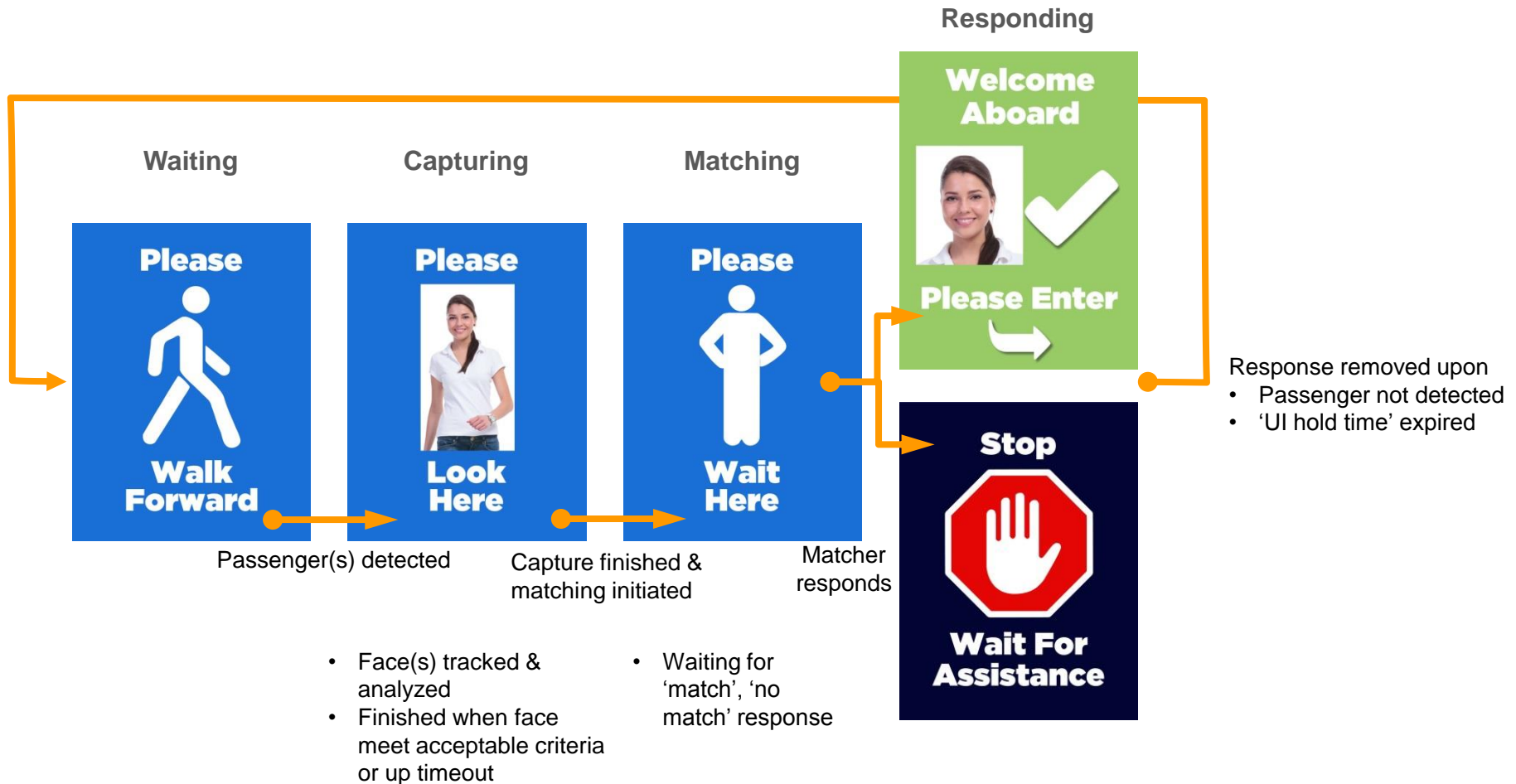
The values that appear in the drop down menus are configurable by editing the 'flightdata.txt' file



