

ENHANCING CUSTOMER EXPERIENCE WITH SECURE DIGITAL IDENTITY

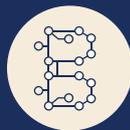
In the past decade, digitalization has had a profound impact on the financial services sector, supported by developments in major technology areas such as:



Biometrics



Internet of Things



Big Data Analytics



Artificial Intelligence



Machine Learning Algorithms



Video Analytics

One-fourth

of data breaches in 2017 affected financial organizations worldwide



ID and passwords are traditionally the most popular authentication mechanisms for online services. However, the rising frequency, severity, and cost of cyberattacks and associated crimes targeting the financial sector on a global scale necessitate more effective mitigation techniques.

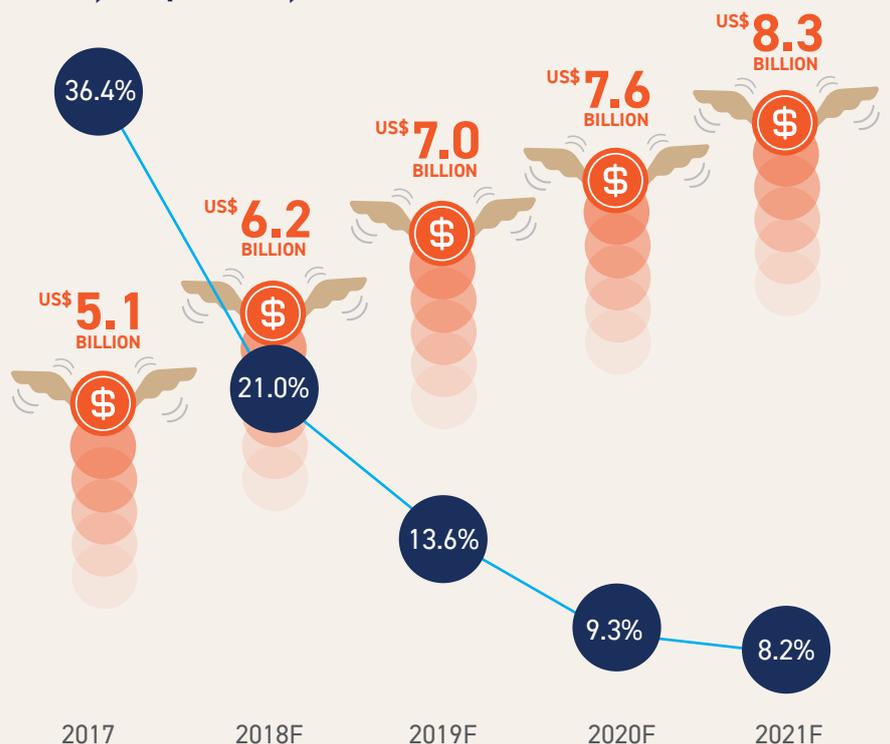


81%

of hacking-related breaches leveraged via stolen/weak passwords



Payment Fraud Forecast, Global, US\$ billion, 2017-2021F



1.8%

in permanent losses of shareholder value from serious breaches in public-listed companies since 2013



Source: 2017 Data Breach Investigations Report, Oxford Economics

● Growth rate

Source: Frost & Sullivan

DIGITAL IDENTITY PAVING THE WAY FOR CUSTOMER EXPERIENCE

Consumers today expect financial services to be available anytime, anywhere, and from any device.

