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Building Smarter States: How Blockchain Can Revolutionize Governance

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Governments need a strategy for deploying new technologies, and blockchain should be a key pillar.

Governments globally are challenged to deliver improved and cost-effective public services amidst shrinking resources and demands for a smaller state. Embracing new technologies can help achieve significant enhancements in public services, free up capital for investments, and avoid increasing fiscal burdens on the public. Technologies like AI and blockchain can serve as catalysts for strategic government, enabling transformative changes and accelerating positive outcomes—in short, doing more with less.

With the growing recognition of blockchain and crypto's transformative potential and increasing regulation and institutional adoption, it is an opportune moment for governments to deploy Distributed Ledger Technology (DLT) as an enabling tool for effective governance. Governments are already exploring digitizing fiat currencies with stablecoins and Central Bank Digital Currencies (CBDCs), updating capital markets through tokenization, and considering diversifying strategic reserves with alternative assets like Bitcoin. However, a more systematic exploration of cross-sector blockchain use cases should be considered as a tool to fundamentally reshape governance.

New technologies are at a critical juncture for advancing good governance, presenting opportunities for bold and imaginative action that promise significant dividends. Current experimentation in forward-thinking governments across the globe spans onchain voting, public record and data management, identity solutions, welfare payments, and innovative healthcare data management methods, among others. In this paper we highlight a range of innovative ideas for utilizing blockchain to catalyse further innovation and experimentation in order to achieve these strategic goals.

This paper focuses on blockchain for enhanced governance, but in reality governments need to consider both a panoply of new technologies and how they can be deployed synergistically. A great example of this is the way in which the combination of AI and blockchain will facilitate the widespread adoption of smarter, cheaper, more efficient, and more trustworthy government processes.

Blockchain for Strategic Governance

Public Records

Blockchain can revolutionize public records management by securing and streamlining processes like public land title recordation that are currently plagued by fraud and errors. Systems such as the "Block-title" can mitigate risks by ensuring that each land rights transfer is authenticated and recorded as a single valid transaction on the blockchain, verified by nodes and enforced by smart contracts.

- The California DMV is tokenizing the titles of over 14 million registered automo-biles, issuing them as non-fungible tokens (NFTs) on the blockchain. This move could reduce fraud and expedite the process of issuing and transferring vehicle titles, reducing it "**from weeks to minutes**."[1] The blockchain also could be used to record vehicle repairs and coordinate with other state agencies that license vehicles, increasing efficiencies.

- A county in Virginia is recording land titles, liens, and other key documents on the blockchain. The program will enable "**faster, better, cheaper access**"[2] that lets residents "pull up 40 years' worth of transaction history in seconds." The project will also use AI to generate property abstracts. Overall, the program aims to improve the integrity of property records and free up valuable time for county administrators.

- Bahrain's Ministry of Health uses blockchain to issue and manage licenses for healthcare professionals.

[1] https://www.coindesk.com/business/2023/03/24/california-leads-the-way-as-us-federal-state-agencies-consider-blockchains-applications-bank-of-america
[2] https://cardinalnews.org/2022/03/02/wise-county-gets-on-the-blockchain-with-land-records-project/

Identity Management

[3] https://www.aarp.org/politics-society/government-elections/
[4] https://www.experian.com/blogs/ask-experian/identity-theft-statistics/
[5] https://www.coinbase.com/blog/online-identity-verification-without-big-tech-how-decentralized-id-can-help

Individuals typically must show proof of their identity to access government services, from education to voting to obtaining a pass-port. But over 10 percent of U.S. adults, or 21 million people, lack a government-issued photo ID.[3] Fraud is also a concern. In 2021, U.S. consumers filed over 1.4 million complaints of identity theft, mostly related to government documents and public benefits fraud.[4]

Decentralized identity (DiD) protects against this fraud while giving users greater privacy and control over how, when, and where they display their personal information.[5] With DiD, a person's data is veri-

[6] https://www.americancityandcounty.com/government-technology/how-decentralized-identity-technology-can-make-access-to-government-services-more-equitable

[7] https://cointelegraph.com/news/decentralized-identity-is-the-way-to-fighting-data-and-privacy-theft

fied a single time and securely stored both on the blockchain and in a digital wallet on their smartphone.[6] This approach offers individuals enhanced control over their personal data while simultaneously bolstering security[7] and streamlining the authentication process.

