

Title: A Blockchain-Based Approach to Integrate Personal Health Records

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Currently there is not a single trusted infrastructure used for the exchange and storage of medical data along the healthcare value chain and, thus, there is no platform used for monitoring patients' traceability within the entire healthcare chain. This situation leads to difficult communication and increased procedural costs, and thus it limits healthcare players from developing a better understanding and know-how of patients' traceability that could further boost innovation and development of the best-fitted health services. PatientDataChain blockchain-based technology is a novel approach, based on a decentralized healthcare infrastructure that incorporates a trust layer in the healthcare value chain. Interconnecting different healthcare providers, the collected data is integrated into a unitary personal health records (PHR) system, where the patient is the owner of his/her data. The decentralized nature of PatientDataChain, based on blockchain technology, leveraged the proper context to create a novel and improved data-sharing and exchange system, which is secure, flexible, and reliable. This approach brings increased benefits to data confidentiality and privacy, while providing secure access to patient medical records. This paper presents the design, implementation, and experimental validation of our proposed system. The original contributions of our paper include the definition of the concept of unifying the entire healthcare value chain, the design of the architectural model of the system, the development of the system components, as well as the validation through a proof of concept (PoC) conducted with a medical clinic from Bucharest, using a dataset of 100 patients and over 1000 transactions. The POC demonstrated the feasibility of the model in integrating the personal health records from heterogeneous sources in a unified, decentralized PHR system, with enhanced data exchange among healthcare players.

Biography

With a deep connection with everything related to technology and IT since early childhood, Alin Iftemi decided to pursue a path which would bring him closer to his one true passion, programming. He is now CBO & Co-Founder of Modex, a global blockchain company. He is the main driving force behind Modex, responsible for developing the company's strategy, while actively searching how to implement new technologies to gain a competitive advantage.

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