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# DIGITAL IDENTITY TRACKER®

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# DIGITAL IDENTITY TRACKER®


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## ACKNOWLEDGMENT

The Digital Identity Tracker® is done in collaboration with Jumio, and PYMNTS is grateful for the company's support and insight. PYMNTS.com retains full editorial control over the following findings, methodology and data analysis.

# WHAT'S INSIDE

It is becoming increasingly critical to secure digital identities as they gain prevalence in everyday life. Financial information, Social Security numbers and other private details form such identities, meaning that data breaches would be catastrophic. Companies must therefore protect their customers' personal data, just as consumers must understand how to safeguard their information.

Both companies and individuals are leveraging biometric authentication methods involving face or fingerprint recognition scans using consumers' smartphones. Such measures are seamless as well as secure, allowing users to forgo passwords and security questions. Even these solutions are vulnerable to fraud, however, and cybercriminals are exploiting them with both simple and complex techniques.

Properly secured digital identities can enable myriad use cases. World governments are considering supplementing or outright replacing their national ID systems with such options. Australia, China, Estonia, France and Singapore are examining digital ID solutions, as are the American states of Colorado, Louisiana and Maryland. Governments must keep security concerns top of mind to prevent their vast stores of personal data from falling into the wrong hands.

**Around the digital ID world**

China is focusing on applying digital identities to smart city concepts. Its new system leverages blockchain for better connectivity and data-sharing capabilities within the country's 500 existing smart cities. Three institutes within the city of Shijiazhuang developed the program, which will ultimately be distributed and managed by the national government.

Apple is wading further into the space's waters, recently filing a pair of patents detailing techniques that would replace traditional driver's licenses and passports with digital alternatives. The move underscores the company's interest in such solutions and follows a recent patent filing for its Apple Ring wearable, bringing its total number of digital ID-related filings to 65.

Finnish airport operator Finavia and airline Finnair have announced the completion of a pilot program with cybersecurity company Nixu to investigate biometric authentication systems for airports. The pilot aimed to ease identity verification by allowing passengers to submit to facial recognition scans rather than provide passports and tickets. The program experienced no technical issues but encountered legal concerns, as it could potentially violate the European Union's General Data Protection Regulation (GDPR) consent laws.

For more on these stories and other digital ID headlines, read the Tracker's News and Trends section (p. 9).

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### How Colorado enabled digital driver's licenses via a mobile app

The driver's license represents one of the most traditional forms of identity verification and is thus a natural candidate for a digital makeover. Twelve states are currently developing a digital driver's license program, and Colorado's will be included in its recently launched myColorado mobile app. For this month's Feature Story (p. 6), PYMNTS spoke with Russell Castagnaro, director of digital transformation at the Colorado Governor's Office of Information Technology, about the app's functionality and how it addresses residents' privacy and security concerns.

### Deep Dive: Biometrics continue to tussle with spoofs and other hacks

Biometrics' seamlessness and security are building popularity among digital ID providers and implementers, but hackers are working hard to bypass the measures and create sophisticated spoofing techniques. This month's Deep Dive (p. 13) explores the various tactics cybercriminals take to breach biometric systems and how developers are relying on liveness detection and white-hat hackers to stop them.

# EXECUTIVE INSIGHT

***Deepfake technology — altered images or media that use advanced methods to replace one person's likeness and voice with another's — presents a unique threat to biometric systems. How can facial recognition systems counter this issue?***

"Deepfake technology is now being weaponized not only for political misinformation, but also for cybercrime. One of the real dangers is that fraudsters will leverage deepfakes to bypass biometric-based identity verification and authentication. To help detect deepfakes and other advanced spoofing attacks, identity verification services are increasingly leveraging liveness detection technologies. Liveness detection prevents bots and bad actors from using photos, videos, masks or other biometric data — stolen or otherwise — to create or access online accounts. Liveness ensures only real humans can create and access accounts.

Sometimes liveness detection methods ask users to blink, smile, turn and nod, watch colored flashing lights, make random faces, [say] random numbers and much more. Sadly, most of these legacy techniques are easily spoofed by deepfakes.

This is where certified liveness detection makes a difference.

Certified liveness detection means that the solution has been vetted by NIST/NVLAP via their accredited testing lab, iBeta, which developed a three-tier system that stands as the industry benchmark for liveness detection. At their core, deepfakes are 2D videos, not 3D human faces, so they become relatively easy to discern for a certified 3D liveness detection provider. With deepfakes, the computer monitor used to play back the video emits light — it doesn't reflect it — and certified liveness detection can tell the difference."

**PHILIPP POINTNER**

chief product officer at Jumio

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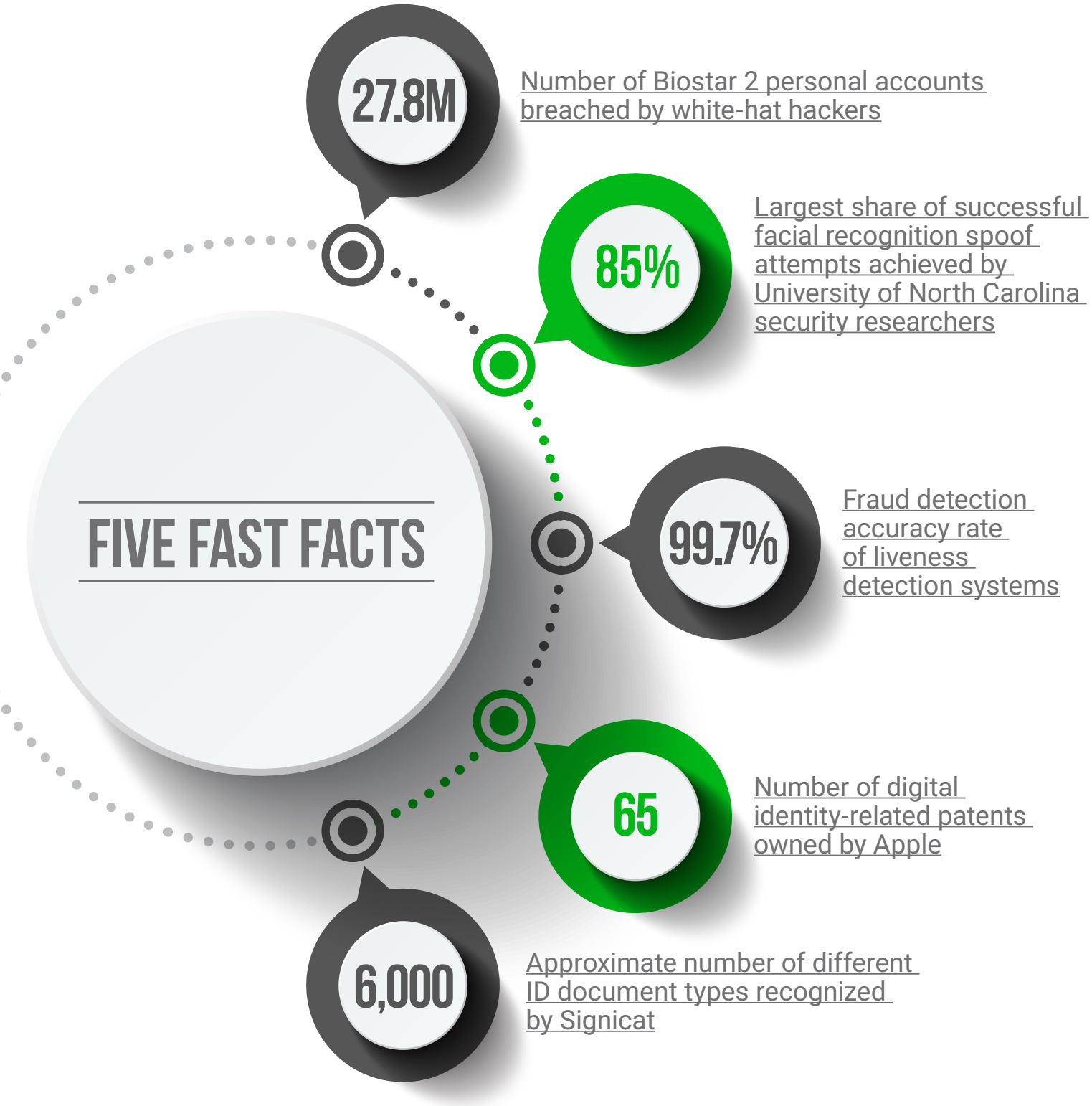


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# FEATURE STORY

## Inside Colorado's New State-Run Digital Driver's License App

State-issued driver's licenses or ID cards are the most common forms of personal identification in the United States, helping citizens prove their identities at airports, bars and in numerous other settings. Individuals must ensure they have such credentials on them at all times, though, which gives them yet another object about which to worry. What if consumers could instead easily access such identification methods on the smartphones they are likely to be carrying anyway?

This was the logic behind myColorado, the state's official mobile app, which provides residents with digital copies of driver's licenses or state IDs. The app was developed in relative secrecy over the past year and officially launched in October by an executive order from Gov. Jared Polis.

PYMNTS recently spoke to Russell Castagnaro, director of digital transformation at the Colorado Governor's Office of Information Technology, about the app's development and how it addresses Coloradans' privacy and security concerns.

### How myColorado works

myColorado was initially intended to be a one-stop shop for all state government-related interactions, starting with driver's licenses and Department of Motor Vehicles (DMV) interactions and expanding from there. Castagnaro said the project's scope narrowed considerably during development because smartphone screens proved too small for certain services. The app's central theory — that Coloradans wanted to use phones primarily in interacting with the world — remained, however.

"It's called the 'walk your dog test,'" Castagnaro explained. "[Residents] want to be able to go walk their dog without having to worry about bringing their purses or wallets, so they could stop and do everything they need to do with just their phones. In fact, 20 percent of Denverites pay for everything with their phones, which just blew me away."

One of the key advantages to providing digital licenses through smartphones is that information can be updated in real time, preventing worries about outdated details.

"The driver's license is up to date as soon as you get it, and then after that you have it for five years," Castagnaro said. "Not only does your face change, but maybe your address changes three or four times during that period, especially in a place like Colorado where people are moving in and out all the time."

Coloradans are still required to carry physical IDs for now, largely because law enforcement agencies are not yet allowed to accept the app as a form of ID. Castagnaro explained that the restriction is mostly due to liability reasons as well as concerns about police accessing personal data during routine interactions.

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"You've got issues of privacy, where text messages might come up that could be incriminating," he said. "If [police officers] have physical access to the phone, does that mean they can go in and look around? We're here to improve competence, not give more reason for suspicion."

### Keeping residents' data safe

Colorado works with third-party security partners to authenticate myColorado's IDs, requiring scans of both the fronts and backs of driver's licenses. The partners then verify that the same person is shown in a user's uploaded picture and driver's license photo. The app also requires device, email and text verification steps to triple-check each user's legitimacy.

"[In this way], we can tie that trusted identity that is proven by the DMV to a device," Castagnaro said. "That's going a step further than most other providers can do because they don't have that trust anchor of the DMV behind them."

Privacy is another major issue, as many citizens are unwilling to overshare personal information with businesses, services and even government entities. Castagnaro claimed myColorado is more effective in limiting personal information access than traditional physical cards.

"Right now, when you give someone your driver's license and they make a copy of it, they have access to all the information that's on there," he explained. "One thing that we have implemented on a digital ID within myColorado is a filter — I call it the vanity filter. You can hide your address or even your birthday if all you need to do is prove that you're 21."

### What's coming around the mountain?

The project's scope may have narrowed during development, but Castagnaro said plenty of additional features are on the way. Topping the list is an integration with healthcare providers that will allow Coloradans to electronically consent to information sharing. The app's development team is also exploring additional DMV compatibility, enabling access to services like vehicle registration renewals.

Officials also have long-term goals for the program, hoping to integrate the solution with other states' digital ID programs and enable federal use at places like airport security checkpoints. The primary obstacle to these implementations is compatibility, however, which Castagnaro does not expect any time soon.

"As soon as mobile driver's license standards get a little more firmed up, we'll support those," Castagnaro noted. "And as soon as the TSA comes out with standards around how to share information with them electronically, we'll support those, too. The one thing to keep in mind, however, is that the Real ID Act came out 14 years ago and there are still two states that don't support it. It'll be a long road before mobile driver's licenses are supported all over the U.S., but Colorado will be there."

Other states with app-based driver's license programs — including Delaware, Louisiana and Maryland — will likely be ready as well, but such leading entities may be waiting for some time.

