

ToBe



ABIS SOLUTION



TOPPAN Security is a global leader in systems integration and solutions, specializing in mission-critical identity and payment technologies. Being a subsidiary of TOPPAN Next, TOPPAN Security is serving as the international development arm of the TOPPAN Group in the security domain. Founded in 1900, TOPPAN (7911:TYO) is a respected Japanese brand known for exceptional quality. With heart, bold ideas, and a deep understanding of government and banking customers, TOPPAN's mission is to create a meaningful, technology-facing future together.

We harness collaborative intelligence to deliver solutions that meet the highest standards of security, quality, and effectiveness. Focused on delivering advanced solutions for the identity and payment sectors, we provide everything from secure document and card manufacturing to advanced encryption and biometric systems. By partnering with governments and businesses, TOPPAN Security consistently pushes boundaries, exceeds expectations, and sets global standards, delivering cutting-edge solutions that transform citizen experiences and drive innovation worldwide.



KEEPING YOUR IDENTITY SECURE

TOPPAN Security has many years of experience implementing and operating a multimodal Automated Biometric Identification System (ABIS), including facial, iris, and fingerprint identification, having deployed it at multiple sites.

With an Automated Biometric Identification System, it is ensured that no applicant will be registered twice. With the support of the biometric database, the system can identify individuals based on their facial features, iris, and fingerprints as part of its identification process.

HONING THE FINE ART OF ACCURATE IDENTIFICATION

Based on these experiences, we have designed and built an ABIS that can be customized and integrated into your existing solutions.

An integrated ABIS lowers development costs as well as the time and effort required to build the system. In addition, standard hardware is used within the system to reduce maintenance costs.

