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Issuing Event Ticket as NFT's

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Keywords: Blockchain, NFT ticketing, Smart Contracts, Polygon, MetaMask, IPFS, Decentralized Application, Fraud Prevention, Web3.

I. INTRODUCTION

The project "Issuing Event Tickets as NFTs" introduces a blockchain-based platform that revolutionizes the traditional event ticketing system by addressing challenges like fraud, scalping, and lack of transparency. Leveraging Non-Fungible Tokens (NFTs), this system ensures each ticket is unique, verifiable, and tamper-proof. Event organizers gain better control over ticket issuance and resales, while attendees benefit from a secure and efficient process. By combining blockchain technology with smart contracts, the platform offers features like dynamic pricing, ownership verification, and automated royalty distribution—setting a new standard in secure and transparent event management.

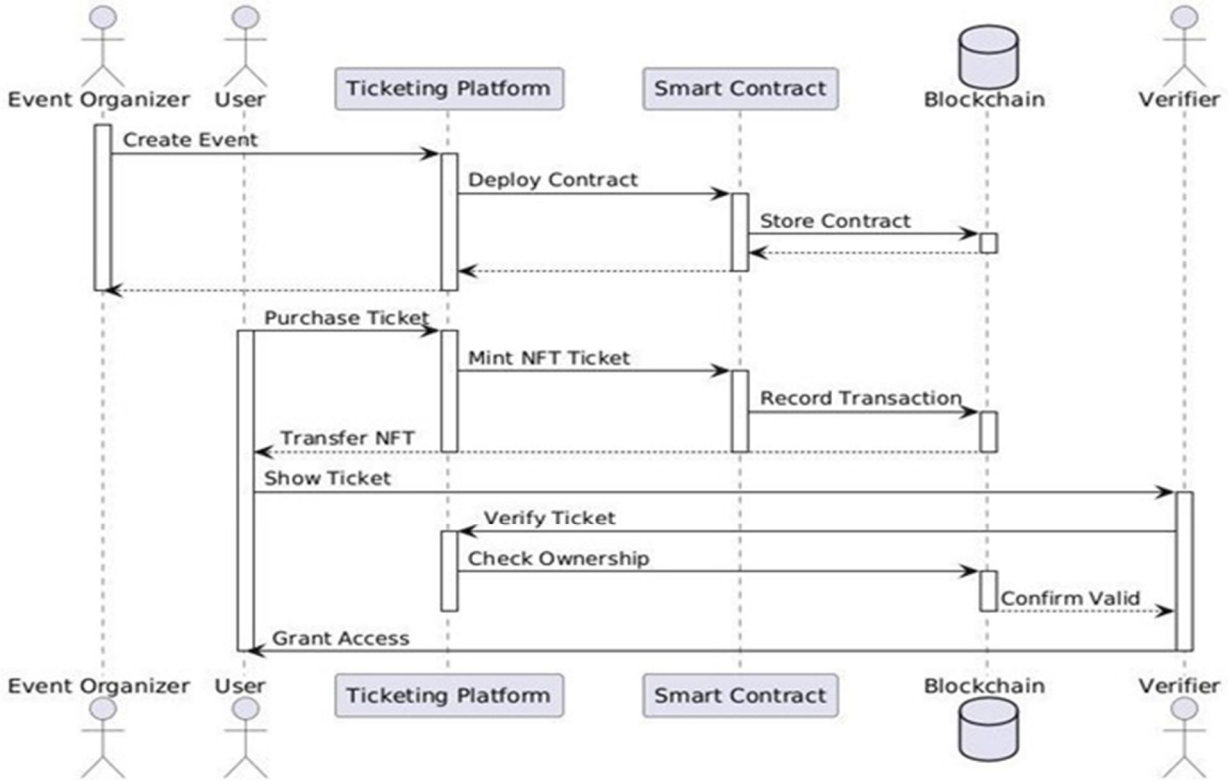


Figure 1: Sequence diagram for issuing event ticket as NFT's

A. *Objectives*

1) Design a user-friendly platform to issue, transfer, and verify event tickets as NFTs.
2) Enable transparent ticket transactions with ownership history stored on blockchain.
3) Implement smart contracts for automated ticket sales, pricing control, and royalty enforcement.
4) Develop an intuitive interface for event organizers and attendees for managing tickets.
5) Enhance system scalability by supporting interoperability across multiple blockchains.
6) Minimize fraud, duplication, and unauthorized ticket resales.

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II. METHODOLOGY

The project uses Polygon blockchain for minting NFTs representing event tickets. Smart contracts written in Solidity handle ticket sales, transfers, and resale policies. A React.js web application serves as the front end, integrating MetaMask wallets for secure transactions. Ticket metadata is stored in a decentralized way using Pinata (IPFS). The backend APIs are developed with Node.js and Express. The solution undergoes deployment first on Polygon's Mumbai Testnet for testing and then on the mainnet for production. The system ensures blockchain security, low transaction fees, and user-friendly access through seamless Web3 integrations.

