



# Increasing the usability of biometric solutions

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# Why support the user in a biometric solution? (1)

- Effectiveness
  - for operator/end user
- Efficiency
  - for operator/end user
- Accessibility
  - for (partially, multiply) disabled, elderly, children
- Language
  - reduce dependency on written instructions
- Reduction of 'User discomfort'
  - in unfamiliar/stressful/encumbered situations



# Why support the user in a biometric solution? (2)

- Physical Challenges
- User Challenges
  - Enrolment
    - Applicant to be enrolled
    - Operator guiding the enrolment
  - Verification
    - Document holder to be verified



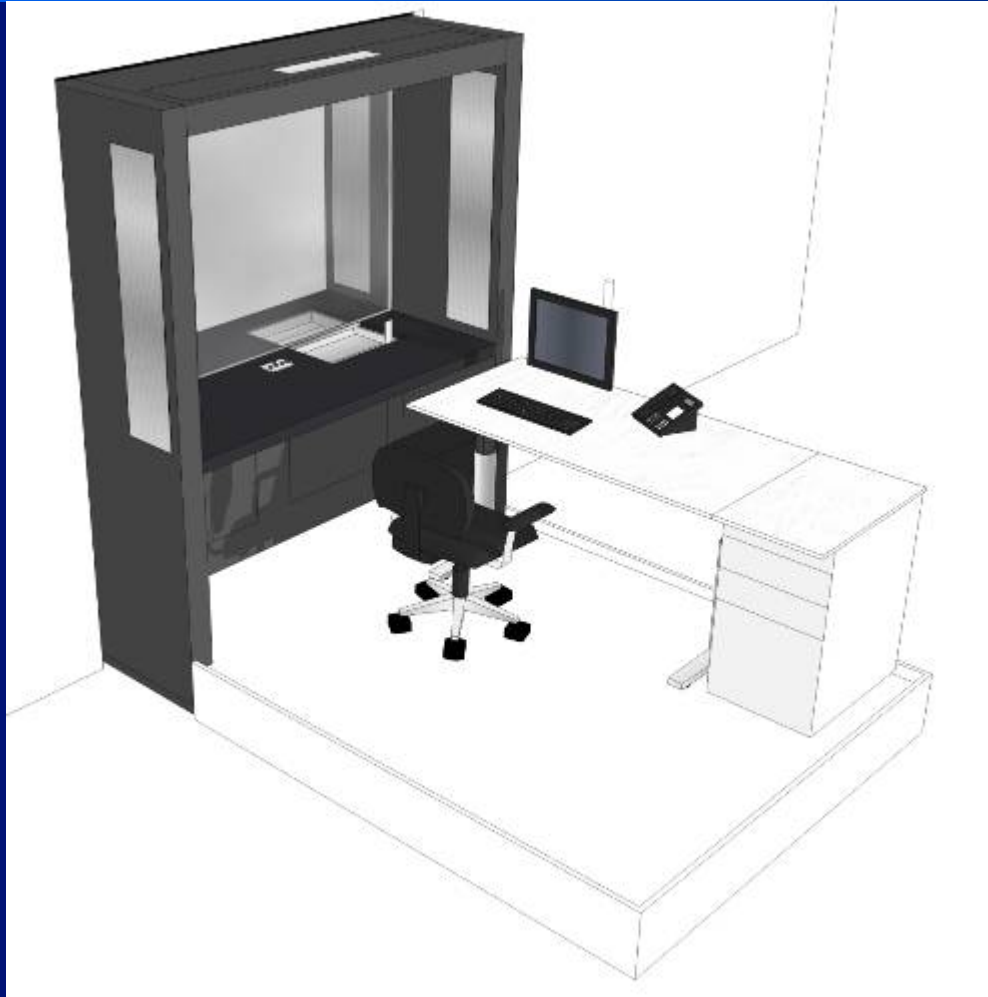
# Physical Challenges *Environment (1)*





# Physical Challenges

## Design concepts



# Physical Challenges *Environment (2)*





# Physical Challenges *Environment (3)*





# Physical Challenges *Environment (4)*





# Physical Challenges *Environment (5)*



# First impressions count



Offputting: systems that are

- Dirty/unhygienic
- Scary
- Rickety
- Technology as a “barrier”
- Violation of deeply engrained social norms (“What to you mean I can’t smile?”)

