Metaverse Standards Forum
Unified Reputation Management for Metaverse Entities

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Status: Approved for Public Distribution

Version: 1.0

Reviewer	Due Date	Status	Contact
Digital Asset Management Working Group	December 17, 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 12, 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

Unified Reputation Management for Metaverse Entities

Use Case Identifier

MSF2024-REPUMME-001

- Version 1.0
- Year of Release: 2025

Summary of Use Case

Description: This use case describes a system for managing, storing, and transferring Reputation Data of Metaverse Entities, which includes both avatars and organizations. The goal is to create a Decentralized, transparent Reputation system that enhances user trust, Informed Decision-Making, and supports cross-platform interoperability. Reputation Data is accumulated based on activities, feedback, and behavior, and is portable across platforms in the Metaverse. Additionally, the Reputation of Real-Life Entities can be incorporated into their Metaverse counterparts, provided consent is obtained from both the Real-Life Entity and the Organization providing the Reputation Data (e.g., LinkedIn, GitHub).

Benefits:

- Enhanced transparency and trust for both Avatars and Organizations.
- Portability of Reputation Data across Platforms.
- Supports Informed Decision-Making based on Reputation scores for Entities.
- Facilitates interoperability across diverse Metaverse Platforms.

- Incorporation of Real-Life Reputation Data for a more comprehensive assessment of Entities.
- Encourages responsible and engaged participation within the Metaverse.

Contributors and Supporters

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

Keywords

Decentralized Storage, Corporate Reputation, Metaverse, Transparency, Blockchain, Tamper-Proof Data, Informed Decision-Making

Actors/Entities

- **End Users (Avatar Owners):** interact across Platforms and accumulate Reputation.
- **Organizations:** participate in commerce, interactions, and other activities within the metaverse, with Reputation Data reflecting their actions.
- **Entities:** End Users and Organizations.
- **Feedback Providers (Other Users):** provide feedback on Entities, influencing their Reputation.
- **Metaverse Platform Providers:** host activities and store Reputation Data.
- **Reputation System Developers:** create and maintain the algorithms for Reputation scoring.
- **Decentralized Storage Providers:** provide blockchain-based, tamper-proof storage for Reputation Data.
- **Third-Party Validators/Auditors:** verify the accuracy and integrity of the Reputation Data.
- **Real-Life Reputation Providers:** Platforms (e.g., LinkedIn, GitHub) that manage and provide Real-Life Reputation Data, which can be linked to Metaverse Entities.

Detailed Description of Use Case/Scenario

Preconditions:

- **Profile Setup:** Entities must have established profiles on Metaverse Platforms, with Decentralized Storage in place.
- **Permission for Tracking:** Entities may need to grant permission for automatic tracking of their activities for reputation purposes.

- **Real-Life Reputation Consent:** Real-Life Reputation data can be linked to Metaverse Entities if consent is granted by both the Real-Life Entity and the Organization providing the Reputation (e.g., LinkedIn or GitHub).

Main Flow:

1. **Reputation Accumulation:** Avatars and Organizations participate in activities, with Reputation Data stored in decentralized systems.
2. **Real-Life Reputation Integration:** Reputation from Real-Life Platforms can be incorporated into the Metaverse Entity's profile, pending permission from the Real-Life Entity and the Reputation provider.
3. **Reputation Calculation:** Reputation Analytics Tools calculate scores based on data from feedback providers.
4. **Feedback Contributions:** feedback providers rate the behavior of other Entities, contributing to their reputation scores. The Real-Life Reputation of Feedback Providers may also be incorporated (perhaps with the permission of the feedback provider) to add credibility to their ratings.
5. **Reputation Transfer:** Entities can transfer their Reputation Data across Metaverse Platforms.
6. **Data Verification:** confirm the integrity and source of the Reputation Data.
7. **End User Decision-Making:** End Users view Reputation Data to make decisions about interactions with other Entities.
8. **Continuous Updates:** Reputation Data is dynamically updated, including details on how the data was captured (e.g., which Entities provided the feedback).

Postconditions

- **Secure Access and Storage:** Reputation Data for Entities is securely stored and accessible, enhancing trust and Informed Decision-Making in the Metaverse.

Implementations and Demonstrations or Technical Feasibility

Existing Implementations

- **Gaming Platforms:** games like League of Legends and World of Warcraft have implemented player Reputation systems, though they are confined to single Platforms.
- **Social Media Platforms:** Platforms like Reddit uses community-based Reputation scoring (i.e., karma as Reddit calls it) as a mechanism to assess user Reputation within their ecosystems.
- **E-Commerce Platforms:** sites like eBay use feedback ratings for sellers, but these Reputations are confined to the Platform.

