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## **A Brief Study of Smart Card Based Electronic Passport, Resident Identity Card and Driving License Projects in India**

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### **Abstract**

*Today smart cards are increasingly being used in e-governance projects as an identification and service delivery tool because of its inherent security, portability and easy integration with biometrics. The present study explores some of the smart card based e-governance projects that has been implemented in India like the electronic passport project, resident identity card project and driving license and vehicle registration certificate project. The Indian electronic passports are based on SCOSTA-CL (Smart Card Operating System for Transport Application - Contactless) which is compliant to International Civil Aviation Organization (ICAO) standards. The performance of Indian e-passport is in some cases better than that of other developed countries. The Ministry of transport in close collaboration with National Informatics Centre (NIC) has launched and expanded the smart card based driving License and vehicle registration system. The biometric enabled system is being linked with Aadhaar database which has been able to mitigate the issue of fake driving license and vehicle registration documents. The migration of these projects from a paper based one to a smart cards based platform augmented with biometric has tremendously helped the immigration, home and transport department of India in creating an ecosystem which is transparent, reliable, scalable and pilfer proof.*

### **Introduction**

Today smart cards are extensively being used in e-governance projects as an identification and service delivery tool because of its inherent security, portability and easy integration with biometrics. The smart card enabled e-governance projects undertaken by the state or central government and its related departments and organisations are the major vehicles of growth for smart cards in India.

According to planning commission (2007) "the Government of India administers a number of subsidy/welfare programmes targeting the vulnerable sections of society. The degree of success in implementing these programmes is dependent on the level of efficiency of the delivery process. Adopting appropriate tools to achieve this objective should become part of the programme implementation strategy. Multi-Application Smart Cards (MASCs) is one of the technological breakthroughs of recent times. MASCs facilitate simplification of procedures and enhancing the efficiency in administering various schemes".

The present study explores some of the smart card based biometric augmented e-governance project namely electronic passport, resident identity card and driving license and vehicle registration in India.

### **Research Methodology**

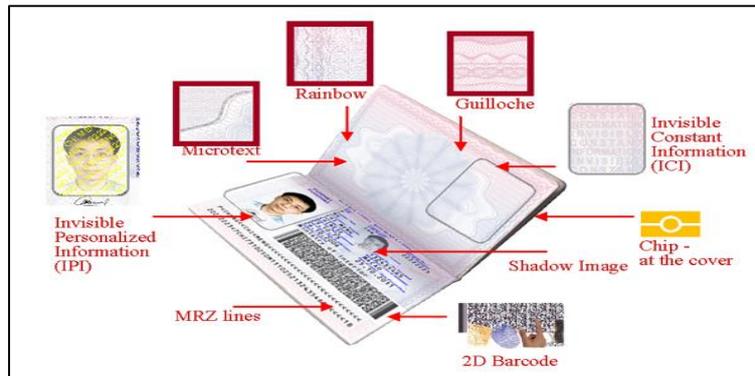
The study is exploratory in nature based on secondary data available from various research materials, journal articles and white papers published in the related subject.

### **Biometric Electronic Passports Project**

Government of India (GOI) introduced the first pilot of smart card based electronic passports (e-passports), also known as biometric passports in the year of 2008. Wherein around 300 diplomatic and official electronic passports were issued by the Ministry of External Affairs (MEA) under the pilot project. The Indian electronic passport is equipped with a microprocessor chip and an embedded antenna to communicate with a passport

reader. Electronic passports contain a contactless Radio Frequency (RF)based integrated circuit embedded in the cover that contains vital information about the passport holder like name, gender, date of birth and photograph. It also holds biometric information of physical attributes such as fingerprints, iris and facial patterns. The Indian electronic passports are based on SCOSTA-CL. The SCOSTA-CL standard is compliant to ICAO specified standard for reading passports across the world. India is today among the 53 countries that have an e-passport system.

**Figure 1: Security Features of Electronics Passport.**

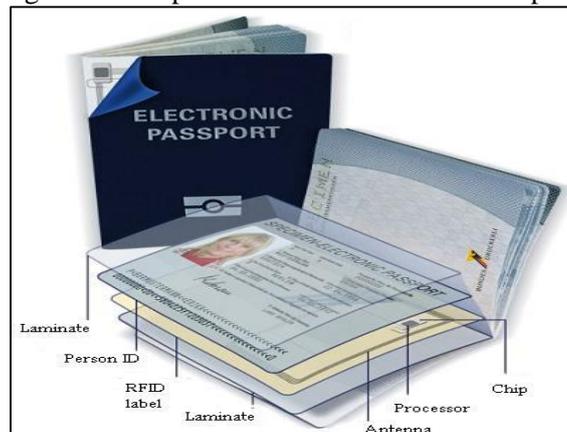


Source: Fadhilah, 2012

The Indian Electronic Passport OS Standard was established by IIT Kanpur in collaboration with NIC and members of the Smart Card Forum of India (SCAFI). The India Security Press (ISP) Nasik was entrusted with the manufacturing of the blank electronic passports with electronic chip inlays. The Indian electronic passports have been tested for inter-operability and performs better than comparable biometric passports in use in other countries across the world (Moona, 2009).

