

VERIFIED

TOKEN FRAMEWORK

Enabling the brightline controls
required for Security Tokens

AN INTEROPERABILITY FRAMEWORK FOR
GLOBAL PARTICIPATION IN THE SECURITY TOKEN MARKET

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BLOCKCHAIN
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Definitions

Accredited Investors	Verified Individuals that have been verified by a Verification Entity as being “accredited” or “wholesale”, in the relevant jurisdiction.
Broker Dealer	Company or other organization that engages in the business of trading securities for its own account or on behalf of its customers.
Identity Provider	A company that verifies the identity & accreditation of individuals being onboarded as customers to Exchanges.
Security Tokens	Tokens which have attributes of securities, such as a right to a share of profits.
Security Token Exchange	A platform for matching the buy and sell orders of investors trading Security Tokens.
Tokens	Cryptographic assets recorded on a blockchain.
Token Issuer	The entity that is issuing tokens and having ownership of the token smart contract.
Verification Entities	A trusted organization (such as a Security Token Exchange) that maintains a Verification Registry of Accredited Investors.
Verified Individuals	These are accredited investors that have passed the AML/ KYC process specific to each Exchange or Identity Provider.
Verification Registries	A Verification Registry is a smart contract containing records of addresses & attributes associated with Accredited Investors.

Abstract

Tokens representing financial securities will require an interoperable specification for controlled transfer of Tokens outside of Exchanges. Token Issuers will benefit from incorporating Verification Registries as an extension of existing standards (i.e. ERC20). Identity Providers, Exchanges, and Broker Dealers can expand their services to include Verification Registries of Accredited Investors.

1. Background

ERC20 has been the first killer app of the Ethereum network. It led to the concept of a 'utility token', a scarce digital asset representing future access to software, enabling a new type of financial exposure to the success of a software project previously unavailable in the marketplace. This financial exposure relied on rapid adoption of the 'utility token' and not the revenue or profits of the project, creating a new regulatory framework not yet fully explored.

The combination of this new funding model and a gap in the regulatory framework has created a proliferation of different utility tokens, and many billion dollars raised in their cause. This has come with clear benefits and also downside costs.

The benefits: the funding model of utility tokens compared to traditional funding sources has resulted in an estimated - 10X improvement in availability of capital and 1000X improvement in time to liquidity.

Costs: most of these projects will fail, the concept of a 'utility token' is currently untested and for the most part only compatible with a small niche of different types of software and almost all of that software requires a massive network effect and a winner takes all approach to the problem space.

This has led to a new wave of entrepreneur who would like to put aside the idea of a 'utility token' and migrate towards digitisation of value, utilizing Security Tokens, even if that would require additional regulatory scrutiny of who can own & buy Tokens. Which may mean a move away from the current permissionless model of the first generation of token standards like ERC20 and ERC721.

2. Problem

The ecosystem cannot solely rely on the continuation of novel ideas for utility tokens, to continue to reap the benefits of tokenization. The ecosystem is looking to evolve to Security Tokens that are financially exposed to the revenue and profits of the underlying project. Which changes the current regulatory treatment and puts restrictions on who and under what circumstances people could buy such Security Tokens.