Onchain Voting

Blockchain technology has the potential to revolutionize voting systems by providing a secure, transparent, and tamper-proof platform for elections. Recording each vote on the blockchain would ensure immutability and auditability. It can eliminate the risk of vote manipulation or fraud, as every entry is cryptographically secured and verifiable by all participants. Blockchain can also enhance voter accessibility by enabling remote voting, which could increase turnout while reducing logistical costs associated with traditional voting methods. Smart contracts can be used to automate vote counting

- **Estonia and Switzerland:** Explored blockchain for secure online voting in government and corporate elections.
- **U.S. (West Virginia):** Piloted a blockchain-based voting app for military personnel overseas, showcasing the potential for secure absentee voting.

while maintaining voter anonymity through advanced encryption techniques. Blockchain-based voting also faces several challenges, including ensuring digital literacy, providing secure devices, addressing scalability, and overcoming resistance to change within electoral systems. Despite these hurdles, blockchain offers significant potential for modernizing and securing electoral processes globally.

Payments

Governments establish a range of payment options for government services, as well as private transactions. To that end, governments should integrate blockchain payment solutions, such as stablecoins, and accept them as payments for government services. Stablecoins can be transferred faster and more efficiently than traditional methods. As governments enable the use of stablecoins and other digital assets, it catalyzes critical innovations to make financial services more accessible to the population. Remittances are a particularly vivid example: The current costs for traditional remittances average

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- **Switzerland (Zug):** Began accepting Bitcoin for municipal services in 2016. Residents can pay for services up to a certain amount using Bitcoin, which the city immediately converts into Swiss francs to mitigate volatility.
- **U.S. (Colorado):** Began accepting cryptocurrency for tax payments in September 2022. Taxpayers can use cryptocurrencies to settle their state tax bills with payments processed through a third-party service that converts the crypto into U.S. dollars.

[8] https://unstats.un.org/sdgs/report/2024/Goal-17/

around 6.4%, which is more than double the target of 3% set as part of the UN Sustainability Goals and multiples higher than the costs of a blockchain transfer.[8] Using Coinbase's Layer 2 blockchain BASE, digital dollars (USDC) can be sent to a mobile anywhere in the world in seconds and cost just cents. With more than $800bn being sent annually in remittances (a figure that continues to grow), many tens of billions of transfer fees could be diverted back to some of the poorest countries and communities.

- Government welfare payment distribution, such as the U.S. Supplemental Nutrition Assistance Program (SNAP), faces logistical challenges and fraud issues. States manage eligibility and benefit issuance for SNAP, which supported approximately 41.2 million people in 2022.[1] Coordinating benefits, especially at the county level, and mitigating fraud are significant challenges. Fraud cost SNAP $592.7 million in 2016 and is predicted to cost $130 million per month today.[9]
- Blockchain can address these hurdles by securely verifying identities and reducing fraud. Platforms like All_EBT offer virtual food stamp cards via blockchain, enabling online food purchases and potentially providing access to multiple social programs and financial services for unbanked individuals.
- The Reserve Bank of India's pilot digital rupee program has reached more than five million users and 16 participating banks to deliver agricultural credits and purpose-bound money to tenant farmers.

[9] https://legal.thomsonreuters.com/blog/snap-benefit-updates-increase-the-risk-of-fraud/

Government Transfers

Blockchain and stablecoins can be used to distribute government welfare payments, offering a decentralized, secure, and transparent infrastructure that can streamline the process, reduce costs, and reduce fraud.