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# NEWS & TRENDS

## Government digital ID initiatives

### China leverages blockchain-based ID system for smart city development

Many governments around the world are leveraging digital ID capabilities, including that of China, which has launched a new blockchain-based system to provide its smart cities with improved connectivity and data sharing. The state-owned Xinhua News Agency reported that the system was developed by three institutes within the city of Shijiazhuang but will be distributed and managed by the national government, which will assign a unique identification code to each municipality. Cities began applying for said codes in November.

China began developing smart cities in 2016, utilizing AI hubs to automate cashless payments, surveillance cameras, traffic signals and other municipal technologies. The country is currently piloting more than 500 such cities, more than any other nation.

### NEC revealed as the Australian Federal Police's biometrics provider of choice

A freedom of information request from ZDNet recently revealed that the Australian Federal Police (AFP) force, the nation's principal law enforcement authority, is using technology provider NEC's NeoFace platform for facial recognition biometrics. It is reportedly leveraging the technology to cross-reference images of persons of interest with several sources, including CCTV crime scene footage, commonwealth offender pictures and social media photos. Officers can also access images from government agencies like the Department of Foreign Affairs and Trade and the Department of Immigration and Border Protection. NEC was recently contracted to revamp the Western Australia Police Force's networking and telecommunications systems, and the deal is expected to be worth $3 billion AUD ($2 billion USD) over the next 10 years.

### Colorado launches statewide digital ID program

State governments in the U.S. are also turning to digital solutions, with Colorado recently launching its first digital identification program on the state's official myColorado mobile app. The app is available for both Android and iOS operating systems, and the ID program eases government service access by providing residents with electronic versions of their drivers' licenses and state identification cards.

Colorado Gov. Jared Polis signed an executive order declaring the digital IDs to be valid, and state agencies began accepting them on Dec. 1, encouraging private businesses to follow suit. The state is still advising residents to carry physical IDs as backups.

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# New players enter the digital ID scene

### Apple applies for two digital ID verification patents

Technology giant Apple recently applied for two patents, both titled Identity Credential Verification Techniques, that entail replacing physical driver's licenses and passports with digital alternatives. The filings signify the company's interest in securely storing ID credentials on iPhones and transferring them to government agencies for verification. Motorists who are stopped by the police, for example, could use their iPhones to provide their driver's license details and receive officers' credentials.

Apple's latest move signifies its continued interest in digital ID solutions. The company was recently granted a patent for its biometric authentication-enabled Apple Ring, bringing its total number of digital ID-related patents to 65.

### Mastercard launches healthcare product suite with biometric verification

Financial services firm Mastercard is entering the digital healthcare services market, rolling out a product suite that uses biometrics and behavioral analytics to protect personal health information. The solution combines face, fingerprint and voice recognition capabilities with a NuDetect behavioral biometrics system that continually verifies with hundreds of user data points. The methods are intended to thwart automated cyberattacks and authenticate new patients during account enrollment, and the suite also includes predictive analytics-based patient payment assurance and AI- and machine learning (ML)-based suspicious claims detectors.

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This project marks Mastercard's most direct entry into the healthcare field to date. The firm has offered payment cards for flexible spending accounts, health reimbursement arrangements and health savings accounts.

### Finavia and Finnair pilot biometric verification for air travel

Biometrics are gaining popularity in the air travel industry as well. Finnish airport operator Finavia and the nation's flagship airline Finnair have completed a pilot program with cybersecurity company Nixu to investigate airport biometric practices. The initiative aimed to overcome air travel verification roadblocks by utilizing facial biometrics, allowing passengers to forgo presenting physical IDs or travel documents. The program experienced no technical issues within the Schengen Area, the 26 EU states that do not require passports for cross-border travel.

The test did encounter legal issues, however, including several passengers who would not consent to face scanning, revealing that the program could run afoul of GDPR consent laws and that clarification on its data handling would be needed before any expansion.

## New and expanded digital ID products and services

### Yubico reveals security key with fingerprint scanner

Enhanced security is a critical function of digital ID, especially when it is applied to computer hardware. Authentication hardware manufacturer Yubico recently unveiled the YubiKey Bio, a security key that requires users to scan their fingerprints to access devices. Users insert the YubiKey products into computers' USB ports and provide their fingerprints and passwords. The device secures users' biometric data via FIDO 2.0 and WebAuthn standards, creating cryptographic keys based on fingerprints.

The device is Yubico's first product with built-in fingerprint authentication. The company revealed it at the Microsoft Ignite conference in early November but did not announce a release date or price.

### Tech5 launches new offline facial recognition app

Computer-based biometrics solution provider Tech5 recently partnered with Pepper & Ink Technologies to launch an app that allows offline users to leverage facial recognition biometrics. The solution encodes and stores data such as demographic information and ID numbers in 2D barcodes and encrypts it with public key infrastructure (PKI), allowing the display of such details on demand without exposing it to hacks.

The companies stated that the app could be of particular interest to national ID projects and financial institutions' online payments, as both require users to present specific identity information but do not need complete biometric profiles. The firms plan to eventually incorporate Tech5's fingerprint and iris biometric technologies into the offering.

### Signicat expands ID verification to 208 countries

Cross-border verification greatly challenges digital identification solutions, but digital ID provider Signicat is addressing the issue by expanding its authentication offering to 208 countries. The platform targets businesses that digitally onboard customers and leverages three methods to verify users' identities.

The first method entails agent-based authentication and integrates provider Electronic Identity's VideoID platform

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to connect agents with users via video chat. The second employs identity verification for more than 6,000 different document types that include driver's licenses and national ID cards. The final system integrates ReadID's mobile verification system to authenticate passports. The platform was recently revamped with a new application programming interface that allows Signicat to more easily add new verification methods.

## Industry initiatives and partnerships

### HID Global and VMware collaborate on identity verification for workspace access

Digital ID offerings are also benefiting old-fashioned security measures. Identity solutions provider HID Global and workspace technology developer VMware are partnering on a mobile phone-based access program for VMware's Workspace ONE digital platform. The service will allow users to access secure facilities equipped with the technology by scanning their smartphones and delivering their mobile credentials to HID's Origo cloud-based access control platform for identity verification.

Users interact with secure doors and entrances by tapping their phones to mobile readers or gesturing to them from afar, and those who lose or replace their smartphones can restore their ID credentials without contacting IT staff. VMware recently piloted the program at several of its facilities.

### Interac purchases digital ID provider 2Keys

Other companies are completing acquisitions to fulfill their digital ID needs. Canadian debit network Interac recently purchased Ottawa-based digital identity provider 2Keys for an undisclosed amount to strengthen its position in the digital ID ecosystem. The deal will allow the former to assist, fund and oversee the latter's development of digital ID solutions, according to Interac CEO Mark O'Connell.

2Keys' approximately 100 employees will join Interac's staff members to continue developing digital ID solutions for commercial, financial and governmental clients. The former's digital identity solutions are presently used by more than 40 million consumers and perform 4 million identity verifications daily.

### Secure Technology Alliance begins initiative to promote mobile drivers' licenses

Companies are banding together not only to develop new products but also to determine the industry's future. The Secure Technology Alliance — a digital ID security association featuring members such as American Express, the Department of Homeland Security and Wells Fargo — recently launched a new initiative promoting mobile driver's licenses. The alliance plans to industry focused educational resources, webinars and workshops for product and service solution providers. More than 60 individuals attended the first workshop in August, which took place in Atlanta, Georgia and was devoted to mobile driver's license education and retail-focused use cases.

Mobile driver's licenses are growing more popular in the U.S., as initiatives and programs are piloting in more than a dozen states. Louisiana was the first to make such identification publicly available in July, and Colorado followed later in the year.

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# DEEP DIVE

## The fight to stop biometric spoofing

Biometric authentication is one of the hottest trends in the digital ID space. Users demand both ironclad security and seamless login experiences, and biometrics meet these desires when incorporated into hardware. Apple's latest iPhone offerings employ biometric unlock features, as the iPhone 8 provides fingerprint recognition and the X and 11 models enable facial scan analysis.

Fraudsters and hackers are working to circumvent these defenses and access valuable user data, but biometrics providers' measures aim to anticipate and counter the latest threats. The Deep Dive examines the seemingly never-ending arms race between providers enacting new security protocols and bad actors building new techniques to thwart them.

### Threats to digital ID security

Cybercriminals employ numerous approaches to beat biometric authentication measures. One method is spoofing, the industry term for faking identifiers to impersonate legitimate users and gain access. Technologies such as AI, ML, 3D printing and advanced sensors are double-edged swords: Biometrics developers can use these tools to improve their security methods, but fraudsters are just as likely to utilize them to crack defenses.

Most spoofing methods rely on faking physical characteristics like facial features, fingerprints or vein patterns, tricking sensors into recognizing users who are not there. Fake fingerprints are a well-known example that go back decades, with thieves and spies breaking into secure facilities with false fingerprints generated with putty, wood glue, or other common household items.

Similar schemes take on much more sophisticated forms today. A team of German security researchers at the Chaos Communication Conference last year demonstrated a fake hand designed to outsmart palm vein scanners. They removed a high-definition camera's infrared filter to document vein patterns underneath individuals' hands, utilizing those pictures to place fake veins inside wax models. Researcher Jan Krissler explained that the entire process took about a month to develop.

Facial recognition biometrics can also be spoofed with certain technologies. University of North Carolina researchers used rendering software to create 3D models of human heads based on publicly accessible Facebook pictures. They then utilized a virtual reality system to submit the models to facial recognition programs BioID, KeyLemon, Mobius, True Key and 1D, successfully

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spoofing four of them with success rates ranging from 55 percent to 85 percent.

### Facial recognition goes live

Biometrics providers are relying on myriad tools to fight spoofing. Chief among these is liveness detection, security features that ensure biometric information is accurately matched to proper users. Such features take many forms, but most fall into one of two categories: active or passive. Active detection requires users to perform specific actions such as blinking or smiling, making it harder for criminals to spoof. Passive detection instead relies on internal algorithms to detect threats.

Some providers are leveraging a hybrid approach by using involuntary facial reactions that certify liveness but do not require users to react to prompts. Iris technology provider Iritech uses pupil dilation to prevent spoofing by monitoring whether users' eyes react to varying amounts of light, for example.

Liveness certification protocols are becoming increasingly commonplace as customers become increasingly comfortable with taking selfies or filming themselves on cue. Liveness detection has a near-perfect record against fraud, as the National Institute of Standards and Technology reports an accuracy rate of 99.7 percent.

### Employing a human touch to stop spoofs

Many digital ID providers are tapping into automated defense systems like liveness detection, but others turn to a more human touch. Some are even employing hackers to test their systems and identify vulnerabilities.

One such authentication provider is Facetec, which is offering a $30,000 bounty to any hacker who can spoof its ZoOm authentication system, which uses 3D facial biometrics to verify users. The company claims there have thus far been no successful attempts, theorizing that some sort of ultrarealistic 3D sculpture or mask will be necessary to fool the system.

A team of white-hat hackers was able to access 27.8 million consumer records earlier this year after cracking into a centralized biometric access control system called Biostar 2 that was used by U.K. police as well as several major banks. The records included employees' personal information, unencrypted customer usernames and passwords, and even a trove of fingerprint and facial recognition data. Fraudsters would have eventually spotted the vulnerability and caused incalculable damage had the white-hat hackers not beat them to it.

AI systems may one day surpass human analysts in the fight against biometric authentication fraud, but everyone from security researchers to biometrics providers to white-hat hackers will be required to cover their blind spots until then.

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# METHODOLOGY

## Scoring overview

Companies featured in the Tracker Scorecard have been evaluated based on four primary criteria:

**Consumer data**

Online, physical identity, social identity and knowledge-based question data

**Device intelligence**

Device fingerprint, IP geolocation, true app and device emulator features

**Transaction behavior**

Click flow, payment history and payment transaction features

**Multifactor authentication**

PIN, biometric and security token features

If you would like your company to be considered for inclusion in the Tracker's Scorecard or wish to have an existing listing reconsidered for an update, please head over to our profile submission/update page.

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## Consumer Data Scorecard – All players are listed in alphabetical order.

01 Systems is a software application and solution provider. Its products include Arabization, signature management, biometric solutions, enterprise content management and digital vouchers.

**Products:** Biometric authentication, enterprise content management, signature management

**Customer Focus:** Financial services

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | ✓ | | |

ABBYY provides document conversion, optical character recognition, data capture and linguistic software and services.

