ENHANCING PUBLIC AND PRIVATE SECTOR DELIVERY THROUGH RWANDAN NATIONAL SMART CARD INITIATIVE.
Sashi Kumar Sivam
Senior Consultant
MSC Technology Centre, Cyberjaya, Malaysia
sashi@msctc.com.my
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Abstract
This study is based on the ongoing Rwandan National Smart Card Initiative. Drawing parallelism from The Malaysian Smart Card Initiative and similar Global Smart Card Initiatives, the study intends to evaluate the role of smart card technology in enhancing public and private sector delivery. Based on review, the enhancement in public and private sector delivery could potentially be the key to the increment of National productivity and competitiveness. Strategically, the elevation of National productivity and competitiveness has been a strong catalyst for economic development and similarly poverty reduction. In view of the above, the low level of productivity and competitiveness are among the factors contributing to the high poverty rate in the low income level nations. Therefore, the study intends to provide a comprehensive overview on common global best practices and methodologies which has led to the enhancement of public and private sector delivery. Strategically, it also evaluates potential economy gains arising from the enhancement of public and private sector delivery. Based on review and analysis, the study provides strategic recommendation and global best practices that could be adopted during the Rwandan National Smart Card program.
INTRODUCTION
Following the success of the National ID program, The Rwandan Government is optimistic in launching the second stage of The National ID and Smart Card program. The second stage is expected to commence as early as August 2008 and will involve the introduction of 500,000 smart cards to prospective Rwandan citizens.
A unique feature of the second stage will be the incorporation of a 64 Kb smart chip. Unlike the 2D barcode that has limited data retention capacity and processing capability, the 64 Kb smart chips is designed to incorporate vast amount of data and applications. Initial review suggests that among the application that promises to be incorporated in the National ID and Smart Card scheme are National Registry Information, Driver’s License, Immigration and Passport Information, Health Information, Social Security Information, Banking and ATM pin codes and Rwanda Revenue Authority Information.
Based on review, the stakeholders are optimistic with the potential success of this initiative. Many stakeholders believe that the Rwandan Smart Card initiative would enhance their quality of service delivery while reducing the lengthy turnaround time. Ultimately it could be a catalyst to revolutionize The Rwandan public and private service delivery. In the near future, the entire Rwandan citizen might be carrying a smart card in their pockets or in their wallets.

Overview on Smart Card
Smart Card is a plastic card that contains an embedded integrated circuit, which can process data. This implies that it can receive input which is processed - by way of the ICC applications - and delivered as an output. Historically it is recorded as a French invention and was first introduced to the European
consumers in 1982 in the form of serial memory phone cards. The first commercial manufacturing of smart card dates back to 1977, when 3 commercial manufacturers, Bull CP8, SGS Thomson, and Schlumberger get together to develop an IC based smartcard. The first commercial success of smart card indicates to Motorola with the success of the first secure single chip microcontroller for use in French Banks in 1979. The First large-scale smart card application implementation was in the United States in 1987 with the U.S. Department of Agriculture’s Nationwide introducing Peanut Marketing Card. Ever since then, The National Smart Card initiative involving smart cards gained much popularity throughout the world. In 1994, Germany launched the largest Smart Card initiative with the issuance of 80 million serial memory chip cards in the form of National Health Cards. Currently, there are more than 60 Nations reverting to some form of National Smart Card initiative and the number is expected to grow with time.

Overview of Malaysian Government Multipurpose Card - MyKad
Due to cost and complexity factor, all smart cards initiatives have been for a single purpose but all that changed in 1997, when The Malaysian Government introduced the very first Multipurpose Smart Card. The notion of the Malaysian Government is best described by the former Malaysian Prime Minister, Tun Dr. Mahathir Mohammed. In his own words the former premier indicated that “The Malaysian Government is proud to lead the new wave of technology application for a better tomorrow. The transformation of public service and Government machinery is the ultimate achievement for the nation, which is pro-investment and growth-driven. The engine of growth can be propelled further with the world’s first Multi-Application Smart Card as we travel into the cyberspace where a growing segment of the economic pie is taking place.”

