



**PAGEMARK**  
TECHNOLOGY

## **Tax Stamp Solution**

August 2013

CASE STUDY

**Industry:**

- Federal Government

**IT Requirements:**

- Tamperproof Tax Stamp with Pelta 2D barcodes
- Customize existing relational database for track and trace capability
- Custom Mobile Application for iOS and Android MOS

**Business Impact:**

- Increased tax revenue from cigarette and cigar import tax
- Reduced the level of counterfeiting, black marketing and gray marketing of tobacco products
- Improved system to control the import of products into the country
- Immediately self-funding, providing a fast return on investment

## Pagemark Technology Helps Generate over \$200M in Tax Revenue from Tobacco Sales

### THE CHALLENGE:

Today's black market in tobacco is a thriving business. It involves criminal gangs producing counterfeit cigarettes, fraudulent divergence of tobacco products, and large-scale tax evasion that governments cannot afford in these challenging economic times.

The losses in unpaid tobacco taxes on the 657B cigarettes/ year are estimated to be up to US\$40 billion worldwide in 2010. That is roughly equivalent in size to the world's third largest multinational tobacco company by volume.

Market data on the tobacco industry:

- 657B cigarettes per year are illegally distributed
- Up to 12% of global tobacco sales are estimated to be illegal
- Nearly 40% of the Malaysian tobacco is illegal cigarettes (Goldman Sachs, Global Tobacco Report, 2009)
- 5M people per year die related to tobacco use
- 80% of the smokers live in emerging countries
- Underage users are a prime target for Illegal tobacco products



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A few of the principal drivers of the increased level of tobacco related fraud are:

- Substantial increases in excise tax
- Weak border controls
- Lax international sanctions
- in-effective packaging regulations
- Cigarettes provide high profit margins,
- Easy to illegally transport due to small size and weight relative
- Low barriers to entry for production perspective

Per the Canadian Tobacco Control Research Initiative in 2009, there are four components that make up a comprehensive anti-illicit trade strategy:

- Use of tax stamps with serialization,
- Track and trace solution,
- Supply chain licensing.
- And aggressive enforcement.

This case study discusses the first two components: tax stamps utilizing Pelta™ 2D Barcodes and Pagemark Track and Trace software. Details into the use of supply chain licensing and federal enforcement policy are outside the scope of this study.

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## COUNTRY'S BUSINESS IMPACT:

The Federal government estimated that over 25% of the cigarettes sold in the country have not paid duty or excise taxes. The 25% was estimated to be the combined total of counterfeiting, diversion, and black market activities of tobacco products. Based on this figure, the tax revenue lost was assessed to be between \$300-450M USD annually.

Counterfeiters could easily create look-alike stamps such that even officials had a hard time discerning genuine from counterfeit.

Most black marketers did not even worry about the use of tax stamps for the majority of product they sold. The black market was bringing in product by the boatload (or truck load) as border control not able to contain the illegal flow of cigarettes into the country. It was estimated that in 2012, black marketing surpassed counterfeiting to be over 17% of the total fraudulent volume.

Meanwhile, the illicit use of cigarettes by the underage group was growing annually, despite attempts by the government to curb access by instigating higher penalties and mandatory jail-time for resellers. Black market distribution policing was not high in priority and with limited field resources, the officials concentrated efforts on more violent crimes and border control.

Public health officials were increasingly worried about the longer term health problems cigarette smoking would do toward their public health system if the smoking problem was left unchecked.

## PROBLEM STATEMENT:

The Federal governments had a growing problem with millions of units of tobacco products being black marketed and increasing concerns related to the creation of counterfeited stamps and cigarettes. The end result was millions of dollars of lost revenue from unpaid duty and excise taxes which would normally be used toward medical programs. The Fed's estimated that a minimum of \$300M USD / year of revenue due to the federal government was lost.

The country had been utilizing an antiquated method of creating tax stamps that had many issues besides just production. Serialization or track and trace was not in use, thus the supply chain has little to no visibility as to where the problems lie. The major issues with the current stamps and tax stamp system were:

- Special pigmented inks and stamps design were easily counterfeited
- Adhesives were not permanent
- Stamp materials were easily sourced
- Production stamps were not 100% securely controlled
- Lacked serialization support
- Lacked an authenticate system
- Track and trace system was non-existent

Other issues to be addressed with a system were:

- Setup and on-going costs
- Scalability
- Ease of maintenance

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## SOLUTION OVERVIEW:

Pagemark Technology working with our Intl. Business Partner proposed a solution to the federal government based on leveraging the newest technology available while taking into consideration the cost constraints related to the millions of units of cigarettes to be tracked.

