Case Study
Ferencváros Soccer Club

»High security, user friendly characteristics.«
Peter Györgydeák, CEO of BioSec, Hungary

The customer

Country: Hungary
Industry: Sport & Leisure
Founded: 1899
Visitors: Max 22,600 + 29 VIP lounges
Website: www.fradi.hu

The challenge

Identification system beside the ticketing and card based physical access control for mass personal identification.

The solution

BioSec LifePass solution based on Fujitsu PalmSecure palm vein technology:

- BioSec 100 terminals
- BioSec BS-CAN controller
- BioSec LifePass authentication server software, 'middleware'

The customer

The Ferencváros Soccer Club in Budapest, Hungary was founded in 1899 and its new stadium was built in 2014, to host not only the team's national league games but also international level games. The 23,000 seat stadium is equipped with the latest technologies and is one of the most modern in Europe. Due to its capacity, the stadium has also proven to be ideal for concerts and other major events.

The challenge

For the new stadium there was a need for a biometric personal identification system in addition to the ticketing and card based physical access control system. The goal of the biometric identification was to prevent banned people from entering the stadium during their banishment and to guarantee that each visitor can only enter their designated section (e.g. that supporters of the two teams cannot get close to each other), and finally to prevent stolen or lost fan cards being used by others because within the stadium fan cards serve as a cashless payment system.

After taking into consideration other biometric solutions (face recognition), the decision was made by Ferencváros Soccer Club to use the BioSec palm vein identification system, based on Fujitsu PalmSecure technology, for secondary identification at the turnstiles.

The expectation of Ferencváros Soccer Club was to find the most secure solution, which can quickly identify up to 22,000 people within 60 minutes at 36 gates. The solution had to be compatible with the RFID fan card reading system and meet all the legal regulations concerning data protection (especially in a public facility), be secure against vandalism, weather resistant and user-friendly for all age groups. Every visitor who wants to enter the stadium has to register just once at the Ferencváros Soccer Club office to receive a fan card, since tickets can be only bought by using the Ferencváros Soccer Club fan card number and cashless payment within the stadium is also done with the fan card.

The solution

For the biometric personal identification the BioSec LifePass solution was chosen. Eight registration points were created at the ticket office for registering visitors, handing out the fan card and enrolling the biometric templates of the person. At the registration point the member ID number stored on the fan card is read and the person's biometric ID (left and right hand) assigned to it in a separate database.

The benefit

- Easy to handle for a large number of people
- Second identification time
- High security with optimal data protection, two level mini hash protection
- Minimal hardware infrastructure required
- Supports family friendly stadiums
- Proven in the toughest sports environments

The club does not store any personal data, therefore the biometric database remains anonymous. As a software developer all APIs were developed by BioSec. Separate terminal and hardware solutions were developed especially for the stadium to meet the above mentioned criteria and FIFA / UEFA requirements.

At one of the 36 entry gates (turnstiles) the visitor holds its fan card to the RFID reader and the member ID will be read out. According to the member ID the physical access control system checks the following information:

- Does the person has a valid ticket?
- If yes, are they at the right gate for the designated sector?

If the answer for both questions is yes, the BioSec system receives the member ID and the person puts its hand onto the BioSec terminal (at the gate) to read out its biometric ID. If there is a matching with the previous record, access to the stadium is granted.

Products and services

- Fujitsu PalmSecure

Using BioSec LifePass for secondary identification it is easy to ensure that the real owner of the card is standing at the turnstile and nobody can misuse any personal identity or card.

The BioSec LifePass system has been calibrated to handle 80,000 people (160,000 biometric templates!).

The benefit

With the BioSec system a cost effective solution was installed, which ensures 100% certainty that only those visitors can enter the stadium, who are allowed to. The BioSec system supports the goal of Ferencváros Soccer Club to create a peaceful and family friendly temple of sport. Since BioSec LifePass is a middleware solution it was easy to integrate into the ticketing and RFID access control system.

Unlike other biometric technologies (e.g. face recognition), there is no possibility of tricking the palm vein scanning based BioSec system as the person is scanned individually and there is no chance to change or hide the hand in order to avoid identification. The palm vein based biometric ID doesn't change statistically from the age of 14 during our whole life, therefore it is enough to register into a system once in a lifetime. In the case of theft of biometric data, it cannot be used, since every fake or stolen biometric template hash code will be recognized immediately, due to the two level BioSec mini hash security system.

How palm vein detection works

Palm vein recognition is based on the absorption of infrared rays, i.e. heat rays, which encounter venous blood in the palm veins, i.e. blood that is flowing back to the heart. The sensor in the entrance terminal sends near infrared light to the palm. The oxygen-reduced blood in the veins absorbs the infrared light.

Palm vein recognition with PalmSecure is practically resistant to environmental influences and is due to its touch-free nature a very hygienic procedure. It only works with living tissue and in view of the present state of technology is free from manipulation. PalmSecure also provides significantly higher precision and security than the biometric recognition of a finger print or an iris. As the use of PalmSecure at Ferencváros Soccer Club shows, it is easy, quick and convenient for the user to handle.

Biometric palm vein sensor technology is also increasingly proving itself in everyday life. The advantages of this technology are:

- Age-independent, individual vein structure
- A secure and manipulation-free biometrical feature under the human skin is scanned
- Impervious to dirt, moisture and superficial injuries of the hand
- High degree of precision and protection against forgery, CC-certified (Common Criteria)
- Ergonomic, simple handling
- Error rate in practice of 0.00008% as regards an unauthorized person falsely gaining access or 0.01% for an authorized person being incorrectly denied access.

In collaboration with

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