## **Abstract**

Current NFT marketplaces provide users with platforms to buy, sell, and trade digital assets without considering the long-term management of these assets after user inactivity or death. The effectiveness of asset preservation and inheritance is limited when users become inactive, leading to potential loss of valuable digital assets and complications for legal heirs. This drawback can be overcome by implementing an automated digital asset inheritance system integrated within the NFT marketplace. This work proposes a novel NFT marketplace architecture that incorporates inactivity detection mechanisms and automated asset distribution protocols. The system monitors user activity patterns and implements a four-way asset distribution strategy after a predetermined inactivity period: (1) charitable donation of selected assets, (2) automated sale of assets with proceeds transferred to next of kin, (3) direct transfer of assets to designated next of kin, and (4) transfer of assets to legal representatives. The experimental implementation demonstrates that the proposed automated inheritance system effectively manages digital asset succession while maintaining blockchain security and transparency. The system utilizes smart contracts to ensure tamper-proof execution of user-defined inheritance preferences, providing a comprehensive solution for digital asset management beyond the user's active participation.

**Keywords:** NFT marketplace, digital asset inheritance, blockchain automation, smart contracts, inactivity detection, estate planning

**Conclusion**  
 This project presents a novel NFT marketplace that integrates an automated inheritance system to manage digital assets responsibly in cases of user inactivity or presumed death. By introducing a four-way distribution mechanism—donation, sale with profit transfer, transfer to next of kin, or to a lawyer—the platform ensures that NFT assets are passed on according to user-defined preferences.Smart contracts govern the entire process, offering transparency, immutability, and automation without the need for intermediaries. The inactivity detection mechanism reliably identifies dormant users and triggers appropriate actions in line with estate planning requirements. This system not only improves asset preservation but also reduces risks such as inaccessible wallets and legal complications.By merging proactive inheritance strategy with blockchain security, the platform fills a critical gap in digital asset management. With future integration into legal frameworks and enhanced security features, it positions itself as a scalable and forward-looking solution for digital estate lanning in the Web3 era.