As cost was a major concern, the Pagemark Pelta 2D barcode system was proposed, which provided an authentication method and worked with the government system for creating serialized stamps. The government had an existing server and data base provider which they planned to continue to utilize for track and trace purposes. They also utilized the Pagemark iVerifyIT™ mobile software for government officials to authenticate stamps in the field.

### IT Services:

1. Create and print new tax stamps with serialized Pelta™ codes for authentication.
2. Included the use of water resistant label materials with security printing.
3. Augmentation to the Federal databases to track all tax stamps from initial shipment to tobacco distribution locations.
4. New version of iVerifyIT™ for field personnel and Police Officers.

## BUSINESS IMPACT:

1. Federal Officers can scan the Pelta code and validate if it genuine and if the excise tax has been paid and prosecute individuals as required.
2. Pelta codes cannot be created without the software key thus immediately impacting anti-counterfeiting.
3. Upon instigation of the new program, immediately cash was generated from the excise tax on new stamps.
4. The new system was up and operational within 6 months of closing the business agreements. All codes are tracked via the expanded database functionality.
5. Monthly reporting system was implemented as officials could track the stamps and any abnormalities such as possible diversion or other possible fraud.
6. Projected tax revenue can be planned for based on the inventory in the system at any given time.
7. The Federal Government put out a new mandate for increased penalties and federal prison for anyone found transporting

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## DETAILS OF THE SOLUTION:

### Part I - Security Printing

**New Tax Stamp** – is placed on all individual cigarette boxes, cartons and cases. The stamps have permanent adhesive and are tamper proof. A new ink formulation was used with a moiré pattern and QR code. The serial number was also printed on the stamp. The QR code covert layer was used to authenticate the serial number. There were 4 categories of stamps:

- Extra Premium
- Premium
- Regular
- Low

Where the excise tax was varied based on the cost of the cigarette. The stamps were closed controlled and shipments were closely monitored to the tobacco manufacturers.



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## Part 2 – Mobile Application

Easy to use mobile application for field personnel to authenticate and track the tax stamps. Provided updates to the database for all scanned tax stamps. Based on the core iVerifyIT™ application. 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.)

8. Reading of the Pelta QR code on the tax stamp – indication if valid or not
9. Reports can be generated on screen to display stamped product history



## Part III – DB Access Real-Time in the Field

Another cost saving for the system was the extended use of an existing dB within the federal system. The system was housed off-site via a service provider aka cloud/server company. As such, new contracts or hardware did not need to be completed and the system had all the modern conveniences provided such as auto-redundancy, fault tolerance, multiple instances, etc. as expected from a cloud provider.

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

- Augmented by adding web services so mobile devices could get to the fast access to the data
- Provide increased data transport security including SSL
- New authentication/ validation methods for field officers.

The whole system was first piloted with one manufacturer and then rolled out to all over following months. The Pagemark Partner contracted the integration services provider to a 3rd party for their extra IT development expertise.

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## THE BENEFITS

### **Fast implementation**

The government expectation was 6 months for implementation and all development was completed within 4, leaving over 2 months for User Acceptance Testing (UAT), stress testing and training. The core Pagemark software for the tax stamp solution was used with some minor modifications to support the new stamp printing system and mobile software iVerifyIT updates. Most all work was done in parallel. The database work was the critical path and took almost 4 months for completion. Using the Pagemark Track and Trace system would have been faster, but the government wanted to leverage their existing database.

### **Easy maintenance**

The core on-going work was mostly concentrated on the sale of new stamps, validating alerts, and running reports for management on the database which took roughly 80 hours per month. Some small amount of maintenance was required around the inventory and the security system surrounding the stamps. (The downside of printing each stamp type in 200k+ batches.) This was not optimal from a security perspective, but due to the inventory and equipment setup times, it was decided to print the stamps in batches vs. on demand.

### **Fast Return on Investment**

As the program was expected to be self-funding with the exception of a startup budget for initial software development and stamp production, the expectation was to reach a positive cash flow in less than 6 months, the goal was exceeded in less than 4 and would have been sooner, expect for delays in the banking side. It should be noted that the financial setup should be initiated as soon as the program starts to shorten delays. The expected annual revenue is projected to be >30% higher than the former program.