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# Mexican States Auto Registration Solution

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## CASE STUDY

### Industry:

- Mexican State and Federal Governments

### IT Requirements:

- Tamperproof 3rd License Plate with Pelta 2D barcodes
- City Zone Sticker with Pelta 2D barcode and Serialized Holography
- Web Updates to State Motor Vehicle Databases
- Custom Mobile Application for iOS and Android MOS

### Business Impact:

- Increased tax revenue from import tax and annual vehicle registration payable and processed real-time
- Program is self-funding, providing a fast return on investment and incremental state tax revenue
- Lower traffic and air pollution in major cities in Mexico
- Control measure on automobile theft
- Higher satisfaction level of state residents

## Pagemark Technology Helps the Mexico State Motor Vehicles Departments Re-capture Millions of Lost Registration Pesos with New Solution

### THE CHALLENGE:

Mexico is a diverse country with a growing population of over 100M people, with over 10M located in the proximity of Mexico City the capital alone. With 31 distinct states plus the Federal District, the states have a diverse range of cultures, ideologies and industries they support locally. One common theme throughout the country has is economic and population growth, which has a direct relationship on capital goods consumption, especially their increased per capita of automobiles.

The auto industry projects Mexico to be the highest country in No. America with over 5% CAGR increase thru 2018. Many automobile manufacturers including Nissan, Audi, Mazda, and Honda have announced plans to build manufacturing plants there from 2012 – 2015 to meet high domestic demand, beneficial labor and supportive export laws. Additionally, many automakers believe Mexico to be the natural gateway to both North and South American.

State governments retain a high amount of autonomy from the Mexican Federal government and are left to manage their own affairs similar as in the US; the States issue and control the Driver's Licenses, vehicle registration programs, state and local highways. As such, to get countrywide consensus on adopting new standards related to automobiles requires a high amount of coordination primarily at the state level.

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## STATE BUSINESS IMPACT:

States estimated that over 25% of the vehicles out of the estimated 20-25M automobiles on the road in Mexico in 2012 were either not properly registered and or their owners were delinquent on their payments related to vehicle registration. Based on these figures and auto registration fees ranging from $40- $50 USD, the loss to the states would be $200-250M USD annually.

Adding to the issue was the increased number of auto thefts in the country; reported to be almost 100k vehicles in 2012 by Mexican insurance companies. Not included in that number were autos stolen but unreported, which puts the number far higher according to the US DEA office. They claim the auto theft industry was a $22B industry in Mexico in 2012. This puts the number of automobiles at roughly 1.4M cars at $15k USD each.

Meanwhile, traffic on the city highways and roads was increasingly congested year over year, with inadequate state funds to keep the roads safe and update the highway system. Additionally, with all the autos on the road, air pollution was increasing proportionally, with the larger cities like Mexico City getting worldwide negative press on their air pollution situation.

Chiapas was one of the first to be approached after the Federal District of Mexico City with a holistic solution for addressing these issues.

## PROBLEM STATEMENT:

The Mexican State governments had a problem with automobile owners not paying their motor vehicle fees. This issue was augmented by an increase of both illegally imported (unofficial numbers were at 500k autos in 2009) and stolen automobiles being moved across both country and state lines irrespective of local law enforcement and border controls. The major repercussions of this issue were:

1. Nationwide, roughly $3B Pesos of lost revenue in the form of vehicle import tax and motor vehicle tax revenue which would normally be used toward highway programs.

2. Vehicles causing increased traffic in the major Mexico cities, burdening an already congested traffic situation especially during morning and afternoon commuting hours.

3. Increased automobile exhaust levels resulting in air pollution becoming a major health concern in and around the larger cities. Mexico City was especially hard hit due to the city being located in a valley.

4. Increased automobile theft, and lacking a solution to help stem the growth year over year.

## SOLUTION OVERVIEW:

Pagemark Technology working with our Mexican Business Partner proposed a solution based on a detailed investigation of the problem with the state motor vehicle departments in a number of Mexican states came up with a holistic solution to help address the issues utilizing a creative solution including the newest available technology interweaving new security printing, smart phones, and leveraging the existing state vehicle and driver database.