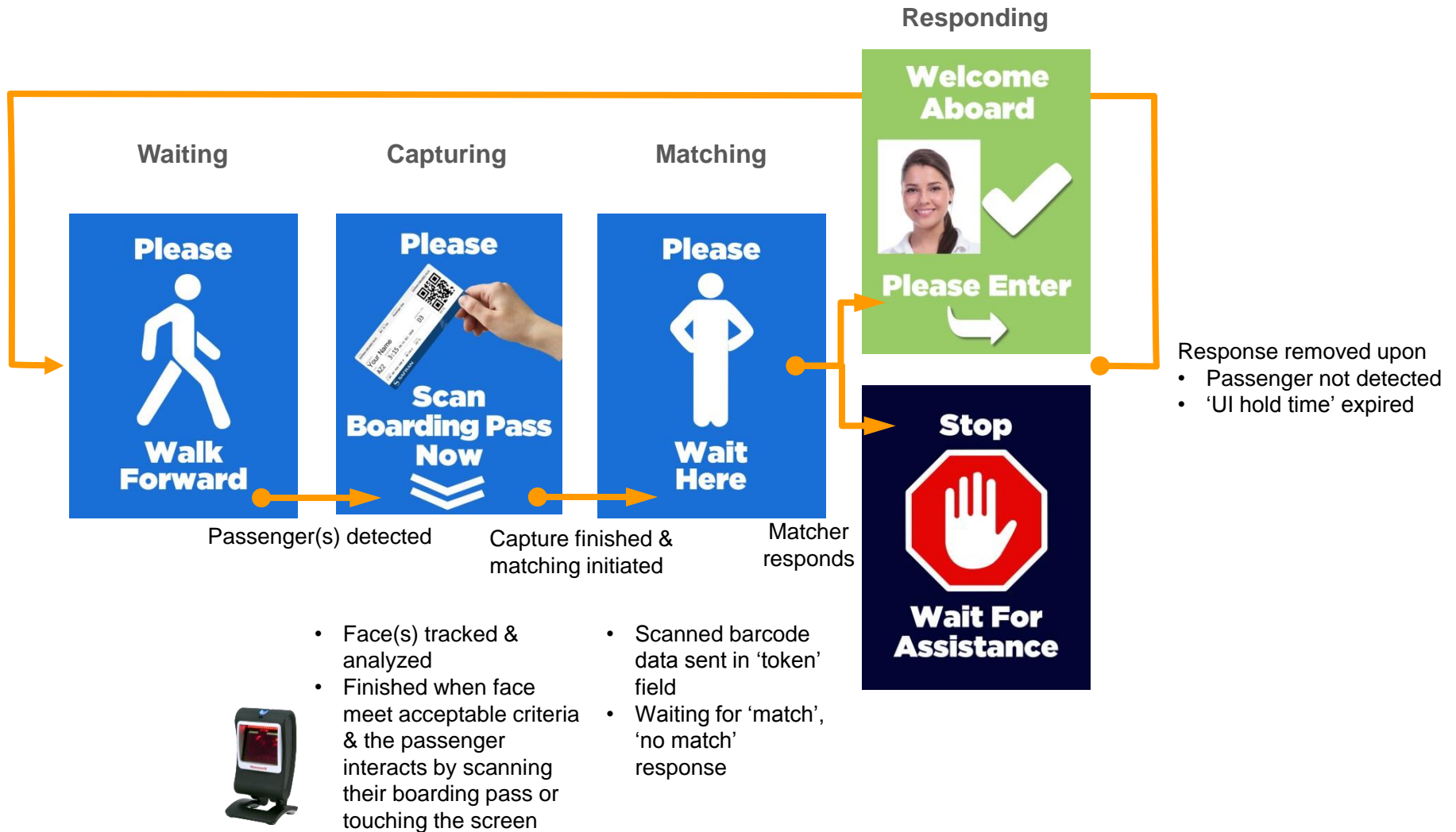
```
flightdata.txt - Notepad
File Edit Format View Help
{
  "carrier_codes":
  [ "RD", "test1", "test2" ],
  "flight_numbers":
  [ "16071", "LD989", "test2"],
  "ports":
  [ "ATL", "test1", "test2"],
  "dates":
  [ "20170516", "20161121", "test2"]
}
```



