# MegaMatcher Accelerator Case Study

**NEUROtechnology**

## Mexico Tax Agency Uses Multi-Biometric Enrollment System
*MegaMatcher Accelerator Provides Rapid Identification and Ensures Database Accuracy Using Iris, Face and Fingerprint Biometrics*

**A new Multi-Biometric Enrollment System (MBES®) developed for the Mexican tax collection agency by Vangent Mexico and Biometria Aplicada uses MegaMatcher multi-biometric iris, face and fingerprint technology to enroll taxpayers and ensure there are no duplicates in the national database. The MBES solution, which runs on six MegaMatcher Accelerator servers, has enrolled more than 3.5 million taxpayers with a projected 5 million to be enrolled by the end of 2014.**

Mexico's tax collection agency is charged with administering the collection of all corporate and individual taxes for Mexico's treasury agency. In order to more efficiently manage the enrollment of taxpayers across the country and eliminate the potential for fraud and tax evasion, the agency created a new program for digital identification and certification called the Servicio de Acreditacion de Identidad Enrolamiento (SAIE).

Vangent Mexico was hired to implement and manage SAIE and to incorporate a multi-biometric identification and database de-duplication system. Vangent jointly developed the MBES solution with Biometria Aplicada using the multi-biometric iris, face and fingerprint technologies in MegaMatcher Accelerator to provide the high level of accuracy and speed required for this ongoing, national-scale program.

More than 3.5 million taxpayers have been enrolled in the system with a goal of 5 million to be enrolled by 2014. Each new taxpayer enrolled must be matched against the national database to ensure there are no duplicate registrations. Currently the MBES runs on six MegaMatcher Accelerator servers that run 24 hours a day, five days a week, processing an average of up to 4,000 requests per day and up to 1000 requests per hour at peak times.

### Background

◈ **The customer:** Mexico's tax collection agency is tasked with administering the nation's collection of corporate and individual taxes.

◈ **The issue:** The agency required a fast and highly accurate biometric identification system for their Servicio de Acreditacion de Identidad Enrolamiento (SAIE) program to obtain accurate identification of all corporate and individual taxpayers and ensure that there are no duplicates in the national taxpayer database.

◈ **The Integrator:** Vangent's Mexico business unit won a contract with the tax agency to implement and manage the new SAIE program to enroll all corporate and individual taxpayers nationwide. Vangent worked jointly with biometric systems experts Biometria Aplicada on the development of the solution.

◈ **The solution:** The Multi-Biometric Enrollment System (MBES®) provides the high-volume, multi-biometric iris, face and fingerprint identification required for the administration of the taxpayer enrollment and database de-duplication elements of the SAIE program. MBES is based on MegaMatcher multi-biometric technology from Neurotechnology and runs on six MegaMatcher Accelerator servers.

## The MBES Solution

The MBES solution developed by Vangent and Biometria Aplicada is designed for ease-of-use and alignment to national and international standards, including ISO, ANSI_NIST-ITL, MINEX, FBI, ICAO and RENAPO.

The solution includes the following modules:
- Demographic Data Capture (Enrollment key, name, address, etc.)
- Biometric Data Capture (1-10 fingerprints, iris, face)
- Digital Signature (Tax-payer signature captured using a signature pad)
- Document Scanning (Documentation to verify tax-payer identity is scanned. e.g. birth certificate, identity document, address proof, etc.)
- Transaction receipt printing
- Biometric validation according to international standards (NFIQ, ICAO, ANSI/INCITS, ISO/IEC)
- Enrolled information management (Append, update, delete)
- Robust and scalable backend enrollment framework
- Interoperability (NIST XML, Web Services)
- Enhanced security (Biometric access control, encrypted data, encrypted communications, expiration policies)
- Enrollment and process control information reporting

Demographic data is captured at 100 enrollment stations using industry-standard biometric scanners for fingerprint and iris capture and digital cameras for facial photography. The MegaMatcher client is installed in each of the enrollment stations and is used to process and validate the following biometric data:

- **Fingerprint:** Up to 10 fingerprints are captured using a fingerprint scanner and processed with the fingerprint recognition algorithm in MegaMatcher.

- **Iris:** For each person two iris images are captured, one for each eye, using an iris scanner and they are processed with the iris recognition algorithm in MegaMatcher

- **Face:** One still photograph image is captured for each person for facial recognition biometrics and each image is processed with the facial recognition algorithm in MegaMatcher.

All biometric matching and database de-duplication are done on the server side using fingerprints only and are completed on the six MegaMatcher Accelerators used in the MBES system.

## Other System Highlights:

Supported scanners and hardware requirements in the system include: Identix TP-4100, ARH AFS-510, CrossMatch Guardian and Suprema RealScan-10.

Supported 32-bit operating systems include: Windows XP, Windows Vista and Windows 7.

## About Neurotechnology Biometric Technologies

**MegaMatcher SDK** is designed for the development of large-scale automated fingerprint identification systems (AFIS) and multi-biometric identification systems using any combination of fingerprint, facial, iris or palmprint biometrics. The identification algorithms in MegaMatcher were designed from the ground up to work alone or in combination to provide very fast 1:N (1 to many) matching with even higher reliability than AFIS or any other single biometric.

**MegaMatcher Accelerator** is a solution for fast template matching on the server-side of a large-scale AFIS or multi-biometric system using any combination of fingerprint, iris or face modalities. Each single MegaMatcher Accelerator Extended system can store 40 million fingerprints or 50 million irises and matches 100 million fingerprints or 200 million irises per second. MegaMatcher Accelerator includes scalable cluster architecture and multiple Accelerators can be used for extremely high-volume, high-speed applications. MegaMatcher's latent fingerprint template editing capabilities also allow it to be used in forensic AFIS applications.

MegaMatcher supports most biometric industry standards. The iris engine in MegaMatcher is NIST IREX-proven, and because the MegaMatcher fingerprint recognition algorithm is NIST MINEX-compliant, it is suitable for use in US Government Personal Identity Verification program fingerprint recognition applications.

## For More Information:

### Vangent

For more information about Vangent Mexico's MBES project (in Spanish), go to: www.mainbit.com.mx/lNegocio.html

### Biometria Aplicada

For more information about Biometria Aplicada, go to: www.biometriaaplicada.com

### Neurotechnology

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

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