**Products:** Identity document recognition

**Customer Focus:** Business, information technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

Acuant provides identity verification services. Its offerings include data capture, autofill, document authentication and facial recognition features.

**Products:** Autofill software, integration and hardware options, verification software

**Customer Focus:** Financial, government, healthcare, hospitality, security

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Aeriandi offers voice security solutions. The company's services include call recording, archiving, Payment Card Industry-compliant phone payments, fraud detection and speech analytics.

**Products:** Call archive, call recording, payment card industry phone payments, phone fraud detection, speech analytics

**Customer Focus:** Banking, telecommunications, travel, utilities

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | ✓ | |

Agnitio offers voice identification products that are used by government organizations worldwide. The company aims to help reduce crime, identify criminals and provide evidence for lawsuits. Agnitos' Voice ID product is also used by a number of other sectors.

**Products:** Criminal identification, voice biometrics

**Customer Focus:** Contact centers, enterprise security, financial services, governments, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | ✓ | |

AllWebID prevents online identity fraud and data breaches caused by stolen passwords. It secures its customers' networks by converting the login workflows of their web portals and software-as-a-servie applications to support two-factor authentication. Users identities are verified either by matching a one-time use PIN code texted to the user's cellphone or by matching fingerprint templates in real time.

**Products:** Identity verification, password management

**Customer Focus:** Banking, education, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Applied Recognition offers face detection, recognition and authentication technology for consumers, enterprises and application developers. The company serves a range of verticals, including financial services, IoT device manufacturers and software providers.

**Products:** Face recognition, photo tagging, Ver-ID software development kits

**Customer Focus:** eCommerce, enterprises, financial services, subscription services

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

Aratek is a biometrics solution provider and a member of China's 863 program. Aratek provides fingerprint image processing, matching and searching software and hardware products, as well as middleware components.

**Products:** Fingerprint software systems, fingerprint tokenization, identity card fingerprint readers, scanners

**Customer Focus:** Finance, government, insurance, policy, power, social security, telecommunications, tobacco

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

Arcanum Technology's nKode solution is a cutting-edge cypher algorithm that generates a series of unique tokenized system values to ensure customers' passcodes are never exposed. nKode reduces the complexity of passcodes by expanding their character sets to include alphanumeric characters, symbols, colors and key positions.

**Products:** nKode

**Customer Focus:** Banks, financial services organizations online merchants

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

AU10TIX is a multi-channel identification authentication and record generation solutions provider. The company develops and implements solutions that help automate the capture, authentication, validation and generation of digital records of identifying documents. AU10TIX is a subsidiary of ICTS International.

**Products:** Front-end solutions

**Customer Focus:** Airports, public services, regulated commercial services, secured facilities

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

Auraya Systems is a biometric voice verification technology provider enabling customers and businesses to interact and engage with security and convenience. Auraya's biometric voice verification engine, known as ArmorVox, is speaker-adaptive and constantly learns about the customers' unique voices to improve security.

**Products:** ArmorVox

**Customer Focus:** Financial services, government, healthcare, retail, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | ✓ | |

Auth0 is a cloud service that provides a set of unified tools that instantly enable single sign-on and user management for any application, application programming interface or internet of things device. The company provides open-source software development kits for all popular platforms, operating systems, devices and programming languages. It also facilitates connections to various digital identity providers ranging from social and enterprise to custom username andpassword databases.

**Products:** Authentication, breached passwords, multifactor authentication

**Customer Focus:** Energy, financial services, healthcare, logistics, manufacturing, media, online services, retail, software

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

AUTHASAS
We make authentication work

Authasas provides an authentication framework that integrates with Microsoft, Novell, VMware and Citrix environments and interfaces to all single sign-on vendors. The company offers biometrics, contact and contactless card technologies, mobile out-of-band, one-time passwords, software tokens, USB flashdrives, passphrase authentication and federated authentication.

**Products:** Authentication

**Customer Focus:** Financial services, government, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | | ✓ | | | ✓ |

AUTHENTICID
TRUE IDENTITY MADE SIMPLE

AuthenticID is an identity proofing provider that aims to deliver accuracy and improve processes, customer service and regulatory compliance for financial institutions, telecommunication companies and any businesses that are required to develop a customer identification program.

**Products:** Facial recognition, global document authentication

**Customer Focus:** All industries

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

Authentik Systems

Authentik Systems produces a remote access biometric time and attendance system that enables users to create a biometric time stamp via personal biometric keys and browser-enabled cellphones.

**Products:** Remote biometric timecard system

**Customer Focus:** Agriculture, home cleaning, home health, HVAC, landscaping

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

AWARE

**Products:** Authentication and payments, border management, citizen identification, defense, elections, fraud prevention, identity proofing, intelligence, investigation, law enforcement, visitor screening

**Customer Focus:** Business, government, healthcare, law

Aware is a global biometric software, services and solutions provider. Its modular software products include software development kits and subsystems that enable fingerprint, face and iris recognition. It also offers user interface applications for biometric enrollment and forensic analysis, software development kits for name matching and identity resolution, a biometric services platform and an automated biometric identification system.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | |

BioConnect

**Products:** Applications, hardware, identity platforms, software, terminals

**Customer Focus:** Data centers, education, enterprises, financial services, healthcare, retail, public sector

BioConnect is an authentication tools provider. BioConnect's core solutions include both physical and digital systems for enterprises of all sizes.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | ✓ | ✓ | ✓ | |

BIO-key™

**Products:** Fingerprint readers, software solutions

**Customer Focus:** Blood centers, education, enterprises, financial services, government, healthcare, retail

BIO-key is a fingerprint biometric identification, mobile credentialing and user identity verification solutions provider. BIO-key's products are software-based and compatible with various fingerprint readers.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

BioID

BioID is a cloud biometrics company. It offers face and voice recognition capabilities for any mobile device.

**Products:** Banking, eIdentity, mobile payments, unified authentication

**Customer Focus:** Banking, government, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | ✓ | |

BIOMATIQUES

Biomatiques is an India-based manufacturer that provides compact iris scanner hardware and iris recognition software development kits, as well as custom casing design solutions to meet various requirements for its range of products.

**Products:** Identity management, security and access control, time and attendance

**Customer Focus:** Government, large businesses, medical

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

biomids

Biomids is a biometric software security firm that provides authentication systems and technologies for enterprise users and developers. It allows customers to use facial recognition software in place of usernames and passwords to access a wide range of accounts.

**Products:** Biometric authentication and proctoring solutions, learning management systems

**Customer Focus:** Developers, education, enterprise, small business/ personal

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

### BITIUM

Bitium provides single sign-on and identity management for cloud-based, software-as-a-service applications. It allows end users to access all of their cloud software accounts using a single set of login credentials.

**Products:** Identity management, single sign-on

**Customer Focus:** Identity management, software

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

### Bluink

Bluink is an enterprise security company focused on phone-as-a-token technology. Bluink enables multifactor authentication and single sign-on using smartphones as a key. Consumers can use Bluink Key to log in to other services with long, random passwords, one-time passwords or FIDO Universal Second Factor public key authentication, which eliminates passwords altogether.

**Products:** Financial services

**Customer Focus:** Enterprises

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

### B-Secur

B-Secur offers biometrics authentication solutions. The company's software uses patented electrocardiogram technology to read individuals' heartbeat patterns to verify their identities.

**Products:** Electrocardiogram biometrics

**Customer Focus:** Automotive, banking, finance, technology industries

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

CA Technologies' CA Advanced Authentication provides real-time protection for online and mobile applications. The solution can authenticate an employee, a partner or a contractor while providing a seamless login experience. It features multifactor authentication and risk-based methods such as device identification, geolocation and user activity.

**Products:** Advanced authentication, API security, identity management, payment security

**Customer Focus:** Enterprise, financial institutions

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | ✓ | | | | ✓ |

CBA provides fingerprint authentication modules and algorithms, fingerprint authentication chips, and USB keys The company also supplies a fingerprint authentication system for mobile phone solutions to meet requirements of suppliers in various markets such as notebook PCs, PC/network security, door interlock, time information and entry systems, safes and internet/intranet authentication servers, among others.

**Products:** Algorithms, fingerprint sensors, modules, processors

**Customer Focus:** Internet/intranet authentication servers, mobile device suppliers, PC suppliers

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

Centrify's identity-as-a-service solutions can be used to verify users, validate devices and put limits on access and privilege. It utilizes machine learning to discover risky user behaviors and apply conditional access, all without impacting user experience.

**Products:** Adaptive multifactor authentication, privileged access management, risk analytics, single sign-on

**Customer Focus:** Automotive, banking, defense, education, government, internet, manufacturing, retail, pharmaceuticals, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

CHINCOTECH

Facial recognition software company Chincotech works with global governments and their agencies to combat issues including terrorism and immigration. The company provides 2D and 3D facial recognition algorithms and software solutions.

**Products:** Facial and general recognition

**Customer Focus:** Government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

civic

Civic allows people to control their identity information by using blockchain identity verification technology to secure and protect personal information transfers. Civic aims to become a trusted third-party source for securing and verifying users' identities. It is building partnerships with banks, credit card companies, online lenders, wireless and cable providers, employee verification services and other institutions that rely on users' identities.

**Products:** Identity codes, identity theft protection, resuable know-your-customer solutions, secure identity platforms

**Customer Focus:** Blockchain companies

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | | | ✓ |

confirm Blog

Confirm offers authentication services for driver's licenses and other IDs. The company's software is used by financial institutions, healthcare providers, insurance carriers, retailers, shared economy companies and on-demand service providers.

**Products:** Form filling services, identity authentication

**Customer Focus:** Financial institutions, healthcare, insurance, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

CROSSMATCH™

Crossmatch helps organizations solve their identity management challenges. Its enrollment and authentication solutions create, validate and manage identities for a range of government, law enforcement, financial institution, retail and commercial applications. Crossmatch's solutions are designed using biometric technologies and multifactor authentication software.

**Products:** Authentication, enrollment, mobile, software development kits

**Customer Focus:** Defense, enterprises, finance, government, law enforcement, hospitality, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | | |

CRYPTOMATHIC

Cryptomathic provides security software solutions to businesses from a variety of industries. Its main product, the Authenticator, utilizes tokenization to match security needs for services such as eBanking and eGovernment.

**Products:** Authentication, EMV, key management, public key infrastructure

**Customer Focus:** Banking, cloud, government, manufacturing, mobile, technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

cryptoVision

**Products:** Java card frameworks, public key infrastructure, smart card middleware

**Customer Focus:** Automotive, defense, financial, government, industry, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | | | | | | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

CRYPTSOFT

Cryptsoft provides interoperable enterprise key management and encryption technology solutions. The company also offers key management interoperability protocol software development kits.

**Products:** Universal Second Factor, one-time password authentication tokens

**Customer Focus:** Security systems

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

Daon

Daon is a biometric identity assurance software products and services provider focused on meeting the needs of governments and large commercial organizations worldwide. Daon supports customers and system integrators in building enterprise solutions.

**Products:** Biometrics, border management, employee credentialing, identity, immigration, mobile authentication, national identification

**Customer Focus:** Commercial enterprises, financial institutions, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |

dashlane

Dashlane offers products that are compatible with Mac, PC, iPhone, iPad, Android phones and tablets and Kindle Fire.

**Products:** Password manager, secure digital wallet

**Customer Focus:** Businesses, internet users

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | ✓ | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

DIAMOND FORTRESS TECHNOLOGIES

Diamond Fortress' solution ONYX is a software-based authentication solution that captures users' unique fingerprints via devices' cameras. The company's software library is offered via a software development kit and allows developers quick access to the technology.

**Products:** ONYX

**Customer Focus:** N/A

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

DigiFlak

DigiFlak offers business solutions that secure workers' digital keys, passwords and certificates in a separate hardware environment. The company manufactures Flak security USB dongles, licenses its technologies and offers subscriptions to services and third-party applications.

**Products:** Flak classic, Flak classic business edition

**Customer Focus:** Businesses, private users

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | ✓ |

DUO

Duo aims to protect organizations against data breaches by ensuring that only legitimate users and appropriate devices have access to sensitive data and applications.

**Products:** Devices, identity verification

**Customer Focus:** Education, financial, healthcare, legal, retail, technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

### EARLY WARNING℠

Early Warning provides payment and risk solutions to financial institutions, government entities and payment companies. Its identity and authentication offerings improve account opening, simplify and unify authentication through a single application programming interface and fight fraud with behavioral biometrics.

