HARNESSING BLOCKCHAIN TO FACILITATE DIGITAL TRANSFORMATION: THE FUTURE OF PUBLIC SERVICES IN GEORGIA

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Over the last few years, blockchain, an obscure technology once associated only with the cryptocurrency, Bitcoin, has become one of the most important technologies to develop. Since its emergence, blockchain has been predominantly applied to innovation within the financial services sector (fintech). However, lately, several new applications have been explored in areas including supply chain, data management, identity and – significantly – public administration.

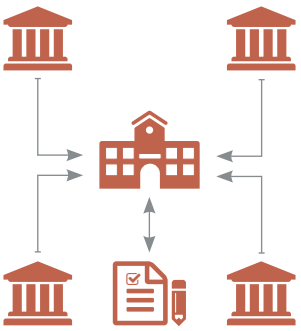
WHAT IS BLOCKCHAIN?

As has become globally apparent in light of the Covid-19 crisis, governments must change the way they administer and deliver their services in order to be equal to current and future challenges. The need to speed up the flow of information and deliver automated and – to the extent possible – remote public services has never been more pressing. Having said that, initiatives for the digitalisation of public administration significantly predate the Covid-19 crisis. A declining trust in government institutions as well as growing expectations of citizens in terms of transparency, integrity and accountability have catalysed digital transformation in the public sector for decades.

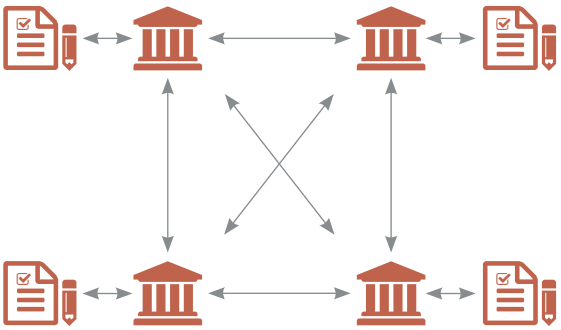
A subset of distributed ledger technologies (DLT), blockchain enables the creation of records of shared facts secured using cryptography to create an audit trail which is maintained and validated by those that use the network (without requiring

a third-party intermediary). This data is cryptographically assured and can be synchronised and distributed across multiple institutions. This allows anyone with access to the network the ability to view the same information as other network users and creates the capacity for a recording of shared facts across independent participants.[1]

Chart 1: Distributed ledger technologies



Centralised ledger



Distributed ledger

Source: EBRD, based on a TradeIX diagram.

With decentralisation, transparency and immutability at its heart, blockchain technology is primed to revolutionise the delivery of public services and promote openness, transparency and inclusiveness, which is one of the key pillars of a digital government,[2] and fits perfectly with the EBRD's mandate as outlined in its 2021-2025 Strategic and Capital Framework.[3]

PUBLIC ADMINISTRATION SERVICES AND BLOCKCHAIN

Apart from the efficiency and trustworthiness of blockchain, the technology can also considerably reduce transaction and administrative costs. Blockchain can also help public administration to digitise, automate and securely manage its records.[4] This all has the potential to benefit user (be that the citizen or business) experience which in turn contributes to an increased trust in public institutions.[5]

It is therefore no surprise that several governments are exploring the potential of blockchain application in public sector administration, land registries, data maintenance, contract management, identity proof and even blockchain-based elections.

EXPLORING BLOCKCHAIN IN GEORGIA

The EBRD has always prided itself on promoting entrepreneurship and innovation, and helping advance the transition to market economies, while fostering sustainable and inclusive growth. Digitalisation fits this mandate perfectly and supports several of the transition qualities.

In late 2019 we responded to a specific request from the Ministry of Justice of Georgia to assist with identifying the possible uses of blockchain in government services delivered by the ministry. As explained below, at the time of the request, Georgia had already piloted the use of blockchain in its land registry, and the aim now was to expand its use.

1 UK Government Chief Scientific Adviser (2016), 'Distributed Ledger Technology: beyond block chain', p. 5, Government Office for Science. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf (last accessed 10 December 2020).

