The background and the challenge

On Sunday, October 30, 2011, Colombia held regional elections for local public posts such as governors, department assemblies, mayors, city councils, and local administrative boards.

Colombia is divided into 32 administrative departments (which are grouped by cities) led by governors. At the same time, these departments have departmental assemblies and each city or municipality (the name depends on the number of residents) has a mayor, a group of council members that basically oversee the city hall, and a number of local administrative boards that represent different neighborhoods. Due to the importance of these posts, these elections are tracked in the same manner as the presidential elections.

According to the legislation of the Republic of Colombia, before any type of elections it’s obligatory to perform a specialized inscription of the citizens who are authorized to vote. Due to this demand, the responsible electoral organization called RNEC (Registraduría Nacional del Estado Civil – National Registry of Civil Status) faced a task to process information about 4.000.000 new voters, capturing not only the inputted data from the registration forms of the citizens (name, identification number, type of identification, date of birth, date of issue of identity, address, telephone number), but the fingerprints as well.

The solution & the project

RNEC was looking for the most convenient solution for this complicated process and finally found the most suitable solution with the help of MTI (Manejo Técnico de Información S.A.) - one of ABBYY resellers in Colombia, who offered to use ABBYY FlexiCapture in this project. This data capture solution was recommended due to its possibility to work with data capture, OMR (optical mark recognition) and processing of fingerprints. Process in general can be divided into 2 separate parts:

1. Process of Extraction of Fingerprint Images from Citizens’ Forms

The forms containing images of fingerprints were scanned at 600 DPI, and the software that has done the entire scanning job was the scanning station of ABBYY FlexiCapture. This software ensured the recognition of different barcodes in the forms, and a secure transfer of images to the storage server.

Previously, the template forms were developed with ABBYY. These templates were responsible for performing OMR recognition of the areas in the form, where fingerprints were recorded. To provide recognition of the fields or areas in the form, the system automatically performed in parallel cutting of these fingerprint images, and then export to the previously defined folder. Besides, another stage was used – the stage of verification station – another station of ABBYY FlexiCapture. The verification station was used to check the reports of the system. These reports appeared when the system couldn’t recognize the information in the forms.

About RNEC

National Registry of Civil Status is the official voting organization of the Republic of Colombia, which is responsible for the development and approval of the policy of Civil Registration in Colombia and attends everything connected with the approval, realization and control of the proper plans and programs of the civil registration. Besides, the organization is in charge of the implementation of the National Census and all necessary preparations to the different types of elections.

To learn more, please, visit the website:
http://www.registraduria.gov.co
2. Process of Data Capture from Citizens' Forms

Firstly, the form templates were developed with ABBYY. These templates had implemented the technologies of ICR (intelligent character recognition) & BCR (barcode recognition). The ICR module is dedicated to recognition of hand printed text, meanwhile the BCR module – to recognition of barcodes. These technologies helped to reduce significantly the time of data capture process, because the percent of recognized information from the forms was high. After capturing the information, it was exported and stored in RNEC database.

The Results

The diagram below shows the behavior and increase of production of fingerprint images extraction with ABBYY. During the first three months of operation there were 5 cooperators that revised the daily reports. The amount of these reports was equal to approximately 9% of diary production, which means that if this process was carried out manually, it would be necessary to plant around 55 persons and the development of software would be much longer.