

# Biometric Access Control

## Rapid and Reliable User Authentication with BioAffix® Gate Vision

### Spotlight on Ones Technology

Ones Technology delivers access control systems for high-security areas such as data centers, airports, metro stations, stadiums, concert halls, and government buildings. Its innovative solutions are recognized across Europe and Asia for enhancing security in public and private sectors.



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– Onur Sirmatel, General Manager, Ones Technology

**Challenge:** Traditional access control systems, dependent on badges, QR codes, or fingerprints, are increasingly vulnerable to fraud and security breaches, nor do they comply with evolving regulations governing how biometric data is shared, stored, and secured.

**Solution:** Powered by an active stereo depth sensor and AI algorithms, BioAffix® Gate Vision integrates RealSense™ biometric facial authentication technology with identity badging to deliver secure and private access-control solutions.

**Results:** BioAffix® Gate Vision authenticates users in less than a second, adheres to GDPR guidelines, and supports multiple authentication methods, including biometric templates on QR codes and Bluetooth Low Energy (BLE) Walkthrough.

### Introduction: The Need for Fast, Secure, and Accurate Biometric Screening

Traditional card-based access solutions offer fast and convenient identity verification but often have limited security, leaving access control systems highly vulnerable to a security event. Most ID cards contain personal data like an individual's photograph and ID number, but they can't verify the identity of the user. For example, fingerprinted readers and iris scanners can be slow and susceptible to fraud. Worse, many facial recognition systems can be compromised with something as simple as a color printout of a face.

The biometric security industry is in rapid transition as manufacturers roll out privacy-preserving solutions that are seamless for the user and provide a significantly higher degree of safety than previous methods. This was the motivation for creating BioAffix Gate Vision, an entry-exit control system that integrates RealSense ID technology to enable a highly secure facial authentication recognition process.

"We were looking for a silver bullet in non-touch biometric authentication," says Onur Sirmatel, General Manager at Ones Technology. "Other solutions can process people quickly but with limited accuracy. RealSense ID stands alone because it can do both, and it even offers controls to allow us to optimize each variable."

RealSense ID combines an active depth sensor with a specialized neural network. This dedicated "system-on-a-chip" encrypts and processes user data quickly and safely. Thanks to an advanced internal card reader module and sensors at the bottom of the BioAffix Gate Vision unit, the device can scan card-based badges and read many types of smart cards quickly and efficiently.

## RealSense ID: Privacy and Accuracy Combined

To verify that an actual human face is in front of the camera, RealSense ID uses liveness detection and anti-spoofing technology. According to Sirmatel, competing open-source solutions send data to a server for analysis, which is less secure. RealSense ID processes all facial imprints locally and encrypts all user data. Each user's biometric data is stored in a tamper-proof ID card and matched to the template extracted from a user's face, all locally on the system. No personal data is stored on a computer or cloud-based server, which aligns with General Data Protection Regulation (GDPR) data privacy mandates. This unique approach makes it ideal for enterprises to deploy in any environment where smart ID cards are already in use.

"As you look at the camera, RealSense ID scans your face then compares the face image stored on the badge to the face print intercepted by the camera," Sirmatel continues. "No information leaves the device."



*A registered user passes through the BioAffix Gate Vision device, simultaneously utilizing facial biometrics and the smart card to gain access.*

Relying on AI vision algorithms and machine learning, the system adapts to users over time as their physical features change through natural aging processes, growth of facial hair, or the addition of glasses. The sensors work in various lighting conditions and can reliably identify people with a wide range of heights and skin tones.

## Choosing RealSense for Superior Performance

Ones Technology selected RealSense ID because it combines the active stereo depth sensor with a wide-view angle camera

and an infrared sensor. Together with a specialized neural network, this configuration allows BioAffix Gate Vision to scan biometric data under any circumstances. Sirmatel and his

team also liked the compact size of the RealSense ID F450 module, configured as a complete hardware component that is easy to integrate into their biometric security devices.