## IT SERVICES:

1. New 3rd License plate with Pelta code for authentication

2. Augmentation to the State Databases to make the data available real-time via web services to the smart phones on the Mexican national cellular system.

3. New mobile application for field personnel and Police Officers.

4. State Registration payment system was made available on-line accessed by the same mobile application.

5. Remote secure login for State Officers and other field personnel using smart phones.

6. New window sticker with a Pelta code and demetallized film for vehicle tracking and pollution control.

## BUSINESS IMPACT:

1. Officers can scan the 3rd license plate on the vehicles at any time and validate if the automobile was both legally in the state and validate if the automobile owner has paid their annual motor vehicle fees.

2. Drivers of the vehicles could be validated for outstanding warrants or tickets with payments due.

3. If any payment were due, they could do a real time credit card transaction via a card swipe reader on smart phone thus providing both a customer service (no lines or postage hassles) and real-time payment into the system.

4. States could start to benefit from the new infrastructure immediately after implementing.

5. The system provides an extra obstacle against car theft, thus providing a benefit to both car owners and insurance companies.

6. The vehicle tracking/parking sticker allowed an inexpensive and easy to implement solution using Pelta QR codes to control access to the inner cities and lower traffic congestion and pollution.

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# DETAILS OF THE SOLUTION:

**Part I – Security Printing**

**3rd License Plate** – is placed inside the car in the back left behind the driver. It features Pagemark Technology Pelta™ 2D barcode on a tamper-proof sticker. All stickers were variably printed with and utilizing Pelta's 2nd covert layer to hold authentication information. Officers could make sure the data in the hidden layer matched the auto description, VIN and registered owner's driver license.

**Parking and Zone Control Sticker** – The Pagemark Pelta QR code provided serialization and authentication while a demetallized film (not shown) was incorporated to provide extra anti-copy protection. The Pelta code covert layer held information tying the automobile to the sticker, so they could not be fraudulently replicated. City officials could scan the code to validate the automobile and driver had access for parking or driving into the inner city zones. This ultimately provided an affordable and easy to implement means to control city traffic and zone parking.

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**Part II – Mobile Application**

The key to the solution was to provide real-time access to Motor Vehicle data. To meet those requirements, a custom mobile application was developed for the field officers in the Mexican states which have the following functionality:

1. Smart phone support on iOS and Android platforms for extra flexibility and cost control (in most cases the more inexpensive phone smart phone on the market can be utilized.)

2. Reading of the Pelta QR code on the 3rd license plate

3. Reports can be generated on screen to display payment history of the vehicle and validate the registered owners.

   a. The vehicle and the license plate match (based on VIN number from dB) for theft verification