2 http://www.oecd.org/governance/digital-government/toolkit/12principles/ (last accessed 10 December 2020).

3 https://www.ebrd.com/documents/corporate-strategy/strategic-and-capital-framework-2021-2025.pdf (last accessed 10 December 2020).

4 https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/using-blockchain-to-improve-data-management-in-the-public-sector (last accessed 10 December 2020).

5 https://core.ac.uk/download/pdf/196263616.pdf (last accessed 10 December 2020).

In recent years, the Ministry of Justice's efforts to innovate and improve efficiency have been lauded globally. In 2019 the Global Innovations Index ranked Georgia in its top 50 countries.[6] In the same year, the World Bank's economy rankings placed Georgia seventh for overall "ease of doing business". Specific category rankings included: fifth place for ease of registering property, and second place for ease of starting a business. Georgia has retained its Doing Business rankings in 2020.[7] These top accolades relate directly to the services offered by the Ministry of Justice.

To ensure that the public service offering remains highly efficient and accessible, the Ministry of Justice sought the EBRD's help in exploring the use of blockchain to further improve the quality of the essential public services it provides, using the country's well-established innovative approach.

The purpose of our assistance was to outline the specific opportunities for using blockchain in public service delivery by detailing a comprehensive and agency-specific set of use cases. The project has been led by the EBRD's Legal Transition Programme and the Ministry of Justice of Georgia and supported by distinguished blockchain industry experts at Verum Capital AG.

Key use cases identified

The Ministry of Justice is the national government body in Georgia responsible for ensuring efficient and accessible public services to citizens through its 12 agencies. The services carried out by such agencies include: the notaries profession, registries (including land registry, real estate registry, movable property rights registry, entrepreneur and non-profit entities registry), enforcement of court decisions, national archives and legislative herald.

Through close cooperation with the Ministry of Justice and each of its agencies, in carrying out the assignment we studied the activities of, and services delivered by, each agency and devised potential use cases where blockchain can be

6 https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019/ge.pdf (last accessed 10 December 2020).

7 https://www.doingbusiness.org/content/dam/doingBusiness/country/g/georgia/GEO.pdf (last accessed 10 December 2020).

deployed and add value to public services. For each use case, we tried to identify the specific technical requirements necessary to deploy it, as well as flag any potential legal and regulatory obstacles.

Lastly, each use case was evaluated against a measured scorecard, the metrics of which were defined in working with the Ministry of Justice. The criteria used to evaluate each use case stress the creation of value for all stakeholders, simplicity of solutions, increased impact and reach of services, valid use of the technology and potential for further innovation (see table below). These metrics have served as overall guiding principles to uphold the interests of the citizens that the Ministry of Justice serves every day.

Due to its innate features, blockchain technology lends itself particularly well to ledger-like solutions such as databases and registries by ensuring the integrity and authenticity of data stored therein.

Example:
Blockchain land registry, Sweden

Piloted in 2016, the blockchain land registry ensures that land titles are stored securely in a trusted environment. It ensures, among other things: complete trust in government data; prevention of internal parties from manipulating data; verification of the integrity of government data independent of its central database and in real time to enable data interoperability between systems and across borders.

Source: Kairos Future (2017), 'The Land Registry in the blockchain – testbed'.

Table 1: Use case evaluation scorecard

Criteria	Vectors	Thresholds
1. Value **Prioritises low initial investments and high operational outcome**	• ongoing improvements • immediate benefits to staff	Low/medium/high
2. Simplicity **Prioritises ease of integration and low ongoing operational requirements**	• ongoing requirements • ease of integration	
3. Impact **% of population that will benefit and the level of service improvement experienced**	• service improvement • reach	
4. Validity **Prioritises the blockchain as a critical feature and its ongoing value**	• blockchain's ongoing value • blockchain's necessity	
5. Potential **Prioritises a stepwise implementation and foundational benefits for further blockchain projects**	• foundational capacity • stepwise implementation	

Land registries and real estate ownership records were identified early on as one of the main public services that could benefit from using blockchain. In countries with unreliable registries, implementing blockchain solutions could form the foundation for more investment in land and development of the mortgage and credit markets.