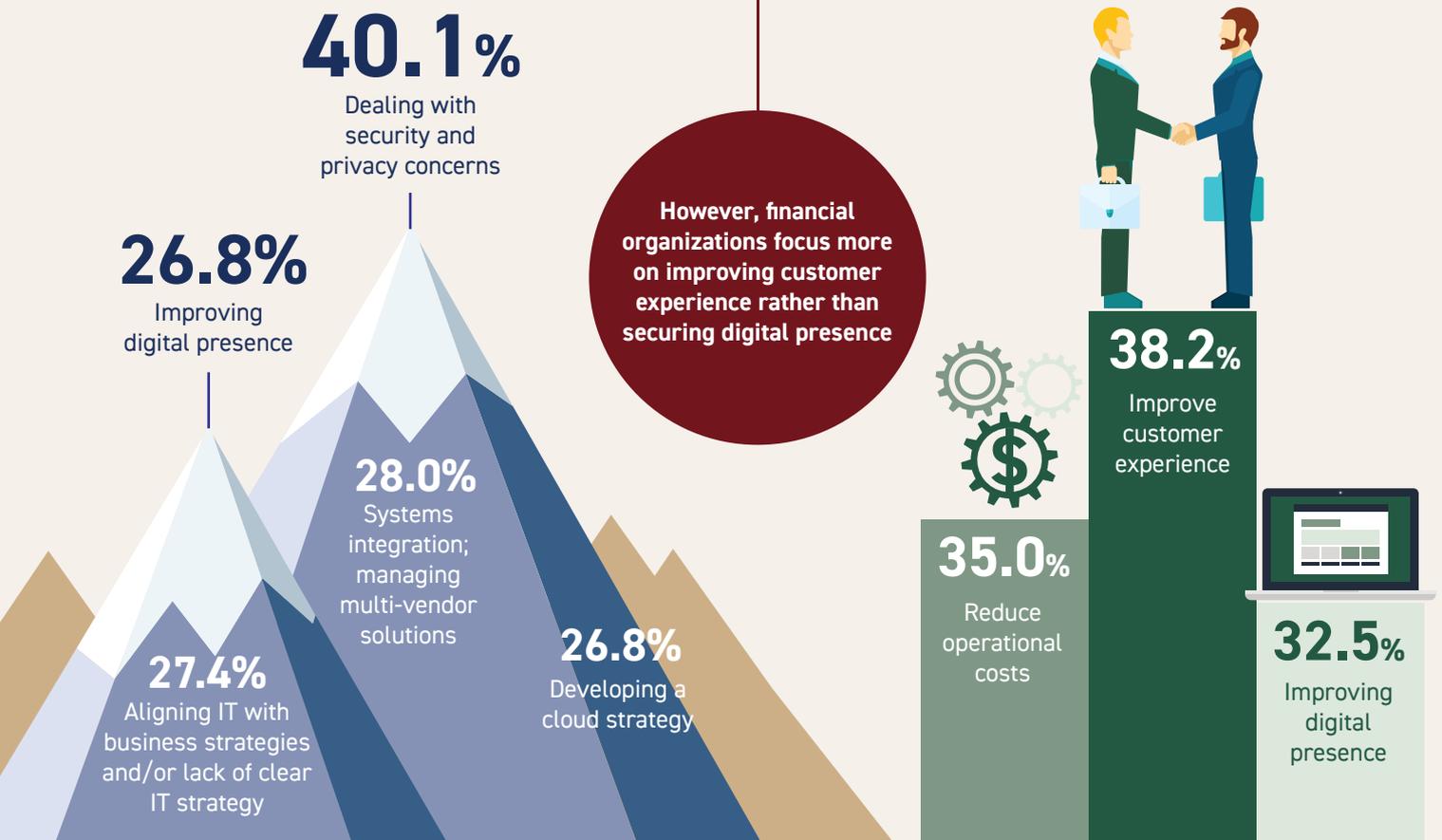
Client interaction is shifting from traditional face-to-face contact to multiple touchpoints using web/mobile-based systems.



A recent Frost & Sullivan study indicates that dealing with security and privacy concerns remains the top IT challenge for banking, financial services, and insurance (BFSI) companies globally.

Top 5 IT Challenges for the BFSI Sector, Global

Top 3 Drivers for IT Investment in the BFSI Sector, Global



Secure Digital Identity should, therefore, be a key component of any global organization's digital transformation agenda.

Key Features of Secure Digital Identity

Forging personalized customer experience

Facilitating ease-of-use and accessibility

Ensuring robust security, privacy, and control of consumer data

ADVANCED RECOGNITION SYSTEMS IN FINANCIAL SERVICES

Amidst a fast-changing business environment, companies need to not only tackle the ever-looming threat within the cyber-physical realm, but also ensure high levels of customer experience. Widespread use of biometric technology is enabling banks and financial institutions to ensure greater security, in addition to providing convenience and ease of banking for customers.

Biometrics has the potential to create a secure link between the physical and digital worlds

Video Analytics:

Automatically analyzes video to detect and determine temporal events not based on a single image

- Branch Banking/ATM
- Suspicious Person Detection
- Abandoned Object Recognition
- Crowd Management

Fingerprint Recognition:

One of the most well-known forms of biometrics

- User Authentication
- Point-of-Sale
- Payments
- ATM
- Mobile Banking

Voice Recognition

Allows users to use voiceprints by asking them to repeat a short phrase

- Mobile Banking
- Know Your Customer (KYC)
- Application Login
- Contact Center Operations

Iris Recognition

Authenticates by using the retinal veins, irises, and other features around the human eye

- User Authentication
- Application Login
- Mobile/Branch Banking
- Know Your Customer (KYC)
- ATM

Palm Recognition

Uses vascular patterns of an individual's palm/finger for personal identification of data

- User Authentication
- Application Login
- Mobile/Branch Banking
- Know Your Customer (KYC)
- ATM

Face Recognition

Captures the image of a customer's face for verification purposes

- Mobile Banking
- Customer Onboarding
- Application Login
- Payments
- Access Control
- Watchlist Matching at ATM/Branches
- Customized Marketing Content





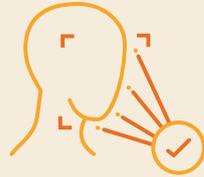
Although biometrics provides a more sophisticated level of security, no single security platform is infallible. Each has its own advantages and disadvantages in terms of ease of capture, accuracy, performance, and cost.



