

BehavioSec

Behavioral Biometrics – why choose between user experience and security when you can have both?

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FAST COMPANY
3RD MOST INNOVATIVE COMPANIES OF 2015 IN MONEY

Gartner 2012
CoolVendor

The
FinTech50
2016



BEST OF SHOW 2014 EUROPE
BEST OF SHOW 2012 US
BEST OF SHOW 2013 ASIA



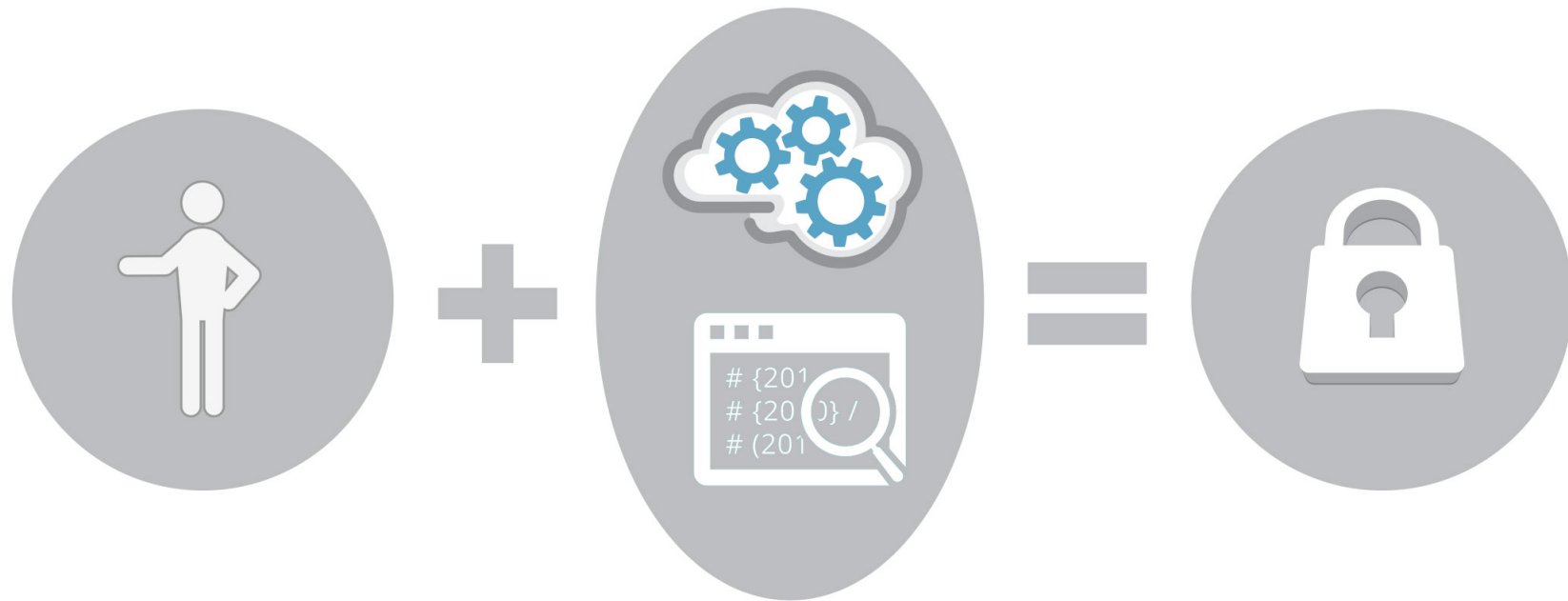
FINDEVr
BEST OF SHOW 2014

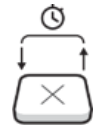
WIRED.CO.UK
EUROPE'S HOTTEST STARTUPS 2014: STOCKHOLM

Minimize risk AND maximize UX

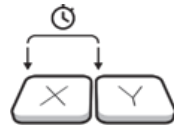


Behavioral Biometrics

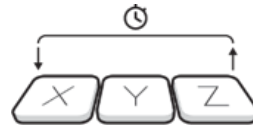




PRESS



FLIGHT



SEQUENCE

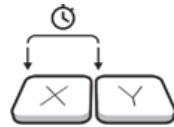


MOUSE

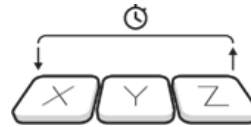
Behavior according to us



PRESS



FLIGHT

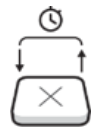
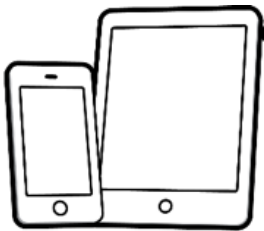


