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Votes on Chain Project

Introduction

In response to growing concerns about electoral transparency and security in Venezuela, we propose voting records to be published on chain, a decentralized trusted system leveraging blockchain technology to safeguard electoral data from potential tampering, fraud, and unauthorized access. This initiative aims to ensure that every vote record is accurately backed-up, transparently verified, and securely stored, thus restoring public confidence in the national electoral system.

We attempt to ensure the publishing of voting records after an electoral process for a greater transparency, immutability and accessibility of the ballot logs:
- The hardware publishes on-chain at the same instant that the physical record is printed.
- Nodes with open-source software, managed and maintained by universities or trustworthy entities from multiple parties, secure the protocol's safety.
- Immediate results serve as an instant backup to ensure verifiable independent audits.
- The massive quantity of decentralized nodes guarantees respect for the results, thanks to the undeniable amount of evidence.
- The validator nodes can be installed on mobile devices, which expands the capacity for real-time monitoring and verification

Technology

We propose the immutable nature of blockchain technology to create a secure, decentralized database for electoral records. Each electoral record is cryptographically secured and stored on a distributed ledger as soon as it is printed, ensuring that it cannot be tampered with or altered once recorded. This system allows for real-time verification of electoral results by any party, enhancing transparency.

The implementation process involves collaboration with national electoral bodies to integrate this technology seamlessly into existing electoral processes.

Benefits and Future Outlook

The adoption of voting record on-chain promises numerous benefits, including increased transparency, heightened security, and enhanced trust in electoral outcomes. By ensuring that all electoral records are immutable and verifiable, we can significantly reduce the risk of fraud and manipulation. Looking forward, we plan to expand this technology to other areas of governance, providing a robust foundation for digital democracy. This effort represents a crucial step towards modernizing electoral processes and strengthening democratic institutions in Venezuela and beyond.

Drawing inspiration from the Liberland project, which advocates for the use of decentralized ledgers to establish a transparent and decentralized governance model, our initiative seeks to bring similar principles to Venezuela's electoral system. By leveraging distributed ledger technology, we aim to create an environment where every vote is securely and transparently recorded, much like Liberland's approach to decentralized governance. This alignment with Liberland's vision underscores our commitment to fostering a transparent, secure, and verifiable electoral process that can serve as a model for modern democratic practices worldwide.

Technical Implementation

Node Configuration:

- Mobile and Static Nodes: Configuration of validator and storage nodes distributed across universities and reliable entities. These nodes will operate on open-source which could be installed on mobile devices, which expands the capacity for real-time monitoring and verification. Software specifically designed for handling electoral data, ensuring transparency and auditability.
- Peer-to-Peer Network: Establishment of a peer-to-peer (P2P) network where each node validates and stores copies of the electoral records. Utilization of consensus protocols such as Proof of Stake (PoS) or Proof of Work (PoW) to guarantee security and efficiency in data validation.

Registration and Verification Process:

- Digitalization and Cryptographic Signing: Each electoral record is digitized and a cryptographic signature is applied using standardized algorithms. This ensures the integrity and authenticity of the data before being stored on the blockchain.
- Blockchain Transaction: The signed data is packaged into transactions and sent to the blockchain network. These transactions are verified by the validator nodes using PoS or PoW consensus, ensuring that only valid and signed data is added to the public ledger.
- Hashing and Cryptographic Linking: Each electoral record is transformed into a cryptographic hash, and the batch of records will be linked to the previous block in the chain, creating an immutable structure that guarantees the integrity of the data sequence.

User Interface and Oracle APIs:

- Transparency Portal: Development of an accessible user interface (UI) for any citizen to verify results in real time. This UI connects through RESTful APIs that interact with proxies connected to the blockchain, allowing data queries and public validation.
- API and Oracle for Electoral Integration: Provision of APIs through Oracle protocols so that electoral bodies can integrate their vote capture systems directly with the blockchain, automating the record registration process.

Security and Resilience:

- Data Encryption: Use of encryption to protect electoral data during transmission and storage on the blockchain.
- Redundancy and Backups: Implementation of redundancy and backup strategies in multiple geographic locations to ensure system availability and resilience against potential failures or attacks.

Audit and Monitoring:

- Monitoring Systems: Configuration of continuous monitoring systems to detect and mitigate potential manipulation attempts or attacks on the network.
- External Audit: Collaboration with national universities and independent entities to conduct periodic audits of the system, ensuring transparency and reliability of the stored data.

Gamification as a learning tool

Along with our plans to improve security for the voting records, we also focus our energy on helping spread awareness about both political information without bias and blockchain technology and its inherent transparency. Creating a 3D web game can be an innovative way to educate people about these topics. This game would immerse players in a virtual world where they can learn the fundamentals of blockchain through interactive challenges and quests. Players could explore different political ideologies and understand how blockchain can enhance transparency, security, and trust in electoral processes.

By simulating real-world scenarios and providing hands-on experience with blockchain transactions and voting systems, the game aims to demystify complex concepts and promote informed civic participation. This immersive approach allows users to engage with and understand the practical applications of blockchain technology while also exploring the importance of unbiased political information. Through this educational tool, we aim to foster a more informed and engaged public.