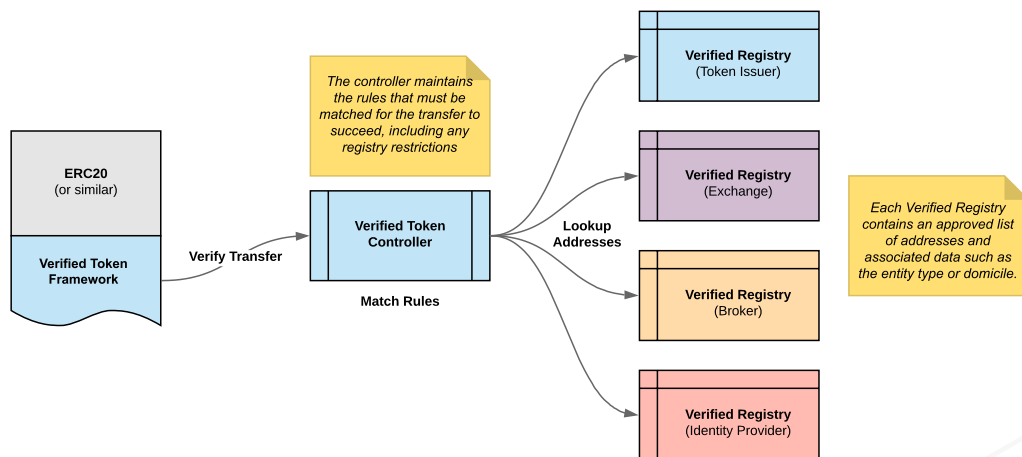
There needs to be a specification that can supplement the current ecosystem of Tokens (ERC20, ERC223, ERC721) that enables a Token Issuer to ensure that its Security Token is only transferred to holders who comply with local and global regulatory requirements.

3. Key Requirements

- The specification must restrict Security Tokens being transferred to parties that meet the regulatory brightlines required by the Token Issuer to be compliant. [For example, many Token Issuers may wish to restrict the transfer of Security Tokens to Accredited Investors.](#)
- The specification must allow for the ability to update the restrictions placed on the Security Token and needs to be flexible and powerful to manage inevitable regulatory changes. [For example investor accreditation requirements will change over time or accreditation of individuals may expire with the effluxion of time.](#)
- The specification must allow the Security Token to continue to operate in a decentralized ecosystem. [For example, there should not be a global, centralized transfer agent.](#)
- The specification must not overly restrict the possible features of the Security Token itself, thus it needs to be simple and modular to enable additional features to be added in the future such as dividends share splits etc.
- A framework for Security Tokens should not be directly commercialized. The Verified Token Framework is a “Public Good” which does not have the friction of requiring a proprietary new token, a centralized body or complex on-chain KYC requirements. For a Security Token ‘standard’ to be adopted, the model must be flexible enough to handle desirable features such as Proxy Voting, Stock-Splits, Dividend Payments and similar, while being capable of addressing the bulk of compliance matters around transferability.

4. Our Approach

Our approach is to create a specification to supplement the current generation of Tokens (like ERC20), so the Token Issuer can maintain a level of control over who can receive the Tokens and regulatory bodies can be satisfied that the transfers are restricted to only those deemed compliant (i.e. Accredited Investors).

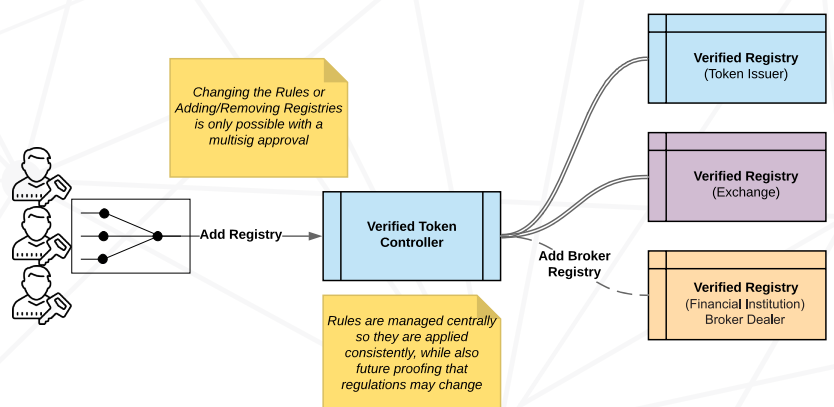


This control will be enabled by allowing the Token Issuer to choose specific on-chain Verification Registries, which are queried every time a “transfer” or “transferFrom” is executed.

We envision these on-chain registries would be federated in nature and maintained by different Verification Entities, likely starting with the original Token Issuer themselves, then KYC/EV Identity Providers, Exchanges, Financial Institutions and even Regulators (should they wish to participate). Initially the Verification Registry may only hold information about a token holder’s Accredited Investor status, but could evolve to also hold information about investors net wealth, domicile or any other information required by future regulatory bodies.