Technical Feasibility

- **Decentralized Reputation Systems:** Civic (blockchain-based identity verification) and Chainlink (decentralized oracle networks) demonstrate how Decentralized technologies could store and manage Reputation Data securely.
- **Integration with Metaverse Platforms:** Decentralized systems like Ethereum and IPFS can provide the infrastructure for scalable, tamper-proof Reputation storage, with the potential to integrate with Platforms such as Decentraland and The Sandbox.

- **Blockchain Storage:** benefit from existing Decentralized Platforms to handle large volumes of Reputation Data, while ensuring efficient performance and scalability.
- **Secure Platforms:** leverage encryption, secure access control, and regular audits as ways to protect Reputation Data from breaches.

Challenges:

- **Interoperability:** ensuring smooth integration across Metaverse Platforms.
- **Data Privacy:** securing sensitive Reputation Data and obtaining user consent.
- **Data Accuracy:** verifying the authenticity and accuracy of feedback and Reputation Data.
- **Scalability:** handling large volumes of Reputation Data across growing platforms.
- **User Adoption:** encouraging widespread adoption by users and Platforms.
- **Usability:** communicating Reputation Data in a way that is informative but does not disrupt user experience.
- **Security:** protecting Reputation Data from unauthorized access or tampering.
- **Real-Life Reputation Consent:** ensuring proper permissions for using Real-Life Reputation Data in the Metaverse context.

Requirements:

Technical and Functional Requirements

- **User Interface:** a user-friendly interface for businesses, organizations, auditors, and metaverse participants to interact with the Reputation Data storage system.
- **Data Submission and Verification:** mechanisms for businesses and organizations to submit Reputation Data, and for auditors to verify this data.
- **Access Control:** fine-grained access controls to manage who can view, submit, and update Reputation Data.
- **Notifications:** automated notifications for updates to Reputation Data, ensuring that users are informed of changes in a timely manner.
- **Scalable Infrastructure:** the system must be scalable to handle a growing number of businesses, organizations, and users.
- **Robust Security Measures:** integrate comprehensive cybersecurity measures to protect data from unauthorized access and breaches during Reputation Data management, transfer and storage
- **Reliability:** high availability and reliability to ensure that the Reputation Data is always accessible to users.
- **Maintenance:** regular maintenance and updates to the system to address security vulnerabilities and improve functionality.

Interoperability Requirements:

- **Cross-Platform Compatibility:** ensure that the system is capable of integrating with various Metaverse Platforms and other Decentralized applications to ensure seamless data exchange.

Other Key Considerations:

- **Privacy:** secure handling and protection of sensitive corporate data, ensuring that private information is only stored with explicit consent.
- **Cybersecurity:** robust cybersecurity measures to safeguard Reputation Data against breaches and unauthorized access. This includes encryption, secure access controls, and provision of audit trails for regular security audits.
- **Identity Verification:** clear identification and verification of businesses, brands, organizations, and auditors to ensure the accuracy and reliability of Reputation Data.
- **Networking and Latency:** efficient data retrieval and storage without latency issues, ensuring that Reputation Data is accessible in real-time.
- **Ownership:** provide Real-Life Entities and Organizations with the ability to maintain oversight on their data usage, storage and sharing to ensure continuous compliance with the consent they have granted.
- **Digital Ethics:** address ethical considerations by establishing or affiliating with an Ethics Board tasked with providing oversight, including regularly reviewing and guiding the ethical use of Reputation Data.
- **Provenance:** accurate tracking of data sources and changes to maintain the integrity and trustworthiness of Reputation Data.
- **Accessibility:** ensuring Reputation Data is accessible to Entities and Feedback Providers, with varying levels of technical expertise and accessibility requirements.

Relevant Domain Working Group (WGs):

- NA

Relevant Pre-qualified Organizations and Groups (POGs):

- NA

Relevant Specifications, Publications and Projects (SPPs):

- Ethereum Attestation Service (https://attest.sh/)
- OpenRank by Karma3Labs (https://karma3labs.com)
- Ceramic Network (https://ceramic.network/)
- Covalent – Unified API for Blockchain Data (https://messari.io/report/covalent-a-unified-api-for-retrieving-blockchain-data)
- Masa Decentralized Data Marketplace (https://www.theblock.co/post/268051/decentralized-google-launch-zk-powered-data-marketplace-avalanche)

Related Use Cases

- Cybersecurity Reputation Data Storage Use Case (MSF2024-001-REPCDS)
- Humanity Attestation in Metaverse Environments Use Case (MSF2024-001-POH)
- Shared KYC/AML Verification in the Metaverse Use Case (MSF2024-REPSKA-001)
- Avatar Ownership Change Use Case (MSF2024-001-AOC)

Additional Comments

- This document is a living artifact and may be subject to revisions on a periodic basis to reflect the future state of Unified Reputation for Metaverse Entities, and or based on feedback received from MSF stakeholders that warrants an update in the future.