

GEN
KEY



6 facts about GenKey's ABIS



Lightning fast deduplication

What is ABIS?

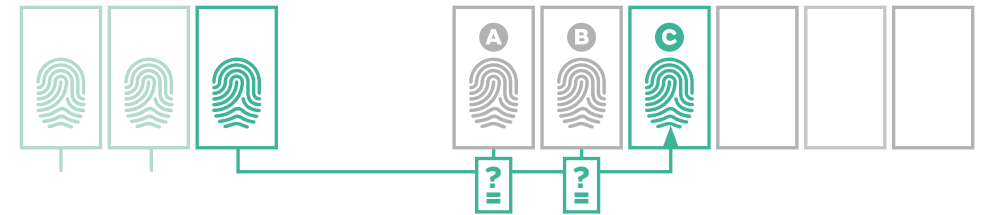
For any biometric identity to be reliable, it's essential there's only one unique ID for every person registered. We call it 1=1 (one person = one identity). In a registration process, involving millions of people, duplicate identities can enter the system. It's the job of GenKey's ABIS to detect them, using biometric comparisons of fingerprints, iris, face, etc.

GenKey's ABIS is designed for small and large-scale identification and deduplication. **It's fast**, capable of checking more than 1 billion stored fingerprints per second. **It's accurate**, offering multi-modal capabilities and 'Label Independent Matching'. **It's ready to go**, designed as a turnkey solution that integrates seamlessly with existing systems.

3 Core Functions

Deduplication (N:N)

Checks for duplicate identities while new subjects are added.



Identification (1:N)

Searches for an identity.



Verification (1:1)

Verifies a claimed identity and delivers results in real time, anywhere.



An ABIS for every market

GenKey's ABIS performs ultra-fast deduplication, whatever the purpose of the biometric ID.

Visa



Refugee Registration



Social Protection



Elections



National Identity



Banking



Civil Registry



Health



Borders & Immigration



Ghost Workers



ePassport



Telco



Fact 1

So fast it's Industry-leading

The processing speed of GenKey's ABIS, reaching 1 billion fingerprint matches per second, goes way beyond the market standard. The unparalleled speed and accuracy, powered by GenKey's patented FastAFIS® and BioFinger technologies, deliver highly reliable results, in real-time.

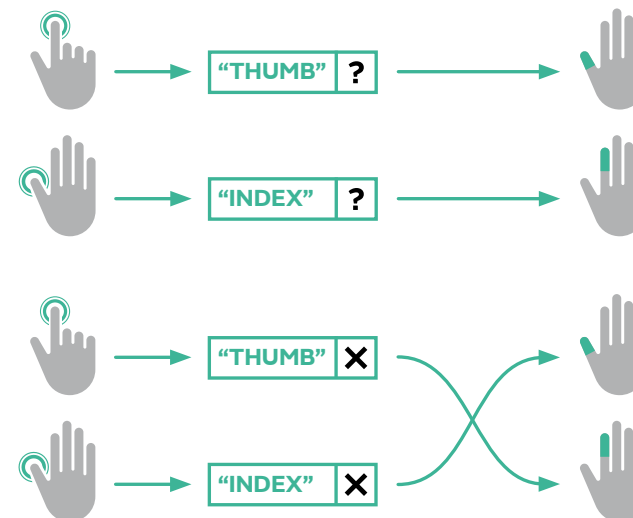


Fact 2

Label Independent Matching

Unlike standard ABIS systems, GenKey's 'Label Independence Matching' detects duplicate fingerprints, even if they've entered the register with the wrong label.

During the registration process, fingerprints can be scanned in the wrong sequence and be assigned the wrong label. 'Label Independent Matching' is a unique algorithm that can detect two fingers belonging to the same person, even if the corresponding label is incorrect.



Label Dependent Matching
When capturing fingerprints, a label is added to each finger indicating the type of finger. Most ABIS systems only check the corresponding labels, which isn't always reliable.

Label Independent Matching
GenKey's ABIS is able to find a match, regardless of the labelling.

Fact 3

Multi-modal

GenKey's ABIS is designed for multiple biometric modalities, including fingerprints, iris, face, vein, etc.





Studies show that the more fingerprints registered per person, the more reliable the ABIS. With additional modalities, the overall accuracy is increased even further, especially for people with low quality fingerprint data.

In addition, GenKey's ABIS integrates biographic information for people with no useable fingerprints.