In a nutshell, The Malaysian Government Multipurpose Smart Card or better known as GMPC MyKad is an integration of 9 core public and private service applications under a single technology platform. Among the applications incorporated in the GMPC scheme are identity card, passport information, basic medical data, frequent traveler card, public key infrastructure, ATM application, electronic cash and transit or travel card. Among its primary objectives are to improve The Malaysian public service delivery with the use of technology vis-a-vis to create a pleasant experience for citizen while interacting with Government service providers. To date some 20 Million GMPC cards have been distributed to potential citizens.

The large scale roll out operation was segmented into three distinct phases:

- Phase 1 (1997-2000) – National Population Registration System
- Phase 2 (2000-2002) – Pilot Roll out of 2 Million Cards to Klang Valley and MSC Area.
- Phase 3 (2003-2007) – National Roll out of 18 Million Cards covering all states

Phase I primarily involves the conversion of the National Registry Database to the new GMPC format. A significant amount of digitization and automation exercises was carried out during the first Phase. Among them includes the introduction of the new Automated Finger Identification System (AFIS) and automation of 183 National Registration Department (NRD) branches.

During Phase II, some 2 Million Smart Cards were rolled out to eligible Malaysian citizens in the Klang Valley and Multimedia Super Corridor (MSC) Area. Phase II also witnessed the development of core GMPC Mykad applications. The pilot enabled the Malaysian Government to evaluate and understand the impact and benefit of multipurpose smart card before embarking on the more ambitious Nationwide National Roll Out.

Phase III, some 18 Million cards were rolled out to eligible Malaysian citizens throughout
West and East Malaysia. The seven years roll out period not only elevated the service level delivery among public and private sectors but also created the platform for the emergence of Smart card industry in Malaysia. To date, Malaysian Smart Card companies has a global foothold in Card production (Iris), Chip Manufactures (My-MS), Smart Card Application Development (Iris, Heitech). Smart Card Device Manufactures (Tricubes).

**Impact and Benefit of The Malaysian Mykad Scheme.**

In reference to the following illustration, The Malaysian Mykad Initiative underwent an extensive integration exercise by incorporating nine (9) applications under a single smart card platform.

Figure 1a: Integration Model of Malaysian Mykad Initiative.

In doing so, The Malaysian Government advertently integrated the following public and private entities:

- Twelve (12) Malaysian Banks and One (1) Micro – electronic payment systems (financial gateway) provider - MEPS
- Two (2) Digital Certificate providers – MSCTrustgate, DigiCert
- One (1) Transit application provider – Touch’n Go

These technology centered integrations elevated the Malaysian public service delivery into a new spectrum. The followings section will briefly explain some of the key Business Process Improvements introduced throughout the implementation of Malaysian Mykad scheme:

**Adoption of New Database Format:** The new database format brought a new level of sophistication where it now allows the branches to retrieve more comprehensive informations within a shorter time frame. As a result of this, the yield and the productivity of the branches improved and more business transactions are processed in a day.

**Digital Thumbprint:** The biometric minutiae stored on the cards is an excellent mean of citizen authentication Digital matching of the thumbprints are less prone to errors compared to ink based thumbprints. Due to its nature, it suggests to be a popular adoption in the financial world where it allows faster turnaround time on common financial transactions e.g. opening on account, money transfer, mortgage and loan processing while providing the required security and reliability.

The integration coupled with the above mentioned business process improvement revolutionized both the service offering and delivery of public and private sectors. Although there were no empirical evidences indicating the success the Malaysian GMPC initiative but through a series of observations it becomes clear that the initiative has resulted in the following benefits:

- The production and delivery of National IDs to citizens have significantly reduced from a few months to a single day.
- Capturing and retrieval of National Registration data could be carried out from any remote and mobile locations thus allowing citizens greater mobility and flexibility.
- Issuance and renewal of driving license have significantly reduced from three days to less than an hour. Similarly, the operation can be carried out throughout nationwide National Registration Departments (NRDs)
- Drivers information together with his/her traffic offences could be verified immediately by traffic police from any remote location through GSM network
- Electronic issuance of traffic summons and payment collection through e-portals,
provided the citizens greater flexibility and wider customer interaction points (touch-points).

