



Lessons learned - German Smart Borders Pilot

Border control daily routine measured against ease of use

The company

Who we are and what we do

The Company

- Independent fingerprint scanner provider
- Founders: Dirk Morgeneier, Roberto Wolfer

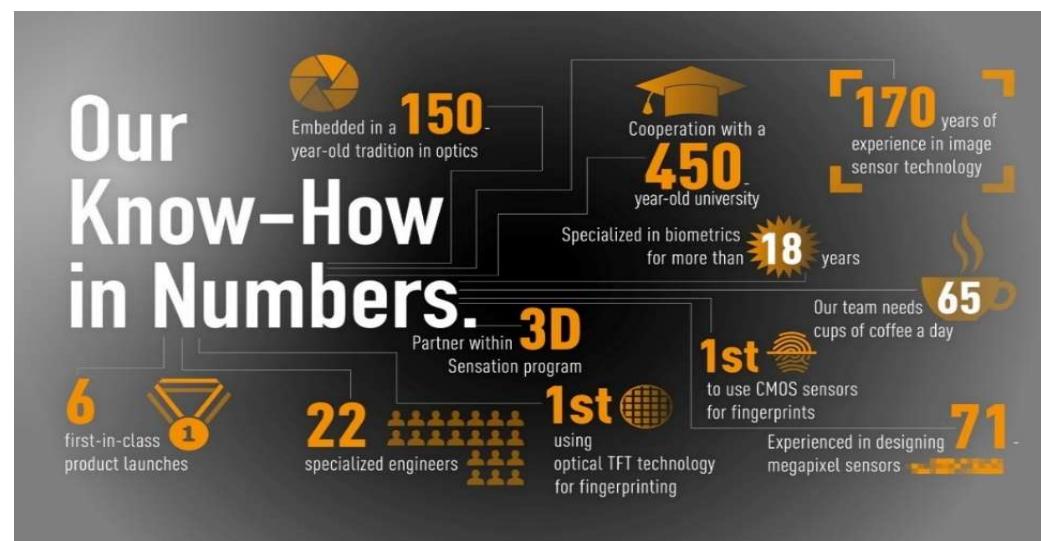


- ISO 9001 certified
- Headquarter in Jena, Germany
- JENETRIC Inc. Malvern, USA



Our Know how

- Innovative leader in biometrics fingerprint technologies
- 30+ employees
- 1st company to apply optical TFT sensors with FBI certification
- 1st company launching a Mobile ID FAP 60 certified product
- 1st company to apply self-service user guidance



JENETRIC's technology for Smart Borders

Wrap-up history

Our route to Smart Borders Pilot – Germany

- Federal Office of Administration (BVA), the Federal Office for Information Security (BSI) & German Federal Police executed first piloting of the system for intelligent borders in 2015
 - To test the practical effects on the border control process

- Product launch LIVETOUCH QUATTRO – September 2015
- Introduction of the product to integrators and end users
 - Special focus on border control and self service environment
- Positioning of fingerprint scanner with on-board user guidance in subsequent extended test phase on Frankfurt airport

