Metaverse Standards Forum
NFT Royalties: Internal Wallet Transfers

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Reviewer	Due Date	Status	Contact
Digital Asset Management Working Group	June 18, 2024	Complete	digital_asset_management @lists.metaverse-standards.org
MSF Domains (Peer Review)	March 05, 2025	Complete	oversight@lists.metaverse-standards.org
Use Case Taskforce	May 05, 2025	Complete	use_case_task_force@lists. metaverse-standards.org

The purpose of this template is to provide a structured framework for collecting and documenting use cases within the Metaverse Standards Forum (MSF). Use cases are essential for understanding real-world scenarios where metaverse technologies are applied and where interoperability challenges may arise. This template guides MSF members in providing a concise yet comprehensive description of a use case, including its title, identifier, and summary. It also encourages contributors to list the benefits of the use case, identify actors or entities involved, and describe the use case scenario in detail, emphasizing interactions, challenges, and requirements. Additionally, it prompts the inclusion of relevant technical information, such as implementations, success metrics, and challenges faced. This template aims to facilitate the gathering of valuable use-case data to inform standards development and foster collaboration within the MSF community.

MSF members and MSF Domain Groups are invited to submit use cases.

NOTE: Organizations such SDOs who want to submit and add a use case would need a sponsor that is an MSF member. This process is established in order to have a contact person in MSF that can handle discussions and resolve open issues within regular meetings.

Eligible submitters:
- MSF Domain Groups
- MSF Members (Principal and Participant)
- External Organizations with Liaison Agreements (with the support of a MSF member that acts as sponsor)
- Standard Development Organizations (with the support of a MSF member that acts as sponsor)

Minimum Requirements for MSF Member Submissions not part of a Domain Group:

- Minimum required number of proposers: 3
- Minimum required number of supporters: 5

NOTE: Use cases submitted by SDOs and Liaison Organizations would also need to fulfill the same requirements (and would need a sponsor) unless they are submitted by a Domain Group.

MSF: Metaverse Standards Forum
POG: Pre-qualified Organizations and Groups
SPP: Standards Related Publications and Projects
DWG: Domain Working Groups
WG: Working Group
SDO: Standards Development Organization

Use Case Title
NFT Internal Wallet Transfers

Use Case Identifier
MSF2024-001-NFTIWT • Version 1.0 • Year of Release: 2025

Summary of Use Case

Description: This use case explores the scenario of internal wallet transfers, specifically focusing on how such transfers can impact the management and distribution of Non-fungible Token (NFT) royalties. The process involves the current owner transferring an NFT between wallets they control, without engaging in a marketplace transaction. This scenario is critical for maintaining the integrity and continuity of royalty distributions in cases where NFT ownership changes hands internally.

Benefits of Internal Wallet Transfers:

- **Royalty Management Efficiency:** streamlines the process of managing and tracking royalties through internal transfers, ensuring rightful recipients receive their dues even in the absence of marketplace transactions.

- **Enhanced Security and Privacy:** allows NFT owners to manage their assets and associated royalties with increased privacy and security, leveraging internal wallet mechanisms.

- **Operational Flexibility**: provides NFT owners with the flexibility to reorganize their digital assets across their wallets while maintaining accurate royalty distributions.

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Contributors and Supporters

- Digital Asset Management Working Group
- MSF Domains (Peer Review)
- Use Case Taskforce

Keywords

Internal Wallet Transfers, NFT Royalties, Royalty Management, Blockchain Transactions, Smart Contracts, Digital Assets, NFT Economy, Royalty Distribution, Metaverse Finance, Crypto Wallets

Actors/Entities

- **Creator:** entity that originates the NFT, responsible for its initial creation and minting.
- **Holder:** the primary entity executing the internal wallet transfer. This actor is the current owner of the NFT and controls both the source and destination wallets involved in the transfer.
- **Wallet:** represents the digital wallets owned by the Holder. In this use case, the Holder uses multiple wallets for managing their assets, including the transfer of NFTs between these wallets.
- **NFT Contract:** the smart contract associated with the NFT being transferred. It contains the logic for royalty distribution upon subsequent sales or transfers, ensuring that creators or rightful royalty recipients are compensated.
- **Blockchain/Network:** the underlying technology that facilitates the transfer of NFTs and the execution of smart contracts, including the management of royalties.

