Blockchain in Public Governance: New Possibilities and Challenges for Public Data Management and e-Voting

Ali Mert Gürkan
Supervisor: Prof. Monica Palmirani

Last-JD Law, Science and Technology PhD Program
University of Bologna
Introduction

• The aim of the presentation:
  • To discuss the benefits and challenges of blockchain in public data management and e-voting
  • Providing important use cases
  • Potential solutions for challenges
  • Looking ahead
Background

- The elimination of the need for central authorities by providing trust with technology: 'the trust machine'.
- Decentralized, transparent, and immutable nature
- Not only trust, but efficiency
Blockchain in Public Data Management

- Decentralization and Transparency:
  - Accountability
  - Improved access to information for citizens and stakeholders
  - Combating corruption and fostering trust

- Immutability and Cryptography:
  - Enhanced data integrity and security
Example Use-cases and Pilot Projects of Blockchain in Data Management

- Land registry management: Georgia and India
- Digital identity management: Estonia's e-Residency program
- Supply chain tracking: IBM and Walmart's food safety initiative
- Health data management: Malta Biobank and MedRec of MIT
Blockchain and e-Voting

- The importance of trust in voting
- Transparency of votes
- Security of the process with cryptography
- Anonymity of the voters
- Immutability of the records
- Cost/Time-Efficiency
- Potential for:
  - Direct democracy
  - Oversea voting
Real-World Examples of Blockchain in e-Voting

- Zug Digital ID of Switzerland
- West Virginia's mobile voting pilot for military personnel
- Sierra Leone's 2018 presidential election along with paper ballot
- A negative example: Moscow's e-voting system
- The lack of mature examples
Challenges and Concerns

- Technical challenges:
  - Scalability
  - Privacy
  - Interoperability
- Regulatory and legal obstacles
- Blockchain needs trust
- Digital illiteracy of citizens
Addressing Challenges

• Providing a trustful environment
• The role of regulatory frameworks and global cooperation
• The need for ongoing research and development
• Technology evolves and matures over time:
  • Off-chain Solutions for Scalability
  • Zero-Knowledge Proofs for Privacy
  • Cross-chain dApps for interoperability
• Education
Future Directions

• Democracies are in crisis
  • The potential for growth and innovation in the public governance domain

• Digital disruption
  • Advancements in technology

• Understanding the limitations but also the potential
  • A better understanding of the technology

• The importance of cross-disciplinary collaboration for sound and effective regulations

• The necessary advancements in both technological and societal domains
Conclusion

• Unique and important features which can be useful for public governance
  • Understanding the potential and limitations
  • How and where to use it

• Challenges should be mitigated
  • Technological and regulatory developments
  • Further exploration and discussion on the topic

UNDER THE HOOD


References


