National approaches to prevent and detect morphing

Germany
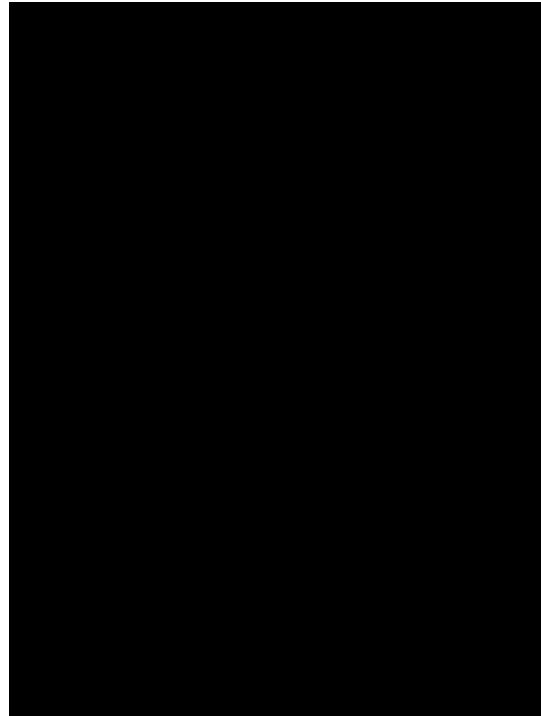
KT 5 – IT Forensics, Documents, Forensic Science Insitute, Bundeskriminalamt, Germany

FRONTEX International conference on biometrics for borders 2019

10+ images of project team morphed
[SOTAMD project , Univ of Bologna]

- When morphing hit Germany officially...

- The challenge: application process in Germany

- Anti-morphing strategy

  - Legislative initiatives

  - Research initiatives

When morphing hit Germany officially
Recent news article – Sept 22, 2018

Face morphing hit the news in Germany

- On Sept. 22, 2018, a group of activists announced that they put a morph image – also containing Federica Mogherini (the EU Foreign Ambassador) – into a German passport to protest the use of passports to control asylum seekers
  → True fact.

- On Tuesday, 25/9, they announced that they have enrolled 5 passports with morph images containing five Libyan citizens and shipped those passports to Libya.
  You can follow that parcel in real-time.
  → Fake news!

SPIEGEL ONLINE

(Reactive) press statement

- "…The article makes the problem of electronically manipulated images (which in known to the Ministry) known to the public. The number and relevance of such cases in the past however does not justify and immediately action such as mandatory live enrolment in the municipality. "

- "The manipulation of images in the application process and the weakening of the facial image as trust anchor is not only nationally debated, but also on EU and international level. The draft regulation for minimum security standards for ID documents recommends future live enrolment. The German Government evaluates if this proposal could be implemented in Germany."

SPIEGEL ONLINE

The challenge
Application process in Germany

- There are 5.300 offices for passport/ID-card application (+ 500 offices for Foreigner issues such as eResPermit) in Germany with approx. 25.000 workstations.

- There are 18 software vendors servicing this infrastructure.

- There are 50-60 regional data centers involved.

- The hard- and software, the system environment and the strategies behind are highly heterogeneous, beyond the reach of the federal government.

- But, the good news: The core of all this is a BSI certified, central piece of software resonsible for biometric enrolment.

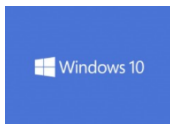Windows 10   Windows 7   Windows 8   CiTRiX®
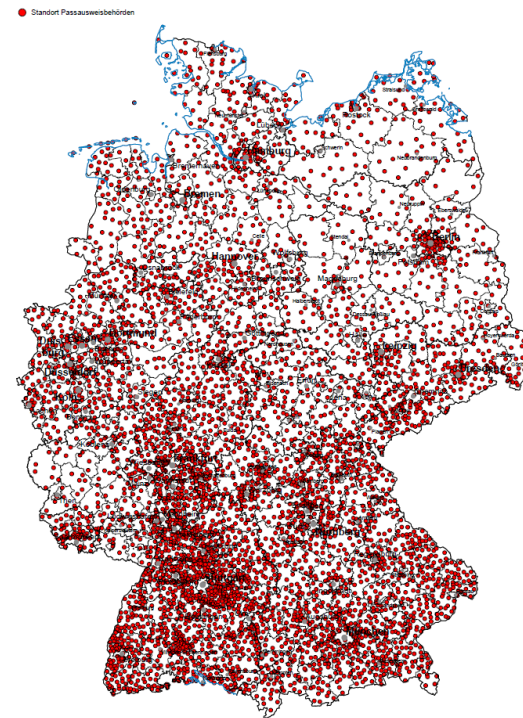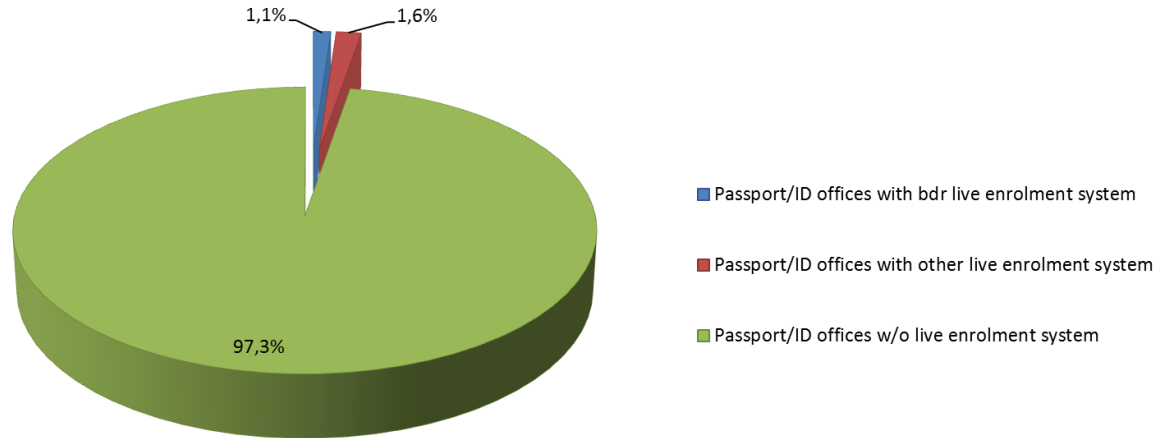
[Source: Bundesdruckerei]