SEQUENCE

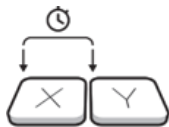


MOUSE

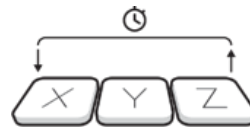
Behavior according to us



PRESS



FLIGHT



SEQUENCE



SURFACE



GYROSCOPE



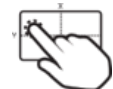
ACCELEROMETER



PRESSURE



MOTION



HIT ZONE

Concept



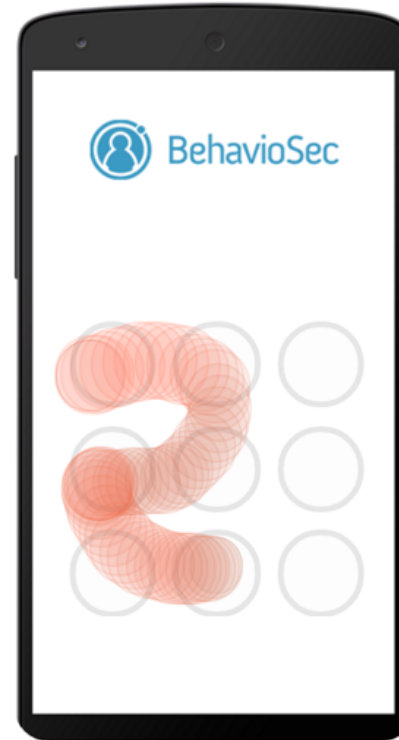
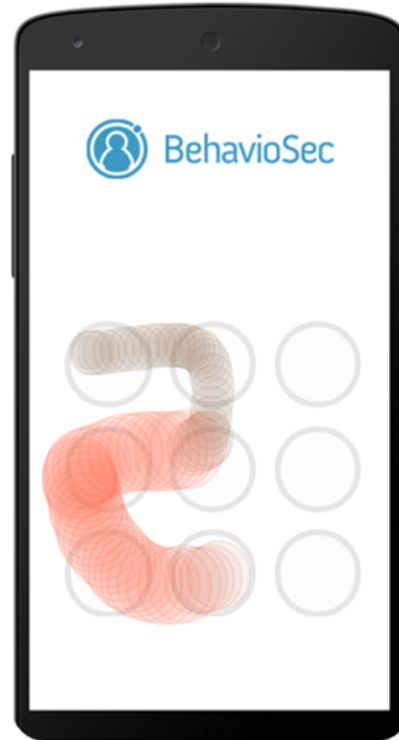
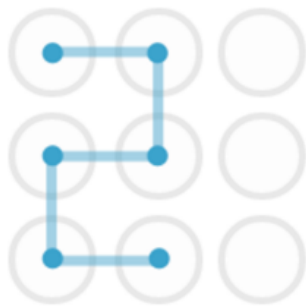
Johanna