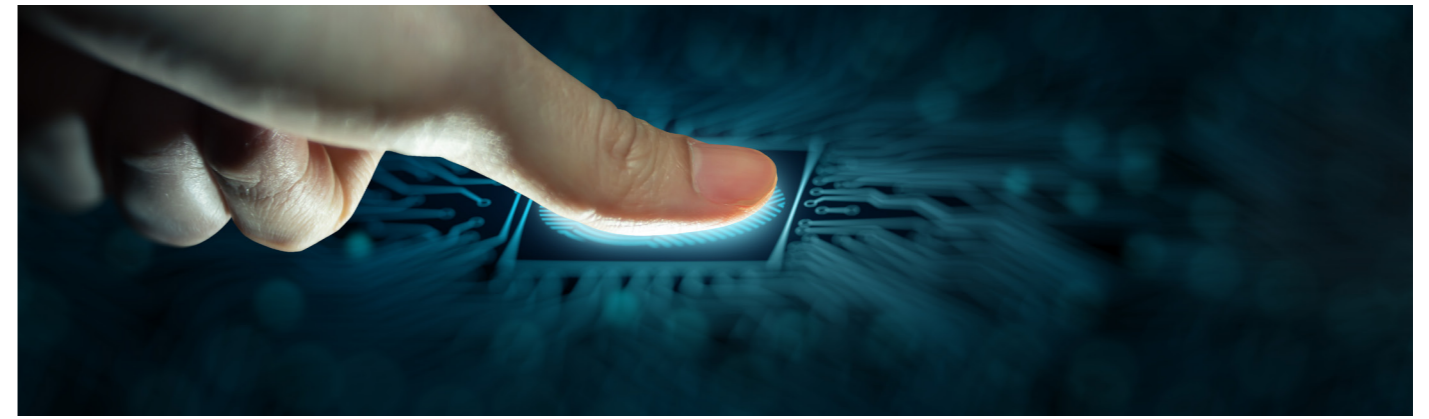
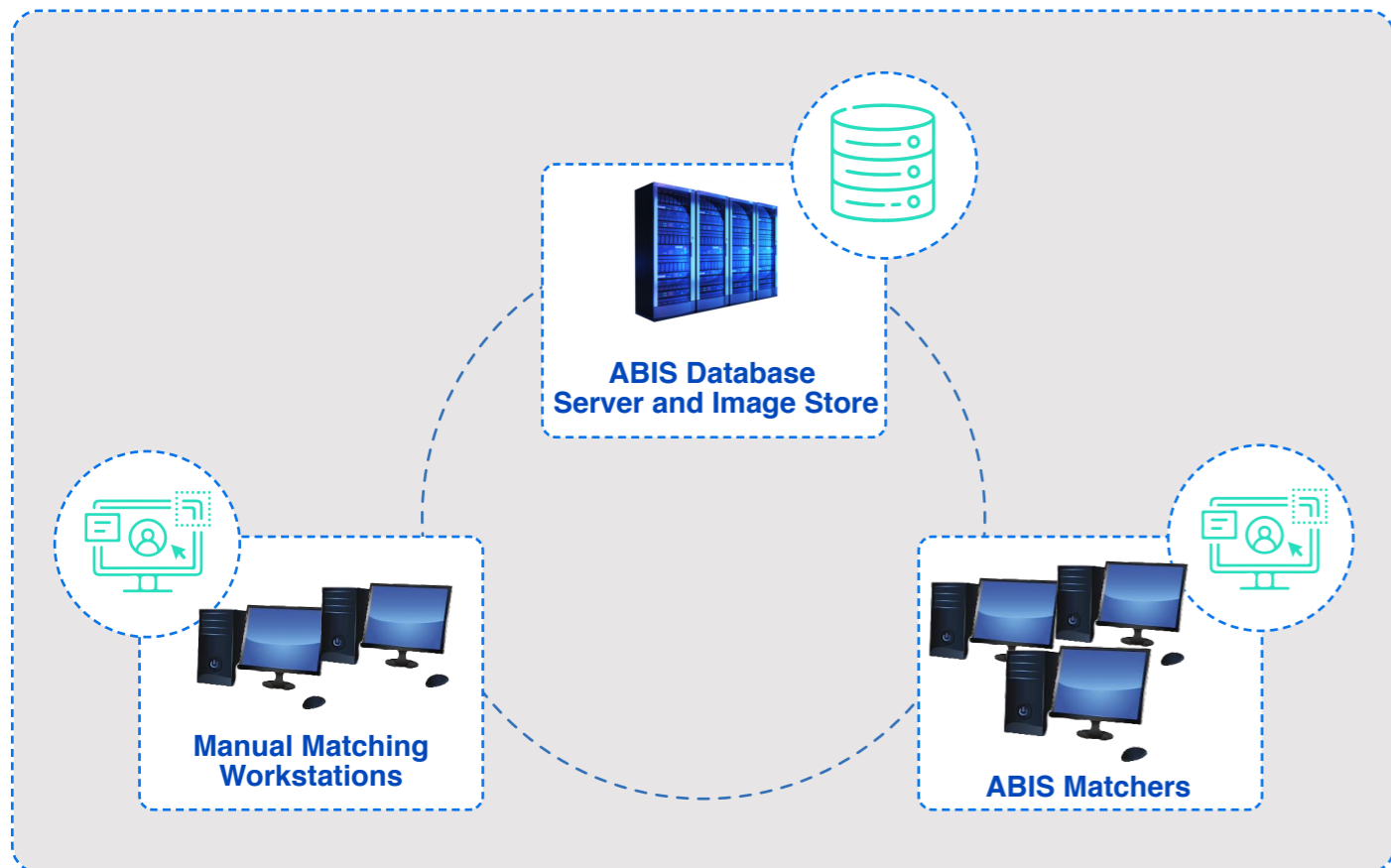


FASCINATING TECHNOLOGY AT YOUR FINGERTIPS

The ABIS package contains everything necessary for setting up complex identification applications, including a high-speed matching engine, biometric search database management, and client-server architecture. ABIS has a scalable architecture, allowing the matching server component to be installed on multiple matching computers to distribute the workload and increase matching speed. Therefore, it can search large-scale databases ranging from thousands to millions of biometric modalities.



