Data Quality and Interoperability: Addressing the Capability Gaps through Standardisation

IN GROUPE

Eu-Lisa Industry Roundtable - November 3rd 2020

IN Groupe - Biometric Data Acquisition: Ensuring Data Quality at the Point of Capture

IN Groupe: a provider of comprehensive identity services

A trusted, recognised actor present in almost

130 countries

Has full mastery of the value chain of identity, individuals, and objects: optical, electronic, and biometric components on interoperable systems and credentials.

Makes everyone's lives easier by allowing everyone to feel calm and safe about their physical and digital lives: simplicity, security, and confidence when exercising your rights, making transactions, and engaging in discussions.

Personal data and discussion safety translates into a commitment: protection of a fundamental right, namely **the right to be you.**

€475 M*

TURNOVER IN **2019**

** pro forma (Surys/Nexus)*

A partner of the French government since 1538

1,700

EMPLOYEES

In France, Sweden, Germany, the Netherlands, the US, Kenya, Malaysia, Singapore and India.

Biometrics

Artificial intelligence

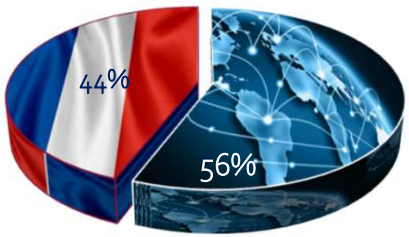
Cryptography

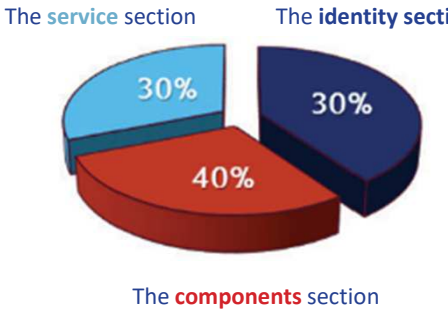
Machine learning

Optical & electronic components

BlockChain

Printing secure credentials





500 years of resilience, 10 years of transformation

1538

Francis I grants the printer the title of the King's Printer for Greek

1640

New name:
Imprimerie Royale

1993

Imprimerie Nationale:
Public limited company with 100% public capital

2002

1st delegation of public service contract

2006

Design and customisation of secure government documents
(introduction of the first customised electronic passport)

ENRICHING SKILLS

Components

Systems
ID activity
THALES

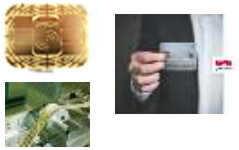
A new brand

STRATEGIC AUTONOMY

Optical security solutions
SURYS

Secure digital identities
neXus

2014



Integration of SPS's secure electronic components business.

2017

Integration of the Thales Group's identity and biometrics technologies.

2018

To serve our customers around the world: governments, citizens, and private companies.

2019

Optical & digital components for identity and currency solutions.

2020

Integration of Nexus to create and protect professional secure digital identities.

IN Groupe Identity value chain

Issuance of secure travel documents

Enrollment and Biometric Identification
Issue of travel document

Citizen identity management

Citizen enrollment
Biometric identification
Multi-issue of secure identity titles
Creation of a derived digital identity

Identification and Control

Automatic Border Control Equipment
Biometric Entry / Exit System & RAE
OneID for a smooth passage to land, airport and port control points

Multi-biometric expertise: Face, Fingerprint, Iris, Voice

Algorithmic expertise: fingerprint, face, iris, voice

Biometric enrollment:

- For states: passport, identity card, visa, residence permit, state agents card
- For airlines (Crew Member Certificate)

Identity management:

- AFIS / ABIS
- Workflow management, Identity Management Platform (IMP), OneID

Border control solutions:

- Fixed and mobile stations, Kiosks, eGates

Participation in European projects: Bodega, H2020, strong links with the academic world: ENSI Caen, University of Oxford and with the following bodies and organizations

afnor CERTIFICATIO

FRONTEX
EUROPEAN BORDER AND COAST GUARD AGENCY

IATA | Strategic Partner

ICAO

LeiSA

European Commission

IN Groupe missions

Protecting identities

Making daily life easier

Technologies adapted to new uses

Digital identity

Biometrics

Enrolment

Border control

Identity management platform

Authentication through image processing on mobile devices

Authentication both online and in real life

Collecting data from multiple channels

Securing travel data

Real-time controls

Biometric Data Acquisition: Ensuring Data Quality at the Point of Capture

Confirmed Experience on High Quality Biometric Data Acquisition

Face Image Acquisition

Fingerprint Acquisition

International Standards Compliant
✓

ISO/IEC 19794 Information technology — Biometric data interchange formats

ISO/IEC 29794 Information technology — Biometric sample quality

+ Development of Quality Metrics Applied on Real Time Image Flow
Optimized Biometric Acquisition Process