Healthcare

Blockchains and crypto can dramatically improve government-run healthcare programs by enhancing patient data security and shareability, streamlining processes, optimizing supply chains, and reducing costs. For example, blockchain's decentralized nature and cryptographic security can protect against unauthorised access to patient records and give users more control over their own health data, allowing them to decide who can access it and on what terms. Such secure and seamless sharing of data may in the future enhance clinical trials and R&D, as well as provide incentives for people willing to share sensitive and personal information. Blockchains can also be used to enhance pharma supply chain management to minimize risks like counterfeiting and to provide more transparency on end-to-end processes for users.

Strategic Reserves

Some governments have adopted Bitcoin and digital assets as part of their strategic reserves to diversify their portfolios and adapt to the evolving global financial landscape. Bitcoin's limited supply and decentralized nature can make it an attractive hedge against inflation and currency devaluation, particularly during periods of economic uncertainty. By holding digital assets, governments can reduce reliance on traditional reserves like gold or foreign currencies, mitigating risks associated with geopolitical instability or shifts in the global financial order. Additionally, Bitcoin's liquidity and 24/7 trading availability provide immediate access to funds in emergencies, enhancing financial resilience. Furthermore, as digital currencies gain global traction, holding them in reserves positions countries to participate actively in the future of decentralized finance.

- **European Blockchain Services Infrastructure (EBSI):** Aims to create a cross-border, interoperable blockchain platform to facilitate secure data sharing among EU member states.
- **U.S. Department of Homeland Security (DHS):** Explores blockchain solutions to enable secure real-time information sharing among agencies, enhancing border security and immigration processes.
- **Smart Dubai Initiative:** Aims to leverage blockchain to optimize various government services with the goal of becoming the world's first blockchain-powered government.

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Cross-Governance Data Sharing and Collaboration

Blockchain can significantly enhance cross-agency collaboration and data sharing by providing interoperable data platforms that enable secure and efficient information exchange across government agencies. This reduces data silos, improves collaboration, and can cut document processing costs.

Federal or Local Capital Issuance Using Tokenization

Tokenization is another blockchain-based technology that can improve government processes, in particular by helping them raise funds more efficiently. Municipal bonds are a type of debt security issued by governments that help fund public infrastructure, from local libraries to emergency response. Investors are repaid in full with interest. But the traditional process of issuing and investing in these bonds is paper-based and labor-intensive, leading to considerable costs and delays.

Tokenizing bonds can make this process more efficient, transparent, and accessible.[10] Placing a digital representation of the asset on the blockchain can reduce issuance costs and eliminate barriers to entry like minimum investment amounts.[11, 12] Blockchain can also enable direct participation in pricing decisions and allow bonds to be subdivided, making them more accessible to the average investor.