ABIS SOLUTION ARCHITECTURE



ADJUDICATION WORKSTATIONS

To minimize the false acceptance rate, finger images with a borderline score are marked for manual matching, a process in which a trained individual reviews the finger images and makes an informed decision.

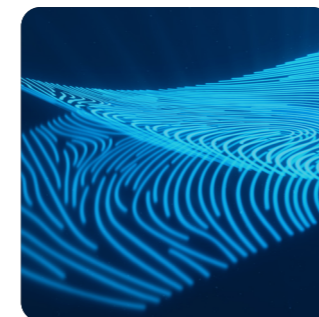
TOPPAN Security offers two methods for handling the identified borderline scores:

MANUAL FINGER VERIFICATION



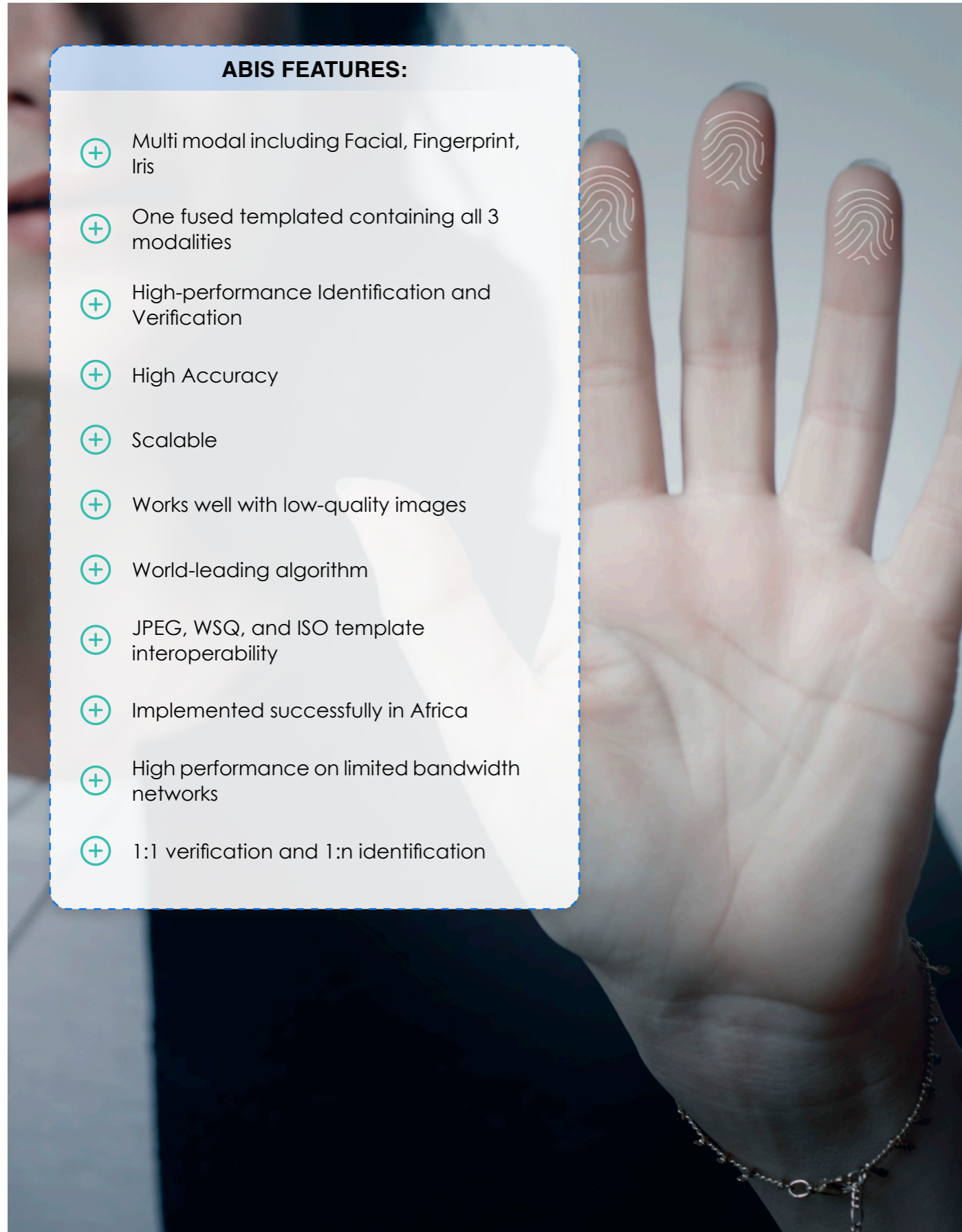
- Border line fingerprints marked for manual adjudication/matching
- Minimizes risk of false acceptances
- Visual tool displaying fingerprint images with their minutiae points
- Operator/Fingerprint expert analyses/compares similarities using various image manipulation points
- Overlays minutiae points to simplify comparisons
- Operator can mark additional minutia points