Application & Use Cases

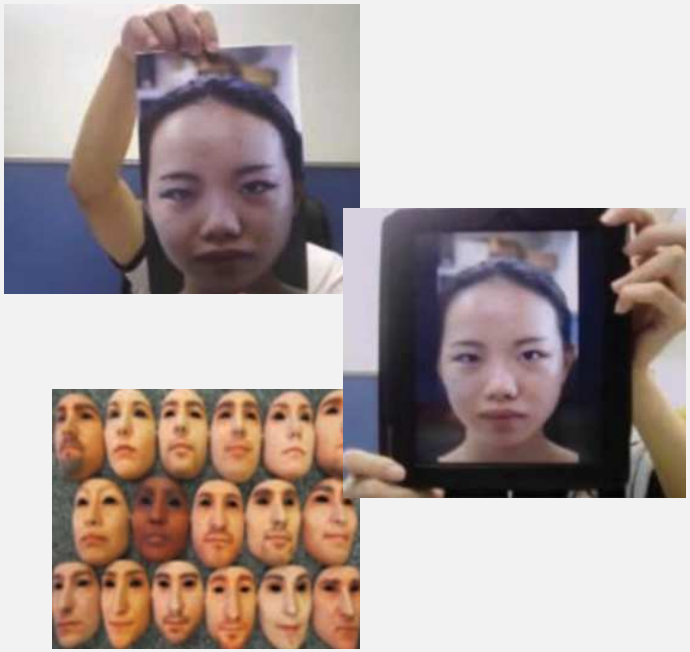
Mobile enrolment stations

Manual booth

Supervised Stationary enrolment

Self-enrolment Kiosks

Emerging Issue : Spoof Attempts



Artificial faces

Artificial fingerprint

Traditional Quality Metrics : Ensure that Biometric Data can be used for Verification or Identification **BUT** they DON'T detect Spoof Attempts

⇒**Spoof Attempts can Compromise the Reliability of Data at Capture Point**

Standard : ISO/IEC 3017 Presentation Attack Detection

Standard (2016/2017)

- Part 1 : Framework
- Part 2 : Data Formats
- Part 3 : Testing and Reporting

Presentation Attack

Presentation to the biometric capture subsystem with the goal of interfering with the operation of the biometric system

Presentation Attack Detection (PAD)

Automated determination of a presentation attack reference

Two Types

1. **Impostor (*impersonation attacks*)** subversive biometric capture subject who attempts to being matched to someone else's biometric reference
2. **Identity concealer (*obfuscation attacks*)** subversive biometric capture subject who attempts to avoid being matched to their own biometric reference

Evaluation Challenges

Security – definition of the Presentation Attack Instruments (PAIs)
Performances – set up of the Right Database using the Targeted Infrastructure

-  NIST National Institute of Standards and Technology **USA Labs**

  Example: NVLAP – iBETA
  iBeta is the only NIST NVLAP, accredited biometrics testing lab in the USA iBeta NVLAP®

-  **Opportunity for EU Labs**

  European Cyber Security Act and its Certification Framework is an amazing opportunity for Europe to create its own certification framework for biometrics technologies

  Example: CLR – Labs
  Ad Usque Fidelis Cabinet Louis Reynaud
  European Certification Scheme for Biometrics technologies certified with **European Values & GDPR** compliance

Certification Scheme Landscape

Functional Conformity

- Sectorial based on International Standards and Referential

Security

- SOGIS Scheme with the French counterpart « Visa de sécurité »

- EU Cyber Security Act is coming

- US NIST (no pentest)