- The introduction of Auto gate by Malaysian Immigration at the nation’s entry and exit succeeded in eliminating the long queue at these points and subsequently reducing the wait time to an approximate three minutes.
- Patient Registration at selected hospitals is carried out by reading the information stored in Mykad thus significantly reducing the amount of time required for manual entry.
- Opening of accounts and customer verification are carried out by reading the information and biometric minutiae thus significantly reducing the time required for data entry and customer verification.
- Automated Fare collection through the Touch’n go application stored in Mykad has significantly reduced traffic queues at toll booths.
- Automated Fare collection through the Touch’n go application stored in Mykad has streamlined passenger movement at both light rail transit (LRT) and public buses.
- Incorporation of Public Key Infrastructure (PKIs) on Mykad has provided the necessary security needed for electronic filling of income taxes. The PKI together with electronic filling resulted in greater flexibility on tax filing for Inland Revenue Authority’s (IRA) customers.

In a nutshell, the Malaysian GMPC- Mykad not only revolutionized the Malaysian public service delivery but it also provided the necessary cataclysm to enhance the productivity and competitiveness of Malaysian public sectors. Malaysia is not the only example where the Government has enhanced the public and private sector delivery through National ID and Smart Card Initiative. Similar achievements could be also credited to the Hong Kong Government Initiative on “Octopus Smart Card” and Finland on “Fin-ID” initiative.

Parallelism between Malaysian MyKad Initiative with Rwandan National ID and Smart Card Program

Therefore and by virtue of parallelism to other global initiatives, one should expect that an efficient implementation of Rwandan National ID and Smart Scheme would harvest similar impact and benefits.

Review suggests that the Rwandan Smart card Scheme is already progressing through similar tracks. Among the first agencies to be integrated are the Police Departments which are to be integrated with financial institutions and the National Registry. The following illustration depicts the proposed integration model.

Figure 2a: Suggested Integration of Rwandan National Smart Card Scheme

Subsequently the scheme intends to integrate the National Health Services, Financial Institutions, Social Security, Medical Insurance and Immigration Services. The immediate benefits expected for the implementation of the Rwandan National Smart Card program are:

- Establishment of a Central National Registry; which will act as an official reference point thus reducing the amount of time and processes required to authenticate and verify citizen related information.
- Retention of data on digital media e.g. on Smart Chip and database would eliminate the need of paper records thus reducing the cost involved in generating and maintaining paper records.
- Retrieval of stored user data from Smart Card will minimize the need to capture them
through human data entry. Potentially, it could reduce the time required for data capture and minimize the errors resulting from human data entry.

- The ability to rewrite or update digital records on smart chip could potentially reduce the need to reproduce new ID cards whenever a change on user record occurs
- The ability to store multiple applications and data in a single smart card reduces the need for users to carry multiple cards.
- The biometric minutiae stored on the card are an excellent mean of customer authentication. Enabling, the banks and micro financiers a reliable means to authenticate and verify potential customers.
- Integration of Government agencies and financial institutions is among the key requirements of this phase. Based on review, integration could potentially enhance information flow and automate the common business processes and workflows. Therefore, reducing the time required to process common business transactions.

In view of the above Rwandan National ID and Smart Card initiative is poised to revolutionize both public and private service delivery and similarly to catalyze Rwanda’s National productivity and competitiveness.

Conclusion

A comprehensive overview of The Malaysian and other Global National Smart Card initiative does indeed suggest that the project has a potential to enhance public and private service delivery. By drawing parallelism, to the Malaysian GMPC – MyKad initiative it becomes evident that the Rwandan National ID and Smart Card Initiative could indeed be an efficient vehicle to revolutionize both the public and private service delivery. In view of the above, the Rwandan National ID and Smart Card Scheme are in the right path to evaluate the Government entities and components to be integrated. The Malaysian and Global best experience, case studies and best practices are indeed valuable tools to under see the success of this initiative. Modernization of Government through the use of technology could ultimately result in the enhancement of Rwanda’s National productivity and competitiveness.

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