

Multi-biometric Case Study



Spanish Airports Install Multi-biometric Security Systems

*Based on VeriFinger, VeriLook and MegaMatcher Technology
Systems are Implemented by Indra*

Spain has installed multi-biometric electronic access kiosks in two of its largest airports. The technology provides a highly efficient and secure way to speed-up the passport control process for European citizens.

The newly installed systems facilitate the rapid entry into national territory, and therefore the Schengen common European area, to travelers who own a Spanish electronic ID card or a European Community electronic passport. All citizens of the European Union countries, the European Economic Area and Switzerland are eligible to use this system.

The two largest airports in Spain are also two of the largest in Europe. Barajas Airport in Madrid and the Barcelona Airport (El Prat) are consistently listed in the top ten of Europe's busiest airports by passenger volume. The high volume of airport traffic combined with a need for the efficient and accurate identification of passengers as a part of border control security led to the exploration of multi-biometric verification at electronic access points.

Indra, the Spanish information technology company, was awarded the implementation by Spain's Ministry of the Interior. Indra selected VeriFinger, VeriLook and MegaMatcher from Neurotechnology to be the multi-biometric engines for the airport access-control kiosks. Beginning with initial installations in May 2010, the main goal of benchmarking the multi-biometric-based system is to assess the best configuration that will finally be implemented in all international Spanish airports.

Background

- ◆ **The customer:** The Spanish Ministry of Interior. The Kingdom of Spain, a nation of 46 million people, has a number of large and busy airports, two of the major ones being Madrid's Barajas and the Barcelona Airport (commonly called El Prat Airport). These two airports had a combined 75 million international and domestic passengers in 2009.
- ◆ **The need:** High volume airport traffic coupled with border security concerns required a reliable and efficient means of verifying and processing identification documents.
- ◆ **The integrator:** Indra is one of the premier Information Technology companies in Spain and is a leading IT multinational in Europe and Latin America.
- ◆ **The solution:** VeriFinger, VeriLook and MegaMatcher provide the multi-biometric recognition technology in the kiosk style access and control points.

Simple and Secure Procedure

The solution developed by Indra allows citizens, after being identified in a kiosk, to perform a quick and simple procedure that includes the automatic reading of the electronic document and validation of its authenticity. The passenger is at the same time identified and matched to their document through biometric recognition and verification. Upon completion of this process the traveler is issued an entry permit. Each individual process is supervised by officials of the National Police.

While similar systems have been established in other countries using a single biometric feature, such as the iris, fingerprint or face to verify the passenger identity, the Spanish system performs a more secure dual-biometric test using facial and fingerprint recognition. It is for this multi-biometric verification that Indra has chosen the Neurotechnology product line.

No prior passenger registration is required to use this system, the biometric information present in the document is sufficient. This is the only automated system in Europe that enables the use of the national electronic ID card to enter the Schengen area.



Two Technologies in Place

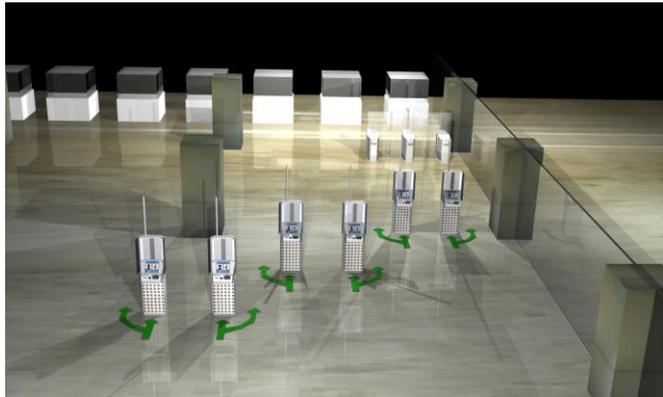
Indra has developed two different systems and has each installed at both Barajas and El Prat airports. Each system at both airports utilizes face and fingerprint biometric engines from Neurotechnology as key components of the identification process.