Tony



Peder





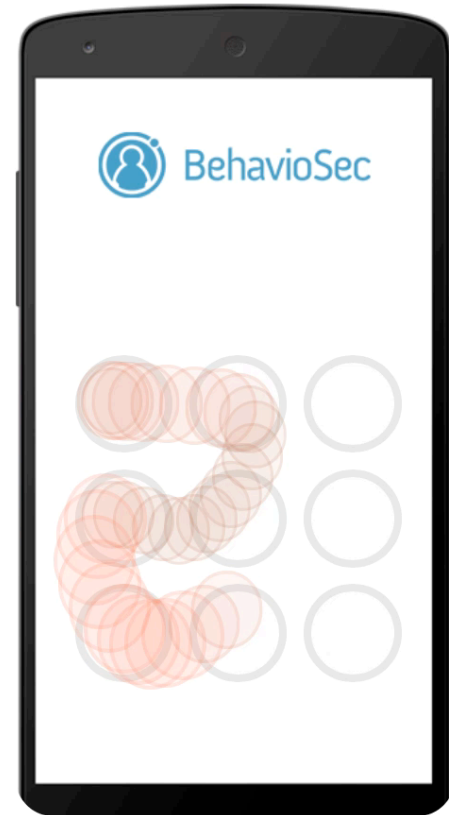
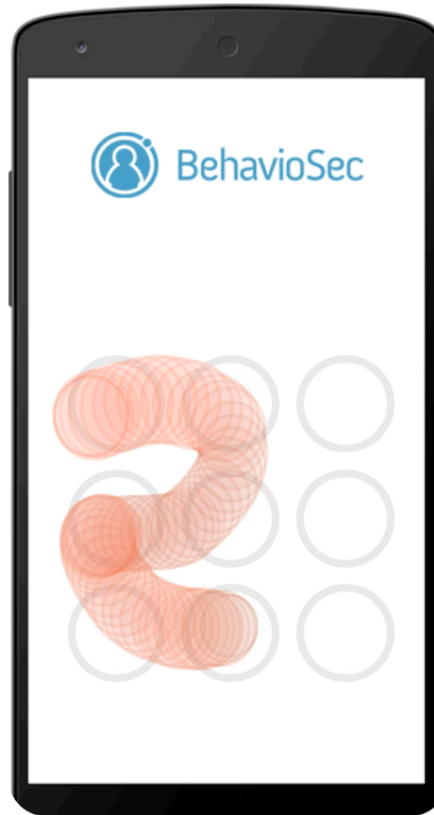
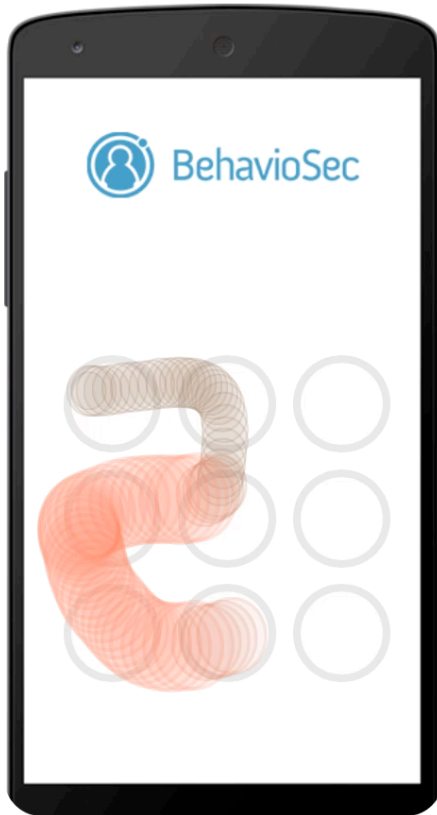
Johanna