The verification contract is modular in design to allow flexibility as regulations evolve, Token Issuers will be able to adopt different registries as well as require new or different brightlines to be checked on each transfer.

Standards must be open, elastic and not directly commercialized.





5. Scenarios / Examples

5.1. As a starting point we have considered the following initial business flow

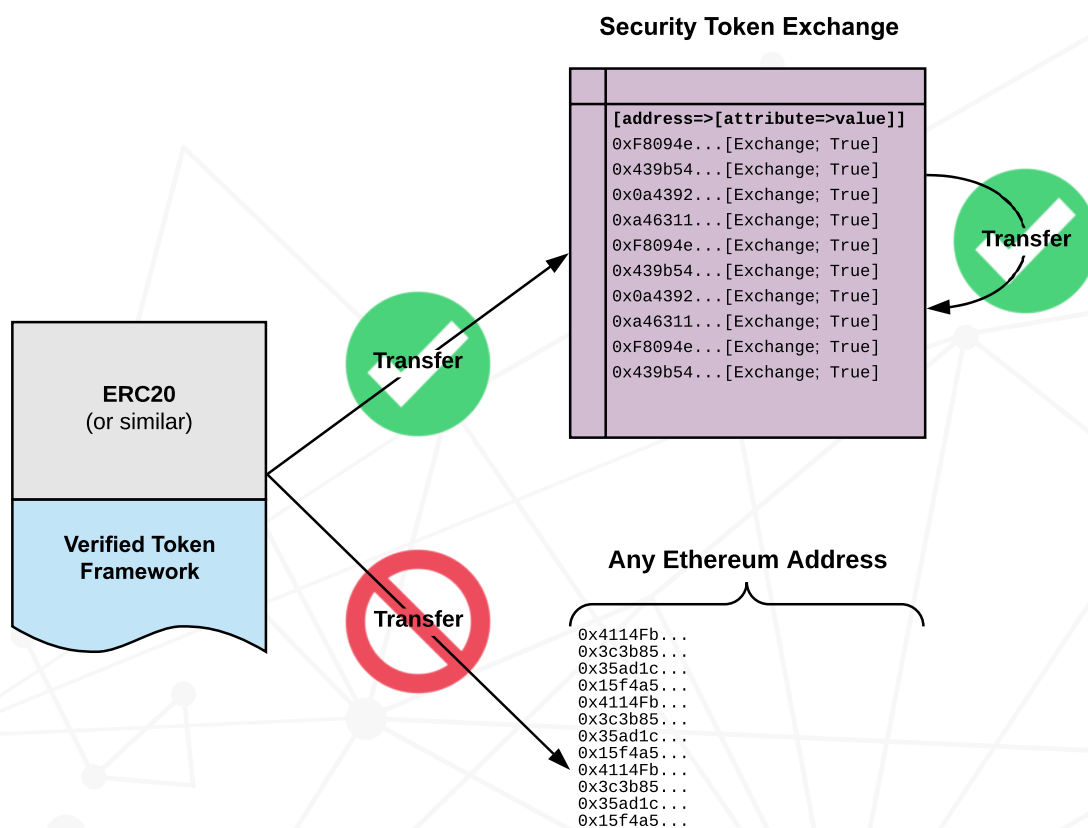
- Investors will sign up with Broker Dealers. They will do KYC and AML to ensure that investors are accredited.
- The Broker Dealers will have relationships with Security Token Exchanges.
- Broker Dealers will trade between themselves and on Security Token Exchanges.
- Accredited Investors may wish to have direct custody of a Security Token.

6. Primary Issuance

6.1 Security Tokens only transferable on the Security Token Exchange

During the issuance or initial distribution, the Token Issuer governing a Security Token would set the Security Token Exchange as the only place that Security Tokens could be transferred to. Once the Security Token Exchange Registry has been set, all Ethereum addresses that the Security Token Exchange systems generate or operate would be attested in the registry contract.

This would mean that Security Tokens could only be sent to the Security Token Exchange addresses and the Security Token would be contained within the Security Token Exchange platform. Security Tokens could never be sent to any other Ethereum Address.



