Thought Paper on Proactive e-Governance

Step towards citizen-centric governance for Chhattisgarh

Using Blockchain

Mr. Alex Paul Menon Special Secretary, Department of E & IT, Government of Chhattisgarh

Gaurav Somwanshi

B.E. Comp. Science & Engineering (GEC, Aurangabad) PGDM, IIM Lucknow Vibha Verma B.Tech. IT, (NIT Raipur) M.Tech. (NIT Raipur) Manish Verma B. Tech. Electronics, (NIT Raipur) PGDM, IIM Lucknow

Contents

Preface	2
Executive Summary	2
Proactive e-Governance	4
Statewide Data Exchange Framework	8
Data Improvement Exercise	10
Trigger Management Platform	11
Technology	12
Blockchain utility for proactive eGovernance	12
API environment for Data Exchange	13
Policy suggestions to implement Proactive Governance	13
Benefits of Proactive eGovernance	
The Way Ahead for Chhattisgarh	

Preface

CHiPS (Chhattisgarh Infotech Promotion Society), the nodal IT agency of state of Chhattisgarh, has always spearheaded initiatives in the state to facilitate the delivery of public services. CHiPS also hosts the State DBT Cell (Direct Benefit Transfers) which is responsible to oversee the functioning of various departments and their respective schemes that deal in disbursal of benefits to the citizens.

CHiPS has been envisioning a state-of-the-art infrastructure to bring Proactive e-Governance (PeG) to the state. Proactive e-Governance is the future of citizen-centric governance. It seeks to transform the relationship between the citizen and Government through technology, by bringing in hitherto missing transparency and accountability, and boosting efficiency. The ideas envisioned by CHiPS are being articulated in this thought paper, authored by Mr Alex Paul Menon, CEO, CHiPS, and Special Secretary, Department of Electronics & Information Technology, along with members of the State DBT Cell, Manish Verma, Vibha Verma, and Gaurav Somwanshi.

The paper seeks to invite informed opinions and constructive criticisms on the ideas presented in it.

Executive Summary

With the rise of Proactive e-Governance and increasing influence of technology, it has become necessary to situate the citizen at the centre of the public delivery landscape. This means ensuring that government administration makes it a priority to not only correctly identify the eligible beneficiaries of the state schemes, but also to ensure optimum citizen data privacy and proactively reaching out to enlist correct beneficiaries instead of shifting the burden upon the citizen.



In order to develop this state-wide framework it becomes necessary to complete the important modules and integrate them all together. This includes conducting a state-wide survey of beneficiaries for their one-time validation and getting a baseline data. There should also be a 'Data Exchange Platform' in place where the departments would be on-boarded to share data, but, without compromising citizen data privacy. Once the department databases are in place, a 'Trigger Management Platform' would be deployed that will bring about automatic registration/deletion of beneficiaries from department database based on relevant triggers of birth, death, marriage, and migration.



Considering the flow of citizen data, it also becomes utmost necessary to deploy stateof-the-art privacy measures and incorporate elements from the 'privacy-by-design' framework as opposed to a wholly consent-based one. To achieve this, emerging technologies like Blockchain can provide a solution to ensure citizen privacy and bring about transparency in government processes when it comes to citizen data.

The above modules are discussed in brief in the thought paper along with the specific challenges that we seek to address with our state-wide framework.

Proactive e-Governance

It is achieved when government proactively provides services to the citizen and seeks feedback about the quality of its services. It also makes it mandatory for service providers to use necessary technology for ease of service delivery and creates dashboards for citizens to view real-time information. The aim is to flip the service delivery model by shifting from the "pull" approach of traditional e-government—whereby the citizen must seek out government services—towards a "push" model, whereby government proactively and seamlessly delivers just-in-time services to citizens shaped around their individual needs, preferences, circumstance, and location. The system where services are actively provided to the citizen would then be justified to be labelled as Proactive e-Governance.



It is a governance model where "the citizen is not coming to the state; the state is coming to the citizen".

Governance challenges

The challenges faced by the administration when undertaking the task of public service delivery will be encountered in various stages, as outlined below:

a. Data quality issues of beneficiary database:

The beneficiary database for the centrally sponsored schemes in several departments are being maintained by the Ministry/Department in government of India. These databases are stored and corresponding portals are maintained by the NIC team at Delhi. For state sponsored schemes, a few of them like that of Food and Civil Supplies Department have their in house beneficiary management system. However, for most of the other departments, either the schemes do not have any systemic solutions and rely on e-District for data digitization and maintain them at their departments using office tools.

Challenges:

1. One of the major challenges that the department faces in case of centrally maintained portal in the issue of accessibility. In case there is any requirement for data to be updated, deleted or added, there is issues of coordination with central team at remote location.

