MegaMatcher Accelerator Case Study

Somaliland National ID Project
Sahal Tech Solutions implemented Somaliland's successful multi-biometric National ID project based on MegaMatcher Accelerator.

The president of Somaliland launched an ambitious project: to register all Somaliland citizens within a six-month period for the creation of a biometric National Identity Card system. Working with Sahal Tech Solutions, a well-established local IT consultancy, Somaliland selected MegaMatcher Accelerator to provide the high level of security, accuracy and speed required for biometric registration and identification using fingerprint, face and iris biometrics.

Working in conjunction with the Ministry of Interior, the president of Somaliland appointed a steering committee and technical task force (SCATFO) to oversee the registration of all Somaliland citizens age 15 and older for the creation of a biometric national citizen database and issuance of citizen ID cards. They wanted a biometric registration solution that would allow the use of multiple different biometric modalities – fingerprint, iris and face – and provide fast, secure and highly reliable identification.

Hargeisa-based Sahal Tech Solutions was contracted to provide the civil registration hardware, software and technical services for the implementation of an Automated Fingerprint Identification System/ Automated Biometric Identification System (AFIS/ABIS). Sahal Tech evaluated a number of different biometric vendors and selected MegaMatcher Accelerator from Neurotechnology to be the core multi-biometric system for Somaliland's AFIS/ABIS solution.

Somaliland has been taking steps toward becoming a unique, multiparty democracy since it declared itself an independent state in 1991. Accurate citizen identification and the establishment of a national civil registry are an essential part of this process, as they aid the government in providing and managing social services and other government programs for the citizenry.

Background

◆ **The customer:** Somaliland, an autonomous region in northwestern Somalia.

◆ **The need:** Somaliland wanted to have an accurate, biometric registration of all citizens for use in the issuance of national ID cards and other future civil registry activities such as passport issuance.

◆ **The integrator:** Sahal Tech Solutions is a well-established IT consultancy based in Hargeisa, Somaliland.

◆ **The solution:** Neurotechnology's MegaMatcher Accelerator national-scale AFIS/ABIS technology was chosen as the core enrollment and identification engine for Somaliland's national ID system. Each citizen is registered with a facial image, two iris images and 10 fingerprints.

The new Somaliland National ID system uses a highly sophisticated combination of fingerprint, face and iris biometrics based on MegaMatcher's multi-biometric identification algorithms. Biometric registration centers have been set up in every city and village in the country and the program is on track to complete 700,000 registrations by the end of the six-month period.

> *"The government has placed a high priority on ensuring that the civil registry provides reliable, up-to-date information. Using MegaMatcher technology from Neurotechnology enables us to ensure our government clients that their system will work quickly and accurately for today's national ID process and future civil registration activities."*
>
> – Abdirashid Mohammed, Managing Director, Sahal Tech

MegaMatcher Provides High Speed and Accuracy Required for National ID Projects

The Somaliland National ID project required a solution that could provide high speed biometric identification using fingerprint, face and iris images with the ability to perform a database search on one million person records in less than three seconds. Sahal Tech evaluated technologies and components from several different biometric vendors and ultimately selected Neurotechnology's products because the development tools in MegaMatcher Extended SDK and the fast matching and de-duplication capabilities of Megamatcher Accelerator provided a complete solution with hardware and software that was robust enough to satisfy all of Somaliland's requirements.

How the System Works

All citizens of Somaliland who are age 15 or older are required to register in the national ID database. Each registered citizen receives an ID card, at no charge, that can be used to access social services and other government programs.
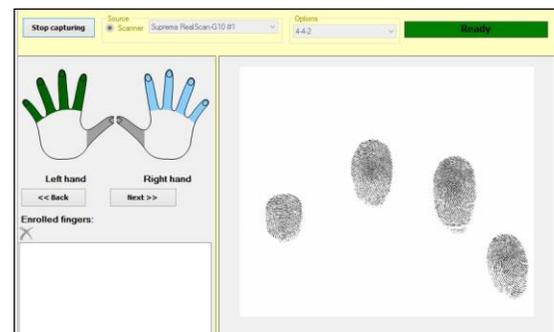
To register, each citizen goes to his or her nearest registration center where computers are running the MegaMatcher client software. A digital photo is taken for face biometrics and iris scans are taken of each eye. Eight fingerprints and two thumbprints are scanned using either single-finger or slap scanners that record finger and thumb prints in a 4-4-2 mode.

The registration is completed online and all the data is enrolled and saved in a central location. The main servers are hosted at the Ministry of Interior and include two application servers, two database servers and two MegaMatcher Accelerator matching servers.