Tony



Peder



How it works

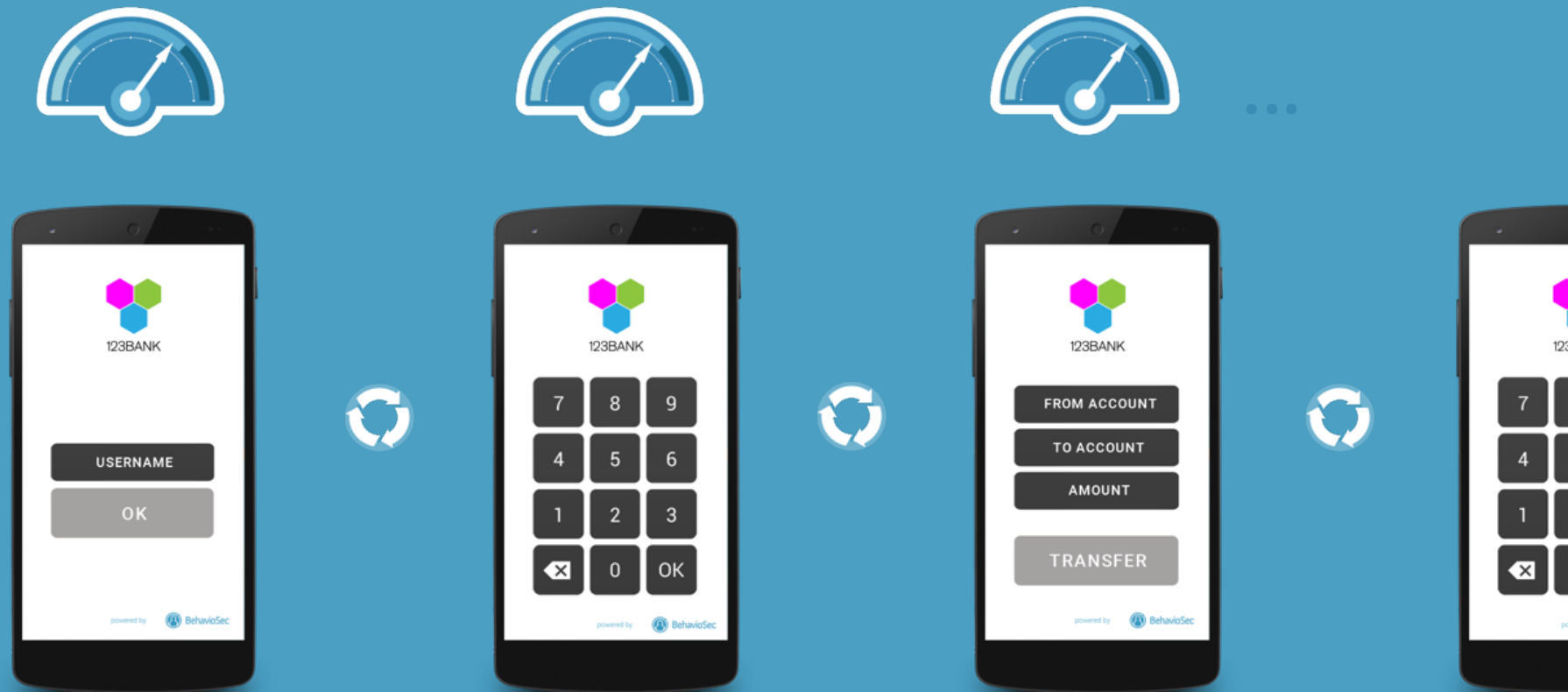


COLLECT
behaviour data

ANALYZE
real time

RATE
intelligence

Continuously.



Transparent. Dynamic. Adaptive.



Continuous User Friendly Security

2014



DARPA



3 M

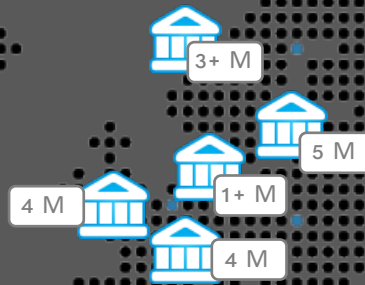


1+ M



BehavioSec

2015



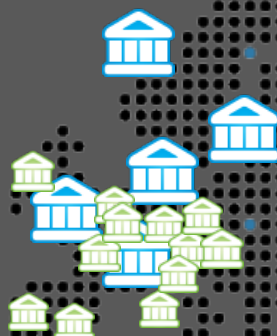
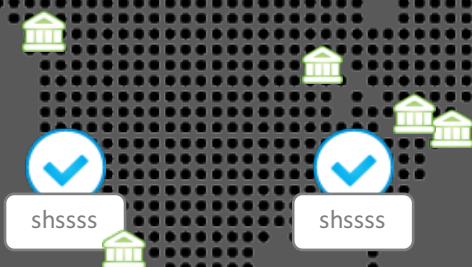
1,2B

Transactions/year

2016



BehavioSec



shssss



est. 4B+

Transactions/year

Business reasons



Risk & Fraud

Minimize fraud

Dynamic risk assessment

Continuous protection

Adaptive ML fraud analysis



Enhanced UX

Passive user verification

Sophisticated data gathering

Designed for layered security

Better user journey

Growth areas

Direct

IDP

- Strategic position
- Large end user numbers
- Implemented architecture
- Extends IDP's value prop

PAYMENTS

- High transaction rate
- UX needs
- Fraud challenge

PARTNERS



UNISYS



nagarro



...

>>

ENTERPRISE & INTERNET BRANDS

Channel



monitise



TEMENOS
The Building Software Company

...

>>

BANKING

The unknown unknown, © by Donald Rumsfeld

- Problem with real life data
 - „On the Internet, nobody knows you're a dog.“
- To fully test the system, controlled trials are a MUST
- Try to get as close as possible to the real world data
 - Use the same app
 - Same devices
 - Blind tests
 - Let test users attack each other
 - Or, if the same thing have been written, synthetic cross attacks can be made



Controlled dataset

- Like always, good statistics need much data, but much good data is hard to get.
- Good enough:
 - About 100 users
 - 30 samples each