Detailed Description of Use Case/Scenario

Preconditions:
- Creator mints NFT using the System.
- The Holder has multiple wallets under their control for different purposes (e.g., investment, collection display, trading).
- At least one NFT in the Holder's possession is subject to royalty agreements, as defined by its smart contract used by Creator.
- The Holder decides to transfer an NFT from one wallet to another, both of which they own, for organizational, strategic, or security reasons.

Main Flow:
1. **Initiation of Transfer:** the Holder initiates the process of transferring an NFT from one wallet (Source Wallet) to another (Destination Wallet) they own.

2. **Validation by Blockchain/Network:** the transaction is validated by the blockchain or network, ensuring the Holder has the right to transfer the NFT and the transaction meets the network's criteria (e.g., gas fees are covered).

3. **Royalty Smart Contract Consultation:** the smart contract associated with the NFT uses System to check for any royalty distribution logic that needs to be executed. Since the transfer is internal and the Holder remains the same, the smart contract typically recognizes it as a non-sale transfer, not triggering royalty distribution.

4. **Transfer Execution:** upon successful validation, the NFT is transferred from the Source Wallet to the Destination Wallet. The transfer is recorded on the blockchain, maintaining a transparent and immutable record of ownership change, even though the Holder remains the same.

5. **Update in Holder's Asset Management:** the Holder updates their records or asset management strategy to reflect the new location of the NFT within their wallets.

Alternative Flow

● **Royalty Payment Triggered:** in certain situations, the internal transfer might be recognized by the System as a transaction necessitating royalty payment. This could happen if the System interprets the transfer as a sale or if the blockchain network enforces royalty payments on all transfer types, including internal transfers. The Holder might need to cover any associated fees or royalties, which are then distributed to the rightful recipients according to the smart contract's terms. And in such cases the following flow applies:

  o The Holder reviews and acknowledges the royalty fee before completing the transfer.
  o The blockchain network executes the royalty distribution as per the smart contract's logic.
  o The transfer is finalized with the royalty payment distributed to the creators or other designated recipients.

Postconditions

● The NFT resides in the Destination Wallet, with the Holder's ownership unaltered but organized according to their preferences.

● The blockchain's ledger reflects the internal transfer. If the alt flow is activated, it also records the royalty distribution.

● The Holder maintains a clear record of their NFT(s) locations, facilitating better management and strategic planning for future transactions.

Implementations and Demonstrations or Technical Feasibility

● **OpenSea:** as the largest NFT marketplace, **OpenSea** allows users to transfer NFTs between wallets easily. When transferring an NFT from **OpenSea** to a **MetaMask** wallet, the process involves selecting the NFT within your collection, entering the public wallet address of the recipient, and confirming the transaction. Royalties are managed at the point of sale, where **OpenSea** collects and distributes royalties to the creators based on the smart contract associated with the NFT.

● **Metamask and Phantom Wallet:** these wallets are popular among NFT holders for their ease of use in transferring NFTs. The general steps include accessing the NFTs tab,

selecting the NFT you wish to transfer, and providing the recipient's public address or ENS before confirming the transaction. Royalties are typically not distributed during wallet-to-wallet transfers unless a sale occurs on a platform that recognizes the royalty terms set within the NFT's smart contract.

Challenges:

- **Smart Contract Interpretation:** ensuring that smart contracts accurately interpret internal transfers without mistakenly triggering royalty payments. This requires clear definitions and conditions within the contract to distinguish between sale transactions and internal wallet transfers by the same owner.
- **Blockchain Network Fees:** managing the cost of network fees, especially during periods of high congestion on the blockchain. Internal transfers, while not involving a change in ownership, still consume network resources and incur gas fees, which can become significant depending on the blockchain and the state of the network.
- **Security Concerns:** maintaining high levels of security during the transfer process to prevent unauthorized access or theft. The use of multiple wallets by a single holder increases the attack surface, necessitating robust security measures across all wallets.
- **Royalty Distribution Logic:** in cases where internal transfers are treated similarly to sales transactions by the smart contract or blockchain network, there must be mechanisms to handle or refund unnecessary royalty payments. This could involve complex logic within the smart contract or additional steps taken by the holder.
- **Record Keeping and Management:** ensuring accurate and up-to-date record-keeping for NFTs across multiple wallets owned by the same holder. This includes tracking the location of each NFT, its royalty obligations, and any internal transfers that have occurred.
- **Regulatory Compliance:** navigating the regulatory landscape, which may impose specific requirements or restrictions on the transfer of digital assets, including NFTs. Compliance becomes particularly challenging when considering the global nature of NFT ownership and transfer.