# CAPTURE/IDENTIFY UI FLOW: ON THE MOVE MODE

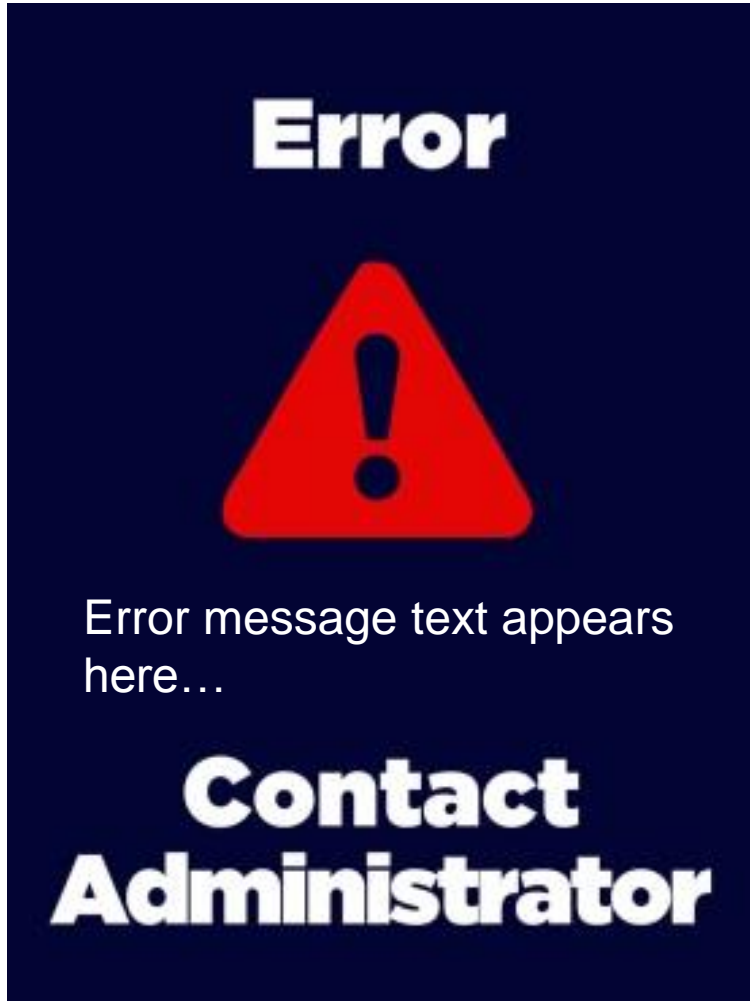


# CAPTURE/IDENTIFY UI FLOW: INTERACT MODE





# ERROR UI

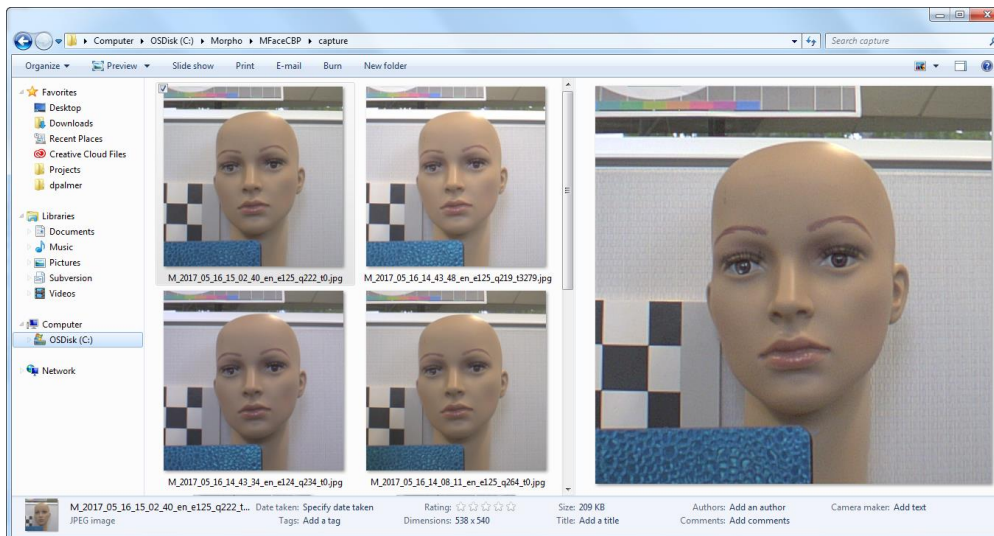
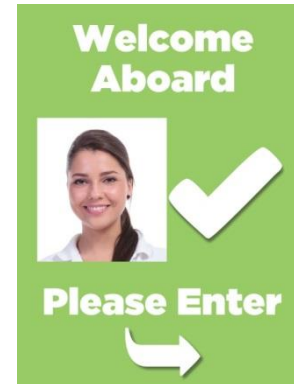