Performance of native mobile application

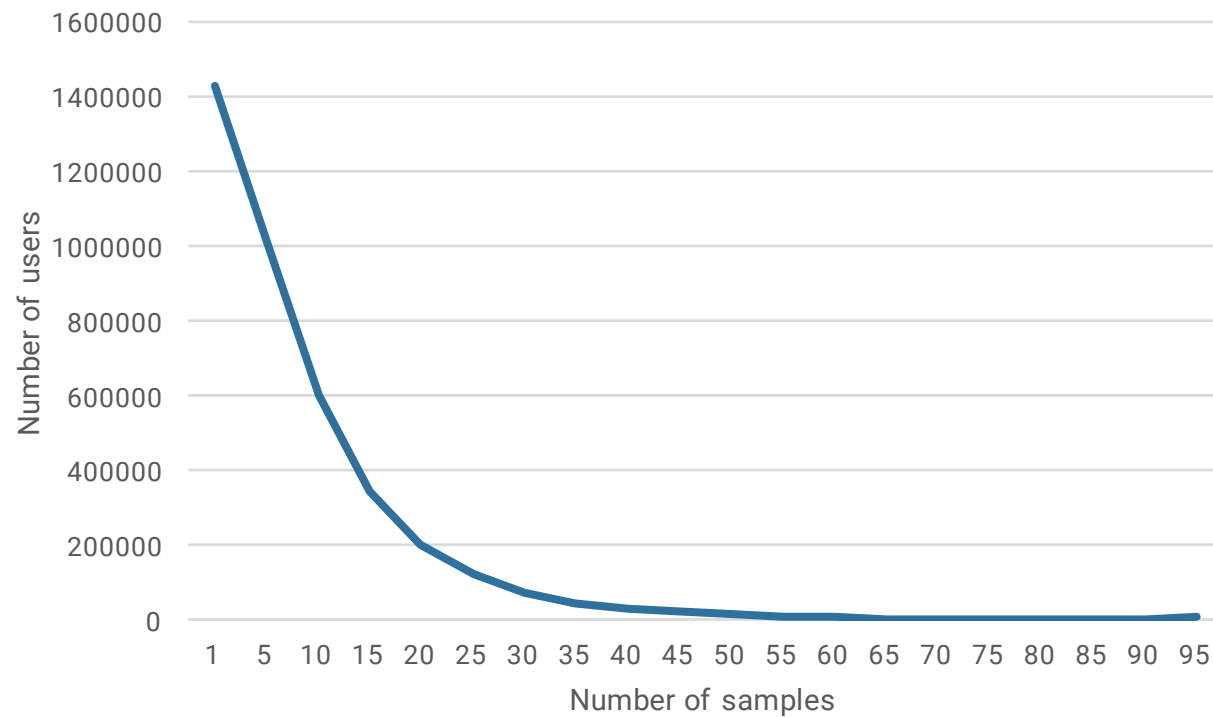
- Peer-to-Peer Payment system
- All mobile devices
- 6-8 digit numeric PIN
- 4 Mio customers
- 40 Mio transactions
- Anonymous data