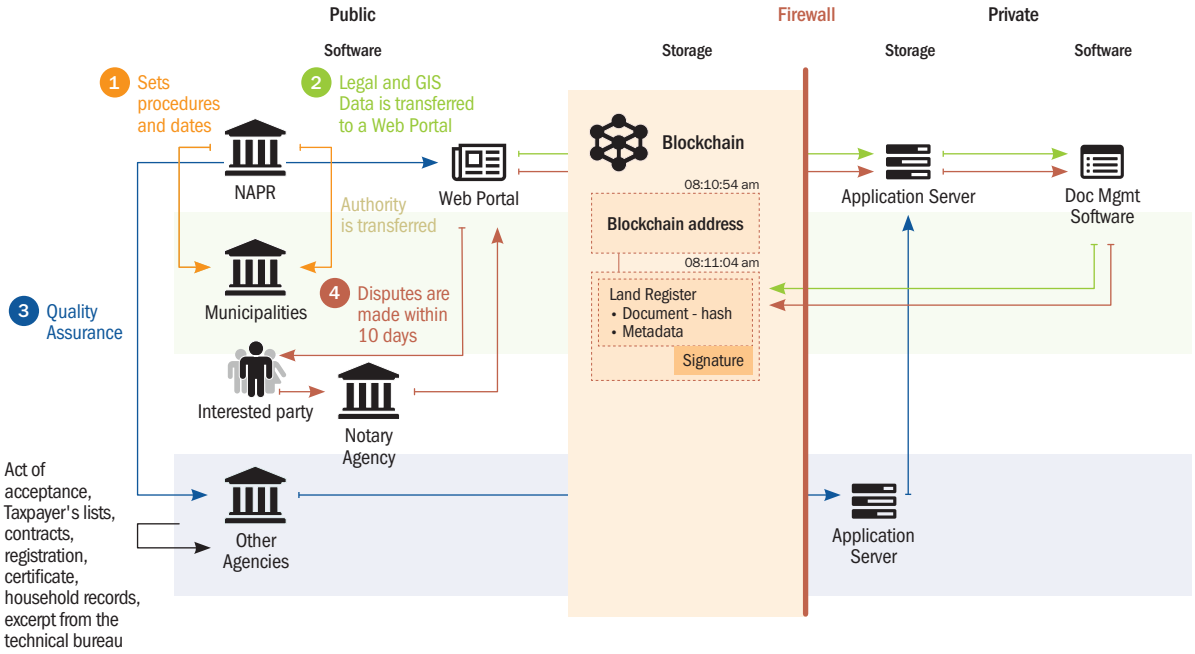
In Georgia, the National Agency for Public Registry (NAPR) currently offers sporadic and systematic forms of land registry to citizens. The NAPR currently stores the data centrally and has written hashed[8] datasets written to the blockchain, ensuring that centrally stored data cannot be manipulated. With early experiments in using a public blockchain well under way, the NAPR is well poised to create an enduring solution for the Land Registry, one that leverages blockchain as an enduring solution for data integrity and creates new opportunities to automate transactions and enables new possibilities for ownership transfer.

Migrating the land registry to blockchain could attract many benefits, including:

1. **Enhanced reliability and trust.** A stand-alone blockchain can improve the security of the existing registry system ensuring that records have not been manipulated by any party who might have access.
2. **Automation and cost savings.** The use of smart contracts can reduce errors related to manual processing, costs-related menial work done by officials, and lower the risk of threats, phishing and otherwise, at the point of data entry, in this case the citizens' portal. For more advanced use cases, a blockchain-based digital identity could reduce recurring procedural costs by approving citizens for registry interaction and allowing them to enter data into the smart contract directly.

Below, in no particular order, we provide a summary of some of the key use cases identified in our report.