In order to minimize duplication in enrollments, the matching server verifies the biometric information that is collected in the field and searches the database for duplicates in real time.
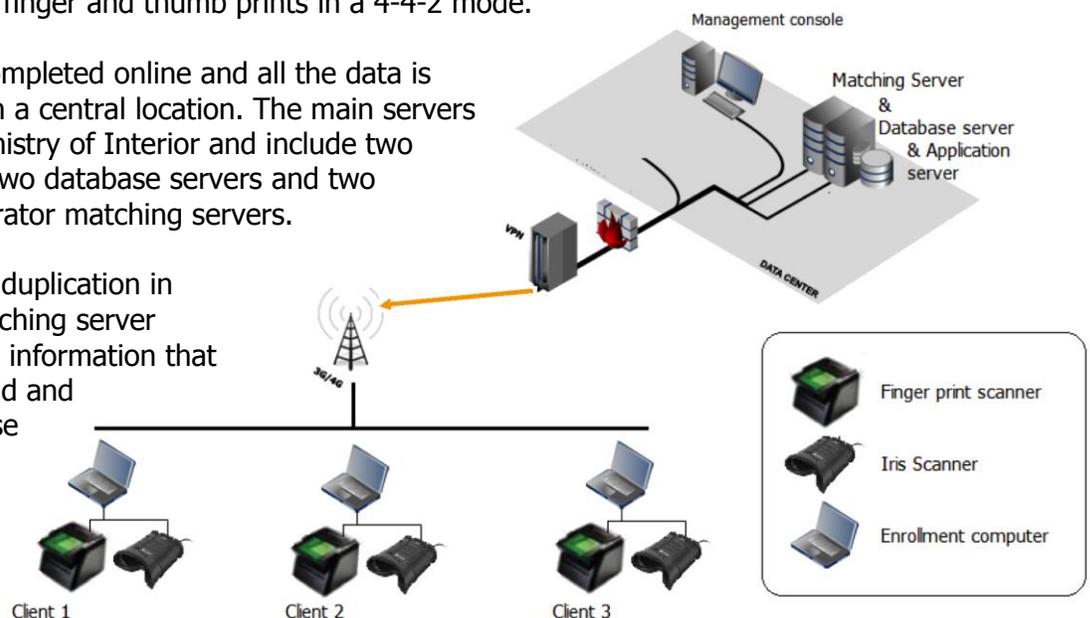
> *"The fact that Neurotechnology's biometric technologies have been used in large-scale biometric registration projects involving millions of persons – including Bangladesh, Indonesia and Mexico – gave us the confidence that the MegaMatcher-based solution would work well for Somaliland."*
>
> – Abdirashid Mohammed, Managing Director, Sahal Tech

Using the developer toolset in MegaMatcher Extended SDK, Sahal Tech created a client side application for data capture, fingerprint extraction, fingerprint sequencing and local matching. MegaMatcher Extended SDK was also used to create functions in a web-service that receives the fingerprint data and sends it to two MegaMatcher Accelerator units for fingerprint matching and de-duplication before saving the new enrollments to the database.

Once the citizen has been enrolled, a national ID card is issued. Each card includes a small onboard memory chip that saves a subset of the person's information, including certain personal details and the minutia of the two thumbprints. In order to keep costs down, it was decided the cards would not contain any match-on-card or other embedded biometrics.

The creation of a new civil registry is a significant undertaking and represents a major milestone in Somaliland's history. Because no reliable identity system was in place previously, the establishment of a biometric civil registry now enables a number of efficiencies in Somaliland's governance. The current system is used only for biometric citizen registration and issuance of national ID cards, however the second phase of the program will include documenting birth records and linking each citizen to his or her family members. The government is also currently considering extending the citizen registry to include issuance of passports, where the new system would speed the process of issuing passports and avoid duplicate registrations.

In the first half of this year, the Somaliland stakeholders have opted for the dual track approach with the Ministry of Interior implementing the civil registration and the national electoral commission conducting the voter registration.

(Note: The voter registration process in Somaliland is based entirely on iris biometrics and is currently separate from the citizen ID registration, as the Somaliland government opted for a dual track approach with the Ministry of Interior implementing the civil registration and the national electoral commission conducting the voter registration.)

The new MegaMatcher-based Somaliland National ID solution has performed very well, consistently catching and eliminating duplicate registrations and operating with the high speed and accuracy required to complete the project under tight deadline.

Key MegaMatcher Benefits:

◈ MegaMatcher Accelerator accurately and rapidly enrolls applicants and identifies duplicate fingerprint, face and iris records in Somaliland's large database.

◈ The real-time database de-duplication from MegaMatcher Accelerator enables an extremely rapid multi-biometric enrollment process, helping to keep Somaliland's speedy timeline for citizen registrations on track.

◈ Fully automatic, the robust and fault tolerant software efficiently manages the large workload required for a national-scale ID program.

◈ The MegaMatcher SDK offers a very high speed along with the interoperability and flexibility that enable the system to easily work with a variety of other software and hardware.

◈ Low cost-per-unit and low hardware system requirements make MegaMatcher Accelerator an effective matching server solution.

◈ Free, unlimited technical support by phone or email for MegaMatcher SDK and MegaMatcher Accelerator software.

◈ Technology provider with 25 years of experience in the field of biometrics and high number of integrations world-wide.

About MegaMatcher

MegaMatcher technology is designed for large-scale AFIS and multi-biometric systems developers. The technology ensures high reliability and speed of biometric identification even when using large databases.

MegaMatcher is available as a software development kit that allows development of large-scale single- or multi-biometric fingerprint, iris, face, voice or palm print identification products for Microsoft Windows, Linux, Mac OS X and Android platforms.The MegaMatcher biometric engine is able to match up to 200,000 fingerprints per second, 200,000 faces per second or 200,000 irises per second on a single PC; several PCs can be connected together to form a cluster for higher performance. MegaMatcher's latent fingerprint template editing capabilities also allow it to be used in forensic AFIS applications.

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, 10 million faces or

50 million irises and matches 100 million fingerprints, 100 million faces 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.

The iris engine in MegaMatcher is NIST-IREX-proven and the MegaMatcher fingerprint engine has received full NIST MINEX Certification for use in U.S. government applications.

About Sahal Tech Solutions

Sahal Tech Solutions is a well-established and growth-oriented high-end IT consultant and software development company based in Hargeisa, Somaliland. Sahal Tech provides expert consulting and uses the latest generation software technologies. Sahal Tech has developed reliable biometric enrollment solutions and data collection kits based on proven and reliable technology.

For more information about Sahal Tech Solutions, go to: www.sahaltech.com

Neurotechnology

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

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