AN APPROACH FOR CREDENTIAL MANAGEMENT LEVERAGING BLOCKCHAIN

Presented to

HYPERLEDGER PUBLIC SECTOR GROUP

by

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CHALLENGES GOVERNMENT ECOSYSTEMS AROUND THE WORLD FACE

01. Process Complexity and Information Silo
   - Manual processes error prone and arduous | Duplicity and redundancy of processes and data | Information silos
   - They delay citizens request processing time and increase govt. expenditure

02. Manual Interventions
   - Intermediaries and too many manual validations makes information propagation across the value chain slow, increase process friction, which in turn delays fulfilling Citizens’ request, effects accuracy and increases service cost.

03. Citizens’ Experience
   - Lack of automation, manual paper driven processes and lack of digital infrastructure having an impact on citizens’ trust and experience

04. Increasing Operational Cost
   - Documenting, reporting and verification are done manually which increases processing time, errors and cost of operations

05. Fraud & Error
   - Non-uniformity/ inconsistent data across the ecosystem and lack of automated checks introduces chances of fraud. Manual process also introduces keying (human) errors.
HOW BLOCKCHAIN CAN ADDRESS SOME OF THESE CHALLENGES?

DECENTRALIZED
Eliminate the requirement for centralized authorities to store the data at one single location.

AUTOMATED
The cryptographic verification of information replaces human interventions thus reducing chance of unforced errors and increasing transparency.

PRIVACY
Enables user to have the control on privacy of their information, including minimal, selective, and progressive disclosure of attributes or other data.

SECURITY
Transparent and secured sharing of identity information

SELECTIVE DISCLOSURE OF INFORMATION
ZKP allows for verification to occur with minimal data exposure
CASE STORY 1: INDIAN INCOME TAX EXEMPTION CERTIFICATE

BEFORE

Customer

IDBI Bank

Submits Form 15G/H

TDS Summary reported to ITD

Random Reconciliation

Indian Overseas Bank

Submits Form 15G/H

TDS Summary reported to ITD

Random Reconciliation

Data Silos – no communication between banks

• High income earners remain outside the tax net
• Interest loss on tax revenue from the ones who submit returns
• Litigation costs for demands that get challenged
CASE STORY 1: HOW BLOCKCHAIN ASSURES PROPER TAXATION

Customer submits Form 15G/H to IDBI Bank, which stores the data into Blockchain. This ensures real-time reconciliation and verification of 15G/H forms.

- Single source of truth
- Near Realtime view
- Instant Reconciliation

This process reduces the cost of tax compliance and increases tax collection revenue.
For CIOs

Case Study: India's Income Tax Department Uses Blockchain To Simplify Tax Processes

January 30, 2020

Why Read This Report

Tax compliance is key to an economy, but most countries struggle with complex tax environments due to a multitude of stakeholders and labyrinthine policy evolution. To promote compliance, tax authorities must make their services easy to use, equitable, transparent, and consistently enforced. India’s Income Tax Department (ITD) decided to use a blockchain-based solution to improve its tax processes. Its experience envisioning and building solutions for all stakeholders provides valuable lessons to CIOs who are considering using distributed ledger technology (DLT).

Tags: Blockchain, Business Technology (BT), Digital Transformation, Government, Public Sector

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The Indian Government is On A Digitization Spree

Situation: ITD Needed To Keep Pace With Rising Citizen Expectations

Approach: A Blockchain Solution With A Long-Term Vision

Results: Banks Are On Board; Ecosystem Partners Are Showing Interest
CASE STORY 2: USE CASES EVALUATED FOR A STATE GOVERNMENT IN USA

Leveraging Infosys’ blockchain technology accelerators for a quick Go-To-Market

DMV DIGITAL IDENTITIES
Provide digital state Ids and driving licenses through mobile apps

HHS VIRUS MANAGEMENT
Track testing and Vaccine Management

MARIJUANA SUPPLY CHAIN TRACKING
Create a supply chain ecosystem for Marijuana tracking from farm to patient

DBR BUSINESS LICENSES
Improve efficiency, time to issue business license

UNEMPLOYMENT FRAUD PREVENTION
Reduce fraudulent unemployment claims in RI with digital identities

Networks formed as part of POC
Future networks to be formed
CASE STORY 3: IDENTITY MANAGEMENT WITH BLOCKCHAIN – EMILY’S JOURNEY

Traditional Identity

1. Emily submits required docs → DMV
   → Issues ID
   → Emily

2. Emily registers profile & applies for license → DBR
   → Asks for ID proof
   → Shares ID issued by DMV → DBR
   → Requests for validity
   → DMV
     → Checks other details and issues license
     → DBR
     → Emily

3. Emily registers profile & applies for service with ID and license shared → DMV
   → Requests for validity
   → Other Govt. Agencies

Self-Sovereign Identity

Issues Digital ID to Emily’s Mobile Wallet → Emily

Asks Emily to share some ID attributes from Mobile Wallet → DMV

Distributed Ledger

Writes signatures in ledger → DMV

Verifies signatures from ledger → DBR

If requested by Emily, other govt. depts / agencies can also authenticate ID information shared by Emily

Other Govt. Agencies

DMV

Instant Reconciliation

Reconciliation delays in process

... and it goes on ...
Enabling a US State Business Regulations department to dynamically validate trustworthiness and authenticity of the credentials and identity documents submitted by applicant individuals or organizations while issuing CPA licenses and Practice Unit licenses respectively in a secured and controlled manner.

**Services Use Cases**
1. Individual Digital ID
2. Firm Digital Id
3. Practice Unit License
4. CPA License
5. CPA employment Verification

**Payoffs**
1. User Control
2. Easy Sharing
3. Secured Data access
4. Trust Automation
5. Data validation and consolidation

- Blockchain does not store the user's data or information. Instead, the public DID of issuers/verifiers, credential schema, definitions and revocation registries get stored into the blockchain.
- PII (personally identifiable information) will be stored in Users' mobile wallets – not on blockchain and user can selectively choose which credentials to be shared with whom.
CASE STORY 3: OFFICIAL RECORDS VALIDATION FOR A US COUNTY
(SECURED, CONTACTLESS SOLUTION)

What?
Enabling government departments in a county in North America to dynamically validate trustworthiness and authenticity of the certificates (Official Records) submitted by applicants in a secured and controlled manner.

How Blockchain solves it?
- Smart Contract authenticates Official Records by comparing HASH
- Validates the authenticity of the issued documents to minimize frauds

Benefits delivered
- Near real time authentication
- Lowers risk of approving fake Official Records by implementing better transparency in the system
Thank You