# Low usability reduces confidence



- In the technology
- Of the Organisations who build/run it
- User/Operator must understand the basics
  - What kind of system is it?
  - What do I have to do?
- Don't make user twist/turn/dance
- Anything that requires posters and instruction is NOT “walk-up-and-use”

# Norway

## Biometric Enrolment Solution



- Client  
The National Police Computing and Materials Service and the Ministry of Foreign Affairs
- Project
  - 1 software solution for the capture of biometric data (facial, fingerprint and signature) for e-passports, travel documents and visas
  - 3 hardware solutions
    - Kiosk
    - Desktop
    - Portable Solution





# Locations (Phase 1 now deployed)

Stockholm  
Kiev  
Oslo  
London



## Full Deployment by March 2009

- 480 Kiosks
- > 120 Consular Posts
- > 100 National Passport Application Offices

Cairo  
Nairobi

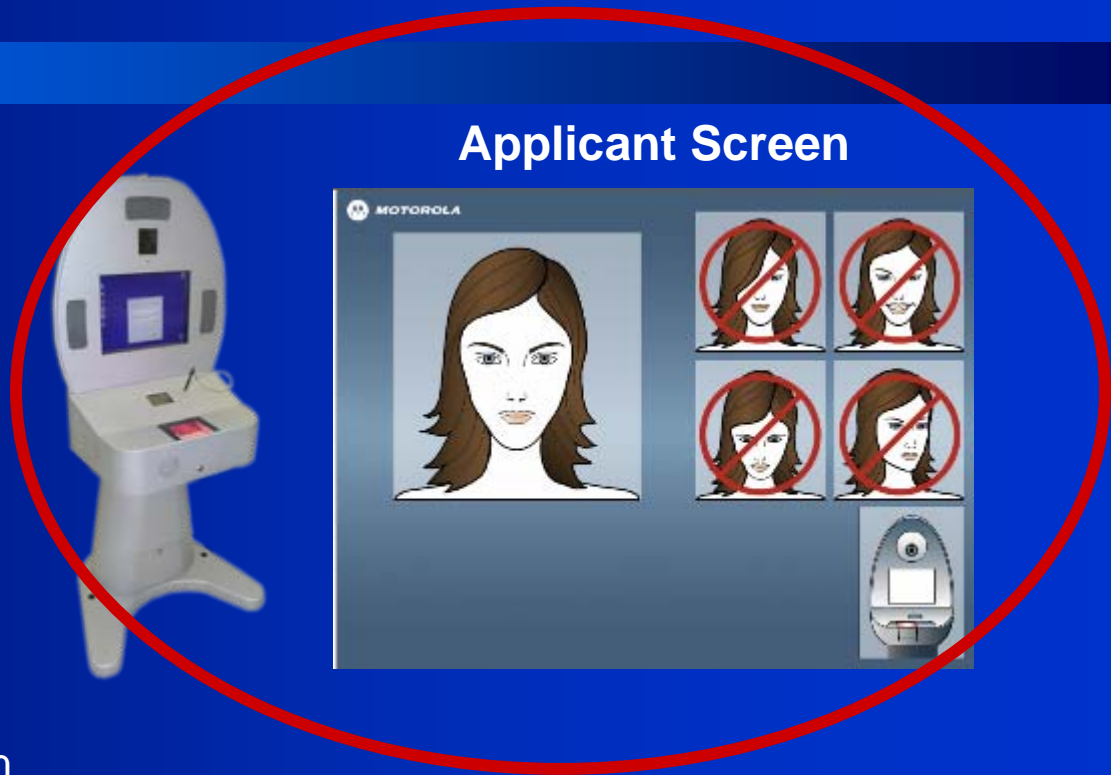
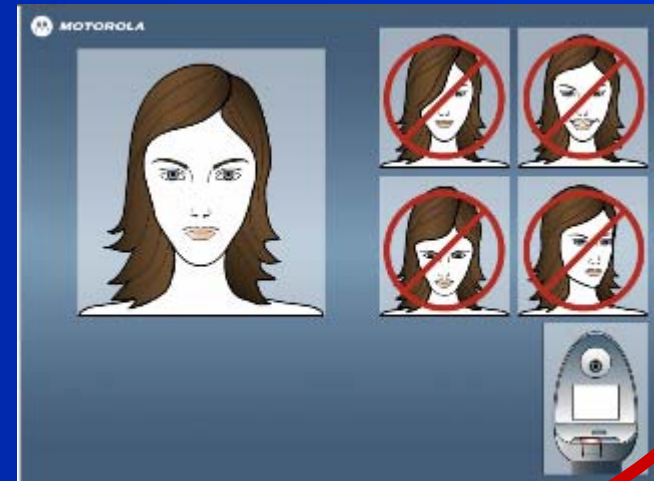
# Norway Solution