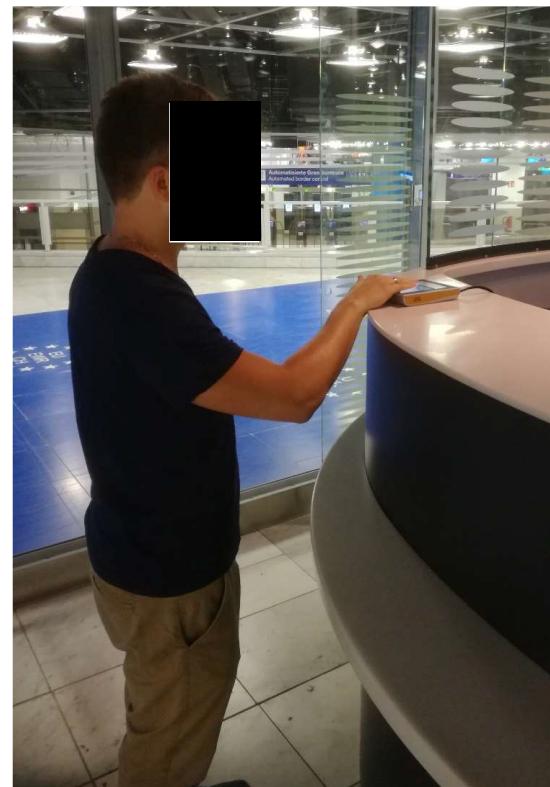


1st 
using
optical TFT technology
for fingerprinting

LIVETOUCH devices in operation



Frankfurt airport Terminal 2 – pilot



Düsseldorf airport – productive environment

Source: Bundespolizei, A. Derksen

The challenge

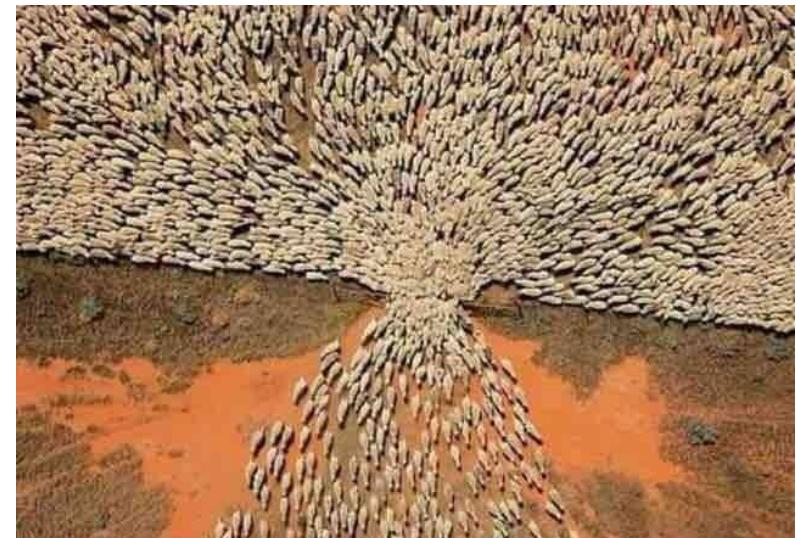
Necessity to increase automation of border control processes

The challenge - Typical users of fingerprint scanners

Yesterday



Today



Source: <https://themindsjournal.com/the-trap-of-thinking/>

Conclusions from usability tests

- Live image leads to pseudo quality assessment¹
- Habituation only improves the usability if user feedback is provided¹
- Poster does not work for user guidance, best are videos²
- User feedback needs to be quality-driven³
- User feedback needs to be in real-time⁴

1) Does habituation affect fingerprint quality?, Theofanos M et al.; CHI, April 22-27, 2006 Montreal, Canada

2) Usability testing of Ten-print fingerprint capture, Theofanos et al.; NISTIR 7403, March 2007

3) Interactive Quality driven Feedback for biometric systems, Wong et al.; IEEE BTAS, 2010

4) Real-time feedback for usable fingerprint systems, Guan H et al.; IEEE Fifth International Conference BTAS2012

Common feedback from test locations

- “According to border guards, travellers almost always need guidance, when using these systems for the first time.”
- “A friendly and human interface and ergonomics are essential for guaranteeing traveller acceptance and usability.”
- “Real-time feedback provided to the border guard and/or to the traveller usually helps to improve the results.”



Usability issues identified during Air Entry-Exit Re-engineering

- Presentation
 - Which finger, where to place, how hard to press?
- Stability Duration
 - How long to hold?
- Movement
 - When to start, how fast to move?

Source: Yevgeney Siton, Scitor corporation, connect:ID 2016

Long story short...

- Habituation only improves the usability if user feedback is provided
 - Feedback needs to be quality-driven, in real-time and as intuitive as possible



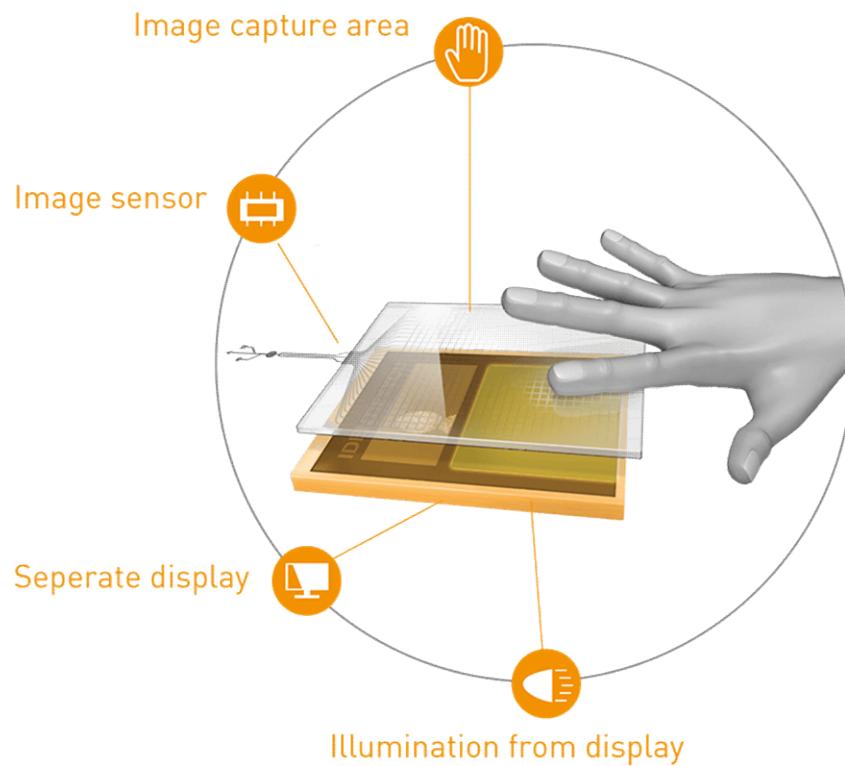
Source: Bundespolizei (Federal Police)
<https://www.abendzeitung-muenchen.de/media.media.567f02c3-4d4e-4996-aff7-58ee337c634e.original1024.jpg>