To fully overcome today's cyber-physical threats,
Multimodal Biometrics is the way forward



Fusion of biometric information (i.e., two or more biometric modalities)



Improved performance in recognition results (e.g., lower false acceptance rates)

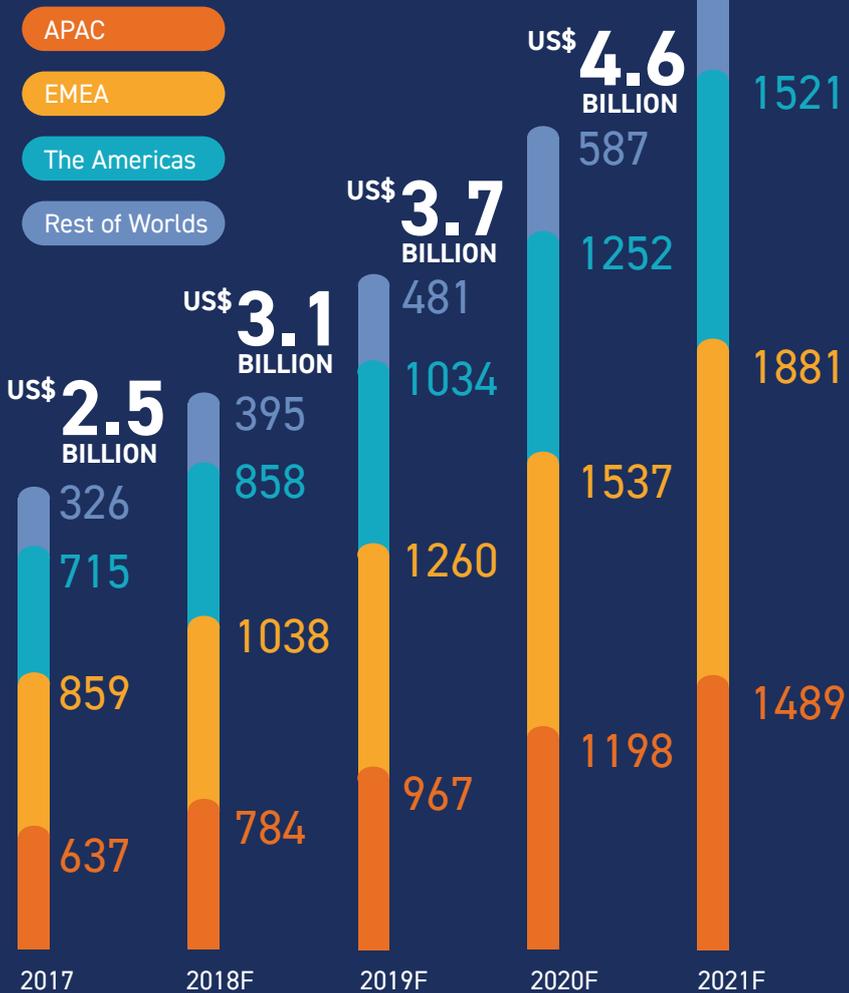


Increased strength of security systems

Extensive research and development efforts have led to the convergence of biometric technology, such as Face Recognition, with Artificial Intelligence (AI) in video surveillance systems.



Biometrics Market in Financial Services, Global, US\$ Billion, 2017-2021F



Supplementing the use of biometrics with video analytics could further improve surveillance for financial organizations and enable dynamic responses based on the output of the videos

Source: Frost & Sullivan

NEC PIONEERING SECURE DIGITAL IDENTITY TO OPTIMIZE CUSTOMER EXPERIENCE

A recognized world leader in biometric technology with R&D activities spanning four decades

NEC – a sponsor member of the FIDO Alliance – contributes toward the improvement of global authentication standards



Impact on BFSI Sector

- Enabling rapid digitization in banks and financial institutions
- Protecting end users from fraudulent activity
- Adopting secure, flexible methods for customers to access services
- Improving security beyond simple username and password protocols
- Creating confidence and trust in the digital space