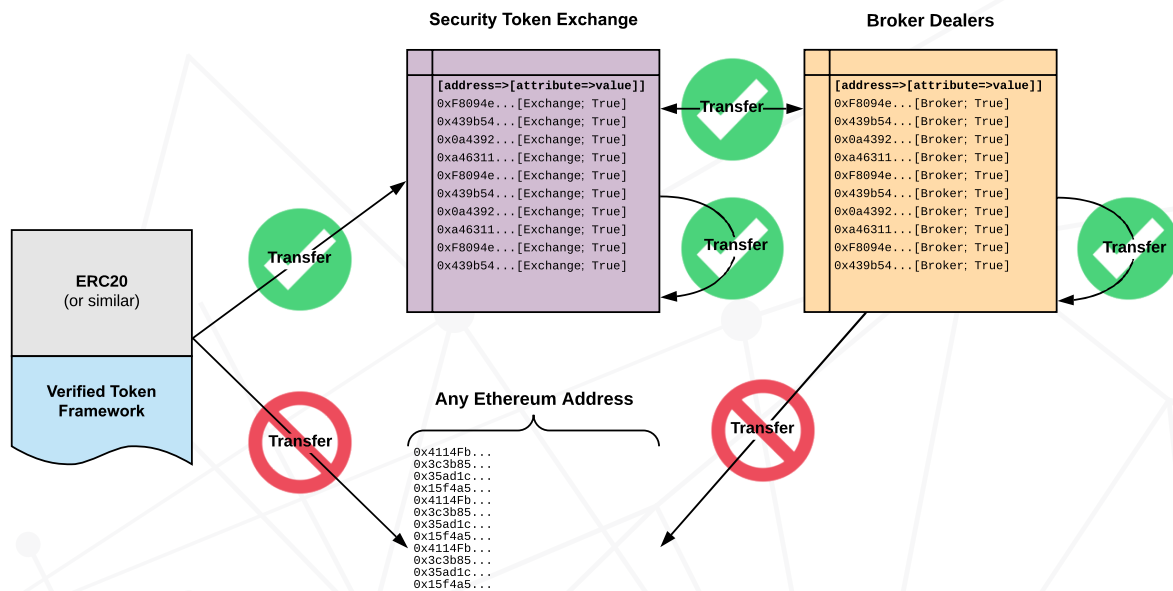
7. Restricted Trading

7.1. Security Tokens transferable between a Security Token Exchange and Broker Dealers

Given the need for Broker Dealers to have custody of tokens on behalf of investors, the Token Issuer governing a Security Token could add the Broker Dealer Registry containing all addresses that have been verified.

This expands the set of addresses that Security Tokens can be transferred to, while still restricting trading to only the Security Token Exchange platform and verified Broker Dealers.

This would mean that Security Tokens could only be sent to and from Security Token Exchange platform addresses and the addresses of Broker Dealers validated by the Security Token Exchange. In this way the Security Token Exchange would be the primary Verification Entity and they would only register addresses operated by the Security Token Exchange and Broker Dealers they have onboarded.