Indian e-passports contain an embedded 64KB microprocessor which contains the photograph and biometric details of the passport holder. The Indian e-passport has a unique security feature wherein the data in the passport cannot be read unless there is a code handshaking with the reader. When it comes into contact with a reader a code is generated for handshaking, only after the successful handshaking with the reader the e-passport allows for exchange of information with the reader, this negates the chances of a sniffing attack. The average read time of Indian e-passport is around 4 seconds whereas the comparable biometric passport of United States takes around 10 seconds to read.

**Figure 2: Components of an Electronics Passport.**



Source: Fadhilah, 2012

### Status of the Project

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The first pilot for e-passport was initiated in 2008. Gemalto was chosen to provide its “Sealys eTravel” solution to India Security Press for the pilot. The Sealys eTravel solution includes contact-less RFID based integrated circuit embedded with secure operating system which archives and protects the holder’s digital identifiers.

The MEA floated a global tender for supplying the integrated circuit to be used in the e-passports in 2013(Abraham, 2013). But the project hit a roadblock as the vendor was under investigation for providing a similar solution rollout in Pakistan which posed as a potential national security risk(Bhaumik, 2012).

Efforts are underway to link the AADHAAR to the passport issuing process. This will streamline and simplify the data collection process during the issuance of passport. Biometric information is already captured for the unique ID cards. It means people who use their UID card for KYC (Know Your Customer) can skip the queue for biometrics at the passport centre, The AADHAAR is already valid address and identity proof for passports(TNN, 2013).

As part of National e-Governance Plan the Ministry of External Affairs (MEA), has entrusted Tata Consultancy Services (TCS) for the Passport Seva Project (PSP), the largest mission-critical e-governance project valued at overRs1,000 crore under Public Private Partnership(PPP) model. The entire passport distribution and delivery system was reengineered under the guidance of National Institute for Smart Government (NISG) who was entrusted by MEA to study and make the recommendations for the process re-engineering. Under the scheme initially 77 model Passport Seva Kendras (PSKs) were established across the country, creating a centralized IT backbone linking all PSKs, regional passport offices also Police and Postal Department.

At present the PSKs on an average are processing a million passport applications a month and to improve the reach the ministry is mobilising the post offices as PSKs. There are close to 800 head post offices across India out of which 236 post offices have been identified as the first leg of PSK implementation. The goal is to have at least one PSK within a 50 Kilometres radius (Majumdar, 2017).

The biometric enabled e-passport for the general population was slated to be launched in 2017 and the ministry of external affairs have already provided approval for procurement of electronic contactless inlays for manufacturing of e-passports to India Security Press (ISP) Nasik. The deployment of the same is in the process of commencement (Ministry of External Affairs, 2017).

### **Resident Identity Card Project**

In 1986, the first pilot project for resident identity card was implemented for issuing of identity cards to residents in selected border areas of Rajasthan. After the Kargil war a Group of Ministers (GoM) was constituted by the Government of India (GOI)with a view to overhaul the national security system. The GoM recommended compulsory registration of citizens and noncitizens living in India, which in turn will facilitate the creation of a national citizens’ register. The GoM also recommended that all citizens should be given a Multipurpose National Identity Card (MNIC) and non-citizens should be issued identity cards of a different colour and design. The recommendation of the GoM was accepted by central government in 2001. The Multipurpose National Identity Card (MNIC) project was the first initiative under taken by the Government of India in establishment of a smart card based national identity scheme, managing citizens’ identity and facilitating e-governance(NIELIT, 2011).

In May 2007, Government of India launched MNIC pilot project, with the aim of strengthening of the national security while facilitating efficiency in e-governance. The MNIC project pilot was initiated to distribute two million smart cards to Indian residents in 13 districts spread across 12 states. The system gathered personal data of Indian citizens—including gender, age, marital status, permanent address, etc. The identity card being given to each individual citizen was a 16KB SCOSTA compliant smart card. The project employed asymmetric key cryptography and symmetric key cryptography in the smart card as a security measure against the risk of tempering and cloning. NIC was instrumental in developing the processes for database management and smart card technology.