Fact 4

Built to last

-  **Lower maintenance costs:**
 GenKey's ABIS can significantly reduce hardware costs due to the high throughput of matches per CPU. It also uses commercially available, off-the-shelf components, ensuring maintenance costs are kept low.
-  **Compatible:**
 ABIS uses standard communication and networking protocols with a REST interface which makes it easy to integrate in existing systems. The REST messages use a standard open XML format.
-  **Updatable:**
 It's set-up to run continuously, allowing for changes in biographic and biometric data, such as new births, deaths, relocation and re-registration. GenKey's updating process is efficient and can be done in a running system without delays or the need to reboot. And, because historical data is never deleted, possible fraud can easily be detected.
-  **Easy to use:**
 It can be accessed anywhere using an internet browser through a secure web interface. It's easy to use, with workflow software for monitoring, control, analytics and reporting.

CPU: Central Processing Unit
REST: Representational State Transfer
XML: Extensible Markup Language

Fact 5

Secure and Reliable

GenKey's ABIS supports complete isolation between biographic and biometric data. All biographic and biometric data is encrypted, using strong multi-factor security.

GenKey's ABIS has been designed to work in challenging environments, capable of handling power outages and interruptions in network connections. It has full redundant functionality, without a single point of failure and has a quick restart capability and full disaster recovery. It can handle automatic multi-server installation and upgrading based on commercial, off-the-shelf hardware.



Fact 6

Adjudication

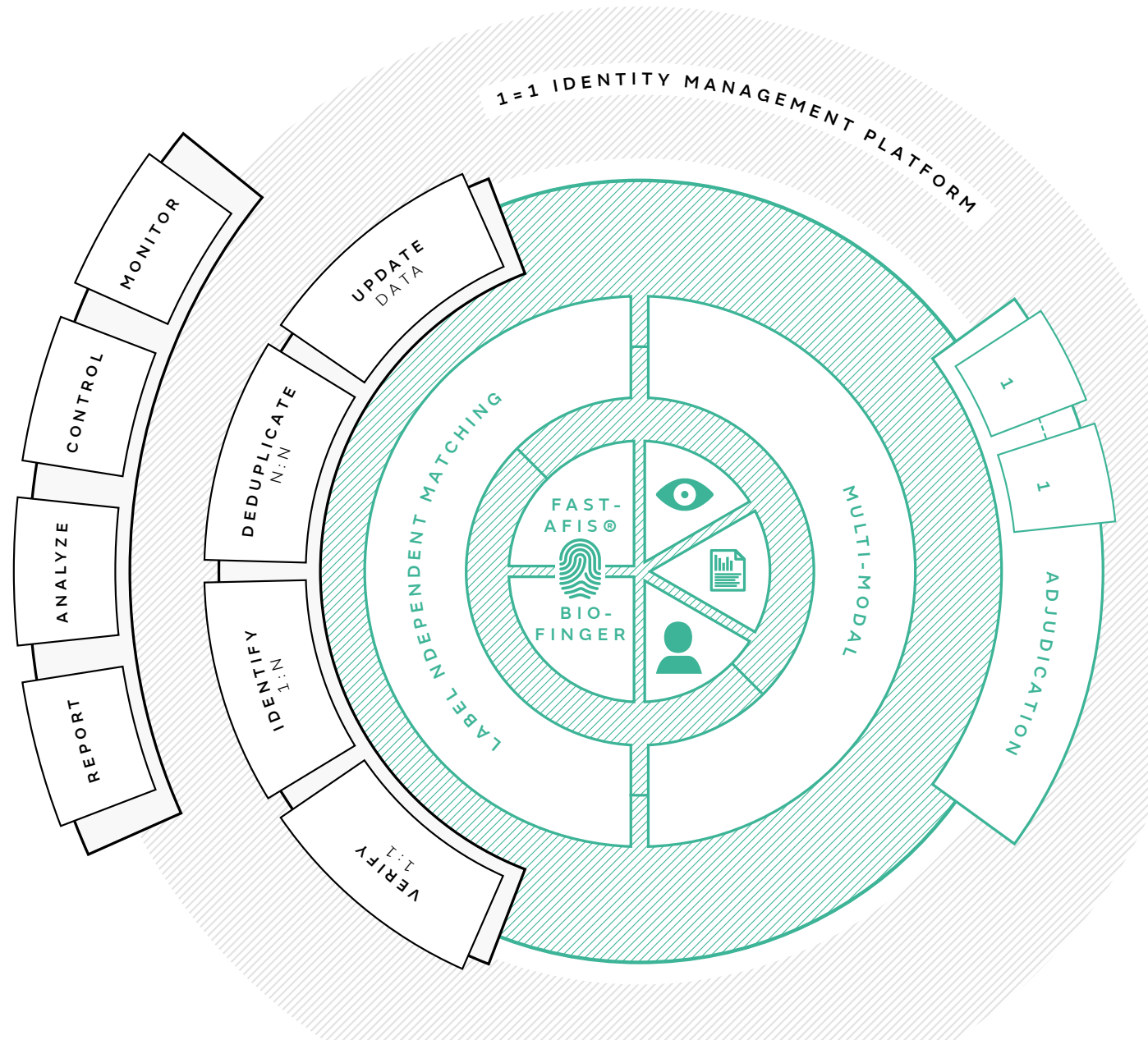
GenKey's ABIS goes a long way to detecting possible duplicate identities, but the final decision is human. The software-assisted adjudication process enables operators to review and validate potential duplicates. Plus, the easy-to-use web-based application can be configured to the needs of each situation, allowing multiple levels of adjudication, validation and approval.