Requirements:

Technical and Functional Requirements:

- **Smart Contract Flexibility:** smart contracts must be capable of distinguishing between internal transfers and market transactions to accurately manage royalty distributions. This could involve implementing logic that recognizes the owner's wallet addresses as the same entity.
- **Enhanced Security Protocols:** strong security measures are essential for both the wallets involved in the transfer and the platforms facilitating these transactions. This includes multi-factor authentication, encryption, and regular security audits.
- **Efficient Network Fee Management:** mechanisms to minimize network fees for internal transfers, possibly through off-chain solutions or optimizing transaction times, are required to make the management of NFTs cost-effective for holders.

- **Clear Royalty Distribution Mechanisms:** for scenarios where royalties are due on internal transfers, transparent and fair distribution mechanisms must be established, ensuring all entitled parties receive their share in accordance with the smart contract terms.
- **Comprehensive Record Keeping:** platforms and wallets must provide tools or features that allow users to easily track and manage their NFTs across multiple wallets, including any internal transfers and associated royalty payments.

Interoperability Requirements:

- **Standardized Royalty Management:** develop and adopt industry-wide standards for royalty management that are interoperable across different blockchains and NFT platforms. This ensures consistent handling of royalties during internal wallet transfers, regardless of the underlying technology.
- **Cross-Blockchain Compatibility:** implement solutions that enable seamless NFT transfers and royalty tracking across different blockchain networks. This requires protocols and standards that support the recognition of NFT ownership and royalty agreements across diverse ecosystems.
- **Unified Wallet Interfaces: encourage the development** of wallet interfaces and tools that can manage NFTs and their associated royalties across multiple blockchains. These interfaces should provide clear visibility into the royalty obligations of NFTs, even when transferred internally.
- **Data Sharing and Privacy Standards:** establish protocols for sharing necessary information between NFT platforms, wallets, and smart contracts to facilitate royalty management while adhering to data privacy regulations. This includes mechanisms for verifying ownership and transfer history without compromising user privacy.

Other Key Considerations:

- **Privacy:** ensure that the process of transferring NFTs internally does not expose sensitive user information beyond what is necessary for the transaction.
- **Cybersecurity:** address potential vulnerabilities introduced by transferring NFTs between wallets owned by the same entity, especially concerning smart contract interactions.
- **Identity:** implement verification methods to confirm that all involved wallets belong to the same holder, without compromising the user's anonymity or security.
- **Networking and Latency:** optimize the transaction process to minimize delays, ensuring that internal transfers are executed promptly, even during periods of high network congestion.
- **Ownership:** maintain clear and indisputable records of ownership before and after the transfer, ensuring that the holder's rights are preserved and easily verifiable.
- **Digital Ethics:** consider the ethical implications of enabling internal transfers, especially in how they might affect the perception of value and the integrity of royalty payments.
- **Provenance:** keep an immutable record of the NFT's history, including internal transfers, to maintain its provenance and the integrity of its royalty lineage.
- **Accessibility:** ensure that the tools and platforms supporting internal transfers are accessible to users with diverse needs, promoting inclusivity within the NFT ecosystem.

Relevant Domain Working Group (WGs):
• NA

Relevant Pre-qualified Organizations and Groups (POGs):
• NA

Relevant Specifications, Publications and Projects (SPPs):
• NA

Related Use Cases
• NFT Swapping Use Case (MSF2024-001-NFTSW) except that the parties that own the wallets are different and NFTs are transferred rather than swapped.

Additional Comments
• This document is a living artifact and may be subject to revisions on a periodic basis to reflect the future state of NFT Royalties, and or based on feedback received from MSF stakeholders that warrants an update in the future.