IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY FOR DIGITALIZATION OF ASSET RECORDING SYSTEM (CASE STUDY: UNIVERSITAS ANDALAS)

FINAL PROJECT REPORT

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PADANG

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IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY FOR DIGITALIZATION OF ASSET RECORDING SYSTEM (CASE STUDY: UNIVERSITAS ANDALAS)

FINAL PROJECT

submitted to fulfill one of the requirements for obtaining a Bachelor's degree in Industrial Engineering, Faculty of Engineering, Universitas Andalas

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ABSTRACK

Industrial era 4.0 is marked by the increasingly massive innovation and digital technology such as artificial intelligence, Internet of Things (IoT), big data, 3D printing, genetic engineering, robotics, and machine learning. Advances in digital technology have driven digital transformation where data is the foundation of all business models. It makes issues related to data security important in the digital era. Blockchain technology is one of the technologies that can be applied as a solution to improve digital data security. The advantages of Blockchain as a distributed data storage system are transparent and difficult to manipulate. The emergence of Blockchain technology as a digital currency milestone has now developed from the digital economy into the digital society that has applied in various fields such as finance, supply chain, data archiving, and others. Blockchain has attracted technologist's activists to build next-generation applications to solve the trust issue in businesses that depend on third parties. Asset management with Blockchain technology makes it easy to implement innovative asset management administration protocols.

The research aims to implement Blockchain technology into the asset recording system in Higher Education (Andalas University). The method used in system design starts from the identification stage of asset management conditions in existing conditions, then analyzes system requirements, then system design is carried out. Implementation of Blockchain technology in the asset recording system is done using the atra.io platform that consists of the implementation of dTables (database), Triggers (decentralized API endpoints), and LiteUI (User interface).

The results of the research are asset recording system was successfully designed using Blockchain technology. The purpose system can digitalize asset data with minimal risk compared to conventional asset recording systems, which are centralized in terms of data security and transparency.

Keyword: Atra.io, Asset management, and Blockchain,

ABSTRAK

Era industri 4.0 ditandai dengan semakin masifnya inovasi dan teknologi digital seperti artificial intelligence, Internet of Things (IoT), big data, pencetakan 3D, rekayasa genetika, robot dan machine learning. Kemajuan teknologi digital telah mendorong terjadinya tranformasi digital dimana data merupakan fondasi dari segala model bisnis. Hal ini membuat isu terkait keamanan data menjadi hal yang sangat penting di era digital. Teknologi Blockchain merupakan salah satu teknologi yang dapat diterapkan sebagai solusi untuk meningkatkan keamanan data digital. Keunggulan Blockchain sebagai sistem penyimpanan data terdistribusi bersifat transparan dan sulit dimanipulasi. Kemunculan teknologi Blockchain *sebagai tonggak mata uang digital yang saat ini telah berkembang dari ekonomi digital ke dalam bentuk masyarakat digital yang telah diterapkan diberbagai bidang seperti keuagan,* supply chain, *pengarsipan data dan lainnya*. Blockchain *telah menarik minat penggiat teknologi untuk membangun aplikasi generasi selanjutnya yang mampu mengatasi masalah kurangnya kepercayaan dalam bisnis yang saat ini sangat bergantung kepada pihak ketiga. Manajemen aset dengan teknologi Blockchain memberikan kemudahan untuk menerapkan protokol administrasi pengelolaan aset yang inovatif*

Penelitian yang dilakukan bertujuan untuk mengimplementasikan teknologi Blockchain ke dalam sistem pencatatan aset di Perguruan Tinggi (Universitas Andalas). Metode yang dilakukan dalam perancangan sistem dimulai dari tahap identifikasi kondisi pengelolaan aset pada kondisi existing, selanjutnya dilakukan analisis kebutuhan sistem, kemudian dilakukan perancangan sistem. implementasi teknologi Blockchain pada sistem pencatatan aset dilakukan menggunakan platform atra.io yang terdiri dari implementasi dTables (database), Triggers (decentralized API endpoints), dan LiteUI (User interface).

Dari hasil penilitian yang telah dilakukan berhasil dirancang sistem pencatatan aset dengan menggunakan teknologi Blockchain. Sistem yang dihasilkan dapat digunakan dalam digitalisasi data aset dengan resiko minimal dibandingkan dengan sistem pencatatan aset konvensional yang terpusat dalam segi keamanan dan transparansi data.

Kata kunci: Atra.io, Blockchain, *dan Manajemen aset.*