**Products:** Authentication, payment, regulatory solutions

**Customer Focus:** Financial institutions, government entities, payment companies

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | ✓ | ✓ | | | | |

### eBureau™

eBureau is a predictive analytics and information solutions provider.

**Products:** Credit risk assessment, collections and recovery, fraud protection, marketing and lead management

**Customer Focus:** Automotive, financial services, higher education, insurance, retail, telecommunications, utilities

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | |

### Entrust Datacard™

Entrust Datacard, formerly known as Datacard Group, offers digital identity solutions to financial institutions, governments and corporate enterprises that conduct highly secure transactions. Some of its solutions include central card issuance systems, passport and identification cards, security certificates and communication channels.

**Products:** Authentication, border control, employee identification, identity credential management, mobile authentication, Secure Sockets Layer certificates

**Customer Focus:** Corporate, education, financial, government, healthcare, retail, transit

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

ePortID, a divison of ePortation Inc., provides biometric identity verification solutions. ePortID delivers identity verification using palm vein scanning for a range of industries.

**Products:** Biometrics, ePortPass, palm vein scanners

**Customer Focus:** Banking, education, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

Equifax is a consumer, commercial and workforce information solutions provider that organizes, assimilates and analyzes data on consumers and businesses. Its identity authentication solution features a five-step process that works by asking "intelligent questions" related to applicants' histories..

**Products:** Identity authentication

**Customer Focus:** Banks, credit unions, financial institutions, government, insurance firms, retail, utilities

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | ✓ | ✓ |

EyeLock is an iris-based identity management technology company that develops systems for border control, logical access, global access control and identity management. It supports governments, businesses and consumers through its distributors and partners.

**Products:** Hardware and software solutions for iris identification

**Customer Focus:** Automotive, businesses, consumers, consumer products, financial services, government, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

EyeVerify's biometric solution, Eyeprint ID, uses mobile devices' cameras to image- and pattern-match the blood vessels in the whites of the eye and other microfeatures in and around the eye.

**Products:** Eyeprint ID

**Customer Focus:** Device manufacturers, financial institutions, government agencies, healthcare services

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | ✓ |

Facebanx has developed an integrated facial recognition technology that utilizes webcams, mobile phones and tablets. It uses cloud-based technology to allow multiple users unlimited access worldwide, manually or automatically. It is an identity verification solution in the registration, single sign-on and know-your-customer processes.

**Products:** Facial recognition, video chat, voice recognition

**Customer Focus:** Banking, gambling, insurance, local government, payments, police, security

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | ✓ | |

FaceFirst is a real-time biometric face recognition software provider. The company's solution matches users' live images with their facial data stored in the system's database.

**Products:** Face recognition platform

**Customer Focus:** Airports, commercial security, gaming, law enforcement, retail, transportation

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

FacePhi provides facial recognition technology that utilizes the camera on a user's mobile device to take a selfie. That photo then becomes their method of identification and interaction with banks' mobile applications.

**Products:** Selphi, software development kits

**Customer Focus:** Financial institutions, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

FICO is an analytics software company. Its solutions help businesses make better decisions through big data and mathematical algorithms to predict consumer behavior. FICO provides analytics software and tools used across multiple industries to manage risk, fight fraud, build more pro-table customer relationships, optimize operations and meet strict government regulations.

**Products:** Analytics, communications, fraud, security, scores

**Customer Focus:** Transportation, travel

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | | | | | |

Fingerprint Cards AB markets, develops and produces biometric components and technologies that verifies identities by matching individuals' fingerprints. The technologies consist of biometric sensors, processors, algorithms and modules that can be used separately or in combination with each other and can be implemented in volume products such as smart cards and mobile phones. The company's technologies can also be used in IT and internet security and access control.

**Products:** Area fingerprint sensors, swipe, touch

**Customer Focus:** Automotive industry, internet of things, smart cards

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

### FORGEROCK

**Products:** Access management, directory services, identity gateways, identity management, user managed access

**Customer Focus:** Communications, digital health, financial services, government, media, omnichannel retail

ForgeRock, an identity relationship management vendor, helps companies and governments build secure, customer-facing relationships across apps and devices. Its access management solution provides authentication possibilities with several out-of-the-box authentication modules to fit the businesses' needs, including device fingerprinting, one-time passwords and adaptive risk authentication.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

### gemalto
security to be free

**Products:** Access management, cloud security, crypto management, data encryption, identity management

**Customer Focus:** Access security, eCommerce, financial services, government, identity security, machine-to-machine, mobile, identity security, retail, training, transportation

Gemalto develops software and other technologies for businesses and governments to help them with identity authentication and data protection. It delivers secure digital services for payments, enterprise security and the internet of things. Gemalto's authentication, identity management, data encryption and crypto management solutions enable organizations to protect sensitive information and ensure compliance.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | ✓ | ✓ | | ✓ |

### GIGYA

**Products:** Customer identity management

**Customer Focus:** Brands, eCommerce, entertainment, leisure, media, organizations, publishing

Gigya's customer identity management platform is designed to identify customers, aggregate data into customer profiles and produce personalized campaigns. The platform helps companies build better customer relationships and turn visitors into known, loyal and engaged customers.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | | ✓ | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

GlobalSign is an identity and security solutions provided aimed at helping businesses with digital processes and transactions.

**Products:** Access management, identity management, internet of things, public key infrastructure

**Customer Focus:** Businesses, cloud service providers, internet of things, large enterprises

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | ✓ |

Goodix is devoted to the research and development of human-computer interaction technologies, including chip design, software development and touchscreen solutions.

**Products:** Fingerprint sensors, tablets, touch controllers for mobile phones

**Customer Focus:** Smartphone and tablet manufacturers

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

GoTrust creates secure micro SDs and delivers hardware security for mobile devices using SDs and micro SDs GoTrust innovates powerful, fast and smart micro SD embedded chips and sophisticated supporting applications.

**Products:** Biometric virtual SDs, FIDO Universal Second Factor authenticators, iOS readers, passwordless solutions, secure micro SDs

**Customer Focus:** Consumers, enterprises, financial, government, military

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

HID

HID Global produces products related to the creation, management, and use of secure identities. Unique identities can be confirmed and counterfeiters can be combated by using multifactor authentication provided by the company, such as biometrics, tokens or digital certificates.

**Products:** Access control, asset tracking, border protection, embedded solutions, identity management, secure transactions

**Customer Focus:** Banking, corporate, education, enterprise, financial, government, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | ✓ | | |

hooyu

HooYu is a global identity verification service. The company's software uses digital footprints, identity document authentication and facial biometrics to prove customers' identities.

**Products:** Identity verification

**Customer Focus:** eCommerce, peer-to-peer sites, regulated companies

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | | ✓ | | | |

HYPR

HYPR provides biometric authentication solutions that utilize existing cameras, fingerprint sensors and microphones on mobile devices.

**Products:** Biometric security software development kits, key password manager, tokenization

**Customer Focus:** All industries

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

id:analytics®

ID Analytics provides actionable insights into enterprises' credit and identity risks. It does this with a combination of proprietary data, patented analytics and up-to-the-minute consumer behavior insights from the ID Network, one of the nation's largest cross-industry data networks.

**Products:** Authentication, credit risk, fraud risk management, verification

**Customer Focus:** Automotive lending, communications, credit card companies, government, online lending, retail banking

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | | | | | |

iDefend
Be Proactive. Defend.

iDefend is a fraud prevention software provider offering biometrics-driven identity authentication for companies, governments and organizations. Solutions include video-based face, voice and lip verification.

**Products:** Biometric authetication

**Customer Focus:** eCommerce, financial, government, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | ✓ | | ✓ | |

IdentityMind

IdentityMind provides identity-based risk management, fraud prevention, and anti-money laundering services for a variety of sectors.

**Products:** Anti-money laundering, merchant risk, online fraud prevention

**Customer Focus:** Acquiring banks, digital currency exchanges, financial institutions, online merchants, payment processors and gateways, payments services providers

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

IDEMIA

IDEMIA is a digital identity service provider for companies in the payments, gaming, communication and commerce space. IDEMIA is the result of the merger between embedded digital security provider Oberthur Technologies and identity and security solutions provider Safran Identity & Security.

**Products:** Access control

**Customer Focus:** Corporates, financial institutions, government, internet of things, mobile networks, retail, transportation authorities

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

IDEX

IDEX has developed advanced fingerprint imaging, recognition and authentication technology. The company sells sensors or licenses its intellectual property to global original equipment manufacturers for use in biometric products.

**Products:** Touch sensors

**Customer Focus:** Identification, internet of things, mobile, smart cards

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | ✓ |

IDology

IDology provides real-time technology solutions that verify the identities and ages of consumers who are not present.

**Products:** N/A

**Customer Focus:** Distance learning, eCommerce, financial services, gaming, healthcare, insurance, retail, tax, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | ✓ | | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

ID R&D

**Products:** IDBehave, IDSquared, IDVoice, SafeChat 2.0

**Customer Focus:** United States

ID R&D is a biometric solution provider focusing on the development of new biometric soutions to increase security and enhance user experience. The company has developed a suite of core biometric technologies for mobile login, chatbots and virtual assistants, and its solutions utilize various data points and biometric modalities — including behavioral, voice and facial recognition — to create frictionless biometric authentication in emerging communication channels.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | ✓ | |

IWS™ IMAGEWARE® SYSTEMS, INC.

**Products:** GoVerifyID, IWS Biometric Engine, IWS CloudID, IWS Credentialing, IWS Law Enforcement, Pillphone

**Customer Focus:** Enterprise, financial, healthcare, retail

ImageWare Systems provides identity management solutions driven by biometrics. Its solutions provide multimodal biometric authentication using voice, fingerprint and facial recognition, and combine cloud and mobile technology to offer multifactor authentication for smartphone, tablet and desktop users.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | |

imprivata®

**Products:** Electronic medical record adoption, electronic prescriptions for controlled substances, multifactor authentication, secure communications, single sign-on, virtual desktop access

**Customer Focus:** Healthcare

Imprivata enables healthcare providers to access, communicate and transact patient information securely. The Imprivata platform addresses critical compliance and security challenges while improving productivity and patient experiences.

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | ✓ | | ✓ |

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**Consumer Data Scorecard** – All players are listed in alphabetical order.

## Inflection

Inflection is a family history website and a people search engine. The company aggregates and makes available personal records. It ensures that the information it collects is done so with privacy in mind.

**Products:** Background checks, employment screening, identity checks, identity protection, identity verification, people search, privacy

**Customer Focus:** Trust and safety, identity protection, employment screening, identity verification, privacy, background checks and people search

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | | ✓ | | | |

## INNOVATRICS
YOUR BIOMETRIC PARTNER

Innovatrics offers biometric technologies for identity management. Its biometric automated biometric identification system includes fingerprint identification, facial verification, facial identification and iris verification.

**Products:** Digital Onboarding Toolkit, Innovatrics ABIS, original equipment manufacturing, SmartFace

**Customer Focus:** All Industries

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | | |

## ib INTEGRATED BIOMETRICS

Integrated Biometrics develops fingerprint scanners. The company's FBI-certified fingerprint sensors use a light-emitting sensor film, enabling them to work in direct sunlight on dry or moist fingers and resist abrasion.

**Products:** Fingerprint scanners

**Customer Focus:** Commercial, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

intercede

Intercede offers cybersecurity services and specializes in identity, credential management and secure mobility services. Its MyID products manage identities and credentials, enabling organizations to create and assign trusted digital identities to employees, citizens and machines. It also allows secure access to services, facilities, information and networks.

**Products:** MyIDaaS, MyID CMS, MyID Platform, RapID

**Customer Focus:** Enterprises, governments, organizations

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

Iritech, Inc.

IriTech provides iris biometric technology. The company offers compact iris camera modules and iris-based authentication solutions that can be integrated in any handheld device.

**Products:** Iris camera hardware, iris recognition software

**Customer Focus:** ATMs, education, government, healthcare, nonprofits, workforce management

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

IS IT YOU

Is It You provides mobile identity and facial verification. Its technology works in almost complete darkness, bright sunlight and with most poses — even while a user is holding the phone at waist level or to the side.

**Products:** Mobile face recognition

**Customer Focus:** Banks, enterprise, personal security

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

janrain
First in Identity

Janrain created the first customer identity and access management solution. It also invented social login and is a founding member of the OpenID Foundation, which has established many of the digital authentication protocols used globally today. It continues to lead the customer identity and access management market, and over half of the world's connected users are on its Identity Cloud network.