- EMVCo

-Private schemes

Data Protection

- Not available

Biometrics

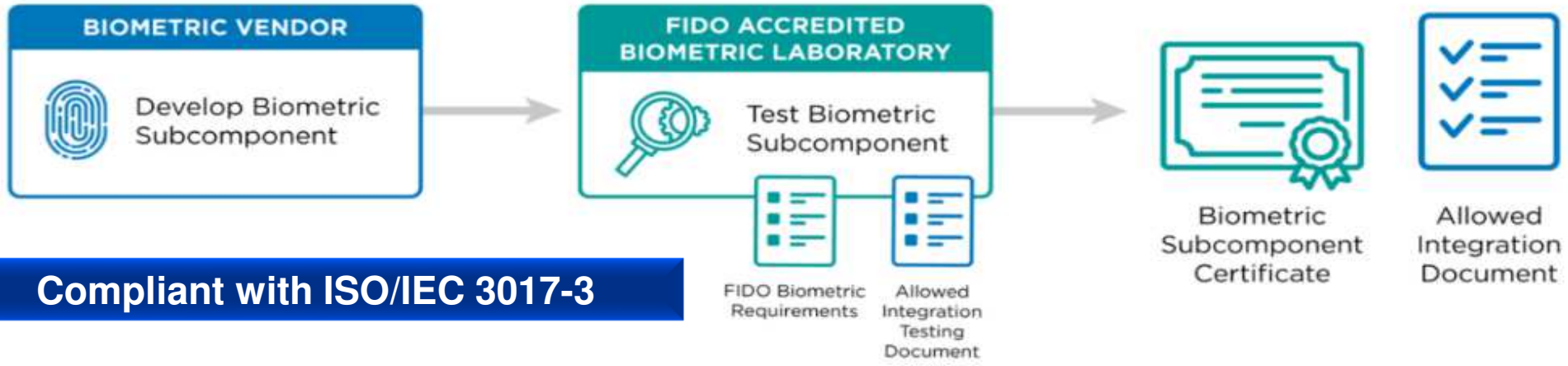
- FIDO

- EMV Co, Visa & MasterCard

-NIST but using International Challenges

-European Cyber Security Act ?

FIDO : Biometric Component Certification



Compliant with ISO/IEC 3017-3

The Only Existing Certification for Presentation Attack Detection

Requested Error Rates :

- **Type A :** ***IAPMR(1) < 20%*** *for 5 of 6 PAI species and* ***IAPMR < 50%*** *for all PAI species*
- **Type B :** ***IAPMR(1) < 20%*** *for 3 of 4 PAI species and* ***IAPMR < 50%*** *for all PAI species*
- **Biometric Matching :** ***FRR(2) < 3%*** *and* ***FAR(3) < 0,01%***

Certification will Evolve
It will become More Challenging

(1) Impostor Attack Presentation Match Rate
(2) False Rejection Rate
(3) False Acceptance Rate

Different Attack Levels

Level	Time	Expertise	Equipment	Source of Biometric Characteristics	Face Examples
A	< 1 day	Layman	Standard	Immediate, easy Ex : Photo from social media	paper printout of face image, mobile device display of face Photo
B	< 7 days	Proficient	Standard, Specialized	Moderate Ex : video of subject, high quality photo	paper masks, video display of face (with movement and blinking)
C	> 7 days	Expert	Specialized, bespoke	Difficult Ex : high quality photo, 3D face information from Subject	silicon masks, theatrical masks

Biometric Laboratory List

LOGO	COMPANY NAME	COUNTRY	ACCREDITATION LEVEL
	Beijing Unionpay Card Technology Co., Ltd （Bank Card Test Center)	P.R.CHINA	Biometric
	ELITT/Leti CEA	France	Biometric
	FIME	France	Biometric
	iBeta, LLC.	USA	Biometric
	Swiss Center for Biometrics Research and Testing Idiap Research Institute	Switzerland	Biometric
	Telecommunications Technology Association (TTA - biomteric)	South Korea	Biometric
	TUV Informationstechnik GmbH	Germany	Biometric
	Cabinet Louis Reynaud	France	Biometric