The MNIC project was lying in hibernation since the pilot study. Government issued a notification approving the setting up of a Unique Identification Authority of India (UIDAI)<sup>1</sup> under the umbrella of the Planning Commission. The MNIC project is now integrated with the UIDAI project which was rechristened as AADHAAR in the year 2010. The aim UIDAI was to issue a Unique Identification Number (UID) to the residents of India (Das, Maitra, & Bagchi, 2011).

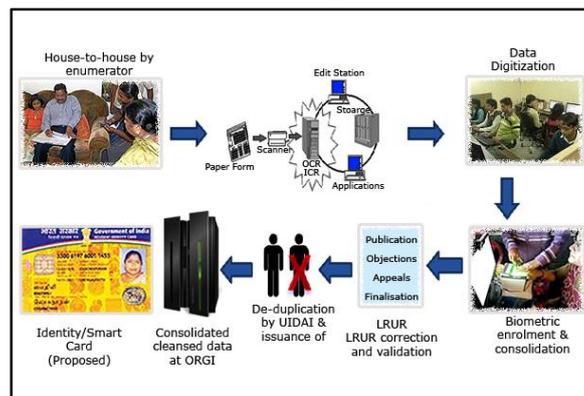
GOI has approved the proposal for introducing the National Identification Authority of India Bill, 2010 in Parliament. To constitute a statutory authority to be called the National Identification Authority of India and lay down the powers and functions of the authority including the framework for issuing UID numbers and related matters (Das, Maitra, & Bagchi, 2011).

The Union Cabinet on the 19<sup>th</sup> of March 2010 approved the creation of National Population Register (NPR). The project spanned to cover an estimated population of 1.2 billion with a projected total cost outlay of Rs3539.24 crores(Press Information Bureau, 2010).

The NPR is a Register for the residents of India. It is being prepared at the local (Village/sub-Town), sub-District, District, State and National level under provisions of the Citizenship Act 1955 and the Citizenship (Registration of citizens and issue of national identity cards) Rules, 2003. It is mandatory for every resident of India to register in the NPR. The objective of the NPR is to create a comprehensive identity database of every usual resident in the country(Census Commissioner, 2013). The Government has approved Rs6649.05 crore for creation of NPR in the entire country.

The Expenditure Finance Committee has recommended the smart card based Resident Identity Cards for all the residents of India. The union cabinet considered the proposal on the 31<sup>st</sup> of January 2013 and subsequently constituted a Group of Ministers (GoM) constituted to examine all aspects of the scheme and to resolve differences. The GoM was headed by the then defence minister (Express News Service, 2013).

Figure 3 :Resident Identity Card Process Flow



Source: Census Commissioner, 2013

The RICcard also carries the bearer's AADHAAR number. As per the inputs of the Technical Committee RIC cards to be used by various departments and ministries for providing various services. The Resident Identity Card is based on a 64 KB capacity smart card. The demographic and a few biometric attributes of the resident are embedded in the chip. The embedded data will facilitate off-line authentication of resident at remote locations where internet connectivity is not available. This will help in plugging leakages in the service delivery of other social inclusion projects managed by the GOI(Census Commissioner, 2013).

1 Unique Identification Authority of India website <http://uidai.gov.in/>

## Status of the Project

Under national population register, resident identity cards are issued across 3331 coastal villages in 13 maritime states and union territories of India with a view to strengthen coastal security. The estimated cost for the outlay was Rs 216.31 crores. The Government, subsequently, in June 2011, approved the scheme of creation of NPR in the entire country at an estimated cost of Rs 6649.05 crores.

As per the ministry of home affairs till mid of August, 2013 more than 64 lakh RICs in the coastal areas have been personalised and dispatched. The state wise breakup is as follows:

**Table 1: Total RIC Distribution till August 2013**

Name of States/ UTs	Number of RICs personalized and dispatched
Tamil Nadu	5,95,868
Puducherry	49,098
Maharashtra	3,54,619
Karnataka	3,99,744
Gujarat	7,80,871
Goa	84,894
Daman & Diu	67,522
Andhra Pradesh	5,63,103
Orissa	4,96,265
Andaman & Nicobar Islands	1,67,386
West Bengal	8,96,988
Kerala	19,45,400
Lakshwadweep	39,781
<b>Total RICs Personalised and Dispatched</b>	<b>64,41,539</b>