The e-c-thru technology

How it works

Our technology

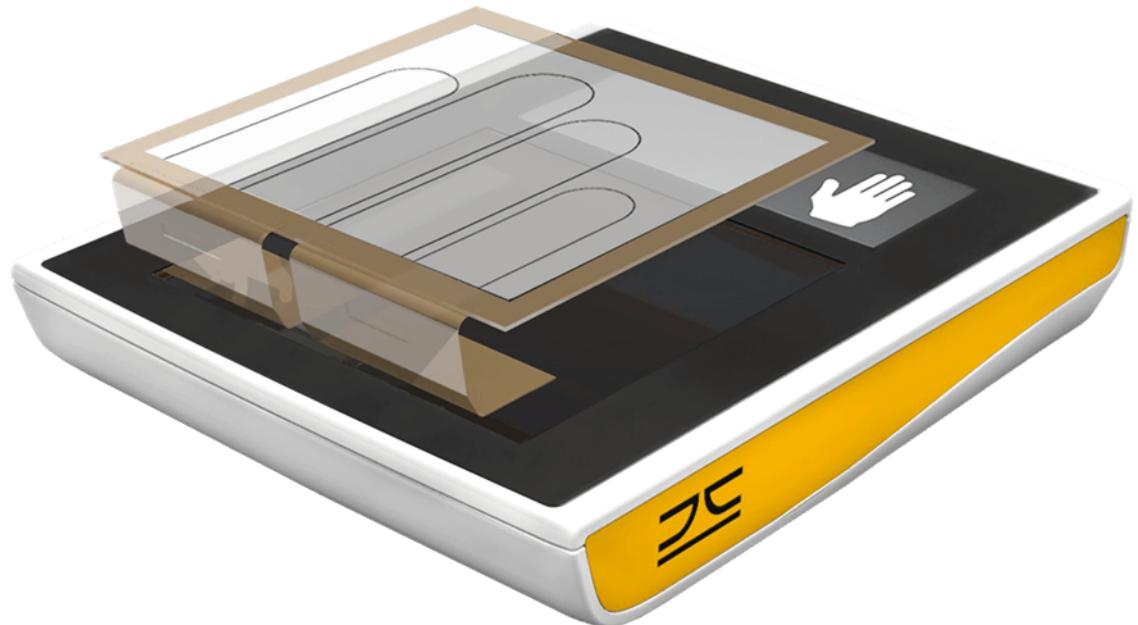
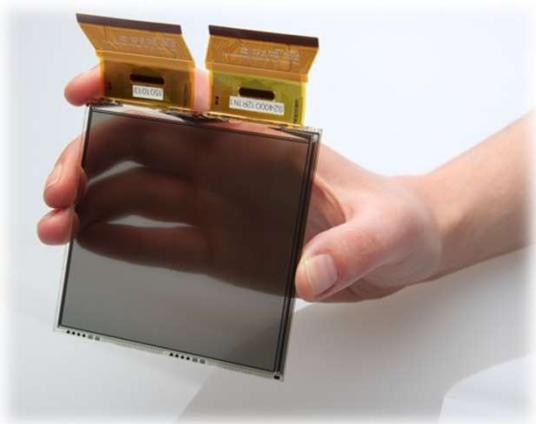


E-THRU
technology

- New capture technology using optical TFT sensor
- Optical TFT (Thin film technology)
- Transparent
- Lightweight, compact
- Fingerprints & documents

The optical sensor

- Advantages
 - Thin
 - Transparent
 - multipurpose



The LIVETOUCH QUATTRO

The most easy-to-use tenprint scanner

LIVETOUCH QUATTRO



1st TFT based scanner tenprint scanner

FBI (1st in class) and BSI certified

New level of user friendliness

LIVETOUCH QUATTRO – User Interface



“A user interface is like a joke.
If you have to explain it, it’s not that good.”