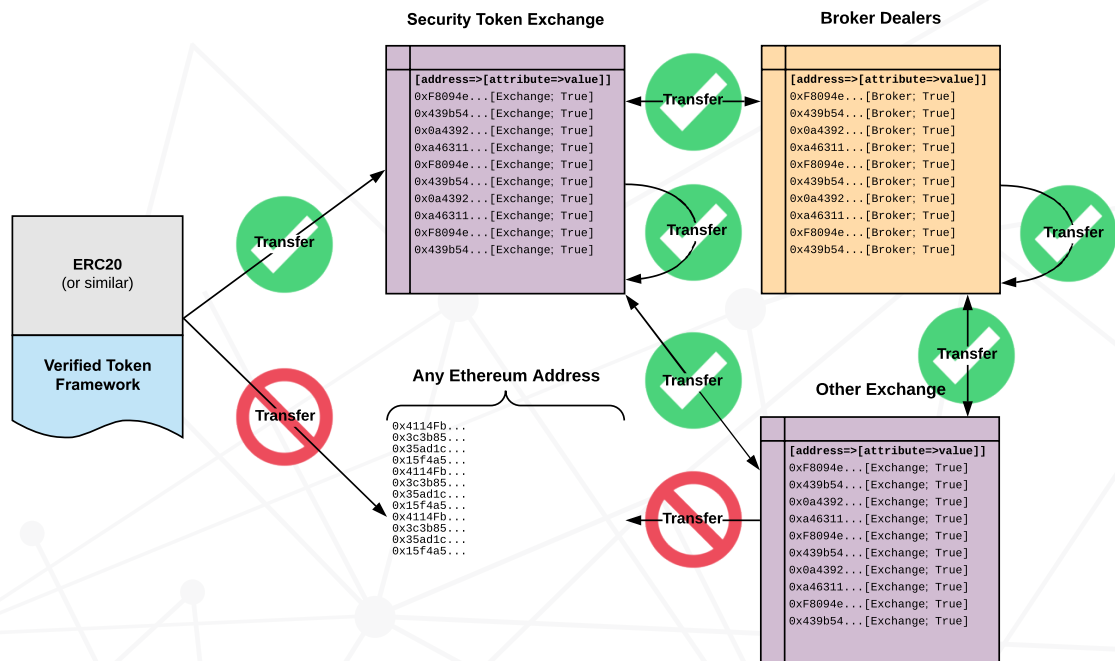


8. Secondary Trading

8.1. Security Tokens transferable between Security Token Exchange, Broker Dealers and other exchanges

Should there be a desire for trading on a secondary market, the Token Issuer governing a Security Token could add another Verification Registry (in this example, an Exchange). This other Exchange is responsible for registering all Ethereum addresses that are on its exchange.

This expands the set of addresses that Security Tokens can be transferred to, while still restricting trading to only the Security Token Exchange platform, verified Broker Dealers, and another Exchange that is able to trade this specific Security Token.



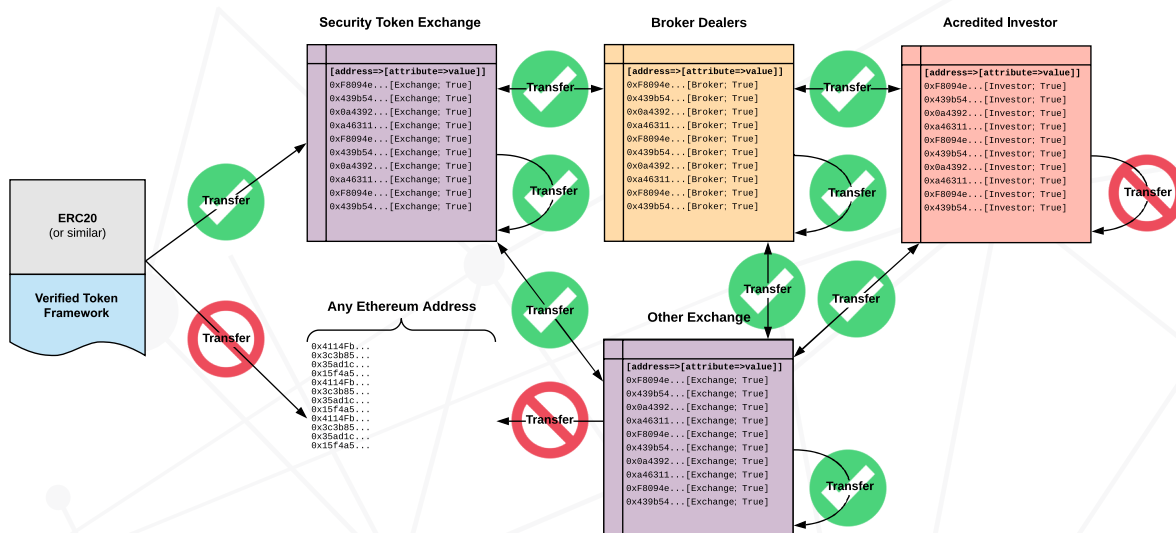
9. Extended Custody

9.1. Security Tokens transferable between Security Token Exchange, Broker Dealers, other Exchanges AND to verified individuals but not between verified individuals.