MANUAL FINGER-MATCHING USING ADDITIONAL INFORMATION



- Visual tool displaying text and photo of similar fingerprints
- Trained operator/expert compares text and photo
- Visual dashboard showing performance statistics
- Operator can start and stop matcher application
- Various reporting options available

FINGERPRINT RECOGNITION ALGORITHM



ABIS FEATURES:

- + Multi modal including Facial, Fingerprint, Iris
- + One fused templated containing all 3 modalities
- + High-performance Identification and Verification
- + High Accuracy
- + Scalable
- + Works well with low-quality images
- + World-leading algorithm
- + JPEG, WSQ, and ISO template interoperability
- + Implemented successfully in Africa
- + High performance on limited bandwidth networks
- + 1:1 verification and 1:n identification

DESIGN PRINCIPLES AND USE CASES

DESIGN PRINCIPLES



USE CASES



MOBILE BIOMETRIC AUTHENTICATION



AI-Powered Engine



Passive Liveness Detection



High Standards for Screening (no masks & hats permitted)

Dynamic Facial Recognition System Using AI Models

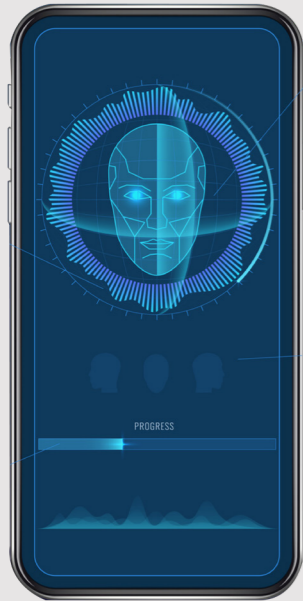
Our AI-powered engine supporting both facial recognition and liveness detection is trained and modeled specifically for smartphone use. Both functions are dedicated to the processing of specific face positions and lighting conditions resulting from the use of the front smartphone camera.

Enhanced Image Processing

From images captured by smartphone cameras, our engine performs color correction and gray-scaling on the images before it detects and extracts multidimensional facial features. This improves the quality of the features extracted to evaluate if there is a potential match.

Liveness Detection

Our liveness detection technique extracts numerous environmental features such as light reflections and photograph borders from multiple frames of the image streams and then performs liveness analysis to prevent spoofing attempts such as videos and even silicone masks.



ABIS PROJECT REFERENCES



Country	Projects
Ethiopia	Taxpayer ID System; ABIS
India	National Rural Employment Guarantee Scheme; AFIS
Malawi	Driving Licenses, Motor Vehicle Registration System; AFIS
Mozambique	Voter registration; AFIS
Nigeria	Taxpayer ID System; ABIS
Senegal	Driving Licenses, Motor Vehicle Registration System; ABIS

Country	Projects
South Africa	Driving License Issuing System FP Verification
Sri Lanka	Driving Licenses, eMotor Vehicle Registration System; Fingerprint Verification
Uganda	Driving License Issuing System; ABIS