[10] https://tokenist.com/consensys-to-tokenize-municipal-bonds-acquires-u-s-broker-dealer/
[11] https://belonging.berkeley.edu/sites/default/files/haasinstituterefundamerica_doublybound_cost_of_issuingbonds_publish.pdf
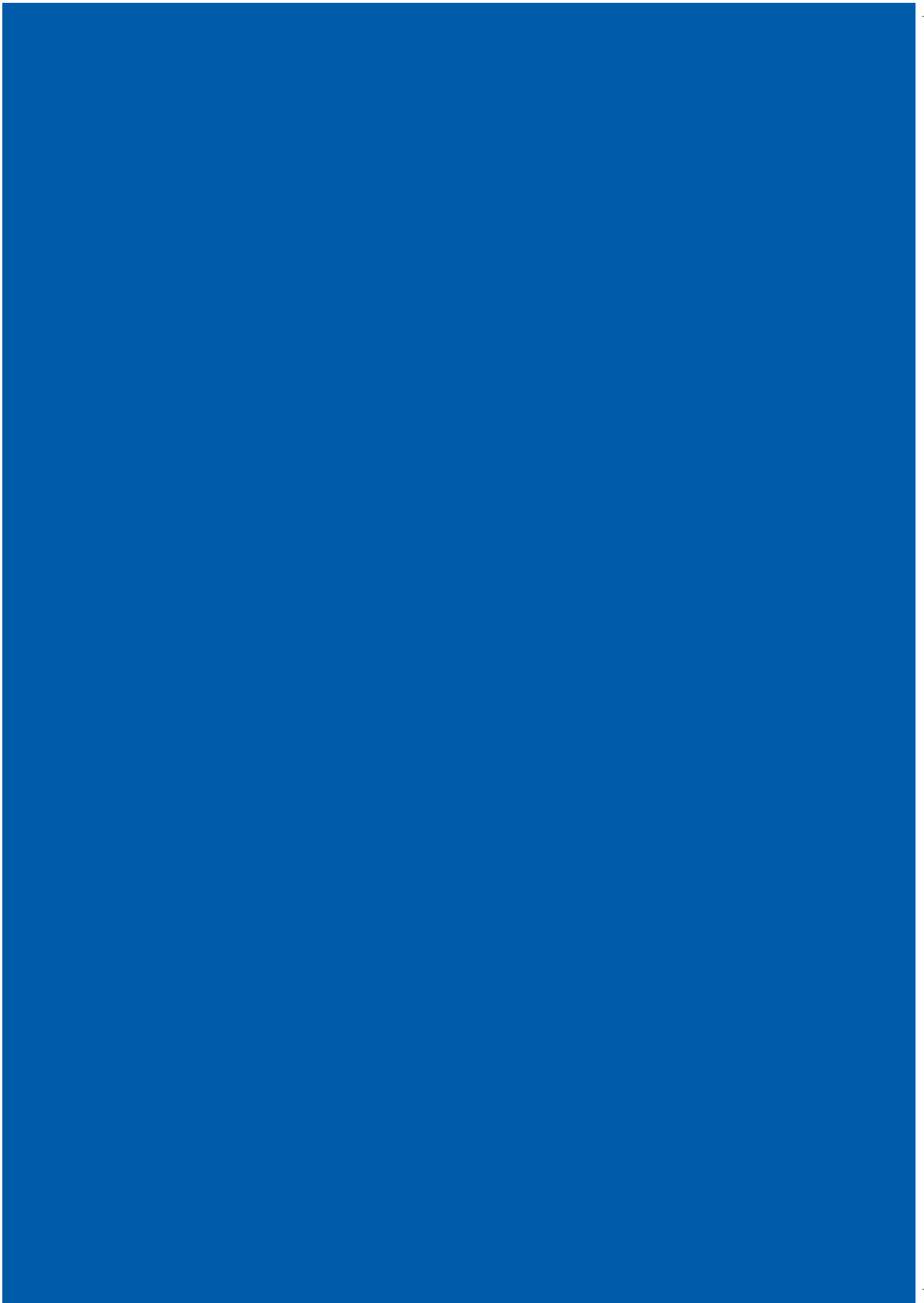[12] https://www.finra.org/rules-guidance/key-topics/municipal-securities

- Hong Kong has embraced this technology by issuing the **world's first tokenized green bond** by a government agency, enabling instantaneous delivery-versus-payment settlement of the primary issuance within a day.

- In November 2024, the U.K. government announced it would pilot a DLT-based gilt instrument.

Technology Synergies

Blockchain and AI

As governments plan to deploy more artificial intelligence, they should note how blockchain can be used with AI to enhance automation, data analysis, and authentication. Blockchain provides a transparent and tamper-proof infrastructure for recording transactions and storing data that AI can leverage to automate tasks without human intervention, such as executing payments when certain conditions are met. AI can also benefit from the standardized and uniform data stored on blockchain, allowing for more accurate analysis and predictions. Additionally, blockchain can authenticate AI-generated content by verifying its origin and ensuring its integrity, thus fostering trust in digital data and media. Put another way, AI scales content, and blockchain scales trust.

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