IN Groupe
PAD Solutions

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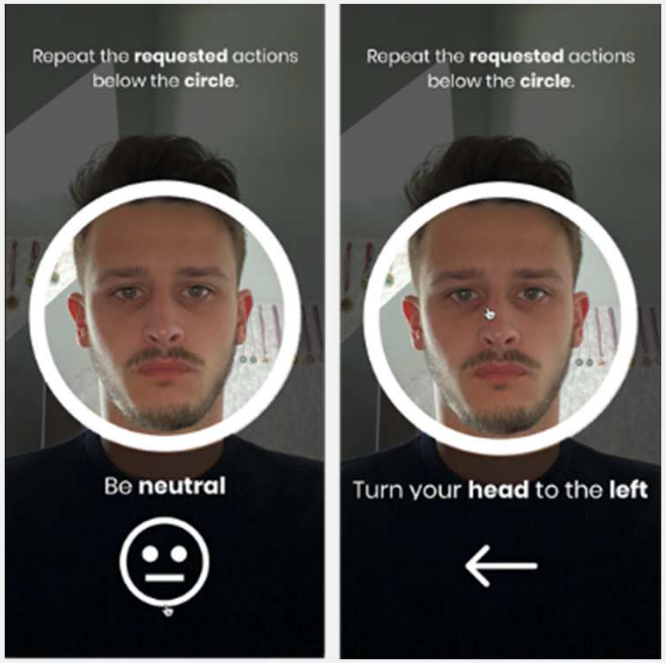
Face PAD Solutions for Mobile or Web Applications

Challenge:

To Operate on a Smartphone or Computer, without the installation of any App



Starts through a randomized selection of two challenges:

- Face Mood (Angry, Smile, Surprise,…),
- Face Rotation (left, right, up, down),
- Eyes Blinking.

Checks if the images are Screen Displayed or Genuine thanks to Deep Learning.

Ongoing Research and Developments

to create a Passive Solution

Face PAD Solutions for Border Control Kiosks & eGates

Kiosk

eGates

Passive :
no specific action required from user

Multi-spectral :
adapted acquisition device

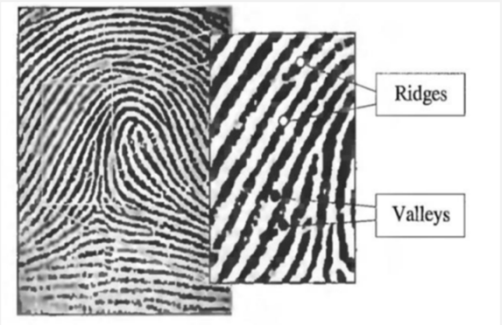
Highly Accurate

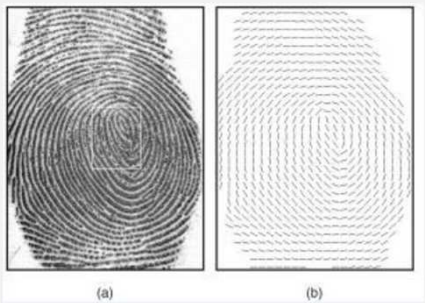
Fingerprint PAD Solutions

Doctoral work in collaboration with GREYC laboratory from ENSICAEN

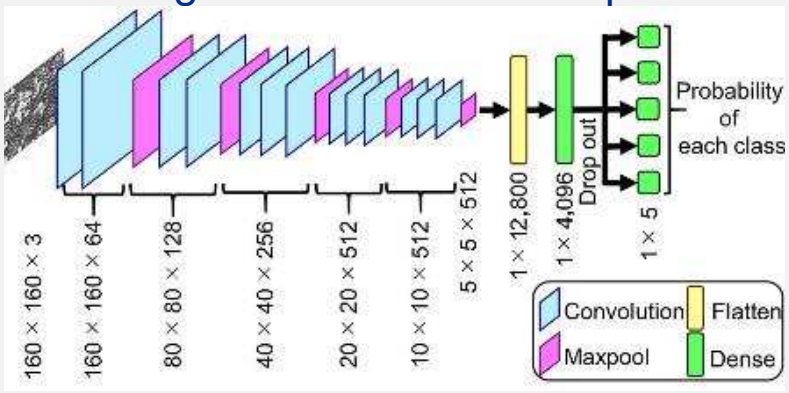
Software Solution that combines :

- Human defined features highly relevant for fingerprints





- Artificial intelligence based on Deep Learning and CNNs



Advantages

- Sensor Independent
- Works with one Single Image
- Highly Accurate

- ✓ **Accurate Biometric Capture is Key to support Business Processes challenges**
- ✓ **One must put in place Security Measures to assure capturing Reliable Data**
- ✓ **IN Groupe works on solutions to Ensure Biometric Data Quality at the Point of Capture**
- ✓ **Contribute to secure European citizen rights and data**

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