Martin LeBlanc

Intuitive capture process



Prompt for left fingers

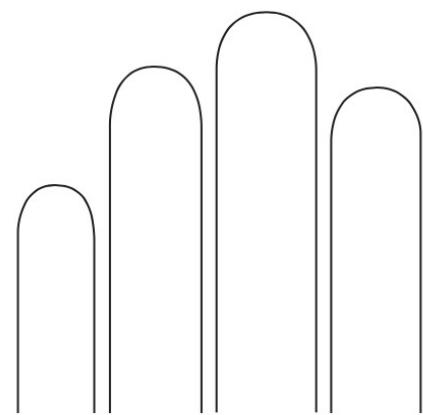
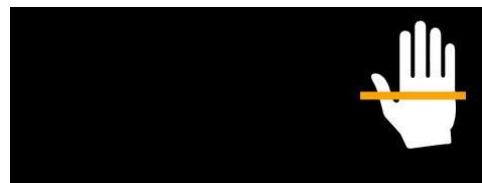


Left fingers are captured

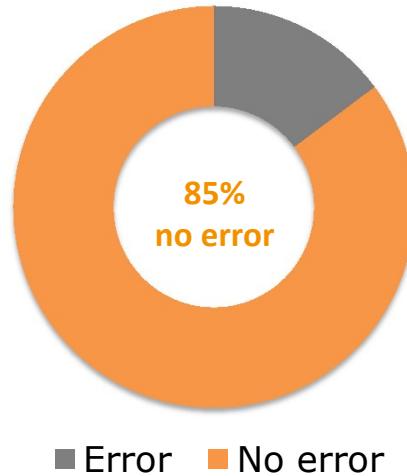


Left fingers captured successfully

Standard 4-4-2 workflow acceptance



Start right hand



Complete right hand

Typical capture errors and guidance for corrections

Fingers placed outside capture area



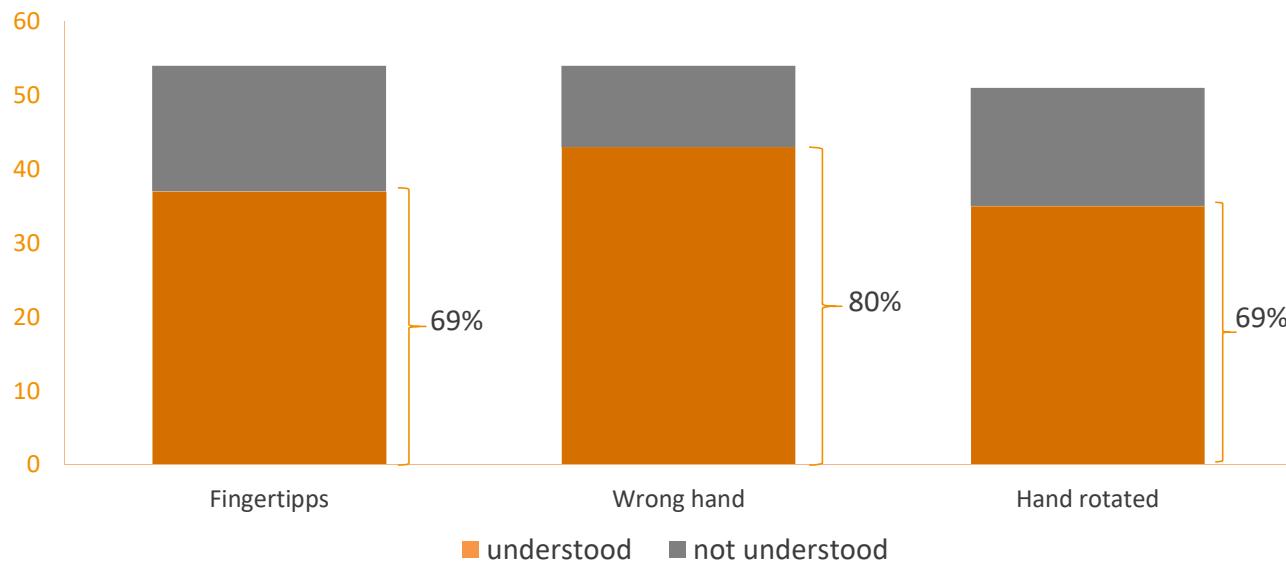
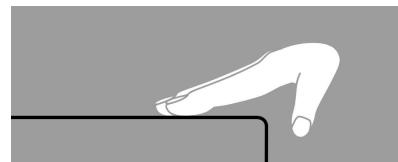
Fingers spread outside capture area