In all of the previous use cases the custody of the Security Tokens will be held by an entity other than the individual investor (i.e. the Exchange or Broker Dealer).

In this use case we are enabling custody transfer to individual Accredited Investors, but no transfers between individual investors, this means that any one individual investor in custody of a Security Token is no more than one step removed from having completed an accreditation process of an Exchange or Broker Dealer.

This expands the set of addresses that Security Tokens can be transferred to include the clients of any Exchange or Broker Dealer, but exclude transfers between those clients directly. The benefit of this use case is that when individual investors have custody of their own tokens they can receive dividends and execute their voting rights without an intermediary.

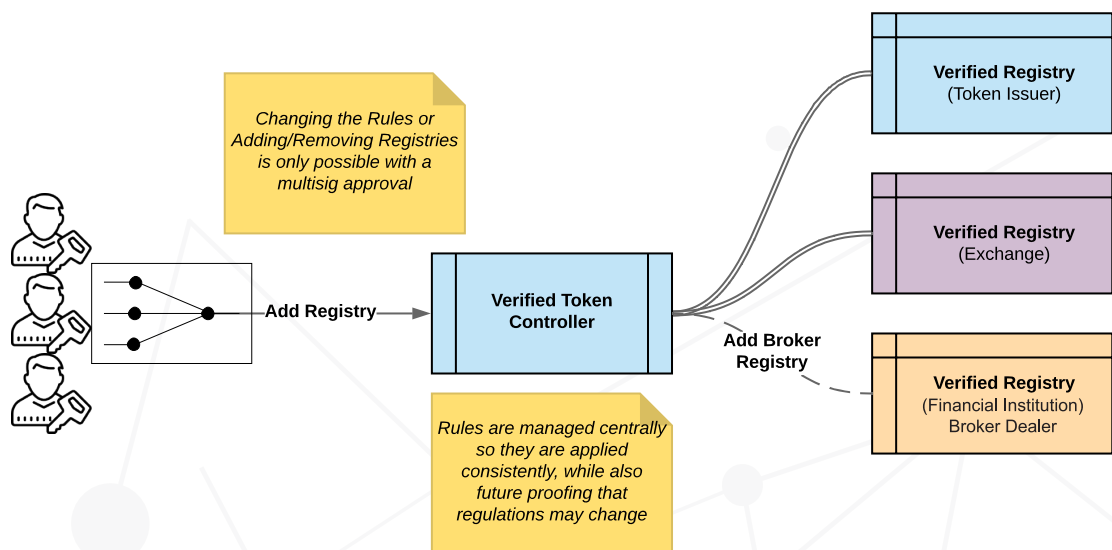


In Practise

10. Governance & Integrity

