



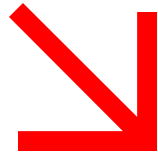
Paramount Software Solutions

Inspiring Integrated Solutions

Blockchain in Public Sector

**Redefining Governance and
Operations for Governments**





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INTRODUCTION



Transparency in systems and processes is the key to winning the trust of citizens for any government or a public service agency.

But, are governments or the public sector willing to bring reformation through transparency? This is a question that remains to be seen.

Blockchain technology's essence is transparency. And the adoption is bound to face challenges at various levels. Despite the positive changes, the pushback is at two levels -

1. A lack of understanding of the benefits.
2. The negative reputation of crypto has damaged Blockchain's reputation as well.

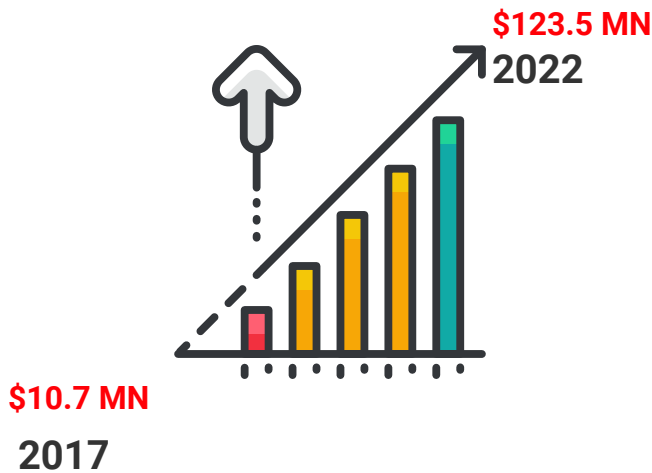
Imagine this - the prescription drugs that are distributed by manufacturers have sensors that can be tracked from the origin to the final destination, and the entire journey and documentation are recorded and traced. Wouldn't it be easy to track counterfeit drugs this way?

Let's go ahead and explore the role of Blockchain in the Public sector, the benefits, challenges of adoption, and much more in this eBook.

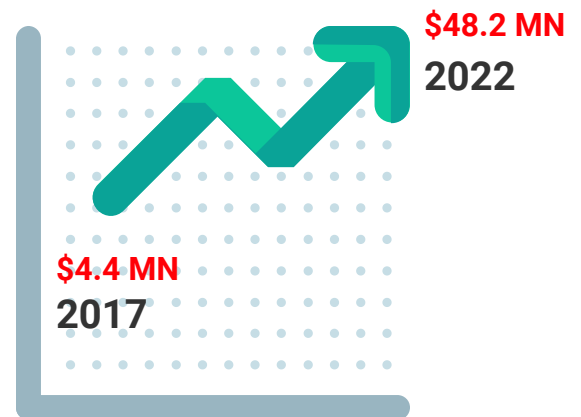


Government's Spending on Blockchain & Readiness in Public Sector

Federal



State & Local



Source : IDC Government Insights



Blockchain Applications Readiness Assessment



Consortium

Being a part of a consortium is crucial to attaining data and information that will leverage the effectiveness of Blockchain implementation. If an agency/body/organization is not ready to join a consortium, access to data and information will be limited.



Public - Private Partnership

Blockchain's role in the public sector would primarily be of enhancing, improving processes, and building trust in citizens. It is important to be open to partnerships that can help achieve that goal.



Operations

Figuring out who is going to be designated for operational maintenance is crucial for achieving success with Blockchain. Changes in the blockchain network have impacts on the downstream with increasing users, and platform maturity. Thus ensuring well-defined operations is a key to success.



Talent

Are there enough people to drive the implementation? Even if an agency decides to partner with an outside provider, there is absolutely a need to have someone in the team who understands the technology and is willing to drive the implementation for the agency/state.



Compliance

Ensuring that there is compliance with the current and future regulatory environment would lead to less disruption in the implementation. Understanding the pattern of government-wide rules and regulations will be expected in the government blockchain network.



Technology

Performance, scalability, and interoperability are key considerations in the adoption of any new technology. A thorough analysis of the blockchain protocol being considered within these parameters is extremely beneficial in the long term. Questions around application and services layer to legacy infrastructure to network and protocol should be encouraged and exact answers should be determined.