**Products:** Identity management, security, social, social media

**Customer Focus:** Businesses

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | | ✓ | | ✓ |

JUMIO®

Jumio is an identity management and credentials company. The company utilizes proprietary computer vision technology to verify credentials and real-time web and mobile transactions.

**Products:** Digital identity verification and scanning solutions

tFinance, gaming, retail, sharing economy, telecommunications, travel

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | ✓ | | ✓ | | | |

LastPass •••|

LastPass offers single sign-on and password management solutions. The company's offerings help customers increase security, maintain compliance and boost productivity.

**Products:** Cloud applications, federated identity management, identity management, mobile application, password management, single sign-on, software-as-a-service, web applications

**Customer Focus:** Password management, identity management, single sign-on, SaaS, cloud, web applications, mobile applications, federated identity management and password management

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | ✓ | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Irisys is an iris security solution company. Its technology includes an iris recognition solution for smartphones, an iris recognition camera module for smartphones and a subminiature iris USB called Lockit.

**Products:** Iris recognition modules, Lockit one-time passwords, Lockit USB

**Customer Focus:** Enterprise, banks

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

LoginRadius is a customer identity management platform offering customer registration services, profile data storage, single sign-on and more.

**Products:** Data integration, identity management, software, software as a service

**Customer Focus:** Business, information technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | | ✓ | | ✓ |

M2SYS Technology provides enterprise solutions that enable customers and partners to utilize or integrate biometric technology. It also offers a biometric software development kit that allows developers to add biometric recognition to any software application.

**Products:** Biometric hardware, biometric technology, cloud solutions

**Customer Focus:** Banking, government, healthcare, workforce management

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

mepin

MePIN provides an authentication and transaction authorization solution designed to offer customer authentication with a single touch. Its solution implements universal two-factor authentication, strong customer authentication for payments and mobile ID services.

**Products:** Authentication, authorization

**Customer Focus:** Banks, government, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | ✓ | | |

Meta Studio

MetaStudio offers fraud defense solutions. Its products provide actionable cyber intelligence to combat fraudulent registrations, bogus leads, account hijacking and organized cyber criminals. The solutions also contribute data on known fraudsters that helps email service providers, internet service providers, lead generators and global online businesses stop criminal efforts.

**Products:** Customer authentication, email validation, instant bank verification, military lending, phone verification, ringless voicemail

**Customer Focus:** Banks, commerce, military

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | |

Microsoft

Microsoft's Azure Active Directory is a cloud-based directory and identity management service. It enables single sign-on and grants employees access to numerous software-as-a-service programs with multifactor authentication.

**Products:** Azure Active Directory

**Customer Focus:** Communications, consumer products and services, financial services, manufacturing, media, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | | | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

miniOrange offers security solutions in cloud security, identity and access management, mobile, and vulnerability management.

**Products:** Cloud identity broker service, fraud prevention, network security, single sign-on, social log-in, two-factor authentication

**Customer Focus:** Education, financial services, healthcare, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | ✓ | ✓ | | | ✓ | ✓ |

MIRACL is a London-based company that applies elliptic curve cryptography to ensure trusted business transactions between people, applications and devices. Its MIRACL Trust® multifactor authentication service integrates into web and mobile applications through a cloud-based service and complies with European Union requirements for financial services companies. The company's zero-knowledge proof, M-Pin, removes the need to send or store authentication credentials, eliminating password databases.

**Products:** Multifactor authentication

**Customer Focus:** Banking, education, healthcare, government, subscription services, pharmaceuticals

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ |

Mitek provides mobile capture and identity verification software solutions. Mitek's identity document verification can enable enterprises to verify users' identities during mobile transactions, helping financial institutions, payments companies and other businesses operating in highly regulated markets transact business safely. Mitek also reduces the friction in mobile users' experiences with advanced data prefill.

**Products:** Deposit, mobile verify, prefill

**Customer Focus:** Enterprises, financial institutions

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Mobile Authentication Technologies™

Mobile Authentication Technologies offers mobile security and authentication solutions using smartcards and biometrics for iOS and Android devices.

**Products:** AuthentiKey, FIDO Universal Second Factor, fingerprint biometric algorithms

**Customer Focus:** Corporations, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | ✓ |

MY PINPAD®

MYPINPAD enables secure multifactor authentication for unsecured touchscreen devices like smartphones and tablets. It provides a modular platforms-as-a-service or customer-hosted platforms that deliver security with familiar and user-friendly authentication interfaces, like biometrics and cardholder personal identification numbers.

**Products:** Face-to-face transactions, online transaction authentication

**Customer Focus:** Banks, consumers merchants

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | ✓ | | |

neustar®

Neustar provides identity resolution solutions designed for a variety of industries.

**Products:** Communications, compliance risk and fraud, marketing, registry, security

**Customer Focus:** Automotive, communications, consumer packaged goods, financial services, hospitality, retail, technology, travel

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

nexmo

Nexmo's Verify application programming interface provides authentication by phone verification. Verify detects a phone number type and selects the appropriate channel for identification – either SMS or voice.

**Products:** Verify

**Customer Focus:** Enterprises, FinTechs

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | ✓ | |

Nok Nok LABS

Nok Nok Labs' ambition is to transform authentication by enabling end-to-end trust across the web using authentication methods that are natural to end-users and provide strong proof of identity. Its solutions remediate and unify authentication silos and provide organizations with greater flexibility to utilize strong authentication solutions in adaptable ways.

**Products:** S3 Authentication SDK, S3 Authentication Suite, Strong Authentication-As-A-Service

**Customer Focus:** Device manufacturers, first responders, government, identity service providers, mobile network operators, public safety, security vendors

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | ✓ |

NXT-ID

NXT-ID provides products that work with the internet of things. The company also has experience with identity verification and data protection and security.

**Products:** 3D-ID, biocloud, facematch, voicematch, Wocket

**Customer Focus:** Enterprises, financial institutions, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

### N-TECH. LAB

NtechLab is an intelligent security solutions and software provider. The company provides facial recognition software and a security software development kit for third-party developers.

**Products:** Facial authentication

**Customer Focus:** Corporate, government, law enforcement

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | | ✓ | | | |

### onelogin

OneLogin is an identity and access management provider that offers enterprise-level single sign-on and identity-management solutions that work in the cloud. The company is based in San Francisco, California, and its products are used by more than 2,000 enterprise customers.

**Products:** Adaptive authentication, mobile identity, single sign-on, web access management

**Customer Focus:** Aeronautics, education, finance, government, healthcare, high technology, insurance, manufacturing, media, nonprofit, professional services, retail services

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | ✓ | ✓ | | | | |

### okta

Okta is an independent identity solutions provider for enterprises. Its Okta Identity Cloud includes workforce and customer identity solutions and developers can use Okta's application programming interfaces to build customizable and secure user experiences.

**Products:** Adaptive multifactor authentication, application programming interface access management, life cycle management, secure server access, single sign-on, universal directory

**Customer Focus:** Financial services, technology companies

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | ✓ | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

OneVisage provides a disruptive digital identity platform for financial services, identity and access management providers, integrators and mobile operators.

**Products:** Premier Face SDK, Premier Secret SDK

**Customer Focus:** Access management, financial services, identity management, integrators, mobile operators

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

Onfido's solutions are powered by machine learning, which validates identity documents by comparing them with facial biometrics. Users identites can be cross-referenced against international credit and watchlist databases.

**Products:** Document check, facial check, identity record check

**Customer Focus:** Businesses

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | ✓ | | | |

PalmID provides authentication and security solutions for devices with cameras. Its offerings convert a users' palm images into unique signatures.

**Products:** Biometric authentication

**Customer Focus:** Automotive, banking, enterprise security, healthcare, IoT, payments, virtual reality, wearables

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

paycasso THE FACE OF SECURITY

Paycasso's software verifies consumers' identities when they are engaging in mobile, online or in-person transactions.

**Products:** DocuSure, IdentiSure, InstaSure, VeriSure

**Customer Focus:** Financial services, healthcare, insurance, restricted goods and services, retail banking

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

PAYFONE®

Payfone is a mobile and digital identity authentication provider. Its platform, Lotus, generates proprietary Trust Scores for mobile identities.

**Products:** Lotus

**Customer Focus:** Banks, brokerages, insurance, technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | ✓ |

Ping Identity®

Ping Identity provides security for borderless enterprises, allowing employees, customers and partners access to the applications they need. The company's solutions ensure that individuals are granted secure, seamless access.

**Products:** Federated access, management capabilities

**Customer Focus:** Airlines, automobile, banking, communication, computing, education, entertainment, government, healthcare, insurance, publishing, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | | ✓ | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

### POINT PREDICTIVE

PointPredictive provides fraud solutions that enable lenders and online retailers to stop fraud and reduce first payment and early payment default at low positives via analytic and big data platforms.

**Products:** Artificial intelligence solutions, risk management

**Customer Focus:** Auto finance, consumer lending, consumer rental, mortgage lending, online retail, real estate

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | |

### PRECISE BIOMETRICS

Precise Biometrics creates fingerprint recognition solutions that can be applied to identification cards, enterprise and bank cards, as well as to systems that control access to buildings, computers and networks.

**Products:** Fingerprint technology, smart card readers

**Customer Focus:** Business, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

### RCDevs security solutions

RCDevs is a security company specializing in multifactor authentication and public key infrastructure Its OpenOTP is an enterprise-grade user authentication solution based on open standards. It supports single-factor and multifactor user access with one-time password technologies and Universal Second Factor.

**Products:** OpenOTP

**Customer Focus:** Financial, government, healthcare, information technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Risk Ident offers anti-fraud solutions used to prevent payment fraud, account takeovers and fraud within account and loan applications.

**Products:** DEVICE IDENT, FRIDA

**Customer Focus:** eCommerce, financial, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | |

SailPoint helps organizations manage user access from any device. Its solutions grant users transparency, enabling them to prevent fraud and mitigate risks.

**Products:** Identity governance platform

**Customer Focus:** Enterprise software, identity management, risk management, software, software development

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | | | ✓ |

SecureAuth provides access control solutions, allowing organizations to determine identities. It provides authentication security, sign-in and self-service tools together in a single platform.

**Products:** Authentication security, single sign-on, user self-service

**Customer Focus:** Financial institutions, government, healthcare, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | | | ✓ |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

SECUREKEY

SecureKey is an identity and authentication provider that simplifies consumer access to online services and applications. The company's identity and authentication networks connect people to online services using digital credentials they already have and trust.

**Products:** Digital identity ecosystem, SecureKey Concierge

**Customer Focus:** Government, healthcare, online marketplaces, telecommunications

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | | |

SEKUR.me Mobile Login & Payments

SEKUR.me reduces online payment frictions for eCommerce sites with single-click technology and multifactor authentication.

**Products:** Branded mobile payments, frictionless payments

**Customer Focus:** Mobile login and payment

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

sensory

Sensory offers fraud prevention solutions to improve consumer electronics user experiences through machine learning technologies. It enables safer experiences and specializes in deep net and learning technologies for speech recognition, machine vision and biometrics on embedded smaller footprint platforms.

**Products:** Audio technologies, hardware, software, speech technologies

**Customer Focus:** Automotive, home electronics, internet of things, mobile devices, toys, wearables

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | ✓ | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Shufti Pro is a digital verification software system. It seeks to create online marketplaces that do not have to worry about fraud and theft.

**Products:** Anti-money laundering, identity governance platform, identity verification, know your customer

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

Signicat is a digital identity and signature solutions provider based in Europe.

**Products:** Advanced authentication, Digital Identity Hub, Digital Identity Service Provider, electronic signatures, Identity Assurance as a Service, identity verification, Preservation Archive

**Customer Focus:** Financial service providers, from large banks to FinTech startups

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | ✓ | | ✓ | | ✓ |

Socure provides digital identity verification in over 180 countries. It assists enterprises with preventing fraud and account takeovers while increasing customer acceptance rates.

**Products:** ID+

**Customer Focus:** Financial institutions, sharing economy

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Sonavation

Sonovation provides authentication and protection services for digital and physical environments. It offers stand-alone products as well as embedded ones.

**Products:** Biometric sensor, sensor-under-glass technology, ultrasound biometrics

**Customer Focus:** eCommerce, financial services, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

sovrin

The Sovrin Network is a public service utility enabling online self-sovereign identities.

Sovrin is open-source and offers the tools necessary to create secure data management solutions.

**Products:** Digital identity libraries and tools

**Customer Focus:** Blockchain companies

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | | | ✓ |

STHALER

Sthaler enables consumers to pay for goods and services, gain entry to events and manage payments online with their fingerprints.