This screen appears when the following errors occur & display their corresponding error message:

- **Software startup & initialization**
- **Web service connection error**
- **Web service login error**
- **Identification error**
  - Data set not found
  - Face not found

# VIEWING CAPTURED BEST SHOTS

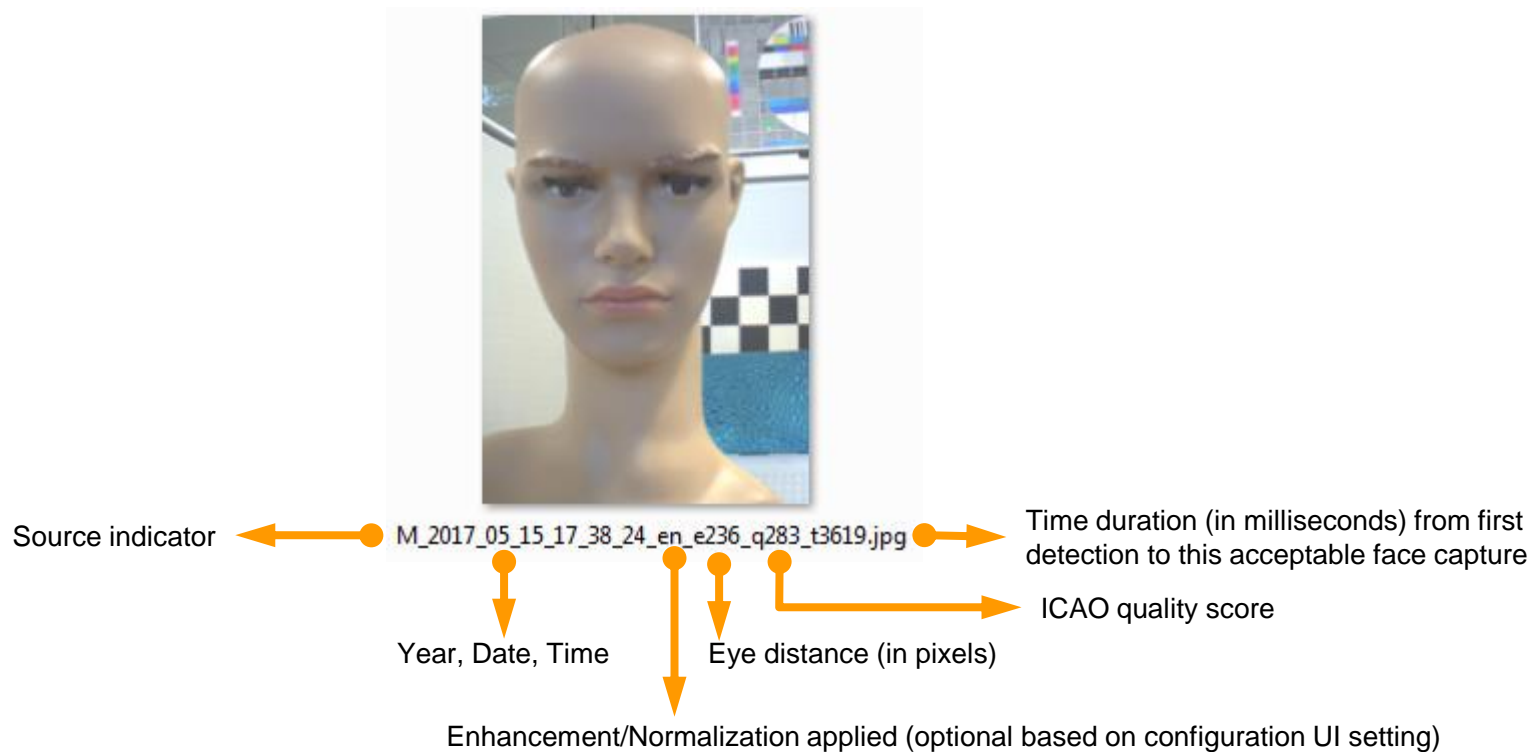
- Captured best face shots are sent directly to the Identify web service for matching
- The captured face shot used for matching is shown on the “Match” response screen
- Captured best face shots can also be saved and logged to the file system at “C:\Morpho\MFaceCBP\capture”



