Update on the Application of Photo Standards in the E-MRTD Issuing Process

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New Technology Working Group (NTWG)
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Introduction


- Experiences of various issuing authorities that have applied these specifications suggest that a number of key specifications within the ISO/IEC 19794-5 Standard may need to be modified.

- The NTWG was given approval at TAG-17 to give immediate consideration to identifying potential solutions, including revised practices and/or tolerance adjustments, to ensure that issuing agencies are able to meet specifications for “Biometric Data Interchange Format - Face Image Data” within Part 1 of ICAO Doc 9303.
At its meeting in Tel Aviv, January 2008, the subcommittee ISO/JTC1/SC37 agreed on the Technical Corrigendum to the ISO/IEC 19794-5 standard "Biometric Data Interchange Formats – Part 5: Face Image Data".

It is now forwarded to ISO publication.

This Technical Corrigendum reflects the analysis and the recommendations given by the NTWG work group at TAG/MRTD-17 in 2007.
**New ISO 19794-5 limits and tolerances**

<table>
<thead>
<tr>
<th>Limits</th>
<th>Eye Distance</th>
<th>Relative Horizontal Position</th>
<th>Relative Vertical Position*</th>
<th>Head Width Ratio</th>
<th>Head Height Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old – Min</td>
<td>90 px</td>
<td>0,5</td>
<td>0,5</td>
<td>0,5</td>
<td>0,7</td>
</tr>
<tr>
<td>Old – Max</td>
<td>+INF</td>
<td>0,5</td>
<td>0,7</td>
<td>0,71</td>
<td>0,8</td>
</tr>
<tr>
<td>New – Min</td>
<td>90 px</td>
<td>0,45</td>
<td>0,5</td>
<td>0,5</td>
<td>0,6</td>
</tr>
<tr>
<td>New – Max</td>
<td>+INF</td>
<td>0,55</td>
<td>0,7</td>
<td>0,75</td>
<td>0,9</td>
</tr>
</tbody>
</table>
The Corrigendum calls for relaxing the tolerance in head roll (tilt) to ±8°. The tolerances for the deviations from the frontal pose in the pitch- and the yaw-axis remain unchanged at ±5°.

Images with head roll angle of ±8°
The modifications set out in the Technical Corrigendum to ISO/IEC 19794-5 will be **backward compatible** with the earlier provisions of ISO/IEC 19794-5 since **only the normative requirements will be relaxed; best practice requirements remain unchanged** and are strongly recommended for the application in the e-passport framework.

This ensures that issuing authorities and/or photographers do not have to change their already-published photo requirements which are based on the best practice requirements of the earlier version of ISO/IEC 19794-5.

Also, issuing authorities will now be able to accept more of the submitted photographs without degrading facial recognition performance.
Backward compatibility contd.

Old and new best practise requirements; unchanged

New lower limit

ISO 19794-5 strict values

New upper limit

New normative requirements

No photo guidelines or policies have to be changed! It leads to less rejections in the application process!
Do we (still) have a problem?
Analysed 31 DG2-images from e-passport reference samples (from 31 countries)

58% JPEG, 42% JPEG2000 image format used

58% Full Frontal Image, 35% Token Frontal Image Type

Average file size is 16.852 Bytes.
Image Analysis – File Size

Average DG2 File Size = 16.852 Bytes
Image Analysis – Dimensions
Image Analysis – Eye Distance

The chart displays the eye distance in pixels for various countries. The x-axis represents different countries, and the y-axis shows the eye distance in pixels. The countries are listed from left to right, and the eye distance varies significantly across these countries.
Image Analysis – Head Height

Token Frontal Image Type other tolerances apply

Token Frontal Image Type other tolerances apply
Image Analysis – Head Width

Token Frontal Image Type
other tolerances apply
Conclusions

- Analysis shows, that the relaxed tolerances are needed for a smooth e-passport issuing process.

- The NTWG welcomes the adjustments made to the standard ISO/IEC 19794-5, closely following its own analysis and recommendations.

- The way these adjustments are made guarantees solid ground, backward compatibility for already issued MRTDs.

- The NTWG will monitor the application of the modified photo standards to the issuance of passports with biometrically suitable passport images and report any new developments to TAG/MRTD.
The NTWG invites the TAG/MRTD


➢ To approve the continuation of on-going research in this area.
Thank you for your attention.

Questions?

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