Chart 2: Blockchain-based systematic land registry*



Source: EBRD-Verum (2020), "Distributed Ledger Technology Opportunities for the Ministry of Justice of Georgia : An Innovative Approach to Public and Governmental Service Delivery".

*As the EBRD-Verum AG Report envisages it to be implemented in Georgia.

8 A hash is a function that converts an input of letters and numbers into an encrypted output of a fixed length.

Debtor registry

The National Bureau of Enforcement (NBE) manages Georgia's Debtor's Registry, ensuring that it is up to date and publicly accessible. It is a systematised electronic database that lists individuals, legal entities and organisations against which enforcement administration has been exercised. The database is accessible on the NBE website; citizens can submit a request, at a negligible cost, to instantly retrieve relevant records. Individuals and entities are added to the registry at the moment that they become the target of an enforcement proceeding.

Migrating such a registry to blockchain could attract many benefits, including:

1. **Reduced risk for fraud and corruption**. A blockchain-based debtor's registry, similar to other registries, can reduce the risk of manipulation of records from parties that might have access to a centralised database.
2. **Cost reduction for involved parties**. Through the eventual automation of access, the administrative costs associated with managing requests could be eliminated.
3. **Social support**. Opportunities to consolidate records and outstanding debts from multiple parties could allow agency officials to support citizens with debt relief counselling based on complete information.

Example:
Ukrainian Ministry of Justice Auction Portal

Piloted in 2017, this blockchain-based auction portal helps fight corruption by providing a transparent and decentralised system for the sale and lease of state properties and other rights and ensuring legitimate ownership and transfer of ownership.

Source: Reuters (2017), 'Ukrainian ministry carries out first blockchain transactions'.

Example:
Groningen Debt Assistance, The Netherlands

Piloted in 2018, blockchain supports debtors to coordinate their credit information from external parties so that government agents can easily provide debt-relief assistance and help them to be stricken from the debtor's registry. Key benefits include secure consolidation of financial obligations for debtors and reduced administrative and legal costs.

Source: CGI (2018), 'Using blockchain to help Groningen residents control their debts'.