Adjudication
GenKey's adjudication software allows for visual side-by-side comparisons of biometric and biographic data, including facial and fingerprint images, with rated scores to assist the reviewer.

How ABIS works

- ABIS**
Automated Biometric Identification System.
- 1=1 Identity Management Platform**
The identity management system is tightly coupled to ABIS and Adjudication. It's a repository of identity information of individuals (biographic data such as name, address, gender, age).



Partnering with GenKey

Trusted

GenKey offers a full support service, from integration to implementation, anywhere in the world.



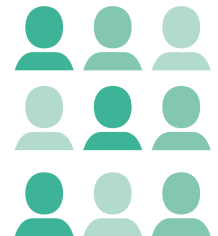
Certification

GenKey's ABIS performs and complies with all international standards and certifications.



Experience

GenKey's ABIS is proven to perform in real-life deployments. Both the team and the technology know what it takes to get the job done, on a nationwide scale.



ABIS in action



Case Study 1: Ghana Elections

- Biometric enrollment of more than 14 million voters in 6 weeks
- The ABIS software was running on 8 standard (commercial, off-the-shelf) servers
- A total of about 980 trillion fingerprint comparisons ensured each voter was enrolled only once
- Candidate duplicates were forwarded to an adjudication system to determine whether it concerned fraudulent cases or not



Case Study 2: Tanzania Elections

- Over 23 million voters registered
- Large quantity of data: 168 million fingerprints
- Deployment in 6 months



Case Study 3: Kenya national health insurance

- 4 million people registered
- Registration at Mobile service points: enables registration of citizen in the remote locations
- Central solution for deduplication with real-time response

To date, we have processed over 110 million subjects worldwide.

110m



Technical Specifications

Supported functionalities

- N:N (many-to-many, deduplication), 1:N (one-to-many, identification) 1:1 (one-to-one, verification)
- Updating biometric records in a running system
- Any number of fingers per subject (up to ten)
- Multi-modal matching
- Label Independent Matching (matching with missing or erroneous finger labels)

Configuration

- COTS hardware, no proprietary hardware required
- Typical server configuration: 2x Intel® Xeon® Processor E5-2670 v2, 48GB RAM, 800GB SATA SSD
- Workflow applications run on standard computers with an internet browser

Central software

- Easy-install of all GenKey software and packages on all central servers
- Modular system design allows for easy extensions and upgrades
- Full redundant functionality without a single point of failure
- Easy to configure
- Full disaster recovery and quick restart

Central OS

Linux

Central databases

Integrates with all common databases like PostgreSQL and Oracle

Interoperability

REST interface with XML requests and responses

Standards and certifications

- WSQ image and JPEG2000 fingerprint images up to 1:15 compression rate, 500dpi, 8 bit gray scale
- FBI certified WSQ
- ANSI INCTIS 378-2009
- ISO/IEC 19794-2 2011
- ISO/IEC 19794-4 2011
- ISO/IEC 24745
- NIST PFT-II
- NIST MINEX
- FVC Ongoing

Biometric matching

- Combined FastAFIS® and BioFinger with in-memory matching with over 1B matches per second on a single typical server configuration
- Other 3rd party matchers can be used
- Adjustable accuracy/speed
- Full biometric matching

Storage requirements

- No fundamental limit to population size
- Approximately 5KB per finger

We're GenKey. We're experts in biometrics.

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We work with governments and their partners to help millions of people across Africa to register and verify their identity.

Our 3 step approach is proven to deliver large scale ID programs across a wide range of markets, including elections, healthcare and social protection to name a few.

There are 1.5 billion people with no legal identity, that means no birth certificate, no ID card, no passport. Nothing. What's more, it's estimated that over 600 million children alive today have no registered birth. Access to a legal identity is one of the UN Sustainable Development Goals. It calls for every person to have a legal identity by 2030.

It's GenKey's mission to help bring about *Identity for all.*