**Products:** Fingopay

**Customer Focus:** Financial services, retail

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

SYNACTS

Synacts offers identity protection tools for consumers. The company develops online services to give internet users full control over their data. The solution is intended for use in digital onboarding, online checkouts, eSigning, secure messaging and payment.

**Products:** Digital identification

**Customer Focus:** End users

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | | |

Synaptics™

Synaptics develops human interface solutions.

**Products:** Biometrics, display drivers, touch controllers, TouchPad

**Customer Focus:** Automotive, technology, wearables

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | | ✓ |

tascent

Tascent develops biometric identity products and solutions with a focus on iris recognition and multimodal high-throughput and mobile biometrics.

**Products:** High throughput iris recognition, mobile identity

**Customer Focus:** Borders, defense, humanitarian aid, identity, law enforcement, personal data, public safety

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

TeleSign

TeleSign is a mobile identity solutions provider. It also offers account security and fraud prevention with two-factor authentication.

**Products:** Account registration, access and usage recovery, smart start services

**Customer Focus:** Customer relationship management software, loyalty marketing, social platforms

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | |

Trulioo The Identity Bureau

Trulioo is a global identity verification company that provides secure access to over 200 unique and reliable data sources worldwide to instantly verify identities.

**Products:** GlobalGateway

**Customer Focus:** Banking, eCommerce, financial services, foreign exchange, online trading and lending, payments, remittance

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | | ✓ | | | |

Trusona offers an insured digital identity authentication solution that does not require passwords. Instead, it relies on technology to analyze automated clearing house transactions to verify each digital interaction.

**Products:** Access management, consumer identity, identity proofing, multifactor authentication

**Customer Focus:** eCommerce, education, financial services, government, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | ✓ | | |

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**Consumer Data Scorecard** – All players are listed in alphabetical order.

Trustev is a fraud prevention solution powered by technology that uses information surrounding users' behaviors, devices, emails and social media accounts when attempting to determine identity.

**Products:** Digital data, identity checks

**Customer Focus:** Airlines, banking, digital goods, insurance, retail, travel

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

Ubisecure offers a digital identity and authentication services platform. It includes customer identity and access management and identity-as-a-service solutions, enabling businesses to determine and authenticate new customers' identities.

**Products:** Identity cloud, identity platform, identity server

**Customer Focus:** Banking, eCommerce, eGovernment, insurance

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | | | ✓ |

Veiris provides advanced computer vision technology for real-time identity verification, facial detection, facial recognition and facial analysis to address enterprises' know-your-customer needs.

**Products:** Face detection, identity verification

**Customer Focus:** eCommerce, financial institutions, FinTechs, travel

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

VERIDIUM
HANDS ON SECURITY

Veridium offers biometric authentication technologies that increase security, reduce fraud and cut costs associated with passwords and traditional multifactor authentication solutions. VeridiumID is a software-only platform for biometric authentication that works in conjunction with a front-end mobile software development kit to embed biometrics into mobile apps.

**Products:** VeridiumID, VeridiumAD

**Customer Focus:** Enterprises, financial, government, healthcare

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | ✓ | | |

VerifyMe™

VerifyMe offers ID services to replace passwords and PINs with multifactor authentication. The company also authenticates individuals using facial recognition, fingerprint, voice and retina scanning, swipe pattern recognition, location detection and approved IP detection.

**Products:** Anti-counterfeiting, biometrics, identity protection

**Customer Focus:** Individuals, industries, government

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | |

VisionLabs
MACHINES CAN SEE

VisionLabs offers security and authentication products and solutions that utilize face recognition, object recognition, augmented reality and virtual reality.

**Products:** FACE.DJ, LUNA PLATFORM, LUNA SDK

**Customer Focus:** Banking, construction, retail, security, transportation

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | | | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

VoicePIN is a voice-based biometric system for user authentication that enables users to log into a system without having to remember passwords or PIN numbers.

**Products:** Voice authentication

**Customer Focus:** Banking, eCommerce

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | ✓ | |

VoiceVault provides voice biometrics solutions that focus on ease of use along with convenience. Solutions are developed and delivered through partners or direct-to-client organizations, and can be deployed through a range of hosting models.

**Products:** ViGo Mobile Identity Verification, ViGo Wear For Wearables, ViM Identity And Access Management, VoiceAuth, VoiceSign

**Customer Focus:** Healthcare, financial

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | ✓ | |

VoiceTrust offers biometric authentication experiences that are ISO 9001 and Common Criteria compliant. The products include biometric solutions consulting, solution deployments and customer support. Its voice-, face- and knowledge-based identity verification solutions are used across North America, Europe and the Middle East.

**Products:** Caller authentication, face login, password reset, proof of life, voice login

**Customer Focus:** Call centers, financial services, healthcare, helpdesk, information technology

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | ✓ | | ✓ | | ✓ | |

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## Consumer Data Scorecard – All players are listed in alphabetical order.

Zoom replaces passwords with selfie-style authentication by matching users' faces via recognition algorithms and verifying liveness with motion and three-dimensionality.

**Products:** Biometric authentication and verification
Commercial retailers

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | ✓ | ✓ | | |

Applied Recognition offers face detection, recognition and authentication technology for consumers, enterprises and application developers. The company serves a range of verticals, including financial services, IoT device manufacturers and software providers.

**Products:** Signature management, enterprise content management, biometric authentication

**Customer Focus:** Financial services

| IDENTITY DATA | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Online Data* | *Physical* | *Social* | *Knowledge Based Questions* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

01Systems is a software application and solution provider. Its industry products are a portfolio offering arabization, signature management, a biometric solutions integrator (finger vein, fingerprint), ECM and digital vouchers.

**Products:** Signature management, enterprise content management, biometric authentication

**Customer Focus:** Financial services

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
|---|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

BeyondTrust™

BeyondTrust is a global cybersecurity company that prevents data breaches by exercising control over internal and external risks.

**Products:** AD auditing, AD bridge, assessment, data security solutions, information security management systems, least privilege, Linux privilege management, privileged access management, privileged account management, privileged password management, secure shell key management, session monitoring, Sudo, threat analytics, Unix privilege management, vulnerability management, Windows privilege management

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
|---|---|---|---|---|---|---|---|---|
| ✓ | | | | ✓ | | | | ✓ |

BIOCATCH
Less Friction. Less Fraud.

BioCatch provides behavioral biometric, authentication and malware detection solutions for mobile and web applications. It collects and analyzes cognitive parameters to generate user profiles.

**Products:** Behavioral authentication, fraud prevention, remote access tool detection

**Customer Focus:** Banking, eCommerce, enterprise

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
|---|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

CA Technologies' CA Advanced Authentication provides real-time protection for online and mobile applications. The solution can authenticate an employee, a partner or a contractor while providing a seamless login experience. It includes features multifactor authentication and risk-based methods such as device identification, geolocation and user activity.

**Products:** Advanced authentication, API security, identity management, payment security

**Customer Focus:** Enterprise, financial institutions

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | | | ✓ |

Callsign offers Intelligence Driven Authentication, a software designed to enable informed and adaptive access control decisions via location and behavior analytics, biometrics and machine learning.

**Products:** Intelligence Driven Authentication

**Customer Focus:** Enterprises, customer-facing digital services, financial institutions

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |

CardinalCommerce provides authenticated payments, secure transactions and alternative payments for both eCommerce and mobile commerce.

**Products:** Alternative payments, big data, consumer authentication, mobile, solution design

**Customer Focus:** Banks, merchants

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | ✓ |

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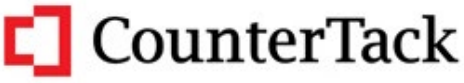
## Device Intelligence Scorecard – All players are listed in alphabetical order.

Centrify's identity-as-a-service (IDaaS) solutions can be used to verify users, validate devices and put limits on access and privilege. It utilizes machine learning to discover risky user behavior and apply conditional access, and all without impacting user experience.

**Products:** Single sign-on, adaptive multifactor authentication, privileged access management, risk analytics

**Customer Focus:** Automotive, banking, defense and government, education, internet, manufacturing, retail, pharma, telco

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |



CounterTack provides predictive enterprise protection platforms to mitigate risk.

**Products:** Cloud security, cybersecurity, network security, security

**Customer Focus:** Enterprise customers

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | | | ✓ |

Duo Security aims to protect organizations against data breaches by ensuring that only legitimate users and appropriate devices have access to sensitive data and applications.

**Products:** Verify user identity, devices

**Customer Focus:** Education, financial, healthcare, legal, retail, technology

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | | | ✓ |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

EASYSOLUTIONS®

Easy Solutions is focused on the detection and prevention of electronic fraud across devices, channels and clouds.

**Products:** Fraud intelligence, fraudulent transaction and activity detection, mobile ant-fraud protection suite, mobile authentication, safe browsing, strong authentication

**Customer Focus:** Airlines, enterprises, financial services, infrastructure, retail, security

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | | | | | ✓ |

ENCAP® SECURITY

Encap Security offers strong authentication and eSignature solutions for the financial services industry. Its smarter authentication platform is integrated into individual customer infrastructures and delivers security and user experience across all applications, channels and devices. The platform supports Apple Touch ID and Samsung fiFingerprint.

**Products:** Smarter authentication platform

**Customer Focus:** Banking, enterprise, healthcare, identity providers

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | ✓ | | ✓ |

Entersekt

Entersekt offers push-based authentication and app security with products that comply with most regulatory guidelines.

**Products:** Card-not-present authentication, mobile app, mobile banking, online banking

**Customer Focus:** Banking, healthcare, insurance, mobile

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

### Entrust Datacard

Entrust Datacard, formerly known as Datacard Group, offers digital identity solutions to FIs, governments and corporate enterprises that conduct highly secure transactions. Some of its solutions include central card issuance systems, passport and ID cards and offering security certificates and communication channels.

**Products:** Authentication, identity credential management, SSL certificates, employee ID, mobile authentication, border control

**Customer Focus:** Financial, government, corporate, education, healthcare, retail, transit

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | ✓ | ✓ | | ✓ |

### evernym

Evernym provides data security solutions. It works with other organizations to create and deploy private-by-design solutions offering control and ownership of personal data.

**Products:** Claims exchange, claims issuing, decentralized application stack, identity owner tools, trust anchor services, verification tools

**Customer Focus:** Commerce, education, finance, healthcare, travel

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | | | | | ✓ |

### EZMCOM

CONVENIENTLY SECURE

EZMCOM is a security access software developer. The company's biometric authentication solutions can be deployed to protect users, data and applications from credential theft, account takeover and breaches.

**Products:** 3D Secure, behavioral authentication, document authentication, fusion biometrics, hardware, mobile public key infrastructure tokens, multifactor authentication, risk-based authentication

**Customer Focus:** Banking, eCommerce, enterprises, government, law

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

ForgeRock, an identity relationship management vendor, works to help companies and governments to build secure, customer-facing relationships across apps and devices. Its access management solution provides authentication possibilities with several out-of-the-box authentication modules to fit the needs of business, including device fingerprinting, one-time passwords and adaptive risk authentication.

**Products:** Access management, user managed access, identity management, identity gateway, directory service

**Customer Focus:** Digital health, financial services, omnichannel retail, communication and media, government

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | ✓ |

FusionPipe offers secure software authentication solutions to improve productivity and enhance data and network security. Its QuikSafe Authentication platform leverages personal devices to provide secure, convenient multifactor authentication without the need for smart cards, readers or hardware-based solutions.

**Products:** QuickID, QuickID Smart, QuickSafe, two-factor authentication

**Customer Focus:** Enterprises, first responders, healthcare, mobile field service

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | | |

IDology, Inc. provides real-time technology solutions that aim to verify the identities and ages of consumers who are not present.

**Products:** Financial services, tax, distance learning, health care, insurance, retail, gaming, telecommunications, eCommerce

**Customer Focus:** N/A

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

InAuth is a digital device intelligence company. The InAuth Security Platform delivers advanced device identification, analysis and risk assessment to help organizations reduce fraud.

**Products:** Analysis, device identification, integrity screening, risk assessment

**Customer Focus:** Banking, eCommerce, enterprise, healthcare, payments

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |

Iovation exposes online fraudsters in real timeand provides multifactor authentication services. Its software-as-a-service solution examines the devices' reputations to provide security.

**Products:** ClearKey, fraud prevention, LaunchKey, multifactor authentication, SureScore

**Customer Focus:** Financial services, retail

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | ✓ | | ✓ | | |

Kount helps online businesses increase sales by reducing fraud and allowing them to accept more orders. For each transaction, Kount's decisioning engine analyzes hundreds of relevant variables and activity from across the globe in real time.

