



Team ID	2		
Semester	6 th Semester		
Course :	Interdisciplinary Project		
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Project Title	Supply Chain Monitoring of Chemical/Aerospace Components using Blockchain		
Center of Excellence	-		
Internal Guide			
Name Designation & Department	Dr. Neeta B Malvi		

INTRODUCTION:

The proposed project develops a blockchain-powered supply chain monitoring system for the aerospace and chemical component addressing challenges like counterfeit parts, manual audits, and fragmented data. It integrates IoT sensors, smart contracts, and decentralized ledgers to ensure end-to-end traceability, automate compliance, and enhance operational transparency.

OBJECTIVES:

1. Establish an immutable and verifiable digital footprint of each component's lifecycle, ensuring source-to-destination integrity.
2. Ensure components are transported and handled under defined environmental conditions using IoT sensors.
3. Automatically enforce and record compliance with international standards and quality control protocols through smart contracts.

METHODOLOGY:

Decentralized Part Tracking: Immutable records of component lifecycle using Ethereum PoA.



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IoT Integration: Sensors (temperature, strain, RFID) feed real-time data to blockchain via Raspberry Pi edge nodes.

Analytical data logging: Securely logs and tracks the composition, processing conditions, and analytical data of chemical or aerospace components.

Anti-Counterfeit Measures: Cryptographic NFC tags and QR codes linked to blockchain UUIDs

Raspberry Pi Visualization Dashboard: for monitoring sensor data, tracking component status, and visualizing blockchain transactions in real-time.

SOFTWARE REQUIREMENTS:

Ethereum, Solidity, React.js, IPFS, Web3.js, Crypto.js

HARDWARE REQUIREMENTS:

Raspberry Pi 4B, RFID Tags, Temperature and component monitoring sensors

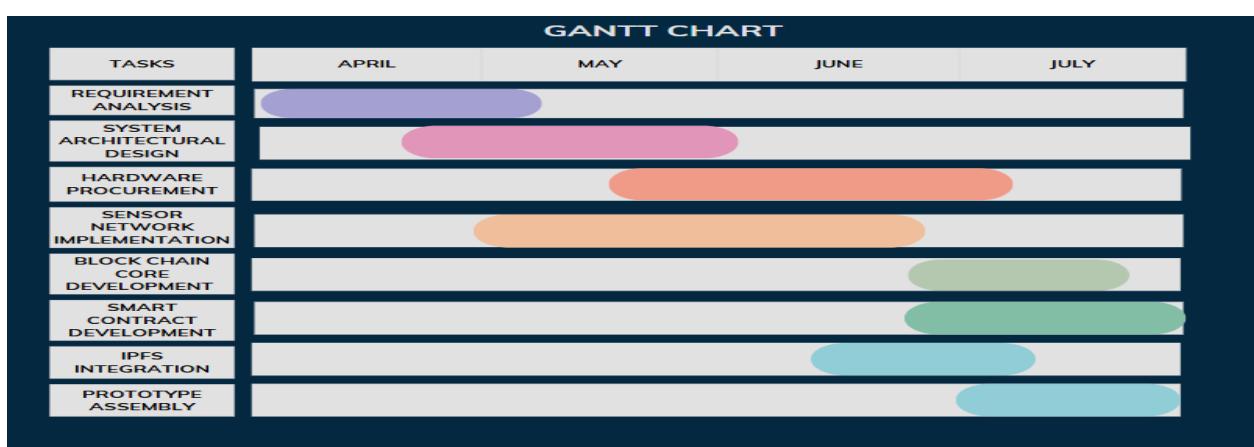
INTERDISCIPLINARY RELEVANCE:

This project unites departments through blockchain technology, enabling secure systems in Computer Science, integrating cryptography, RFID, and sensors in Electronics and Communication, ensuring standards-compliant design and CAD modeling in Aerospace, and supporting sensor-based material monitoring and chemical analytical techniques in Chemical Engineering.

INNOVATION / CONTRIBUTION TO THE FIELD:

Blockchain technology in the supply chain for stringent aerospace/chemical applications can improve production and minimize losses impacting Industry 4.0 in a big way.

TIMELINE (GANTT CHART):



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