Image enrolment in Germany

- Passport images taken at the photographer is the most frequently used method for passport/ID-card application (5.171 out of 5.315 offices)

- Today, about 144 offices use some form of live enrolment (but not exclusivlely)

- All offices would need one (or possibly more) image live enrolment stations!

1,1%   1,6%

97,3%

■ Passport/ID offices with bdr live enrolment system

■ Passport/ID offices with other live enrolment system

■ Passport/ID offices w/o live enrolment system

[Source: Bundesdruckerei]

Anti-Morphing Strategies
A twofold approach

To improve security for <u>national</u> passport enrolment

- **Invest in live-enrolment** technologies and **legislation**

- Kiosk solutions or certified photographers

- Best practise activities of EU Article 6 Committee
  EU regulation 2019/1157 on ID card security

To improve security for <u>third country</u> national's passports @ EU borders

- **Invest in research** for morphing detection technologies

- Goals: high detection rate with low false alarm rate

EU legislation: EU regulation 2019/1157 of 20 June 2019

- (32) Member States should take all necessary steps to ensure that biometric data correctly identify the person to whom an identity card is issued. To this end, Member States **could consider** collecting biometric identifiers, particularly the facial image, by means of **live enrolment** by the national authorities issuing identity cards.

National legislation initiatives (Germany): Passport law and ID card law + resp. regulations

- Intergovernmental procedure to change the law(s) under way for a nation-wide deployment of live enrolment for fingerprints and facial images in the application process of German ID cards and passports

- Enrolment of fingerprints and facial images interpreted as part of the official production of ID documents and therefore to be federally regulated (and technically equipped)

Research initiatives

- 2014: EU Project FIDELTY – Research of University of Bologna revealed the threat of morphed images

- Since then: quiet research in NLD, D, other MS, USA to analyze the impact

- 2016: EU action plan on document security mentions the threat of morphing

- 2017: D presents the current activities and results to the Article 6 committee

- 2018/2019: Award of the one-year EU–ISF SOTAMD project (State-of-the-art-of-morphing detection) to an international consortium

- 2019: H2020 call explicitly calls for projects proposals dealing with the morphing threat → projects will start early in 2020 (at best)

- Various other national research activities in Germany, federally funded (BSI)

Overview of SOTAMD project
## Funded by the EU's Internal Security Fund — Borders and Visa

- Budget: € 1.000.000
- February 2019 – February 2020
- Coordinator: National Office for Identity Data, NLD
- Partners:
  - Bundeskriminalamt
  - University of Bologna
  - Hochschule Darmstadt
  - The University of Twente
  - Norwegian University of Science and Technology

Bundeskriminalamt

h_da
HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

UNIVERSITY OF TWENTE.   NTNU

National research initatives
BSI Biometric Evaluation Center (BEZ)

- Public-Academic partnership of BSI, Federal Police and University Bonn-Rhein-Sieg