The first system consists of a set of double-door lock gates, with identification kiosks inside. In this setup travelers access the lock gate through the first door, proceed with the identification inside and access the airport terminal through the second door that opens automatically after positive verification of the citizen's identity. The VeriLook facial recognition engine is used for face matching, as all passports include an individual's facial image. VeriFinger is used for fingerprint matching with all 2nd generation European



passports, which include a fingerprint biometric (1st generation passports lack the fingerprint biometric).

In the second system the kiosks are separate from the access gates. The passenger identification takes place in any available kiosk. VeriLook is used for face matching and VeriFinger is used for the 2nd generation passports. Fingerprints are enrolled for all forms of documentation. Upon completion of the processing the traveler moves on to the gates, gaining access to the airport terminal by using a fingerprint reader that employs MegaMatcher to match all kiosk-identified and enrolled individuals. The validation process takes place using the powerful 1-to-many (1:N) multi-biometric matching engine in MegaMatcher.



In both gate configurations officials of the National Police monitor the process and resolve any issues that arise.

Any European citizen with an electronic passport, or a Spanish citizen with an electronic ID card, will be able to avoid entry queues at passport checkpoints. The solution also alleviates some of the National Police workload by reducing the number of passengers who require a manual control check.



About Neurotechnology Multi-biometrics

MegaMatcher SDK is designed for the development of large-scale automated fingerprint identification systems (AFIS) and multi-biometric face-fingerprint identification systems. MegaMatcher includes both fingerprint and face identification engines with a fusion algorithm that allows the two technologies to work together to provide very fast 1:N (1 to many) matching with even higher reliability than AFIS or facial recognition alone. Iris and palmprint add-ons are also available.

MegaMatcher's fingerprint matching algorithm can produce up to 160,000 matches per second on a single processor. With MegaMatcher's fault-tolerant, scalable cluster software, this number can be multiplied across multiple PCs. For very large applications MegaMatcher Accelerator or

an Accelerators cluster can be used. Each MegaMatcher Accelerator enables the system to match 40 million fingerprints per second. MegaMatcher's latent fingerprint template editing capabilities also allow it to be used in forensic AFIS applications.

The MegaMatcher fingerprint engine has received full NIST MINEX compliance for use in U.S. government applications.

VeriFinger SDK is a software development kit that allows development of PC- and Web-based solutions on Microsoft Windows, Linux and Mac OS X platforms. The fingerprint identification technology in VeriFinger is based on the NIST MINEX-compliant MegaMatcher fingerprint identification engine. VeriFinger assures system performance with fast, reliable rolled and flat fingerprint matching that is tolerant to fingerprint translation, rotation and deformation in 1-to-1 and 1-to-many modes. Used in more than 1000 end-user products, VeriFinger's compact fingerprint template can be used with databases of almost unlimited size.

VeriLook facial identification technology, available as a software development kit for development of PC- and Web-based solutions on Microsoft Windows, Linux and Mac OS X platforms, provides system performance and reliability with simultaneous multiple face recognition and fast face matching in 1-to-1 and 1-to-many modes. VeriLook works with webcams and other low cost cameras. VeriLook Surveillance SDK is available for integrating face identification into surveillance systems.

About the Integrator

Indra is a global company of technology, innovation, and talent. A leader in high value-added solutions and services for Security, Transport, Energy, Telecom, as well as many other sectors, Indra operates in over 100 countries and has 29,000 employees worldwide. Indra has the highest investment in R&D and is the second largest in market capitalization within its sector of European companies.

By combining electronics, communications and IT, Indra's solutions add intelligence to many different infrastructures in order to respond to a client's challenges and issues and improve their economic, social and environmental performance, thus assisting in their long-term sustainability.

For more information:

Indra

For more information about Indra and the services they provide go to:
<http://www.indracompany.com/en/>

Neurotechnology

For more information about MegaMatcher pricing, product capabilities and specifications as well as other products from Neurotechnology, go to: <http://www.neurotechnology.com>

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