TUAX1: Tokenized Utility Assets

A chain-ambiguous standard for the tokenization of utility-based Real World Assets (RWA)

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Abstract

This document introduces TUAX1, a token standard for Tokenized Utility Assets (TUA). TUAs are an asset class that creates an ownership link between real assets and their tokenized representations. This is within the scope of solely providing utility value to token holders. Unlike Real World Assets (RWA), TUAs are not securities with explicit revenue or income streams. TUAX1 accommodates the unique characteristics of TUAs and ensures interoperability among different TUA tokens.

Motivation

As the tokenization of real world assets gains traction, it is essential to have a distinct standard for utilities that differentiates them from RWAs.

TUAs represent tokens that solely provide utility value to users, such as access to certain services, access to the underlying asset itself, usage rights, and ownership of tokenized underlying assets. By establishing a standardized framework for TUAs, we will enable seamless integration, interoperability, and innovation in this emerging asset class.

Specification

TUA smart contracts should follow the syntax and semantics of the base smart contract standard of respective blockchains (ERC20, ERC721, SPL, BRC20, Ordinal, for eg).

The standard has the following requirements:

- MUST include Initial Agent/Administrator (IAA) details
- MUST include Current Agent/Administrator (CAA) details
- MUST include Asset Definition details
- CAN include Asset Evaluation and Appraisal (AEA) details
- MUST include Initial Asset Location (IAL) details
- MUST include Current Asset Location (CAL) details
- MUST include Provenance Record (PR) details
- MUST include Tokenized Representation (TR) details
- CAN include Fractionalized Representation (FR) details
- MUST include Ownership Claim Validity (OCV) details
- MUST include Holder Utility Benefits (HUB) details
- MUST include Ruleset details
- MUST include Voting, Governance, and Dispute Resolution (GVDR) details
- MUST include Owner Engagement Understanding details, as stated here

Initial and Current Agent/Administrator (IAA/CAA):

The party that initially is in control of the physical or digital asset(s) on behalf of the Tokenized Representation holders and/or Fractionalized Representation holders. The party who is currently in control of the physical or digital asset(s) on behalf of the Tokenized Representation holders and/or Fractionalized Representation holders.

Provenance Record (PR):

The record of Agent/Administrator assignment since the inception of the TUA until the current day including dates of transfer of administration, details of Agents/Administrators, and other relevant details about the circumstances, if any.

Asset Definition:

A detailed description of the underlying asset(s), including physical characteristics and dimensions, model and/or serial numbers, brands and/or makers, registration numbers and unique identifiers, categories and/or commonly-known groupings, genres and/or asset classes, and any other relevant, required, or useful information with regards to reasonably identifying the asset(s), as applicable in each case.

Asset Evaluation and Appraisal (AEA):

(Optionally) Certificates, documents, and information relating to any professionally provided appraisals as to the value of the underlying asset(s).

Initial and Current Asset Location (IAL):

The geographic location of the asset and/or the digital location of the asset, initially. The geographic location of the asset and/or the digital location of the asset, currently.

Tokenized Representation (TR):

Details of the digital asset(s) that confer ownership of the underlying asset(s). The Tokenized Representation can be seen as the digital asset(s)

that ultimately confer tokenized ownership, which may or may not have further children, in order to facilitate fractionalization, for example.

Fractionalized Representation (FR):

(Optionally) If there is a fractionalization of the tokenized ownership of the underlying asset(s) or Tokenized Representation, details of the tokens that are Fractionalized Representations of the asset, how many there are, any classes of these tokens that confer differing utility privileges, their unique identifiers, and/or blockchain numbers.

Ownership Claim Validity (OCV):

Specifics and proof to support ownership and claim rights of the Tokenized Representation, based upon existing legal structure.

Holder Utility Benefits (HUB):

Utility benefits that are provided to the holders of Tokenized Representations and/or Fractionalized Representations are explained in detail, outlining how these utilities may be accessed and under which conditions.

Ruleset:

The directive set out that determines the rights of Tokenized Representation and Fractionalized Representation holders. The procedures for interacting with the TUA for all participants. Guidelines for the management of predictable situations and decision making in relation to the TUA.

Voting, Governance and Dispute Management:

The specifics of how governance and decision making relevant to the TUA will be executed. Provisions for dispute management may also be included here, but are not compulsory if, for example, majority voting by holders is determined to be used in all cases.

Ownership Engagement Understanding:

As follows and to be consistent for all applications of TUAX1: "by purchasing, selling, owning, or controlling TUAs, you acknowledge that in no way should these digital assets carry with them the expectation of revenue, profit, or income, created in part or whole by a 3rd party on your behalf, or in any other way.

Tokenized Utility Assets strictly provide utility benefits ONLY to holders, such as access to certain services, access to the underlying asset itself, usage rights, and ownership of tokenized underlying assets. Neither is there an explicit nor implicit provision within this asset class for things like the generation of rental income as a result of the tokenized ownership of a rental property, for example.

If you have these expectations, you should not engage in owning TUAs, and instead seek out securitized and regulated tokenized assets that do allow for these mechanisms.

By purchasing or engaging with TUAs, you agree not to attempt to create these kinds of relationships."

Rationale

Real World Assets are an emerging quadrant of the cryptocurrency space that create a legal tether between assets outside of blockchains, and designated tokens on blockchains that represent claims against their ownership.

Until now, the vast bulk of the focus on these new assets has been the creation of securities that require regulation in many jurisdictions, under authorities such as the U.S. SEC and their foreign counterparts.

However, although there is a major push towards tokenized securities initially, there is scope and the logical application of this same technology within many situations where the only reason to own such tokens is to access some form of utility, such as being able to use an underlying physical asset by owning the corresponding token.

In order for this new utility-centric variant of the emerging Real World Asset ecosystem to properly be understood and implemented in a legally compliant way at scale, it is important to create a standard that can be

trusted, and that provides a complete set of the necessary information in all cases to create reliable digital representations of ownership.

Guiding Objectives:

This standard has been designed with the goal of achieving 3 primary functions:

1. The continuation of the existing protocol structure for tokenized securities, commonly referred to as "real world assets", as the backbone of the logic for implementing their utility-based counterparts.
2. The assignment of a comprehensive set of data points needed to create Tokenized Utility Assets in a standardised and compliant way.
3. A universal and blockchain-ambiguous standard that can be used as the basis for other blockchain-specific TUA standards moving forwards.

Congruent TUA Applications, not limited to:

- Ticketing and Membership
- Tokenized Asset Timeshare
- Utility-Based Real Estate Tokenization
- Collective Parking Spaces
- Collective Commercial Equipment
- Utility-Based Art Ownership
- The Tokenization of Services (ToS)
- The Tokenizaton of Resources (ToR)
- The Tokenization of Personal Time (ToPT)

Reference Implementation

A reference implementation is offered in the form of the first Tokenized Utility Asset to be created using this model.

The artwork known as "Genesis: The Evolution of Value" was created as the first TUA of any kind on any chain, and first RWA of any kind on the Bitcoin blockchain.

Its relevant documents for reference are TUAX1 specs and explainer.

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