## Operator Screen



## Applicant Screen



- Software for Enrolment Solution
  - 4-4-2 fingerprint scanning
  - 2D camera
  - Signature pad
  - Interfaces to existing Norwegian passport, visa and immigration systems
  - <3 minutes for total enrolment



# Facial Image Capture

## ICAO Guidelines

### Glasses and Head covering Expression and Frame

### Portrait Quality



### Style and Lighting



### Expression and Frame





# Facial Image Capture

## Guidance Analysis

<ul style="list-style-type: none"><li>• Portrait Quality</li></ul>	<ul style="list-style-type: none"><li>• Installation Environment Guidelines</li><li>• Operator Controlled, Aided by Automation</li></ul>
<ul style="list-style-type: none"><li>• Style</li></ul>	<ul style="list-style-type: none"><li>• No hair obscuring the eyes</li><li>• Facing square to the camera</li><li>• Head should be upright</li></ul>
<ul style="list-style-type: none"><li>• Lighting</li></ul>	<ul style="list-style-type: none"><li>• Installation Environment Guidelines</li><li>• Operator Controlled, Aided by Automation</li></ul>
<ul style="list-style-type: none"><li>• Glasses</li></ul>	<ul style="list-style-type: none"><li>• Installation Environment Guidelines</li><li>• Operator Controlled, User Instructions</li></ul>
<ul style="list-style-type: none"><li>• Head Covering</li></ul>	<ul style="list-style-type: none"><li>• Installation Environment Guidelines</li><li>• Operator Controlled, User Instructions</li></ul>
<ul style="list-style-type: none"><li>• Expression</li></ul>	<ul style="list-style-type: none"><li>• Look at the camera with a neutral expression</li><li>• Mouth closed</li></ul>
<ul style="list-style-type: none"><li>• Frame</li></ul>	<ul style="list-style-type: none"><li>• Operator Controlled, Automatic</li></ul>



# Facial Image Capture

## *Guidance*



# Facial Image Capture Overall Approach

## Applicant Screen

- Animated pictorial instruction
- Flashing indicator to capture attention on kiosk
- No language

## Operator Screen



- Image view
- Image alignment grid
- Quality assessment
- Optional detailed report
- Management tools
- Show image to applicant



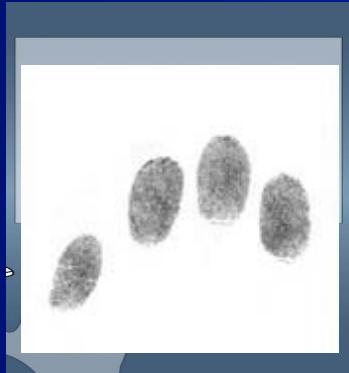
# Fingerprint Capture

*Guidance : cleaning fingerprint platen*



# Fingerprint Capture Overall Approach (1)

## Applicant Screen



- Animated instructions
- Live capture preview

## Operator Screen



- Yellow = hand/fingers being captured
- Green box = good quality
- Red box = poor quality



# Signature Capture

## *Guidance*



# Summary

## Operator Screen



- Shows information captured through process
- Same screen for Operator and Applicant
  - Optional display to Applicant



# Physical Issues





Finger

Face

Iris



# Thank You

# Questions ?

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