**Products:** Access, fraud prevention platform

**Customer Focus:** Healthcare, insurance, payment processors, retail, telecommunications

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

LIVEENSURE®

LiveEnsure is an interactive authentication company with solutions that authenticate users, mobile devices, sessions, locations and behavior contexts with app-to-app rollover or touch-to-tap engagement. LiveEnsure offers mobile security solutions for cloud, web and apps on iOS, Android and Windows.

**Products:** Four factors of authentication

**Customer Focus:** eCommerce, financial services, telecommunications, web developers

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

MAXMIND

MaxMind's GeoIP data is used to locate internet visitors and show them relevant content and ads, prevent fraudulent online transactions and reduce manual review.

**Products:** GeoIP2, minFraud

**Customer Focus:** eCommerce

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

MetaStudio

MetaStudio offers fraud defense solutions. Its products are designed to provide actionable cyber intelligence to combat fraudulent registrations, bogus leads, account hijacking and organized cyber criminals. The solutions also work to contribute data on known fraudsters that helps email service providers, internet service providers (ISP), lead generators and global online businesses stop fraudsters efforts.

**Products:** Customer authentication, Instant bank verification, Military lending act, Phone verification, Ringless voicemail, Email validation

**Customer Focus:** Bank, Military, Commerce

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

miniOrange offers security solutions in the areas of cloud security, identity and access management, mobile Security, and vulnerability management. Its products include miniOrange Strong Authentication, miniOrange Single Sign-on solution and the miniOrange Fraud Prevention solution.

**Products:** Cloud identity broker service, 2FA, single sign-on, fraud prevention, network security, social login

**Customer Focus:** Financial services, retail, healthcare, education

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | | ✓ | ✓ |

mSIGNIA offers mobile authentication and device recognition solutions. The company's software helps businesses limit risk, reduce fraud and enhance customer experiences within fast-growing digital channels. mSignia uses authentication, intelligent behavior data analytics and biometric authentication.

**Products:** 3DS Merchant With Data Gateway, EMV 3DS Compliancy Platform, USDK And SDK Manager

**Customer Focus:** Banking, eCommerce, gaming, healthcare, payments

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | |

Neustar provides identity resolution solutions designed for industries including marketing, security and communications, among others.

**Products:** Marketing, Compliance Risk and Fraud, Security, Registery, Communications

**Customer Focus:** Retail & Consumer Packaged Goods, Financial Services, Automotive, Travel & Hospitality, Communications & Technology.

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

### NOPASSWORD

NoPassword, powered by WiActs, offers identity management and password-free single sign-on solutions. Its products are designed around biometrics and feature multifactor authentication.

**Products:** Hidden multifactor authentication, human multifactor authentication, NoPassword Authentication

**Customer Focus:** Financial, government, healthcare, insurance, retail, technology, travel

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | |

### okta

Okta's Identity Cloud solution is designed to securely connect enterprises to their partners, suppliers and customers. It uses deep integrations to secure access from any device.

**Products:** Single Sign-On, Multi-Factor Authentication, Lifecycle Management, Universal Directory, API Access Management

**Customer Focus:** Cloud, Consumer, Education, Finance, Government, Healthcare, Manufacturing, Media, Non-Profit, Retail, Services, Technology, Transportation

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ |

### onelogin

OneLogin is a cloud-based identity and access management provider that offers enterprise-level single sign-on and identity-management solutions. The company's solution is used by more than 2,000 enterprise customers for securing and managing identities in cloud, legacy and hybrid environments.

**Products:** Adaptive authentication, mobile identity, single sign-on, web access management

**Customer Focus:** Education, finance, government healthcare, high-tech, insurance, manufacturing, media, nonprofit, professional services and retail services

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

OneSpan

Be bold. Be secure.

OneSpan's security and eSignature solutions protect people, devices and transactions from fraud, providing rock-solid security and a frictionless customer experience. This enables even the most regulated companies to drive bold digital transformations and deliver powerful digital interactions with their customers.

**Products:** Cybersecurity, information technology, security

**Customer Focus:** Banks, businesses

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ |

privaKey

Privakey offers multifactor authentication without requiring passwords, password managers, SMS messages, out-of-band codes or other protocols. It allows users to use personal devices like phones, tablets or computers with a PIN or biometrics as the unstored second factor. This protects against phishing, keylogging, device cloning, account takeover and other common attacks.

**Products:** Two-factor authentication

**Customer Focus:** Financial services

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | | |

RCDevs security solutions

RCDevs is a security company specializing in multifactor authentication and PKI. RCDevs provides solutions to customers ranging from SMEs to large corporations in the IT, financial, healthcare and government sectors. Its OpenOTP is an enterprise-grade user authentication solution based on open standards. It supports the combinations of single-factor and multifactor user access with one-time password technologies (OTP) and universal second factor (FIDO-U2F).

**Products:** OpenOTP™ server (multi-factor with OTP and FIDO-U2F)

**Customer Focus:** SMEs, IT, financial, healthcare and government sectors

| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | ✓ | | ✓ | | ✓ |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

RISK IDENT

Risk Ident is a software provider that offers anti-fraud solutions to companies within the eCommerce, telecommunication and financial sectors. Risk Ident's key products are FRIDA Fraud Manager, DEVICE IDENT Device Fingerprinting and EVE Evaluation Engine, designed for use in payment fraud, account takeovers, and fraud within account and loan applications.

**Products:** FRIDA fraud manager, DEVICE IDENT device fingerprinting, EVE evaluation engine

**Customer Focus:** eCommerce, telecommunication, financial sector

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | ✓ | | | | | |

RSA

RSA provides business-driven solutions for advanced threat detection, cyber incident response, identity and access management and governance, risk management and compliance.

**Products:** Access management, authentication, credential management, credit/debit card information protection, consumer identity protection, data protection, identity administration, mobile workforce security, password management, portal and partner integration, regulatory compliance

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ |

SECUREAUTH

SecureAuth provides access control solutions, allowing organizations to determine identities. SecureAuth™ IdP provides authentication security, sign-in and self-service tools together in a single platform.

**Products:** Authentication security, single sign-in and user self-service

**Customer Focus:** Financial institutions, healthcare, retail, government and other industries

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | ✓ | | | | ✓ |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

sift science

Sift offers fraud detection systems, using large-scale machine learning technology to predict fraudulent behavior. The solution catches fraud that is unique to different businesses and stops fraudsters in real time.

**Products:** Device fingerprinting, machine learning

**Customer Focus:** Digital cash, eCommerce, on-demand services, online marketplaces, payment gateways, travel

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | | | | | |

SOCURE

Socure provides digital identity verification. The company's technology applies machine-learning techniques with trusted online/offline data intelligence from email, phone, address, IP, social media and the broader internet to authenticate identities in real time. The company has established global channel partnerships with credit bureaus, identity verification vendors and other solution providers. The company powers financial inclusion verifying identities in over 180 countries, helping enterprises combat identity fraud, prevent account takeover and increase customer acceptance.

**Products:** ID+ (digital identity verification), perceive (remote facial biometrics), business verification

**Customer Focus:** Financial institutions, sharing economy

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | ✓ | | | |

ThreatMetrix™

ThreatMetrix offers advanced fraud prevention and context-based security solutions that authenticate consumer and workforce access to mission critical applications using real-time identities and analytics.

**Products:** Advanced fraud protection, content-based authentication

**Customer Focus:** eCommerce, Federal Financial Institutions Examination Council, financial institutions, government, healthcare, insurance, social networks

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

Trustev, owned by Transunion, is a fraud prevention solution powered by technology that uses information surrounding a user's behavior, device, email and social media when attempting to determine identity. Trustev provides services to retail, banking, digital goods, insurance, airlines and other travel-related companies.

**Products:** ID checks, digital data

**Customer Focus:** Retail, banking, digital goods, airlines & travel, insurance

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | | |

Vantage Point stops friendly fraud by creating digital video recordings of customers placing orders online. The recordings contain the device and environment fingerprint — combined with customer interactions as they navigate websites — adding an extra layer of security.

**Products:** Devices fingerptinting

**Customer Focus:** eCommerce

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | ✓ | | | | | |

VASCO provides two-factor authentication and electronic signature solutions to financial institutions. The company also offers access to data and applications in the cloud and provides tools for application developers to integrate security functions into their web-based and mobile applications.

**Products:** Compliance, documents, eSignature, fraud prevention, identity and access, mobile app security, transaction signing

**Customer Focus:** eCommerce, enterprise, financial, government, healthcare

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | ✓ | | ✓ | | ✓ |

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## Device Intelligence Scorecard – All players are listed in alphabetical order.

VERIDIUM
HANDS ON SECURITY

**Products:** VeridiumID, VeridiumAD

**Customer Focus:** Financial, healthcare, enterprise, government

Veridium offers biometric authentication technology. The company's solutions help organizations increase security, reduce fraud and cut costs associated with passwords and traditional multifactor authentication solutions. VeridiumID is a software-only platform for biometric authentication which works in conjunction with a front-end mobile SDK to embed biometrics into a company's mobile app.

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | ✓ | | |

VerifyMe™

**Products:** Biometrics, identity protection, anti-counterfeiting

**Customer Focus:** Industries, governments, and individual

VerifyMe offers ID services to replace passwords and PINs with multi-factor authentication. The company also provides the ability to authenticate individuals using facial recognition, fingerprint, voice and retina scanning, swipe pattern recognition, location detection and approved IP detection.

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | ✓ | ✓ | ✓ | |

YOTI

**Products:** Age checks, biometric log-in, building access, customer authentication, digital identity, identity verification

**Customer Focus:** eCommerce, financial services, healthcare, venues

Yoti provides security software solutions. Its offerings include a digital identity platform to improve online and in-person security by verifying and authenticating the user.

| | | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|---|
| *Device Fingerprinting* | *IP Geolocation* | *True Application* | *Device Emulator / With Malware* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

aimbrain
simply smarter authentication

AimBrain is a mobile biometric authentication platform. It uses behavioral, facial and voice recognition as well as patent-pending technology to authenticate the user.

**Products:** Biometric authentication

**Customer Focus:** Financial

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | ✓ | ✓ | |

AuthenWare™
Security Redefined.

AuthenWare is a cybersecurity software firm providing businesses with solutions to fight identity theft. Its AuthenWare Technology enables customers to deliver enterprise application, website and transaction security, as well as installation, configuration, identification, testing, instructor-led product training and production deployment services.

**Products:** Onlinene authentication

**Customer Focus:** Consumers, cybersecurity, government, security, small and medium-sized businesses, software

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | |

BALABIT
CONTEXTUAL SECURITY INTELLIGENCE

Balabit is a contextual security technologies provider that prevents data breaches without constraining business. Balabit operates globally with offices across the United States and Europe. The company's platform offers real-time protection from threats posed by the misuse of high-risk and privileged accounts.

**Products:** Application log management, behavioral analytics, privileged user monitoring, user behavior analytics

**Customer Focus:** Cloud and managed service providers, finance, government, healthcare, higher education, telecommunications

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | ✓ |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

BehavioSec offers Behaviometric solutions for risk-based authentication of end users. Behaviometrics identifies unauthorized users by detecting anomalies in keyboard/mouse or environment behavior and creates digital fingerprints from user behaviors.

**Products:** Authentication, behavioral biometrics, fraud detection, information technology security, information theft

**Customer Focus:** Financial, information technology, online services

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

BioCatch provides behavioral biometric, authentication and malware detection solutions for mobile and web applications. Available as a cloud-based solution, BioCatch collects and analyzes cognitive parameters to generate a user profile.

**Products:** Behavioral authentication, RAT detection, fraudulent activity

**Customer Focus:** Banking, eCommerce, enterprise

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

Biometric Signature ID develops biometric ID verification software solutions that use multifactor authentication. The company helps organizations control risk, reduce fraud, manage security and maintain compliance.

**Products:** BioName-ID, BioProof-ID, BioSafe-ID, BioSig-ID, BioTect-ID, reporting and forensics

**Customer Focus:** eCommerce, education, enterprise, financial, healthcare

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

CA Technologies' CA Advanced Authentication provides real-time protection for online and mobile applications. The solution can authenticate an employee, a partner or a contractor while providing a seamless login experience. It includes features multifactor authentication and risk-based methods such as device identification, geolocation and user activity.

**Products:** Advanced authentication, API security, identity management, payment security

**Customer Focus:** Enterprise, financial institutions

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | |

Credence ID offers biometric authentication tools, including mobile fingerprint, iris and facial recognition technologies.