Projects by Governments Worldwide



Source: Deloitte analysis in conjunction with the Fletcher School at Tufts University & other sources

Some Blockchain Projects in the Public Sector

United States – Blockchain Approach for Supply Chain Additive Manufacturing Parts project was implemented by The United States Airforce to secure long value chains with distributed ledger technology.

United Kingdom – UK’s Food Standards Agency completed a pilot Blockchain project to track the distribution of meat as a regulatory tool to ensure compliance in the food sector.

India – In the Indian state of Maharashtra, the state Government and the Dept. of Revenue partnered with an open-source hybrid blockchain platform to complete a proof of concept for land records on the blockchain.

Brazil – Blockchain application rolled out to monitor the process of public bidding on contracts with the Government. This would ensure secure and transparent deals between local agricultural associations and cooperatives across the country. Funded by the World Bank.

Uganda – Tracking of counterfeit drugs. More than 10% of medicines are fake in Uganda. Tracking the journey of a drug in the supply chain will prevent counterfeits from being sold to users.

Challenges of the Public Sector



Identify Areas Trust & Confidence from Citizens of Interest



Protection of Critical Infrastructures



Information Validation



Managing Historical Records Efficiently



Managing Certifications of Stakeholders



Lack of efficient and Transparent Voting System



Lack of Robust IP Protection



Faster Dispute Resolution

Benefits of Blockchain In Public Service

\$48.2 MN in 2022

Blockchain spending among state and local governments in the United States compared to \$4.4 million in 2017 - IDC Government Insights



Reduction in Bureaucracy

Due to the ability to access immutable and secure time stamped ledger, to multiple parties, there is a level of trust within different processes in business and government. This reduces bureaucracy often associated with public sector and government agencies.

Increased Efficiency of Administrative Processes

With reduced bureaucracy in processes, and trust among parties comes the elimination of excessive costs that usually is associated with accountability management, corruption, and abuse of systems. Thus administrative processes have the potential to witness increased efficiency in operations.



Increased Trust in Public Record Keeping

Reduction of bureaucracy, increased efficiency, immutable and secured data management, and transparency in accountability are foundations of increasing the trust of the public in the government record-keeping. When there is there's shared accessibility of trusted data of records among citizens and governments, there is increased trust in government by the citizens.

Key Applications of Blockchain



IDENTITY MANAGEMENT

Availability of secured encrypted access, Public sector agencies, and Government will enable the verification and authentication of citizens for many relevant services.



Verify & Authenticate



EDUCATION SERVICES

Data and information on students and academicians could be stored, accessed, and validated when references are required.



Digital Wallet for Student Credentials



OFFICIAL REGISTRY

Digitized agreements between two parties/individuals can be accessed by scanning the blockchain. Citizens and administration could have a much smoother experience that is automatic, trustworthy, and secure.



Smart Contracts

Key Applications in the Public Sector

Contract Management



PUBLIC BIDDING

Contract management from bidding to contract acquisition could be made transparent, and accessible to relevant and verified stakeholders.

Payroll Tax Collection



TAX COLLECTION

Tax data can be matched with income and tax and social security deductions can be calculated. The net salary transfer and tax payments can be automated with a blockchain-based system.

Enhanced Voting Systems



VOTING SYSTEMS

Blockchain-based voting infrastructure could enable more trustworthy and representative elections with accurate identification, prevention of duplicate votes, and many other possibilities.



Citizens and administration could have a much smoother experience that is automatic, trustworthy and secure

Blockchain & Tackling Governance

Qualities that are Centers of Exemplary Governance Models



Transparency



Integrity



Effective
Performance



Collaboration

In a report of a study conducted by the Organisation for Economic Co-operation and Development (OECD), it was found that in OECD countries citizens' trust in government was deteriorating with **only 45% of citizens having trust in their government**. Some of the key predictors of public trust are government values like integrity, fairness, and transparency of institutions. In order to boost public trust in institutions and governments, responsiveness and reliability in delivering public services play a crucial role.

