

# Blockchain technology for e-governance

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Dear colleagues,

I should start with that simple, convenient and effective interaction between the government and the citizen has become a common expectation in the modern information society. Electronic government solutions - based on automation of decision making processes are serving to meet these expectations, while generating efficiencies in government and social communications for each member of the society.

Electronic government brings fundamental changes to the distributed governance system, and affects the entire range of functions related to document management and processing.

Among the multiple technological solutions, varying in speed, and the degrees of reliability and data safety, blockchain offers great promise for e-government.

Blockchain is the best known distributed ledger technology. A ledger is a database, which keeps a final and definitive record of transactions. Records, once stored, cannot be tampered without leaving behind a clear track. Blockchain enables a ledger to be held in a network across a series of nodes, which avoids one centralised location and the need for intermediaries. This is particularly helpful for providing trust, traceability and security in systems that exchange data or assets. In the context of electronic government, this means a technology that stores the results of all interactions between citizens and government agencies.

I will not focus on the technical details of how does blockchain work. I will just underline that we should differ the very blockchain technology and its particular avatars such as cryptocurrencies.

Importantly, the data are interlinked, coded and stored by all members of the system, and are automatically updated to reflect the changes made. Users act as a collective notary that certifies the accuracy of the data in the system and guards against abuses and scheming attempts. Blockchain technology acts as a control on the egoistic motives that cause some people to engage in corrupt practices.

It also creates a powerful incentive to abide by the rules that apply to all participants equally, thus creating a spirit of collective responsibility.

Blockchain is a technology that facilitates agreement among the participants on virtually any matter without the involvement of an intermediary; it thus creates a foundation for decentralised governance, promotes consensus-based social contracts and maintains a fair balance of interest beneficial to the society.

A registration system based on blockchain technology can enhance the safeguards normally offered by the traditional registries. The cost of transactions can be greatly reduced by eliminating the payment of state duties and intermediary fees, while the transactions themselves can become less time-consuming, and more transparent and secure.

Blockchain technology is being introduced in many countries, for a variety of purposes, including: registration of movable and immovable assets, such as: intellectual property, wills, social protection, health care data, and pension systems. Tested blockchain solutions are available to conduct auctions, to promote transparency of the national and local budgets, to secure reliable vote counting in elections, to create crowdfunding platforms enabling investors to trace expenditures on their projects, and to maintain a variety of registries.

Blockchain technology has demonstrated its feasibility and relevance in e-commerce. Its use is now being extended to new areas, related to e-government.

The obvious effect of blockchain-based solutions and their integration in e-governance will be increased effectiveness of government, reduced cost of transactions and simpler, quicker, more effective, and consequently more convenient means of interaction between the government and the citizen.

In practice, performance of an administrative procedure amounts to making a record in an official registry of civil status, property rights, health, etc. Thus, blockchain can be viewed as a unique and universal technology that helps streamline and automate virtually all administrative procedures while increasing the transparency and effectiveness of e-government.

Many governments in the world are already giving a try to the technology. The government of Sierra Leone, for instance, ran a blockchain-based election earlier this spring, presumably lowering the possibility of election rigging.

Samsung is creating blockchain solutions for the South Korean government, which will be put to use in public safety and transport applications.

Georgia converts its land register to Blockchain. Sweden has also successfully completed its first pilot. Ukraine has piloted blockchain technology for conducting auctions as a part of an effort to improve transparency in government transactions.

In December 2016, the Dubai government announced the Blockchain Strategy with the vision to transform Dubai into the first Government in the world to execute all applicable transactions on the Blockchain by 2020 and to improve its business ecosystem.

In its recent joint report the U.S. House of Representatives and Senate stated that “Government agencies at all levels should consider and examine new uses for this technology that could make the government more efficient in performing its functions”.

Since 2012, blockchain has been in production use in Estonia’s data registries, such as the national health, judicial, legislative, security and commercial code systems, with plans to extend its use to other spheres. After Estonia’s experience with the 2007 cyber attacks, scalable blockchain technology was developed to ensure integrity of data stored in government repositories. And Estonia became host to the NATO Cooperative Cyber Defence Centre of Excellence and the European IT agency.

The European Commission aims to develop a common approach on blockchain technology for the EU in the international arena to improve the European industry - from start-ups to large corporates, administrations and citizens.

In 2017, the Commission recognised blockchain-inspired technologies as having huge potential for administrations, businesses and the society in general; it launched the EU Blockchain Observatory and Forum and invested more than 80 million euro in projects supporting the use of blockchain in technical and societal areas. Around 300 million more are to be allocated to blockchain by 2020.

Last month, 22 European countries have signed a Declaration on the establishment of European Blockchain Partnership. The Partnership will be a vehicle for cooperation amongst Member States to exchange experience and expertise in technical and regulatory fields and prepare for the launch of EU-wide blockchain applications across the Digital Single Market for the benefit of the public and private sectors.

Last year, the President of Belarus has signed the Decree “On the Development of Digital Economy” which regulates blockchain technology implementation.

The National Bank of Belarus has built up the network on blockchain introducing the new mechanism of maintenance of the register of bank guarantees.

Studies explore uses of blockchain to improve the operation of the property registry, which now contains about 7.5 million records of property objects and grows by an average of 100,000 new records of property transfers per month.

Further, given the great amount of state property, the privatisation plans, and the high risks of corruption, blockchain technology can bring more transparency by enabling electronic auctions based on other countries' experiences. The political will is needed here.

Obviously, the use of blockchain in governance and related fields is growing and can be very beneficial. Yet, the real potential impact of this technology and the ways in which it can disrupt the existing landscape of public services and legal procedures and can replace present solutions and processes are largely unknown.

There is a number of technical challenges faced by blockchain:

- Poor scalability (growth in data volume on each node)
- Low bandwidth,
- Centralization tendency as a result of the growing resource-intensity of data validation procedure.

Information security, cost and reliability are still important problems in application.

As a result, deploying disruptive technologies in governance requires a thorough assessment of their potential impact, benefits and risks for the delivery of public goods.

Establishing a general application platform of blockchain technology and developing management standards are crucial for promoting and applying blockchain in e-governance. Blockchain provides an effective way of making government services more efficient, but standardizing the management system, processes and responsibility for the application is necessary for its further promotion.

During the recent World Economic Forum, the characteristics of high-potential use cases were formulated:

- A shared repository of information is used by multiple parties
- More than one entity generates transactions that require modifications to the shared repository
- A level of mistrust exists between entities that generate transactions
- One (or multiple) intermediary or a central gatekeeper is present to enforce trust
- Interaction or dependency between transactions is created by different entities

In conclusion, I should say that, before blockchain, e-governance was the application of ICT for delivering government services. With blockchain, the paradigm changes, and I see e-governance as the implementation of smart laws.

Thank you!