   b. Check for outstanding tickets for the registered driver of the automobile

   c. Validate the driver of the vehicle match the license plate

4. Payments for infractions, out of date motor vehicles registration fees, and other can be taken real-time by the officer via a credit card swipe option on the smart phone. In this manner no cash is handled by the officers and the transaction is processed immediately.
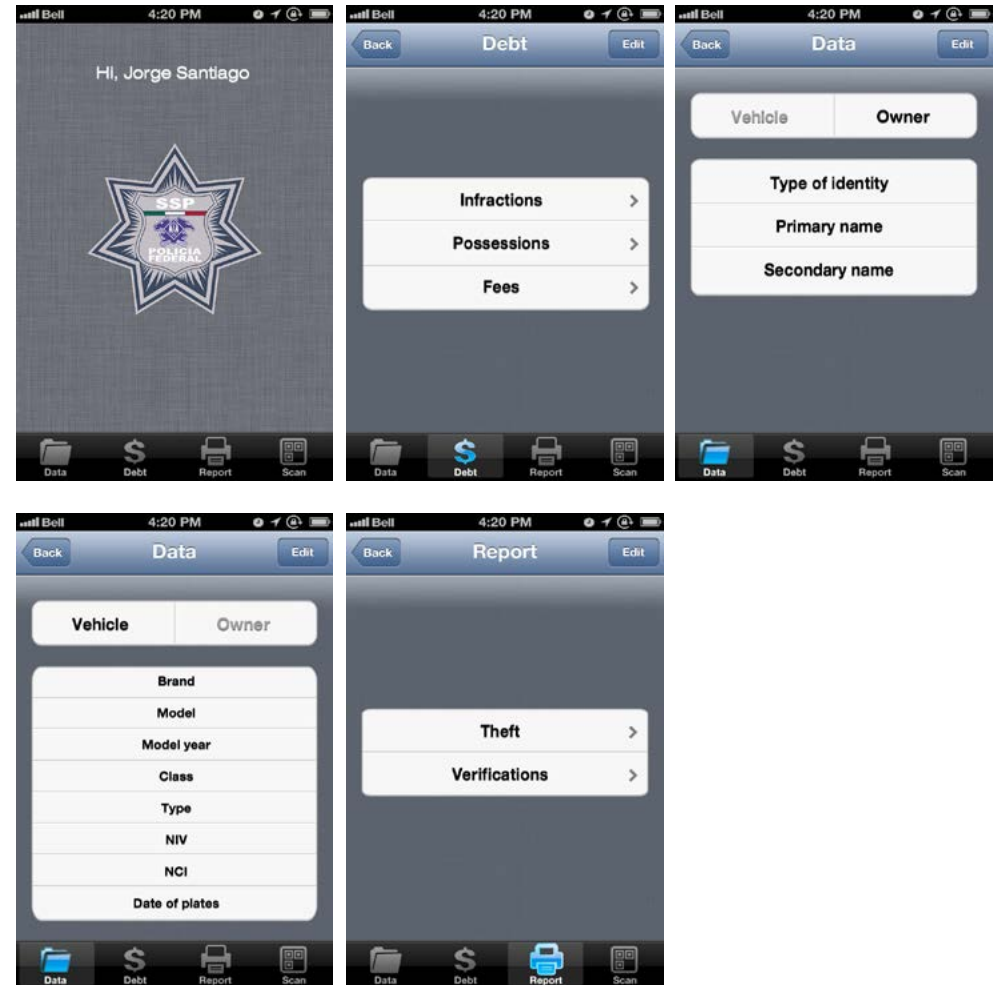
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### Part III – DB Access Real-Time in the Field

Robust data access was also required and remote field and police officials needed immediate access to the motor vehicles database. Before this could be implemented, the database needed the following updates:

- Migration to a more scalable server infrastructure to provide fast real-time access and immediate bandwidth for the thousands of field representatives employed in the state,

- Augmented by adding web services so mobile devices could get to the fast access to the data,

- Provided increased data security including SSL and new validation methods for field officers.

The whole system was first piloted and then rolled out districts-by-district over a period of 1-year. The Pagemark Partner contracted the integration and data services to a 3rd party for their extra IT expertize to maintain a 99.98% uptime required for this critical application.

### THE BENEFITS:

#### Reproducible Results

Since first implementing with the State of Chiapas and Mexico City, the solution scope has expanded to all 31 states in Mexico and has been introduced to many of the other countries/states throughout the world. With little risk, most states can be up and running within 3 months. The formula for implementation has been very reproducible with over 35 successful installations to-date.

The state's requirements to-date all had a common goal of mobile access and payment on-line which assists with the fast return on investment of the solution.

#### Fast Return on Investment

With the solution featuring immediate payment of Motor Vehicles registration fees and outstanding citations, the solution starts to pay for itself from day one. On the average, a driver pulled over generates over $40 USD in outstanding registration fees and fines. As such, positive return on investment can be achieved as little as 3-4 months, dependent on the general population, the number of automobiles per capita, and the percentage of outstanding registration creditors in the state. For example in the state of Puebla, there were nearly 300k unregistered automobiles, which generated over $12M USD in revenue. Their number of un-registered automobiles went down to nearly zero since implementing the solution.

#### Traffic and Pollution Control

In Mexico City, which has an extended population of over 10M people and highest number of automobiles per capita, the secondary window sticker has been used to limit access to the inner city zones based on the color and the numbers read from the QR code. This allows the city control over the number of autos allowed in the city zones on any given days. At the time of investigating this case study, tagged automobiles were allowed inner city access every other day. This system has increased the use of public transportation, increased car-pooling, and dramatically cut down the traffic gridlock and pollution in Mexico City.