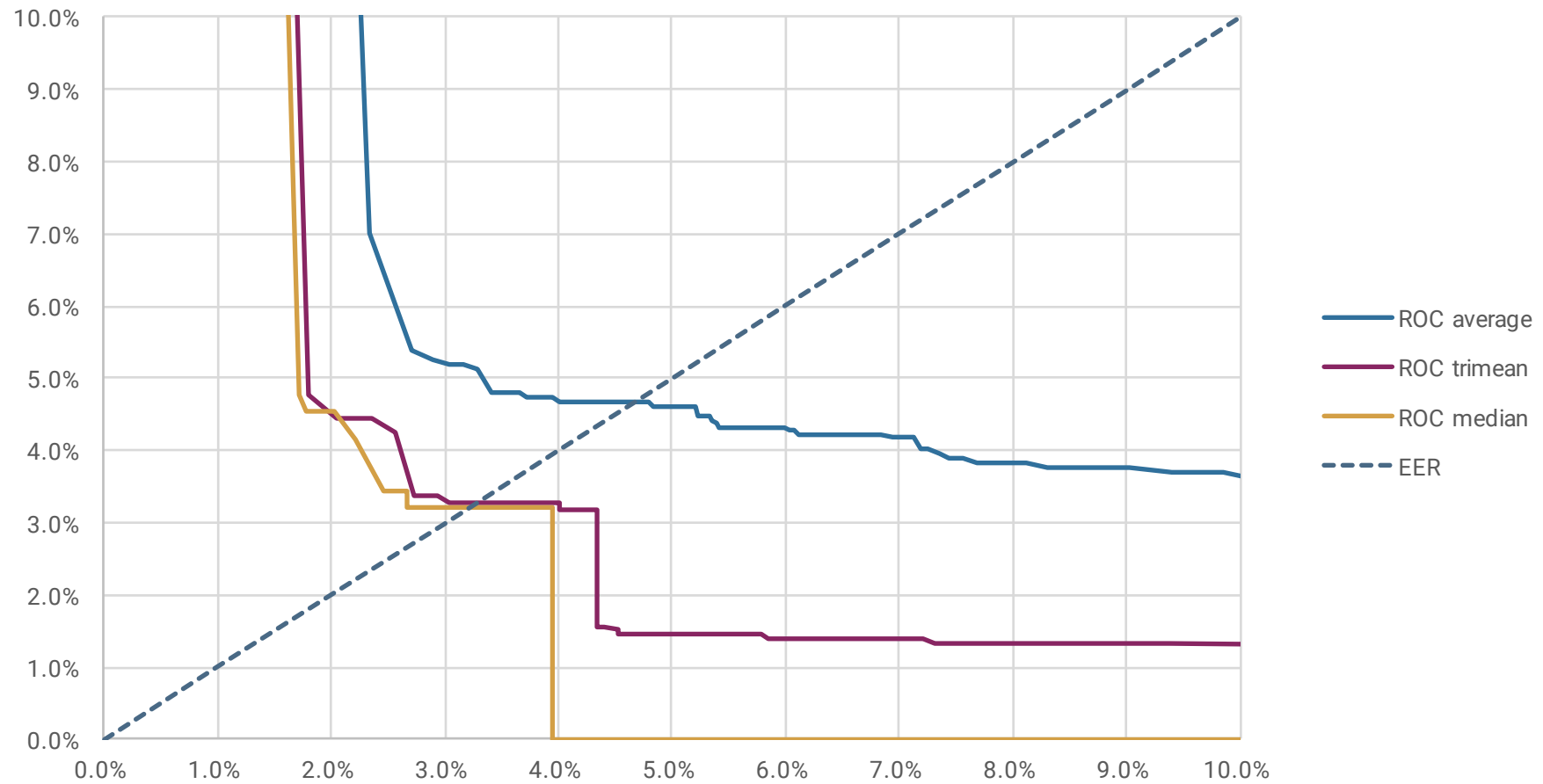
How to measure

- **Build profile with first 10 transactions**
- **Continuously train the profile if the new behavior is close to the profile**
- **False Reject is calculated on 3 tries**
If the right user gets in within these 3 tries, this counts as accepted
- **False Accept is calculated on 3 tries**
If the wrong user gets in within 3 tries, this counts as **false** accepted

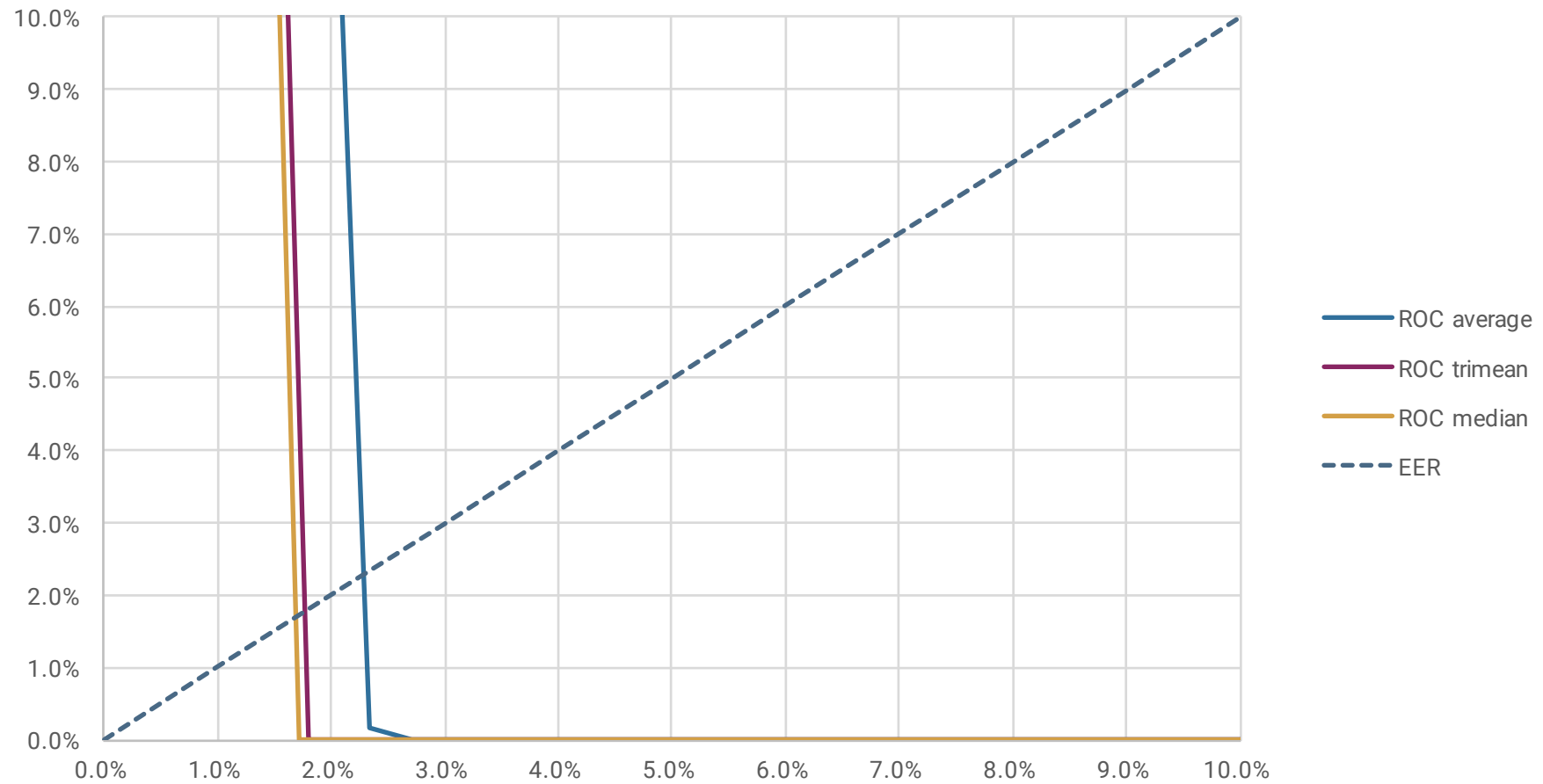
Not all had enough transactions....