2. For departments those which does not have any solutions for beneficiary management, there is no option to maintain a record of the processes undertaken by the department.

b. Validation Process of Departments:

Aadhaar Authentication is the primary method to validate the list of beneficiary present with the departments. As of now, several central sponsored schemes have the option of demographic authentication. For one of the department, CSC-SPV is undertaking biometric authentication of the beneficiary. At times issues crop of when there is erroneous or non-functional data-points like bank accounts. This acts as a bottleneck in delivery of benefits to the intended beneficiary creating confusion for multiple stakeholders

Challenges:

1. Availability of Aadhaar services to the Departments at state level.

2. Availability of PFMS gateway for the department to ascertain the correctness of the bank accounts.

3. Currently, when it comes identification or validation exercises conducted by state departments to identify the correct beneficiaries, it is a common scenario to see various departments working in silos. It is also a likely scenario where one can expect a certain citizen being visited by multiple departments for him to provide his identity authentication. A single e-KYC for all government departments at a onetime process has to be thought of to prevent duplication of efforts.

c) Benefit Disbursal/Payment Process:

The payment process in the departments of the government of Chhattisgarh is being carried out through NEFT or cash transfer. Few departments and schemes have been on-boarded on the PFMS platform. However, barring a couple of departments, migration to PFMS has been a major bottleneck due to complex technical process. Few departments have been on-boarded on APB/Bulk Payment solutions provided by leading banks.

Challenges:

1. Auto generation of Payment order and its transmission to Banks digitally.

2. Training to department staff to adopt the digital payment process.

d. Business intelligence platform for the scheme analytics:

Scheme managements system are only available for few central schemes. State schemes are yet to have any MIS to monitor the scheme progress. The state DBT portal has an interface to monitor the payments and benefit disbursal made by the departments for both central and state schemes in the state. But, the schemes needs to have more analytics than just a dashboard for DBT implementation in order to derive usable insights.

Challenges:

1. Generic Scheme Management System for department that can be customized as per department's needs.

2. Disclosure of scheme implementation data under Open Data protocols.

3. Web services as a tool to access scheme data to draw insights.

e. Application based benefit disbursal system:

Currently to avail any social welfare benefit or service the citizen needs to apply for the Government schemes. This system involves multiple level of application and authorization processes making it cumbersome and prone to leakages. Seamless and effective delivery of benefits necessitates the automation of the process of beneficiary identification. All the departments engage great amount of human and capital resources for beneficiary authentication. Thus, the need is felt to create an automated trigger based system for accurate and automated identification of beneficiary leading to Government cost optimization.

Challenges:

1. Departments invest large amount of cost and human resources for beneficiary identification.

2. The system for beneficiary authentication is subjective and inefficient as document verification is done at Panchayat/Block level by field officer.

f. Aadhaar related issues:

A Unique National Identifier has proven to be a necessity in any welfare state. The risks of surveillance or privacy breach are still real, but more often than not, they occur at the risk of loss of identity to the citizens. In India, there are currently 18 national ID cards but most of them would not be available for easy access to the average Indian citizen. In this scenario, the introduction of Aadhaar has been a welcome change, and there is tremendous potential to reach out to hitherto excluded beneficiaries as well as find and target correct beneficiaries. However, along with personal data, integration of databases, and cybersecurity concerns, there is a risk of citizen privacy being compromised. Let us look at some of those challenges of Aadhaar:

Challenges

1. Seeding without validation

A common feature of Aadhaar has been that state departments had taken the Aadhaar data without validation i.e. inorganic seeding. Though it was clarified that such seeding

would not count as Aadhaar seeding, many state departments continue to use these databases for seeding. When disbursal of benefits happens through such databases, there is always a high chance of errors, as has also been observed through our experiences.

2. Inorganic seeding

Sometimes departments may directly borrow databases from elsewhere to select their beneficiaries. This entails quite a few concerns from consent to accuracy to multiplication of errors.

3. Multiple validation efforts

In order to conduct validation of beneficiaries, departments have to visit the beneficiaries again. Here, it is not an unlikely scenario to imagine that multiple departments will visit the same citizen to conduct the same identity validation exercise. This could be avoided if a single validation could be used by other departments as well without violation of consent or privacy.

4. Aadhaar storage

Recent circulars by UIDAI mandate that all agencies storing Aadhaar must now do so with 'Aadhaar Vault' and 'Reference Keys'. While this is a good idea to maintain privacy, there are still some challenges in the implementation phase. For example, if the state wishes to conduct de-duplication exercises then the various reference keys could create obstacles.

Statewide Data Exchange Framework

To enable the Proactive e-Governance vision we had envisioned a state-wide Data Exchange framework (DEF) which would be a technology based solutions supporting good governance initiatives and building an empowered society. It is being envisioned to build a supportive ecosystem for citizen-centric service delivery leveraging information technology compliant with privacy protocols. It also extends to all concerned government and non-government entities. Briefly, DEF comprises of best practices and guiding principles adhering to data security and privacy, methods to bring about data quality improvement, and data exchange platform for data driven proactive eGovernance.

