Implementation of FI in preparation for EES EIO

Face Image Quality Workshop - Nov 7, 2023
Daniel Segui – Swedish Police IT, Border Control Systems
Strategy

• Brand new, modern border control application
• Agile rollout process – soon 90 releases in 24 months
• Hardware & software independent
• Own resources
• Product approach
• Good understanding for the business
• Hardware/functional/UX alignment in preparation for EES
Sweden’s approach

- Verify document ownership – “EES compatible”
- Early rollout of new hardware
- High resolution camera - distance
- Mounted in portrait mode
- Support for multiple people in front of camera
- Burst mode – multiple photos per traveler
- USK + own algorithms
- Automatic step or on request
- High quality capture – dual use
Our ”product”
Misc

- The border control system guides the border guard depending on type of traveler
- Only relevant information is presented – avoid information overload
- Digital first – border guard assist the system when necessary
- Parallelization of algorithms – queue
  - Steps for same category of traveler can come in different order
- Data/information populated ”on the fly” when ready
  - As a new step
  - Populate information in an existing page
- Prepared for new functionality
- Metrics
Optimisation/parallelization (example)

Traditional approach

Scan document → Photo step → Comparison step → Next step → Next step

…waiting time
Optimisation/parallelization (switch order)

Traditional approach

Scan document → Photo step → Comparison step → Next step → Next step

…waiting time

New approach

Scan document → Photo step → Next step → Comparison step → Next step

Time saving

Start Border Control → End Border Control
Optimisation/parallelization (remove step)

Traditional approach

Scan document → Photo step → Comparison step → Next step → Next step

...waiting time

New approach

Scan document → Photo step → Next step → Comparison → Next step

Time saving

Start Border Control

End Border Control
Optimisation/parallelization (example)

Traditional approach

- Scan document
- Photo step
- ...waiting time...
- Comparison step
- Next step
- Next step

New approach

- Scan document
- Photo step
- Next step
- Next step
- Time saving x 2

Start Border Control

End Border Control
The solution
Photographable area

Seat 1

Normal length
110 - 210 cm

Seat 2

Shorter/taller

Approx 180 cm
Border guard’s perspective

Red frame – face is identified but too far away from camera. Face will be ignored

Green frame – face is identified and in range. Face will be captured.

Click the camera button or push enter to capture photos
Camera’s perspective
3-4 photos are captured
Cut out faces from all photos
USK + open eye analysis
Compare chip photo with EES ready faces
Handling the result

**Best result of the biometric comparisons decides what happens next:**

- If best score is above threshold – just continue
- If best score is below threshold – show comparison step
Manual comparison – below threshold

Quick zoom feature

Retake photo if needed

Continue if okay
Feedback - recapture
Zoom in anywhere

Individual zoom and placement of lens
Manual check always available

Summary page – always possible to go back and verify again
Results from initial tests

• It takes approximately 8 seconds from start scanning the passport until the photo step is initiated.
• Max time for instruction and release of camera step: 36 seconds
• Min time for instruction and release of camera step: 8 seconds (traveler imitated behavior)

• *Average for instruction and camera: 18 seconds

*Including comparison step for 20% of the travelers
Thank you for your attention!

Contact

The Swedish Police Authority
Daniel Segui, project manager - Border Control Systems
daniel.segui@polisen.se