NEC recently launched **NC7000-3A-FS**, a FIDO-certified client-based biometric authentication suite for the BFSI sector

Ensuring customer satisfaction by providing simple, secure, and swift transactions

60%–85%*

Estimated TCO savings over legacy authentication solutions

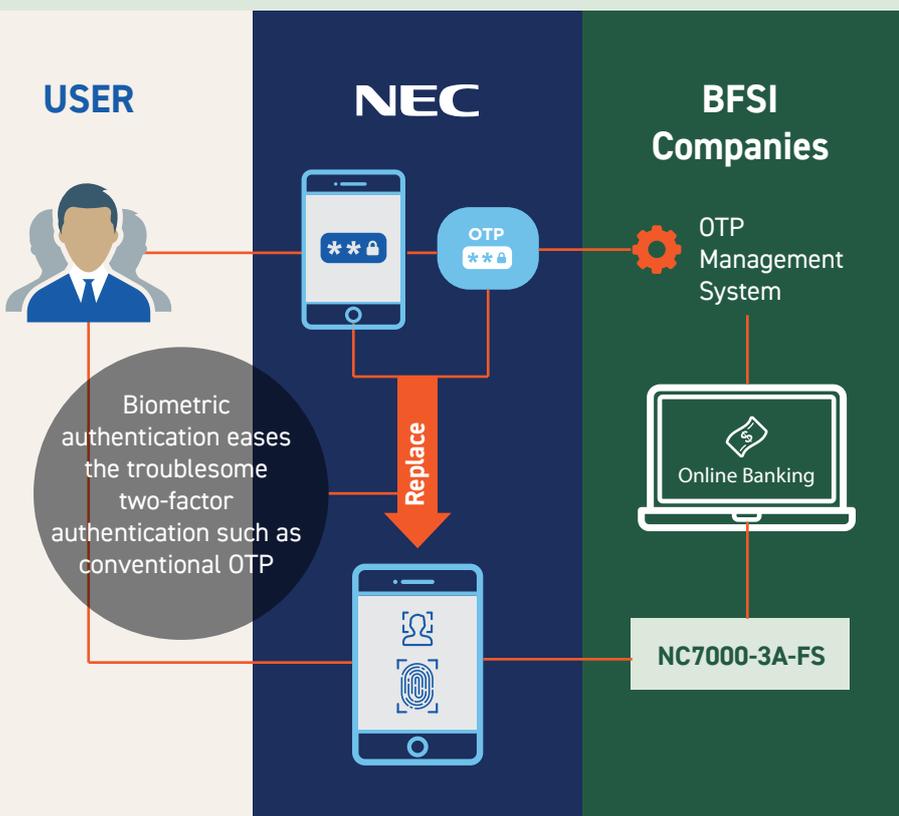


NeoFace® Face Recognition Suite facilitates adoption of secure, flexible methods for customers to access different services

99.2%
accuracy



Ranked World's Most Accurate Face Recognition Technology by NIST independent tests several years running



- ✓ Verify individuals carrying out financial transactions/operations
- ✓ Monitor number of people queuing in bank branches/ATMs
- ✓ Screen public movements to prevent unauthorized activities

* Based on a comparative study under standard conditions NIST - U.S. National Institute of Standards and Technology

Note: NIST Tests were conducted to recognize one individual at a time as they walk through an area without stopping or acknowledging the camera.



Facial Recognition System for Credit Fraud Prevention

CredDefense began providing NEC's face recognition solution in early 2017. Today, more than 13 million faces are registered in the system, which is being used by more than 130 CredDefense clients, who represent more than 25 thousand commercial establishments throughout Brazil.

Looking ahead, face recognition and voice-based recognition are anticipated to become the most prominent methods of multi-factor authentication



Customer onboarding may also go paperless in line with government identity cards and digital mobile-based KYC processes

Results:

Reduced number of frauds by over **90%**

Approx. **US\$ 300 MILLION** Annual savings by the clients

Minimal false acceptance rate at **LESS THAN 2%**

The importance of being human-centric instead of techno-centric is now fundamentally assessed in the context of secure digital identity for the financial services landscape. Forward-looking banks and financial institutions are increasingly responding with resources and

investments that deliver NEC's state-of-the-art authentication methods to meet consumer expectations. As a result, NEC's vantage point goes far beyond cutting-edge technologies and solutions, such as integration of multimodal biometrics.

Recent Frost & Sullivan Awards



2017 Asia Pacific Integrated Biometrics Solutions for Public Safety Leadership Award



2016 North American Company of the Year



2016 Australia Biometrics Vendor of the Year