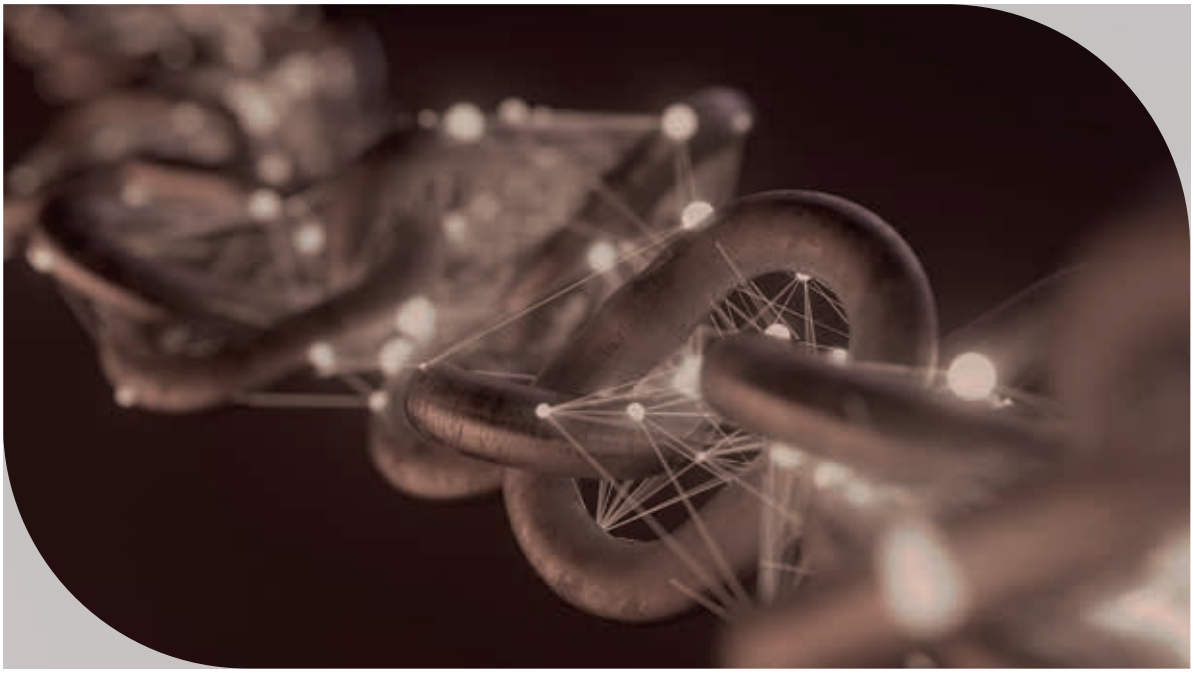
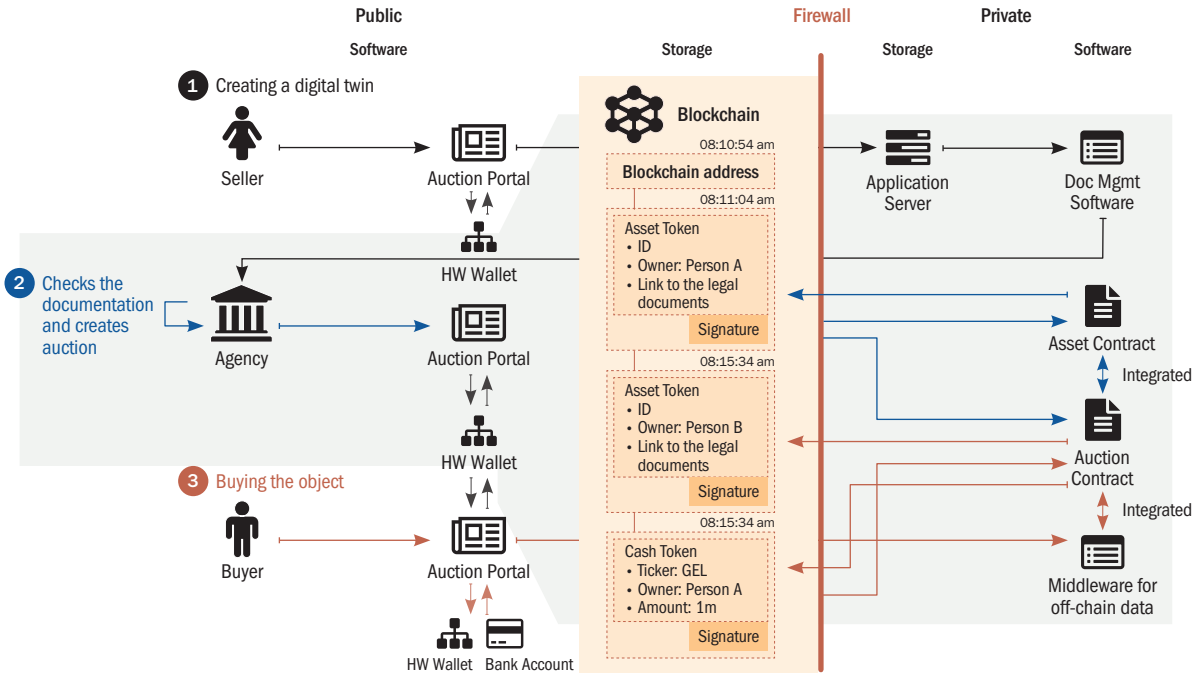


Chart 3: Blockchain-based auction portal



Source: EBRD-Verum (2020), "Distributed Ledger Technology Opportunities for the Ministry of Justice of Georgia : An Innovative Approach to Public and Governmental Service Delivery".

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Auctioning of property

The NBE enables all citizens to trade online and purchase property that is being auctioned. The auction process starts by NBE publishing a statement online, announcing an auction that will last from seven to 10 days. Participants in the auction proceed to agree to terms, pay a guarantee, register via the relevant website and ultimately submit their bid online. The winning bidders are required to pay in full for purchases within 10 days or they lose their guarantee. Certified ownership documents are then issued and the buyer must collect their property within 15 days.