III. RESULT AND CONCLUSION

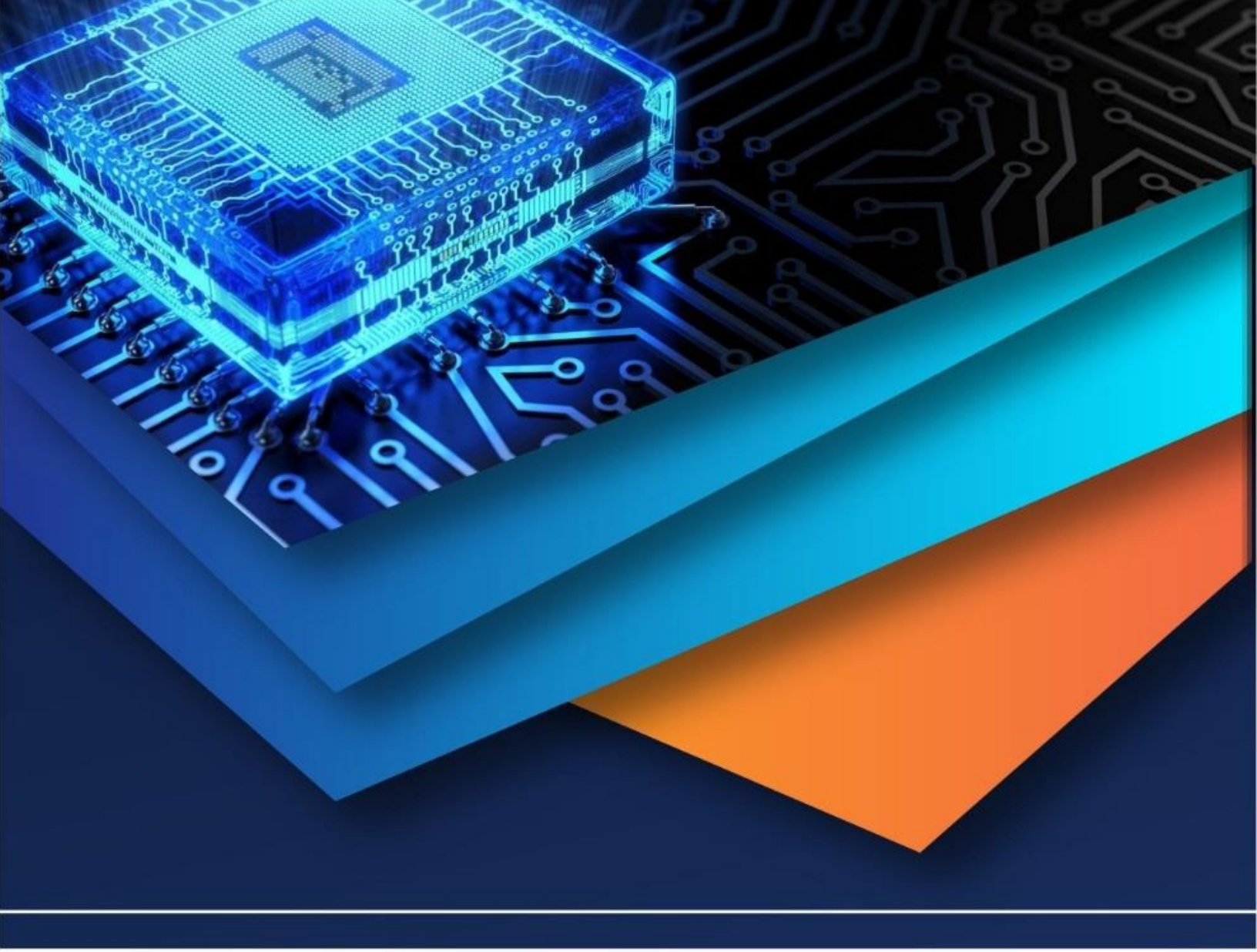
The project successfully demonstrates a working NFT-based ticketing system deployed on Polygon blockchain. Testing validated the secure minting, ownership transfer, and verification of tickets while preventing fraud and unauthorized resales. The smart contract's performance ensured royalty compliance and dynamic transaction handling. Snapshots from the implementation show real-time ticket bookings, seat selections, and blockchain confirmations via MetaMask. This solution establishes a transparent and scalable ticketing model while addressing major limitations in traditional systems.

IV. FUTURE SCOPE

The future scope of this project includes:

1) Multi-Blockchain Support: Extend platform compatibility to Ethereum, Solana, and Binance Smart Chain.
2) Dynamic Pricing Models: Integrate AI to adjust ticket prices based on demand and market trends.
3) Marketplace Integration: Build a dedicated secondary marketplace for secure peer-to-peer ticket resales.
4) Mobile App: Develop native apps for Android/iOS for seamless user experiences.
5) Offline Verification: Use QR codes with cryptographic checks for internet-free ticket validation.
6) Eco-Friendly Solutions: Migrate to greener blockchain networks using Proof-of-Stake (PoS).

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