*RealSense™ ID F450 module, with a credit card to show the scale.*

With its 3D camera and unique sensor hardware, BioAffix Gate Vision transforms each person's facial biometrics into a unique algorithmic dataset," Sirmatel explains. "Anti-spoofing and facial authentication software enable reliable, live detection of human beings. Other solutions did not work well in low-light situations, but thanks to its IR illuminators, we can use RealSense ID even in the dark."

## Resolving Access Control Challenges

With approximately 500 BioAffix Gate Vision units deployed, Ones Technology has enhanced 3D facial security in a variety of settings including Turkey's IST, one of the busiest airports in the world. Istanbul City Municipality uses BioAffix to verify the time and attendance of its employees. Its solutions are widely used in data centers, schools, government buildings, warehouses, and many other public and private facilities.

As Ones Technology applies its access control solutions to these unique situations, its engineers rely on the RealSense software development kit (SDK) to simplify development and integration tasks. "The RealSense software development kit is amazing," Sirmatel confirms. "Our engineers use the SDK to apply the facial ID technology in different scenarios. You don't need dedicated software developers to implement it, and everything is well documented."

## Supporting Sovereign Identity Constraints

RealSense ID plays an important role in conforming to data privacy regulations. Most facial authentication solutions send face images from the camera into a central system, either onsite or in the cloud, where the face template is generated and analyzed. Once individuals are identified, the server sends a response back to the card reader to permit or deny access. However, GDPR sovereign identity regulations don't allow organizations, such as airports, train stations, and other public entities to share personal data across boundaries and countries, so as to restrict the data from getting into the hands of people

## Case Study | Ones Technology

who can misuse it.

BioAffix Gate Vision solves this problem by preloading each individual's facial template onto a secondary authentication mechanism like an access control badge. Individuals carry around their own sovereign biometrics, in keeping with the GDPR requirements.

"You walk up to device, scan your badge and look at the device so it can scan your face. The device reconciles the two – a simple one-to-one match," Sirmatel says. "There is no need to collect personal data. The face templates are not stored on the device and are not conveyed to any other device."

## Supporting Multiple Authentication Methods

BioAffix Gate Vision acts as a card reader for any access control system, transmitting the card ID via Wiegand or OSDP connections without requiring additional software or integration methods. BLE technology is used for transmitting data such as QR codes to extract data from national IDs, passports, mobile applications, and other means. It offers several identity verification methods: Biometric Template On Card, Biometric Template On Mobile (App or Credential), Biometric Template On Hard Print, and Biometric Template On BLE Tag.

For example, when an individual enters the communication range of the BLE module on a 3D facial recognition device, their biometric data and other identity information, stored as a QR code on their mobile application, are transmitted. The device's BLE module sends broadcast packets to the mobile phone, which processes them and sends back the encrypted QR code via BLE Extended Advertisement (see diagram). This creates a temporary database for those within the BLE range. The mobile application can also use GPS to activate BLE automatically, enabling seamless identity verification without forcing users to handle the device or even stop in front of the facial recognition system.

*"Some biometric screening solutions have exceptional security but are slow. Others can process lots of people quickly but have a high false-positive rate. RealSense offers 3D face recognition with infrared depth perception to ensure secure, accurate access in high-traffic environments."*

– Onur Sirmatel, General Manager, Ones Technology



### Walk-through BLE based on QR Data Transmission

As Ones Technology continues to expand its presence across Turkey and other European markets, Sirmatel credits RealSense for its ongoing support. "RealSense has been very responsive," he concludes. "Even though Intel is a technology giant with a large army of service professionals, the RealSense ID team feels more like a small guerrilla task force. We always receive fast action even when we don't expect it."

## Learn More

Discover more about Ones Technology's biometric access control solutions and RealSense ID for Facial Authentication technology at

[realsenseai.com](https://realsenseai.com)