• Data Exchange Framework	• Data Quality Improvement Methodology	• Chhattisgarh DBT Portal	• Data Driven Governance Framework
Interaction between databases across the government departments – in line	Authenticating data quality through field survey	Accurate bank and Aadhaar seeding with the beneficiary database	Enabling access to citizen for automated updation of the
with Government guidelines	Supporting	Verify bank account linkage with Aadhaar	databases
Data Exchange would be enabled through API	departments in Aadhaar seeding, e Authentication/ e-KYC	Support department in Aadhaar authentication and integration of MIS	Analytics for deriving usable results for Proactive e-Governance
Protecting the data through State of Art	Collecting Aadhaar consent and enabling	portal	Access of public data for academic and action
Architecture & Blockchain	Aadhaar and bank account linkage	Enabling monitoring & evaluation through dashboard	research
 Event based trigger for beneficiary databases 			

DEF would establish systems, processes and practices using ICT infrastructure and applications to transform current government information/data processes enabling whole-of-Government interface for citizen, businesses through cashless, paperless and faceless services enabled by seamless process and information integration. It would serve as the backbone of IT driven architectural governance. DEF would institute set of standard principles, guidelines and frameworks that the government agencies must adopt enabling seamless sharing and collaboration within the government system. It would allow diverse government application systems to seamlessly exchange data through a set of defined security protocols, standardized technologies and applications ensuring data uniformity across the system and use it for deriving meaningful results.

DEF would encompass integration of necessary systems and ICT infrastructure leading to optimal utilization of the Government resources. The vision is to establish best-inclass framework for architectural governance, processes and practices to lay down integrated and citizen centric service delivery system.

Objective of Data Exchange Framework:

- Interaction between databases across the government can help in apprising and rationalizing the schemes in different departments.
- Enable data and information interaction to ensure connectivity between complex diverse data sources of schemes & departments.

- Enhancing quality of data management, minimizing time and optimize the cost incurred by the Government agencies in data collection, data management and protection.
- Wider access to well-managed data promotes an integrated view of the Departments operations and it becomes much easier to upgrade multiple databases at a time
- The data security layer of the DEF would ensure citizen data protection
- To deliver effective, automated and integrated services of highest standards and quality through a democratic citizen driven processes
- Data interaction and exchange between departments increases end-user productivity
- To explore a trigger-based approach where events occurring in a citizen's life (like birth, death, marriage, migration, etc.) automatically make him eligible in schemes where he is eligible.

Data Improvement Exercise

Challenges of departments as per their status of scheme's data:

Without Infrastructure	With Infrastructure	Without HR capabilities	With all capabilities
 Selection of digitization tool Data collection and digitization Database preparation 	 Data Verification Beneficiary Authentication 	 Capacity building of existing Resources Data quality awareness 	 API Development Data Cleansing Data Integration

Below are the activities that can be opted by department to get the high quality of data: Data improvement exercises could be carried out in a multitude of ways at different scales. It could be a scheme-wise activity, department activity, or even a state-wide activity. However, in order to have a baseline data that is ready to be on-boarded on the state-wide 'Data Exchange Framework' it is recommended that a one-time statewide be conducted. This could be done in the following ways:

- Camp organisation at Panchayat / Block level or Door-to-Door Survey from scratch by using Mobile app.
- Camp organisation at Panchayat / Block level or Door-to-Door Survey with semi-filled form by using existing data viz. SECC, Aadhaar seeded NPR, State big volume database like for Chhattisgarh PDS, RSBY/MSBY.

- Each department can improve data at benefit disbursal point and later data can be integrated via unique ID of Aadhaar (Unique ID will same if all department use same AUA/ASA for Aadhaar authentication), but this will be redundant exercise.
- Open Portal where citizens will come themselves and fill their details. Some of the state like Maharashtra and Andhra Pradesh has already opted this.

Trigger Management Platform

One of the advantages of a federated architecture is the possibility of automatic seeding of beneficiaries in schemes where he or she is eligible, without the additional need to apply on their own. For example, the event of birth in a certain scheme can act as a certain indicator that the citizen is eligible for a certain scheme after 6 years, or 18 years, and at such an event, the citizen's details would be automatically fed into the schemes. Also, self-seeding initiated by the citizen would also entail the automatic seeding of the citizen in all the schemes where they are eligible. A visual explanation of the above is as follows:



As shown above, initially four major events will be under scope: Birth, Death, Marriage and Migration. An event like birth would trigger/activate relevant scheme databases at predefined points in the citizen's life cycle, and automatically enlist the beneficiaries for the schemes.