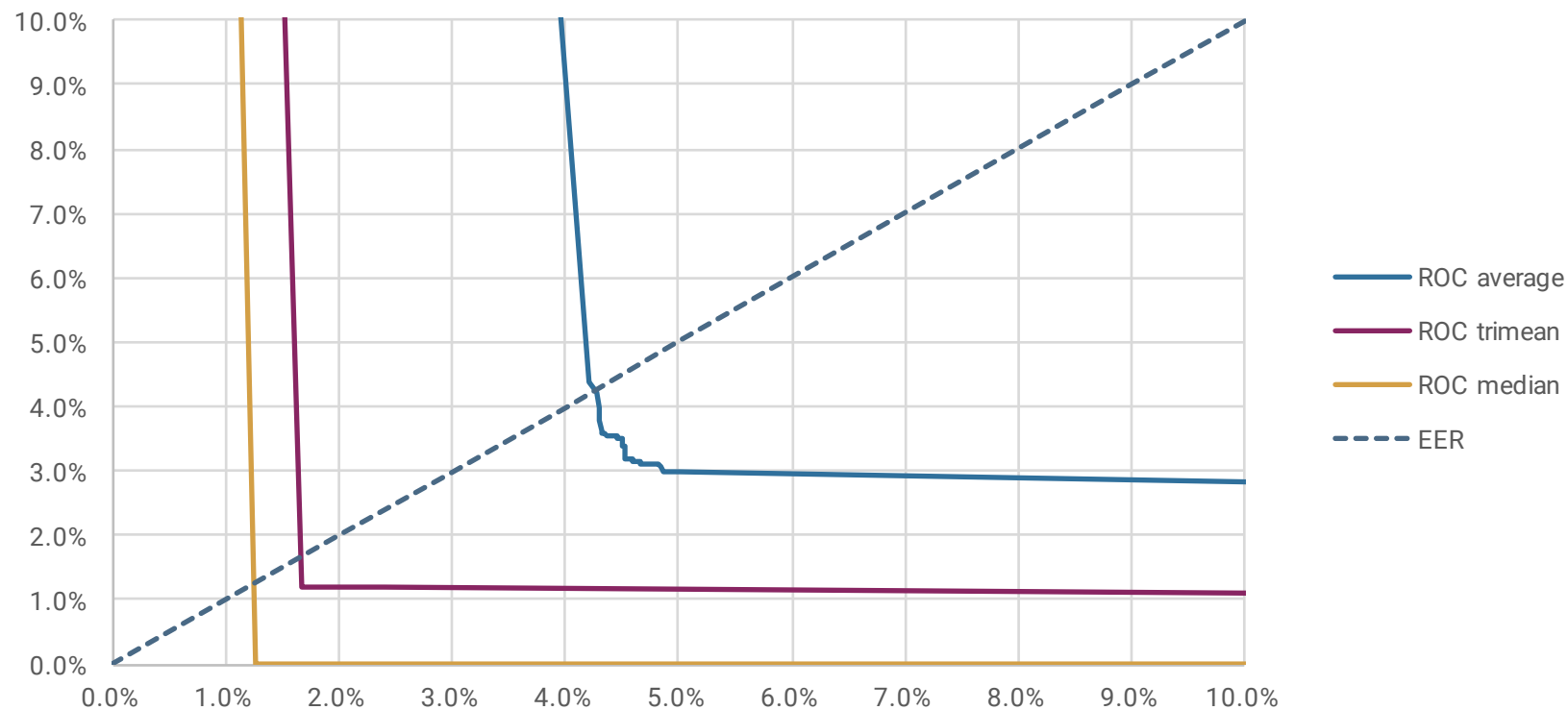
Password 1 try



Password 3 tries

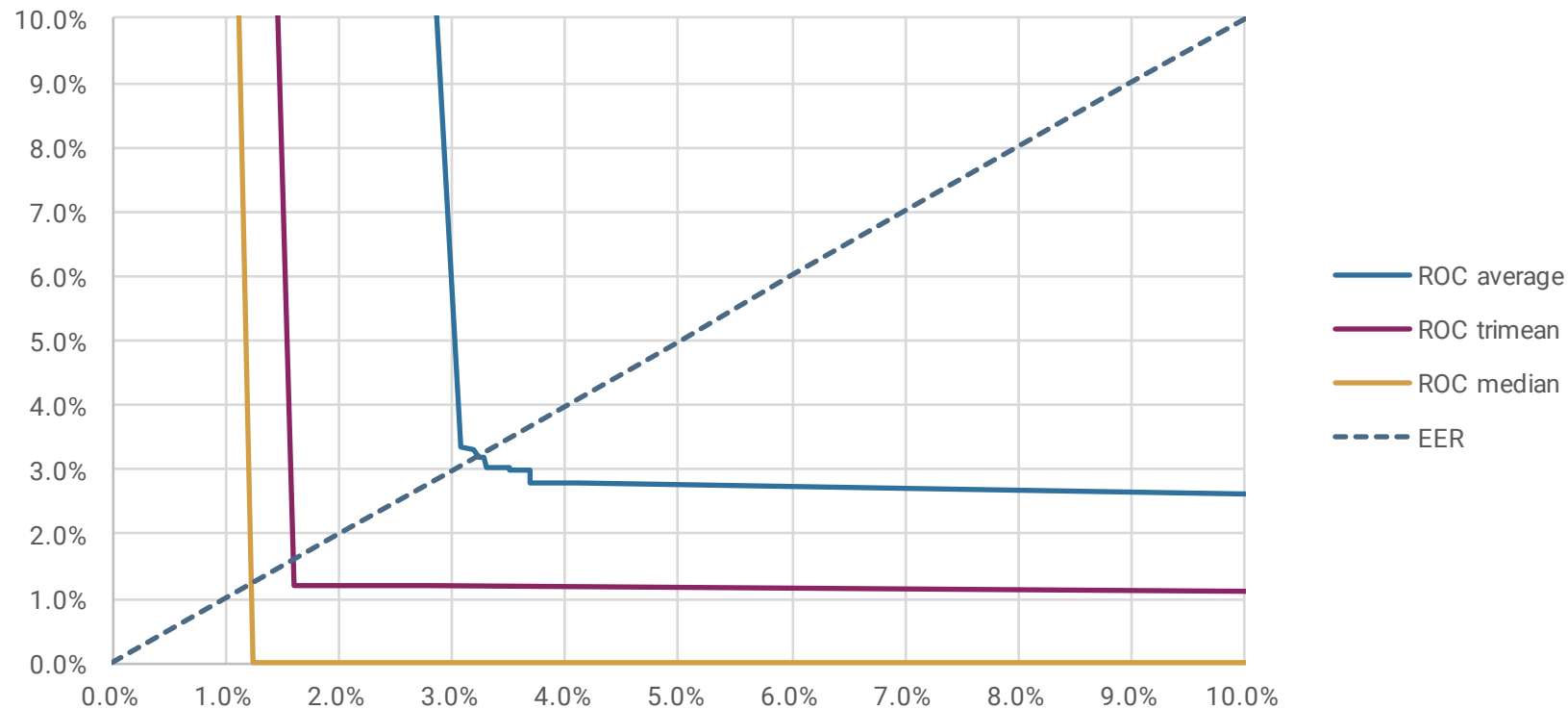


Controlled dataset payment transaction*



*Payment transaction consists of account number, amount, and notes.

Controlled dataset password + payment transaction*



*Payment transaction consists of account number, amount, and notes.

Results

Scenario	Accuracy
Password 1 Try	EER ~3.1%
Password 3 Tries	FAR 1.8 % FRR 0
Payment	EER ~1.4%
Session	EER ~1.3%

Read more...



THE WALL STREET JOURNAL.

BBC NEWS



WIRED

Forbes

The INDEPENDENT

FINANCIAL NEWS

AMERICAN BANKER.

Smithsonian.com

COMPUTERWORLD

THE IRISH TIMES

ComputerSweden

Slashdot

5 Offices
7 Nationalities
50+ Customers
15+M End Users

>>4+ B

Transactions in 2016

We MADE A SPACE

...QUESTIONED norms

...RESEARCHED to improve via ML & BD

...DEVELOPED continuous authentication

...PROPOSED to DARPA & Google

...CREATED developer SDK

...WON global FinTech endorsement

...EMPOWERED identity providers

Thank you.