Migrating such registry to blockchain could come with many benefits, including:

1. **Secure payments**. Guarantees can be submitted and returned instantly. This allows people to make more bids and feel more secure with how their funds are being handled.
2. **Secure transfer of ownership**. Transfer of ownership can be completed instantly on auction close or after payment in full has been received with minimal administrative efforts. Citizens can prove ownership rights to avoid collection issues.
3. **Automated and secure processes**. A smart contract programmed to uphold the terms of the auction can reduce opportunities for error by agency officials and prevent any internal manipulation of bids or pricing.

"The National Bureau of Enforcement (NBE) enables all citizens to trade online and purchase property that is being auctioned."

GENERAL LEGAL REQUIREMENTS TO ENSURE ENFORCEABILITY OF BLOCKCHAIN TRANSACTIONS AND COMPLIANCE WITH LOCAL LAWS AND REGULATIONS

Lastly, when considering the adoption of blockchain in the delivery of a public service, a key consideration should be the extent to which the platform and the services delivered through it are compliant and enforceable under the local law. In a sense, there needs to be a recognition of specific actions/events as having the force of law. Such actions can be summarised as recognition of :(i) digital signatures and stamps attributed to an individual (that are able to indicate intention in a binding and timely manner); (ii) timestamps (that indicate when and by whom the action has been conducted placing it in time); and (iii) other sorts of validation relevant to a specific use case (for example, uploading of documents and agreements; approval of actions by third parties).

Enforceability of blockchain-based smart contracts is predicated on being able to ascertain parties' identities (which may also be helpful if a dispute is presented before a court of law) and intention. Mechanisms introduced on the basis of recognised international standards and regulations (that is, European Union eIDAS regulation) such as electronic signatures and time stamps would need to be recognised and given equivalence to their written/analogue counterparts.

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In addition, whether smart contracts (the computer code utilised to automatically execute certain functions on blockchain) are legally enforceable contracts themselves or form part of legally enforceable contracts, remains a fundamental question for blockchain adoption. In general, analysis of this question relies on the application of basic contract law principles with modern-day facts and circumstances.

Importantly, the inherent features of blockchain technologies (especially immutability and security) may place it at odds with data privacy laws and regulations which call for the possibility to amend, correct and delete personal data. As a result, careful analysis of local laws and regulations is required in order to ensure conformity of blockchain solutions with the local regulation in this respect.

The EBRD's Legal Transition Programme's Report "Smart contracts: Legal Framework and Proposed Guidelines for Lawmakers",[9] published in 2018, provides further detailed and useful guidance for state authorities considering all these issues.

9 http://www.ebrd.com/documents/pdf-smart-contracts-legal-framework-and-proposed-guidelines-for-lawmakers.pdf (last accessed 10 December 2020).

CONCLUSION

The cryptography that underlies blockchain technology helps increase the security of the transaction in any sort of application. Blockchain offers government bodies the ability to provide a secure, trustworthy and transparent service while improving communication with its citizens. Furthermore, blockchain is able to provide secure access to public sector data, which in the long term will help ensure all information is kept safe.

The saying “necessity is the mother of invention” rings especially true now. Digitalisation has found a new spotlight, so this is the perfect time to focus on digital transformation. Industries across the board are evolving at lightning speed and keeping up with the change is challenging. It is no surprise that blockchain has caught the eye of the government, notwithstanding that widespread implementation of it may be some time ahead.

Shepherding the government through such a digital journey needs to be a steady process. With technology changing at breakneck speed, infrastructures must be put in place to help navigate the platforms of the future. Governments must focus on the value of technology and acquiring the necessary skills.

Our work, as evidenced by our activity in Georgia, is significant progress, where it can be seen that a priority for the government is to recruit more digital and technology specialists in order to improve the government’s technical capability. We look forward to seeing this evolve and adapt through the years.