Only fingertips are presented

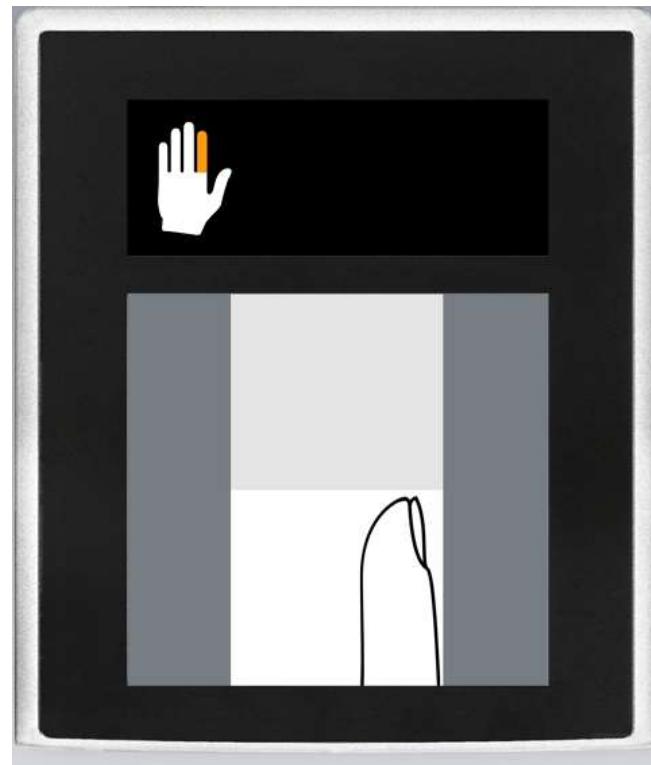
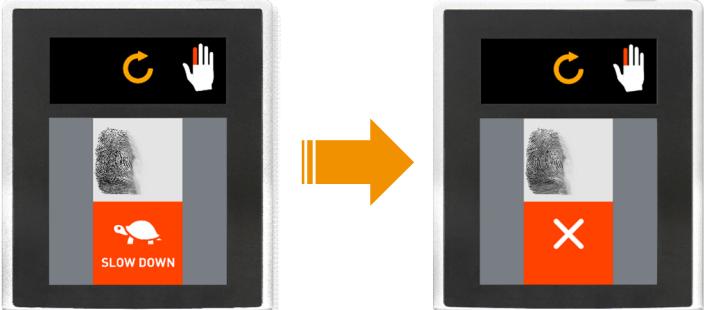


Well understood corrective actions



Capture rolled fingers

- Capture window shows capture area
- Where, when and how to roll
- Roll progress on device display
- Intuitive, consistent quality, more secure



3 Factor - Authentication

1

Access by PIN code



Multipurpose use of integrated display

2

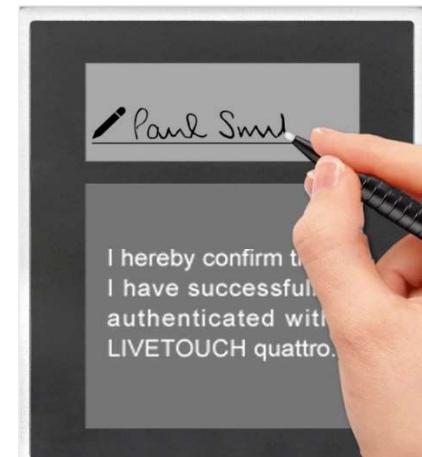
Verification by fingerprints



High quality fingerprints

3

Confirmation by signature



Touchscreen for electronic signature

Outcome and Outlook

- Form factor, usability and fingerprint quality convinced German federal police
 - More fluent fingerprint capturing
 - Less addition corrective interactions between border guard and passenger
 - Less capture errors
 - Less time spent at the border
- German borders will be equipped with LIVETOUCH QUATTRO starting end of 2018
- Commitment to the technology extended until 2022

The LIVETOUCH portfolio

Our products



LIVETOUCH
QUATTRO

LIVETOUCH
QUATTRO Compact

LIVETOUCH
QUATTRO Mobile

Soon to come

Use smartphone camera when closed



Easy to click in your smartphone

Truely one-handed operation



Typical use cases



Mobile checks



Voters registration



Civil registration



Check-in / Border control

Integration options - example



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