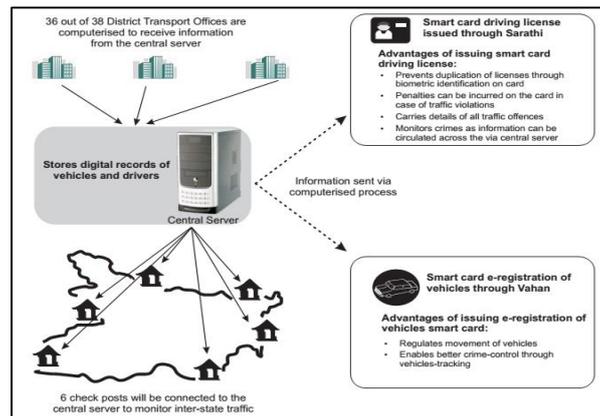
## Smart Card Based Driving License and Registration Certificate

Smart card-based Driving Licenses (DL) was first initiated in the state of Gujarat in the year of 1998. Subsequently in January 2002, the state government of Madhya Pradesh formally launched the project for issuing smart card based Driving Licenses, along with Vehicle Registration Cards (RCs).

The ministry of road transport in 2010 has issued guidelines for the introduction of smart card based driving licenses and registration certificate across all states of India (MRTTH, 2010). The smart card based DL and RC contains an embedded chip that stores the cardholder's fingerprint, digital signature and personal information in case of DL and scanned documents of the registration file for RC, in optical memory with WORM (Write Once Read Many) capability of the smart card. The smart card used in DL and RC is hard-masked SCOSTA compliant 64 KB microprocessor based contact type card.

The entire IT backbone of the project is being provided by the NIC. In fact SCOSTA was conceptualised and developed for the transport application, largely to address the interoperability in the nationwide implementation of smart card based driving licenses and registration certificates. Subsequently SCOSTA is being used in other segments and today it has become the de facto standard for smart card based project deployment in India.

Figure 4: A Typical State Level Vahan Sarathi Eco-System



Source: OneWorld, 2010

### Status of the Project

Before the large scale computerisation the major problems that plagued the Regional Transport Offices (RTO) was issue of fake DL and RC. Previously under the paper based system it was easy for a user to have multiple DL registered under fake addresses and names. Often stolen vehicles were sold to unsuspecting buyers on forged RC documents which were mostly paper documents. It was extremely difficult for the RTOs to check the duplicate and fake cards. With the introduction of biometric enabled smart card driving license and registration certificate across the various RTOs in India it became near impossible to duplicate and fake smart card based driving licenses and registration certificate.

The ministry of road transport and highways has launched an ambitious national database for the safe upkeep of both driving License and vehicle registration details. The register is operational at both national and state level. The data of registration of vehicles and driving license holders across the RTOs will be available online on one integrated national platform (Press Information Bureau, 2013).

Presently the detection of fake driving Licenses and tracking stolen vehicles has become very convenient. It was observed in the past wherein commercial driving license holder used to have multiple DL across states, so when they were caught for any serious offence they will simply switch to the license illegally procured from some other states. With the creation of national register the violators will no longer be able to have multiple licenses as the same will be checked with the existing biometric profiles in the national register including biometrics. The information captured at the regional level (RTO level) will cascade to state consolidation registry. This will act as a repository at the state level providing information to key stakeholder like the police, transport departments, other Government to citizen (G2C) services etc. The state register data will cascade to the national register which ensures transparency and de-duplication of records. The national level data will also be shared with the key stakeholders like interstate check post, department of road transport, RTO, police department etc. (Dash, 2010). Under the national register scheme two portals Vahan and Sarthi were launched to provide IT based solutions for Vehicle Registration and Licensing. Vahan portal was introduced to automate vehicle registration and related processes. Whereas, Sarthi deals with issuance of driving license and related processes. The two portals Vahan and Sarthi ensure availability of all the driving license and vehicle registration certificate holders' data in one integrated national platform.

The central government is in the process of introducing an amended Motor Vehicles Act wherein the databases of driving License and vehicle registration will be linked with the Aadhaar database. This will enable the government in tracking and dealing with cases of traffic rule and other related violations and help mitigate the menace of fake licenses and vehicle registration across the various states of India (PTI, 2018).

The smart card based DL and RC is a boom to both the document holder and the law enforcement officials. Gradually most of the state RTO's gradually will integrate all the documents like Insurance details, pollution road challan and fines into the smart card. Thus the end user will no longer require to carry multiple

documents. The police department can check the smart card of the vehicle and the driver in real time by connecting with the national database and ascertain if any violation or deviations are reported against(Harsimran Singh, 2007) the card holders.

## Conclusion

It is evident from the above study, that the migration of the above discussed projects from a paper based one to a smart cards based platform augmented with biometric substantially helped the external affairs, home and transport department in creating an ecosystem that is transparent, reliable, scalable and pilfer proof. Moreover there is an option of adding future multi-applicational capabilities in the smart card based project which will help in making the ecosystem future proof to a large extent.

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