Also, it is explained that a single-event updated in any of the scheme databases, either by the citizen or by department, would update all relevant/eligible databases accordingly and automatically.



• In the above diagram we can see that there are two routes of triggers for updation of all eligible scheme databases, one is via citizen self-seeding and other is via automated monitoring of scheme databases. If the citizen registers for any event then the single registration would be checked against all possible scheme databases where the citizen would be eligible for seeding. Additionally, the data contained within the databases themselves would be monitored for such triggers and automated seeding of the beneficiaries in the relevant scheme databases would occur.

Technology

Blockchain utility for proactive eGovernance

When it comes to governance and the relationship of government with the citizens, the aspect of trust can be potentially resolved, and the custodians of sensitive data can be made accountable to the citizen of data by use of Blockchain technology. To make a broader point, wherever there is a lack of trust between intersecting parties, Blockchain has the solution to offer the role of being the bridge. Similarly, as within our Proactive eGovernance model, there is a continuous exchange of data between various departments, the usage of Blockchain technology for identity management can provide the middle path between having ease of identity authentication and between citizen data privacy.

Given that Blockchain offers us the gifts of irrefutability, time stamps, and audit trails, it can be leveraged to create a possibility of trust between not just state and citizens but

also between various departments of the state. The database of citizens itself need not be in Blockchain, but an additional layer could be provided over a traditional database and still the essential advantages of the technology could be leveraged to our advantage.

Going in future, the government can also consider using the technology for authenticating delivery of benefits or subsidies to citizens as well to radically enhance their Direct Benefits Transfers scheme.

Blockchain can enable us to perform necessary data analysis without running the risk of profiling or breach of privacy. This aspect could prove to be instrumental in future where the advantages and risks of oncoming data will have to be balanced.

Further, after identity management and data security, Blockchain could be extended for other aspects of a citizen's life, namely health records and land records. Considering the sensitive nature of the data at hand, as well as the tremendous utility of having the data secured and available, a Blockchain environment surrounding a citizen's life could be envisioned for the future.

API environment for Data Exchange

DEF will allow API based system-to-system information/ data transfers, bulk upload of a data files or direct entry of data records through a web-based portal. 'Data Exchange' reflects the two-way focus on both smarter and more efficient ways of collecting data from public delivery agencies, and more useful data reporting about the outcomes achieved for individuals, families and communities. Data requirements will be streamlined, processes automated and performance focused measurements for more meaningful information about service delivery outcomes. Specifically there will be:

- Significantly fewer data items reported
- Streamlined reporting arrangements
- A simple and easy to use IT tool (the Data Exchange)
- Greater access to outcome data

Policy suggestions to implement Proactive eGovernance

• Formulate Open API framework/policy for State departments.

- Create a beneficiary consent framework which will seek to incorporate the positives of 'privacy-by-design' framework along with thrust on consent wherever it is necessary
- Issue guidelines on management of personal data wherever interactions with such data is involved in department proceedings
- Leveraging emerging technologies like decentralised systems (i.e. Blockchain) to be encouraged at policy level

Benefits of Proactive eGovernance

With Proactive e-Governance we bring the citizen to the centre-stage of public service delivery by ensuring that least amount of onus is laid upon the citizen and government takes up responsibility of correct identification of beneficiaries along with ensuring that their data privacy and consent is respected. With the 'Data Exchange Platform' in place, we save the state's resources by eliminating the duplication of efforts of the departments. The 'Trigger Management Platform' ensures that eligible beneficiaries are not left out of availing from their deserving benefits, as well as ensuring that ineligible or cancelled beneficiaries would be deregistered from the department's databases automatically thereby saving resources.

Further, the rising concerns of citizen data privacy can be addressed effectively with the adoption of emerging technologies like Blockchain. Since the government is already moving towards an era of digitisation of all its records, it makes good sense to begin directly with Blockchain wherever the use-case for it stands reasonably justified. With Blockchain and other emerging technologies, the government itself becomes more accountable to maintaining citizen privacy given the features provided by these technologies.

The Way Ahead for Chhattisgarh

CHiPS is working with experts across the globe and given the unprecedented nature of the project itself, it is working to conduct a number of proof-of-concepts to validate the use-cases, especially when it comes to emerging technologies. CHiPS has also conducted an international Blockchain Grand Challenge that saw participation of start-ups from across the world. The conceptual framework is thus being validated by both on-ground pilots as well as after validation from experts in relevant domains. The framework envisioned within this white paper would fit especially well to any state like Chhattisgarh, which does not have the burden of any archaic legacy systems and where there's a real potential to leapfrog to a citizen-centric model of governance. Consequently, if successful, there is a wide scope of replication of the Proactive eGovernance model across the states of India as well as nations similar in characteristics to Chhattisgarh.