- Major activities

  - Biometric performance testing

Source:
Bundesamt
für Sicherheit in der
Informationstechnik
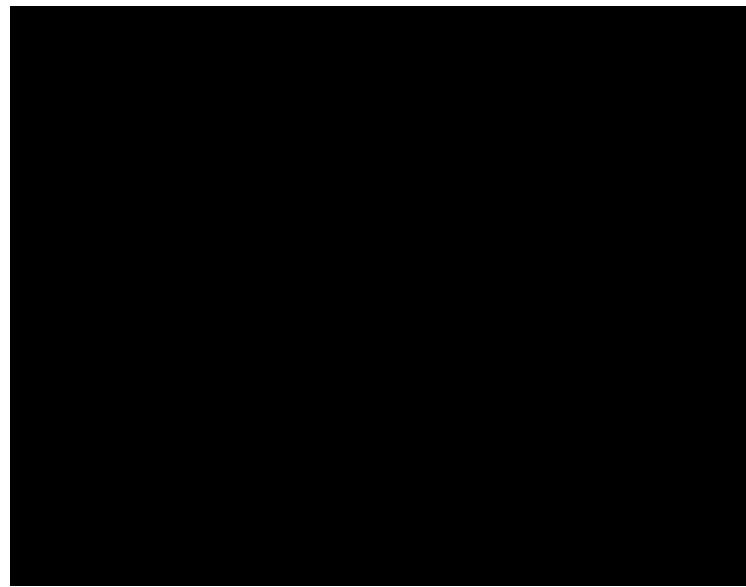
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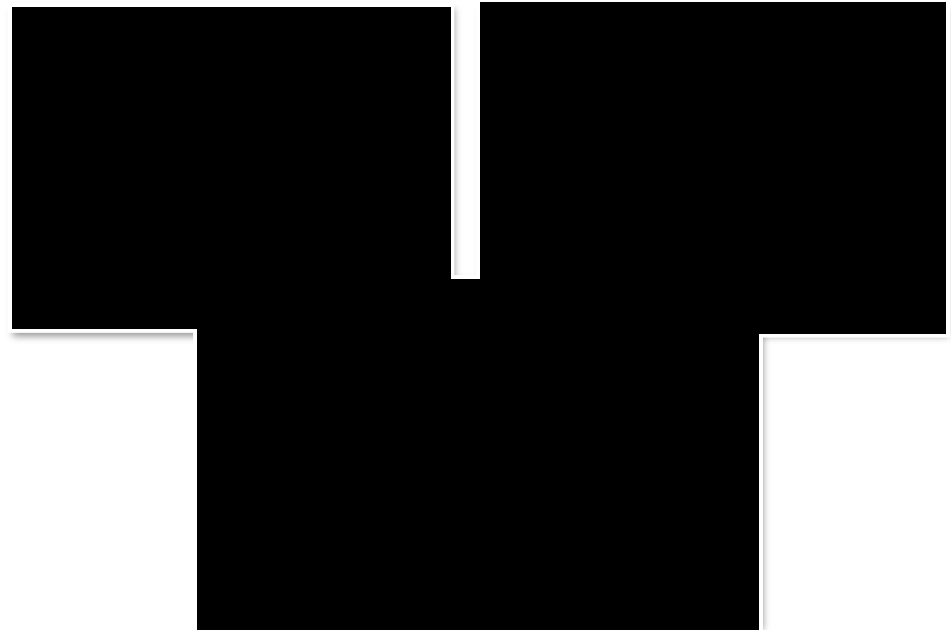- Major activities

  - Biometric performance testing

  - PAD and morphing detection
    (e.g. for Smart Borders and EES)

Source:
Bundesamt
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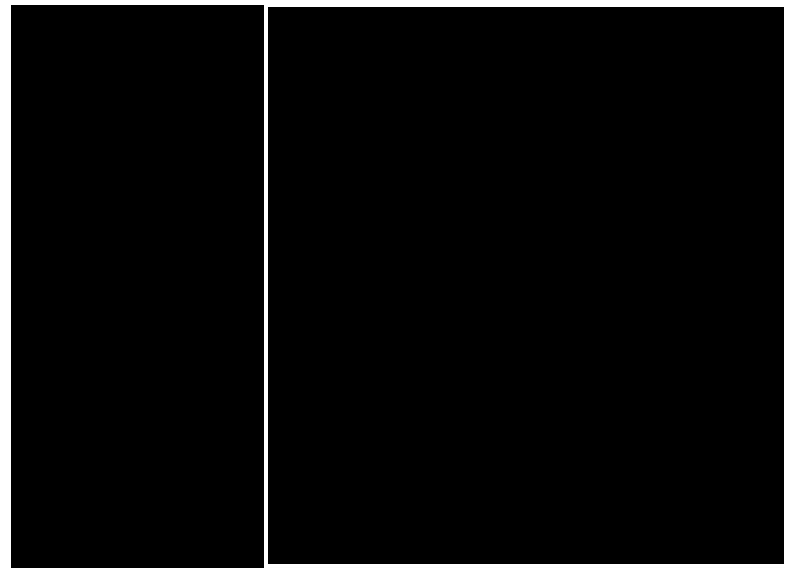 - PAD and morphing detection
    (e.g. Smart Borders and EES)

  - Development of new technologies
    and Usability analysis

Source: Bundesamt für Sicherheit in der Informationstechnik

Bundeskriminalamt

Thank you for your attention…

… and my colleagues from
Ministry of Interior, BSI and Bundesdruckerei
for their support!