Scope For The Application Of Blockchain In The Public Healthcare Of The Russian Federation

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Abstract

How Blockchain as a technology can be used in closed systems to maintain electronic health records, circulation of medical products, controlling healthcare service contracts, educating medical staff.

Introduction

- What is Blockchain?
- What are the benefits of Blockchain?
- Open vs Closed Blockchain systems.
- What is a smart contract?

Blockchain in Medicine

- Until 2017, most publications regarding the use of Blockchain in medicine talked about improving quality of clinical trials, transparency of data and reliability of scientific research results.
- Firstly, it ensures reliability of stored data. Each record is confirmed by several sources.
- Data will remain unchanged over time, unless all sources agree to the changes.
- Proper data security will be ensured, since no one can access the data without permission from the data source.

- The staff of the Department of Information and Internet Technologies of the Sechenov University (Russia, Moscow) introduces the newest technologies of teaching in the educational process, including distance learning.
- Here, Blockchain can be used to monitor the skills of specialists, verify the level of education, control knowledge flow.

- In clinics, an information system automates and streamlines business processes.
- It stores all patient data in a single electronic map, allows you to monitor the dynamics of changes and carry out a complete cycle of patient management.
- Regardless of where the clinics are located, all data exists on a single database.
- It is also possible to develop a smart contract for electronic medical history that records the results of diagnosis and treatment of patients.

Benefits of Closed Blockchain

- Increases the legal significance of electronic information.
- Instead of notarizing data to confirm its authenticity, the storage of data based on the Blockchain system allows you to reliably trace the records for any time interval.
- All registries managed by federal executive health bodies follow traditional database principles, ie, reliability is based on duplication of primary documentation. This requires regular verification
- Blockchain can significantly optimize the register model of storing legally significant information.

Building the Blockchain System

- Each operation of entering information in the register must be a transaction.
- Transaction groups are combined into a block that reference the previous block.
- This allows tracking of changes at all stages.
- Viewing access is allowed to all registered parties.
- Transactions are accepted only from authorized sources.
- Since the system is smaller, calculation of chain of blocks does not require much power.

Electronic Register of Medicines (with IoT)

- Periodic reading of labelling of packages of the product automatically ensures compliance with requirements of the GxP system.
- Fines charged for improper improper storage and violation of shelf life.
- Correct information allows minimizing foreclosure data, improves safety of pharmacotherapy.
- Can implement more ambitious projects like logistics from the cloud.

CALS / PLM

Continuous Acquisition and Lifecycle Support – A means of continuous information support for the supply at the length of life cycle of products.

Product Lifecycle Management – An organizational and technical system that provides management of all information about products and related processes throughout its lifecycle

- Logistics brings together solutions for transport management, flexible supply chains and forecasting the demand for medicines.
- Leads to acceleration of turnover of inventories and receival of full, reliable and timely information about commodity-material flows.
- Includes several modules that can be implemented separately or together.
- Allows real time monitoring of financial efficiency, optimizing the use of transport resources.
- Follows the ‘what if’ principle, ie, making production and transport plans taking into consideration multiple constraints. Optimal plan is chosen once logistics is considered.
- Highly scalable.

Conclusion

Thus, closed Blockchain systems can find the widest application for improving the quality of public services, primarily healthcare. The implementation of the described examples do not require significant costs as all technological platforms and solutions are ready. All that is required is the development of specific application solutions, and their introduction to the production and regulation process. The most significant areas of interest seem to be in the data processing, maintenance of registers, licensing, quality control, remote monitoring of health status, distance consultation and so on.

Thank You