**Products:** Mobile biometric hardware and software

**Customer Focus:** Biometrics, enterprise, ePayments, government, identity

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

Crossmatch aims to help organizations solve their identity management challenges. Its enrollment and authentication solutions are used to create, validate and manage identities for a range of government, law enforcement, financial institution, retail and commercial applications. Crossmatch´s solutions are designed using biometric technologies and multifactor authentication software.

**Products:** Authentication, enrollment, mobile, SDKs

**Customer Focus:** Defense, finance, government, law enforcement, hospitality and retail, enterprise

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | | ✓ | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

EARLY WARNING℠

Early Warning provides payment and risk solutions to financial institutions, government entities and payment companies. Its identity and authentication offerings are intended to improve account opening, simplify and unify authentication through a single API, and fight fraud with behavioral biometrics.

**Products:** Authentication, payment, regulatory solutions

**Customer Focus:** Financial institutions, government entities, payment companies

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | ✓ | | | | |

EASYSOLUTIONS®

Easy Solutions is focused on the detection and prevention of electronic fraud across devices, channels and clouds. Easy Solutions products range from fraud intelligence and secure browsing to multifactor authentication and transaction anomaly detection.

**Products:** Mobile anti-fraud protection suite, fraudulent transaction and activity detection, fraud intelligence, strong authentication, save browsing for any environment, mobile authentication

**Customer Focus:** Financial services, security firms, retailers, airlines

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | ✓ | | | | |

FICO™

FICO is an analytics software company, with solutions designed to help businesses make better decisions through Big Data and mathematical algorithms to predict consumer behavior. ICO provides analytics software and tools used across multiple industries to manage risk, fight fraud, build more pro table customer relationships, optimize operations and meet strict government regulations.

**Products:** Analytics, fraud and security, scores, communications
**Customer Focus:** Transportation and travel

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

FORTER

Forter's decision-as-a-service system eliminates fraud prevention frictions, such as the need for rules, scores or manual reviews. The company's machine learning technology combines cyber intelligence with behavioral and identity analysis to create a multilayered fraud detection mechanism.

**Products:** Behavioral analysis, cyber intelligence, elastic identity

**Customer Focus:** Online merchants

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | | | | |

fst biometrics

FST Biometrics offers solutions that utilize biometric identification technology to provide secure access. The company's motion identification system combines facial recognition, behavioral analytics and voice analytics to identify authorized individuals from a distance and in motion.

**Products:** Digital doorman, in-motion identification, mobile

**Customer Focus:** Airports, corporates, education, entertainment, financial, healthcare, residential, retail, pharmaceuticals

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | |

id:analytics®

ID Analytics' solution provides actionable insights into enterprises' credit and identity risk. It does this through a combination of proprietary data, patented analytics and up-to-the-minute consumer behavior insights from the ID Network, one of the nation's largest networks of such cross-industry data.

**Products:** Authentication and Verification, Credit Risk, Fraud Risk Management

**Customer Focus:** Automotive lending, communications, credit card, government, online lending, retail banking

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

IdentityMind Global platform provides identity-based risk management, fraud prevention, and anti-money laundering services for online lenders, acquiring banks, payment processors, gateways, payment service providers, digital currency exchanges, financial institutions, and eCommerce merchants.

**Products:** Online fraud prevention, anti-money laundering, merchant risk

**Customer Focus:** Online merchants, acquiring banks, payment processors and gateways, payments services providers, digital currency exchanges, and financial institutions

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | |

ID R&D is a biometric solution provider focusing on the development of new biometric soutions to increase security and enhance user experience. The company has developed a suite of core biometric technologies for mobile login, chatbots and virtual assistants, and its solutions utilize various data points and biometric modalities (including behavioral, voice and facial recognition) to create frictionless biometric authentication in emerging communication channels.

**Products:** IDSquared, SafeChat, IDVoice, Voice Anti-spoof, IDBahave

**Customer Focus:** N/A

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | | ✓ | |

KeyTrac provides companies with biometric solutions to identify users. Its offerings can be accessed using a common and commercially available computer keyboard.

**Products:** Keystroke biometrics

**Customer Focus:** eLearning, financial, legal, online services, startups, universities

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

### miniOrange

miniOrange offers security solutions in the areas of cloud security, identity and access management, mobile security and vulnerability management. Its products include miniOrange Strong Authentication, miniOrange Single Sign-On solution and the miniOrange Fraud Prevention solution.

**Products:** Cloud identity broker service, 2FA, single sign-on, fraud prevention, network security, social login

**Customer Focus:** Financial services, retail, healthcare, education

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | | | | ✓ |

### NetGuardians

NetGuardians provides software that uses data to correlate and analyze behaviors across an entire bank system. The solution allows banks to target specific anti-fraud or regulatory requirements.

**Products:** Fraud protection

**Customer Focus:** Financial

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | | | | | | |

### NOPASSWORD

NoPassword, powered by WiActs, offers identity management and password-free single sign-on solutions. Its products are designed around biometrics and feature multifactor authentication.

**Products:** NoPassword Authentication, Human and hidden multifactor authentication

**Customer Focus:** Financial, Insurnce, Healthcare, Technology, Government, Manufacturing, Retail, Travel

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | ✓ | ✓ | ✓ | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

### NuData Security

NuData Security positively verifies users online with real-time passive biometrics and behavioral analytics.

**Products:** Cybersecurity, enterprise software, fraud detection, internet

**Customer Focus:** Financial

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | | | |

### Plurilock

Plurilock's solutions use artificial intelligence to identify, prevent and eliminate insider threats.

**Products:** Plurilock Adapt, Plurilock Aware, Plurilock Defend

**Customer Focus:** Banks, critical infrastructure, financial, government, healthcare, military

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

### SECUREAUTH

SecureAuth provides access control solutions, allowing organizations to determine identities. SecureAuth™ IdP provides authentication security, sign-in and self-service tools together in a single platform.

**Products:** Authentication security, single sign-in and user self-service

**Customer Focus:** Financial institutions, healthcare, retail, government and other industries

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | | | | ✓ |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

SECUREDTOUCH

SecuredTouch offers behavioral biometrics for mobile devices. The company collects and analyzes different behavioral parameters to create a unique user behavioral profile to authenticate transactions. The company offers both application- and device-based solutions.

**Products:** Behavioral biometrics

**Customer Focus:** Financial

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | |

sift science

Sift Science offers fraud detection systems, using large-scale machine learning technology to predict fraudulent behavior, leveraging a global network of fraud data. The solution is intended to catch fraud that is unique to different businesses and to train specific customer customized models to stop fraudsters in real time.

**Products:** Machine learning, device fingerprinting

**Customer Focus:** Travel, digital cash, on-demand, online marketplace, eCommerce, payment gateway

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | | | | |

Solus

Solus Connect's platform uses multifactor authentication and biometrics to verify users with no hardware necessary

**Products:** Behavioral authentication, eyeprint, multifactor authentication

**Customer Focus:** Banks, enterprises, finance, government, healthcare

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | ✓ | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

TeleSign

TeleSign is a provider of mobile identity solutions and offers account security and fraud prevention with two-factor authentication, based on each user's mobile identity (phone number, device and behavior), which is driven by real-time global intelligence, including reputation scoring and device data.

**Products:** Account registration, access and usage recovery, smart start services

**Customer Focus:** Software CRM, loyalty marketing, social platforms

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | ✓ | ✓ | | ✓ |

ThisData

ThisData offers an advanced data security application to protect client information through cloud-based storage. It leverages behavioral biometrics and advanced machine intelligence to create user profiles based on user activity. The profile will automatically detect unusual behaviors, such as accessing an application from an unrecognized device or a new location.

**Products:** Account takeover, adaptive authentication, continuous authentication, fraud detection, intelligence community, risk scoring, threat intelligence, two-factory authentication

**Customer Focus:** Commerce, education, finance, healthcare, travel

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | ✓ | | | | | |

ThreatMetrix™

ThreatMetrix offers advanced fraud prevention and context-based security solutions. These solutions authenticate consumer and workforce access to mission critical applications using real-time identity and analytics.

**Products:** Advanced fraud protection, content-based authentication

**Customer Focus:** eCommerce, financial institutions and FFIEC, enterprise, insurance, social networks, government, healthcare

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | ✓ | ✓ | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

Trusteer provides endpoint cybercrime prevention solutions and clientless fraud prevention products. Its offerings protect against financial fraud and data breaches.

**Products:** Banking, fraud detection, network security

**Customer Focus:** Brokerages, online banks, retailers

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | ✓ | | | | | | |

Trustev, owned by Transunion, is a fraud prevention solution powered by technology that uses information surrounding a user's behavior, device, email and social media when attempting to determine identity. Trustev provides services to retail, banking, digital goods, insurance, airlines and other travel-related companies.

**Products:** ID checks, digital data

**Customer Focus:** Retail, banking, digital goods, airlines & travel, insurance

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

Twosense provides a mobile software development kit that offers continuous, invisible user authentication practices through behavioral biometrics. It can be integrated with a few lines of code, and observes and models authorized users' behavioral fingerprints to deny entry to attackers. The solution also applies deep learning tools to reduce fraud and improve user experiences.

**Products:** Behavioral biometrics, fraud protection

**Customer Focus:** Call centers, mobile banking, mobile payments

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | ✓ | | |

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**Transaction Behavior Scorecard** – All players are listed in alphabetical order.

## typingdna

TypingDNA provides biometric technology. It offers proprietary artificial intelligence software to identify users by the way they type on their keyboards. The solution also provides quick integration via application program interfaces.

**Products:** Authentication solutions

**Customer Focus:** Financial

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

## unbotify

Unbotify's security solution leverages behavioral biometrics data and machine learning models to offer bot detection. It analyzes hundreds of features extracted from mouse movement data, keystroke dynamics, touch events and mobile device orientation sensors, and isolates bots that carry out malicious activities.

**Products:** Attribution, analytics, audience builder, fraud prevention, Unbotify

**Customer Focus:** Agencies, eCommerce, finance, gaming, subscription, travel

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| | ✓ | ✓ | | | | ✓ | |

## UNIFYID

UnifyID offers authentication services with solutions that rely on implicit authentication and are based on location, technology usage habits and sensor technology. The company also offers machine learning software.

**Products:** Implicit authentication

**Customer Focus:** All industries

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

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## Transaction Behavior Scorecard – All players are listed in alphabetical order.

VASCO is a provider of two-factor authentication and electronic signature solutions to financial institutions. The company also offers access to data and applications in the cloud, and provides tools for application developers to integrate security functions into their web-based and mobile applications. The company primarily serves clients in the financial, enterprise, eCommerce, government and healthcare markets.

**Products:** Mobile app security, compliance, fraud prevention, transaction signing, identity and access, documents eSignature

**Customer Focus:** Financial, enterprise, eCommerce, government, healthcare

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | ✓ | | | ✓ | ✓ |

Zighra's provides user recognition by adding an invisible biometric layer to mobile and internet of things authentication. Zighra applies the intelligence of biological systems to security to deliver continuous authentication to mobile transactions.

**Products:** SensifyID

**Customer Focus:** Mobile financial services, retail

| PAYMENTS | | | | BIOMETRICS | | | |
|---|---|---|---|---|---|---|---|
| *Click Flow* | *History* | *Transaction* | *PIN* | *Camera* | *Fingerprint* | *Microphone* | *Security Tokens* |
| ✓ | | | | | | | |

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PYMNTS.com is where the best minds and the best content meet on the web to learn about "What's Next" in payments and commerce. Our interactive platform is reinventing the way in which companies in payments share relevant information about the initiatives that shape the future of this dynamic sector and make news. Our data and analytics team includes economists, data scientists and industry analysts who work with companies to measure and quantify the innovation that is at the cutting edge of this new world.

JUMIO®

Jumio enables businesses to reduce fraud, increase customer conversions and provide seamless experiences, and offers identity verification solutions that can be tailored to fit specific business requirements. Boasting more than 80 million verified identities, the company's technology uses computer vision, machine learning and live verification experts to verify credentials — including passports and drivers licenses — issued by more than 200 countries. It powers businesses with scalable, secure and compliant identity verification, enabling them to build and sustain trust in an increasingly risky digital world.

Based in Palo Alto, California, and funded by Centana Growth Partners and Millennium Technology Value Partners, Jumio operates globally, with offices in the U.S., Europe and Asia Pacific. Learn more about it here: https://www.jumio.com.

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