# VIEWING CAPTURED BEST SHOTS

→ Each logged capture best face shot has the following naming convention:

<src>\_<year>\_<date>\_<time>\_[en]\_e<eye dist>\_q<ICAO score>\_t<cap time>.jpg



➔ **Web service interaction between MorphoFACE the Traveler Verification System are logged & can be found at “C:\Morpho\MFaceCBP\cbp-rest-client.log” and “C:\Morpho\MFaceCBP\cbp-rest-client.log.<yyyy-mm-dd>”**



# CUSTOMIZING USER INTERFACE

→ The graphical user interface screens that are shown on the touch screen display can be customized or change to anything that is desired as long as they conform to the following:

- Size 768x1024 pixels (portrait)
- Use the following names:

Name	UI Purpose / Screen
SafranMorphotrakDesktop.jpg	Main Menu
WalkForward.jpg	Waiting UI
CapturingLookHere.jpg	Capturing UI (on the move mode)
ScanID.jpg	Capturing UI (interact mode)
CapturingWaitHere.jpg	Matching UI
Match.jpg	Match Response UI
NoMatch.jpg	No Match Response UI
Error.jpg	Error Response UI

→ The audible responses can be customized or change to anything that is desired as long as they conform to the following:

- Audio format: MP3
- Use the following names:

Name	UI Purpose / Screen
capture.mp3	Matching UI
match.mp3	Match Response UI
nomatch.mp3	No Match Response UI

# MANUAL CAMERA CONFIGURATION

- Proper configuration of the camera is stored in its non-volatile memory & is set upon software startup. Therefore, manual camera configuration should not be needed.
- In the event manual configuration is desired, perform the following steps:
  - Run “uEyeCockpit.exe” (should be at “C:\Program Files\IDS\uEye\Program\uEyeCockpit.exe”)

Click here

Click here

Click here

Click here

- To reconfigure camera, select File/Load parameters/from File and select “C:\Morpho\MFaceCBP\uEye-settings.ini”. Then select File/Save parameters/Parameter set & press ‘Ok’.
- To manually adjust individual camera settings, select uEye/Properties... & then change desired settings.



# TROUBLE SHOOTING

**The following are potential problems and trouble shooting steps to resolve:**

**→ Quality of captured face photos appears poor**

- Check that the lens glass is free from smudges or obstructions
- Manual lens focus: screw the lens clockwise or counter-clockwise until focus is achieved on a subject at a desired distance
- Blurry: Observe that the live video refresh rate is around 30 frame per second. If not, then manually reconfigure the camera from the saved setting file “uEye-settings.ini”
- Over/Under Exposed: If the live video and/or captured photo appears too bright or too dark. Check that the camera isn’t pointing directly at a light source. If not, then manually reconfigure the camera from the saved setting file “uEye-settings.ini”
- If desired/needed, use the “Enhance/Normalize photo” Configuration UI option.

**→ Software’s performance seems slower than usual**

- Check that the device isn’t too hot or has been over heating
- Check that only one instance of the software is running
- Possibly consider rebooting the device



# APPENDIX

## → Barcode scanner reset codes

- The following bar codes can be scanned by the bar code scanner, where upon the scanner will be properly restored to its default settings. Scan the first, then the second, then the third.



DEFAULT.  
Activate Defaults



PAP\_AT.  
IBM PC AT and Compatibles with  
CR suffix



VSUFCR.  
Add CR Suffix  
All Symbolologies

## → ICAO 9303 Standard

- <https://www.icao.int/publications/pages/publication.aspx?docnum=9303>