

## **A Decentralized Application for Secure Data Handling of Wireless Networks Using Ethereum Smart Contracts**

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**Abstract :** This paper introduces a method to verify multi-agent systems in industrial control systems using blockchain technology. The proposed solution enables to record and verify each process that occurs while generating a customized product using Ethereum-based smart contracts. Node-Red software agents are developed with the help of semantic web technologies, and these software agents interact with IEC 61499 function blocks to execute the processes. The agent associated with each mechatronic component and its controller can communicate with the blockchain to record various events that occur during each process, and the latter smart contract helps to verify these process orders of the customized product.

**Keywords :** blockchain, Ethereum, node-red, IEC 61499, multi-agent system, MQTT

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