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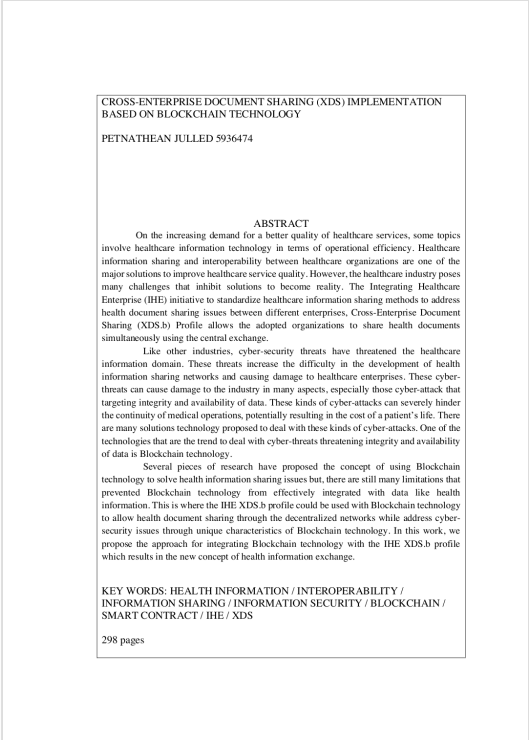

CROSS-ENTERPRISE DOCUMENT SHARING (XDS) IMPLEMENTATION BASED ON BLOCKCHAIN TECHNOLOGY

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ABSTRACT

On the increasing demand for a better quality of healthcare services, some topics involve healthcare information technology in terms of operational efficiency. Healthcare information sharing and interoperability between healthcare organizations are one of the major solutions to improve healthcare service quality. However, the healthcare industry poses many challenges that inhibit solutions to become reality. The Integrating Healthcare Enterprise (IHE) initiative to standardize healthcare information sharing methods to address health document sharing issues between different enterprises, Cross-Enterprise Document Sharing (XDS.b) Profile allows the adopted organizations to share health documents simultaneously using the central exchange.

Like other industries, cyber-security threats have threatened the healthcare information domain. These threats increase the difficulty in the development of health information sharing networks and causing damage to healthcare enterprises. These cyber-threats can cause damage to the industry in many aspects, especially those cyber-attack that targeting integrity and availability of data. These kinds of cyber-attacks can severely hinder the continuity of medical operations, potentially resulting in the cost of a patient's life. There are many solutions technology proposed to deal with these kinds of cyber-attacks. One of the technologies that are the trend to deal with cyber-threats threatening integrity and availability of data is Blockchain technology.

Several pieces of research have proposed the concept of using Blockchain technology to solve health information sharing issues but, there are still many limitations that prevented Blockchain technology from effectively integrated with data like health information. This is where the IHE XDS.b profile could be used with Blockchain technology to allow health document sharing through the decentralized networks while address cyber-security issues through unique characteristics of Blockchain technology. In this work, we propose the approach for integrating Blockchain technology with the IHE XDS.b profile which results in the new concept of health information exchange.

KEY WORDS: HEALTH INFORMATION / INTEROPERABILITY / INFORMATION SHARING / INFORMATION SECURITY / BLOCKCHAIN / SMART CONTRACT / IHE / XDS

298 pages