Blockchain technology is potentially a very powerful tool that can track information and transaction which can eventually minimize friction between stakeholders in the government and public sector, reduce corruption, increase trust in them, and empower citizens. The use of Blockchain technology to enhance government systems and processes is not a utopian thought. The advantages of technology - automation, transparency, auditability, and trustworthiness - makes it a very relevant and viable proposition.

Only 45%
of citizens
have trust in their government

Source : Organisation for Economic Co-operation and Development

Blockchain Platforms

Alignment with Government & Public Sector



Key Features

- Read-only history inquiries
- 180+ collaborating organizations
- Production ready for large set ups.
- Already adopted by the **Department of Health and Human Services** for the first blockchain-based program in the Federal government **Accelerate**



Key features

- Connect banks, digital assets exchanges, and payment providers
- Transfer money globally with ease.
- Speed guarantees 5 transactions every second, a faster, and more efficient platform.



ethereum

Key features

- Open for public use
- Proof-of-work based system
- Strongly followed in Github



Key features

- Focus on the commercial segment - healthcare, trade finance, supply chain, etc.
- Permissioned Blockchain
- Focusses on interoperability ease of integration with the legacy system.
- Meets **National Institute of Standards and Technology (NIST)** standards.

Platform Choice Determining Factors



Kind of Network



Language Used



Popularity

Activity



Pricing



Consensus Mechanism

Hyperledger Fabric Relevance in Public Sector

“

Department of Health and Human Services is using Hyperledger Fabric for its procurement program Accelerate to **save \$30 mn over the next five years.**



Lower Risk

Provides multiple options for Data Privacy and Confidentiality



Multi-platform Deployment

Deploys to all major cloud or on premise runtime systems



Flexibility and Agility

Pluggable Services & Configurable Policies architecture allows flexibility to fit many use cases like ID Management.



Digitally Signed Transactions

With finality support using event listeners



Mature & Production Ready

Largest number of production blockchain deployment – matured & production ready



Simplified Smart Contract

Faster approvals on routine activities, streamlined processes, tamper-proof documents - unbiased mediators in transactions.



One of the biggest advantages of platforms like Hyperledger Fabric is because it is made for generic solutions, which allows building purpose fit products and solutions to meet specific needs, and its ease of implementation. Hyperledger supports Java with a composer tool that enables organizations to develop smart contracts with minimal codes.

Hyperledger Fabric was adopted by Department of Health and Human Services for the use of a new procurement program using blockchain - *Accelerate*. This is the first federal government blockchain - based program that is expected to save the department \$30 mn over the next five years.

Source : American Council for Technology-Industry Advisory Council
Federal News Network

Adoption Roadblocks & Mitigation

Any new technology or a new way of doing things is bound to undergo a series of adoption roadblocks or some level of pushback. Blockchain technology is no different. Back in 2016, at the National Association of State Chief Information Officers, blockchain was not on the priority list of anyone but one year from then the narratives changed. There was interest, and CIOs were investigating proactively - simply because more questions were probably answered, and a lot of unknowns became relatively better explained. One of the key adoption challenges of Blockchain in public and government agencies is the lack of legal and regulatory support. However, many agencies and states start with pilot programs to explore the benefits VS pitfalls to make a decision and that is probably the best way to go in the process of adoption or choosing not to adopt. With the right problem statement and knowledgeable implementation partners with deep experience in giving shape to similar use cases, the adoption challenges will effectively reduce.

 Adoption Roadblocks	 Mitigation
Awareness about right use case	Education and Case Study Reviews
Negative image due to crypto	Differentiate Distributed Ledger Technology from its applications
Maturity of Blockchain	Comparative analysis of the platforms
Siloed and lack of interoperability	Hyperledger Cactus
Complexity	Modular Architecture Design
ID and Access Management	Governance Model
Compliance to regulations and standards	Plug and Play Architecture
Undefined or lack of standardized metrics	Hyperledger Caliper

TAKEAWAYS

“ 10-30% of a public contract's overall value is lost to corruption.

“ Blockchain technology is capable of addressing corruption and increasing transparency

“ Cultural Change, informed policy making and sustained political buy-in are critical for a corruption free and transparent government as well as for blockchain effectiveness