10.1 How can the Verified Token Framework be used for Governance & Integrity for Token Issuers

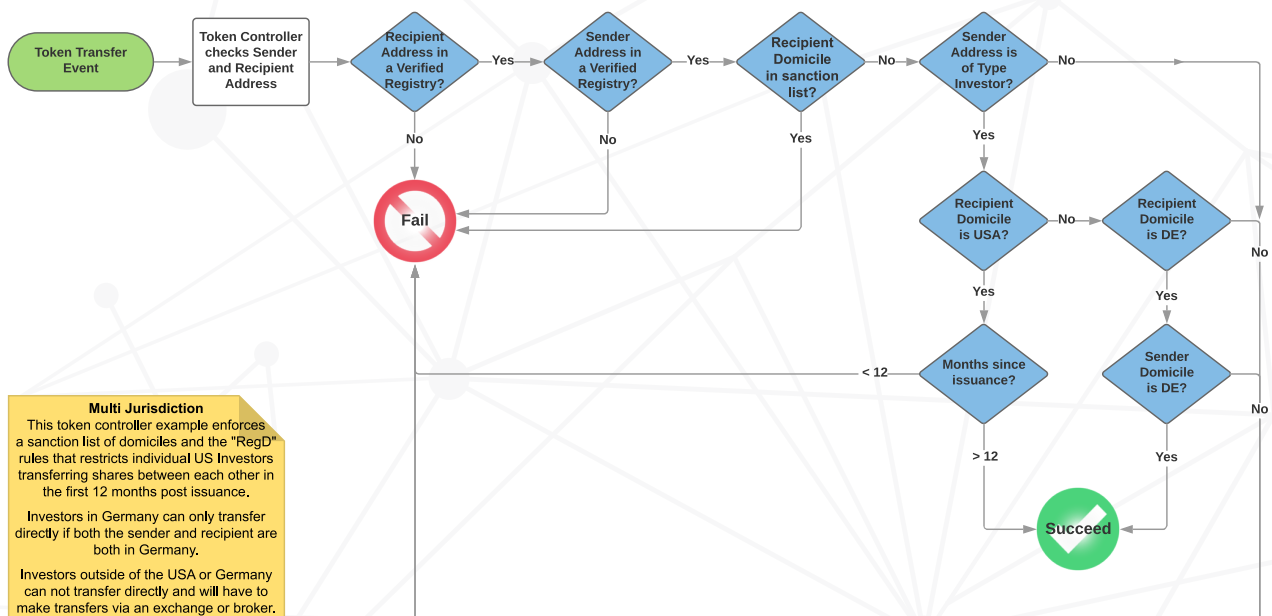
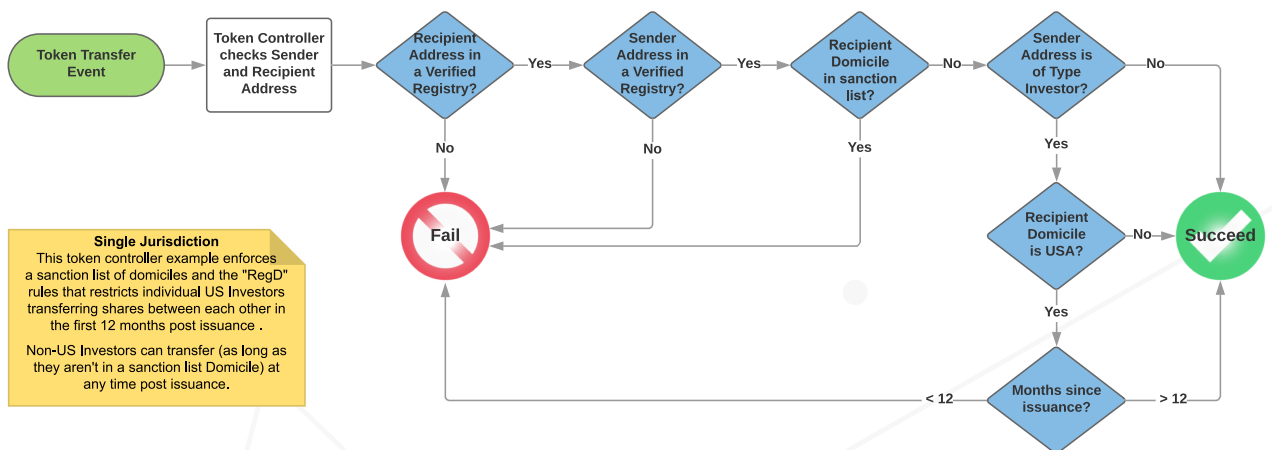
Verified Token Framework's modular design, allows for many different combinations of transfer restrictions and validators. The transfer restriction rules are encoded in the logic of the smart contract and are enforced with the integrity of the blockchain. The validators are selected and governed by the Token Issuer. Ultimate control of the restrictions and the validation will initially sit with the Token Issuer however it is possible to delegate that control to a third party or a group of third parties that can maintain the ongoing governance. In the circumstance in which a Verified Registry is found to have skirted its responsibility to maintain an accurate register that Verified Registry can be removed.



11. Compliance

11.1. How can the Verified Token Framework be used to ensure the correct application of Local compliance regimes

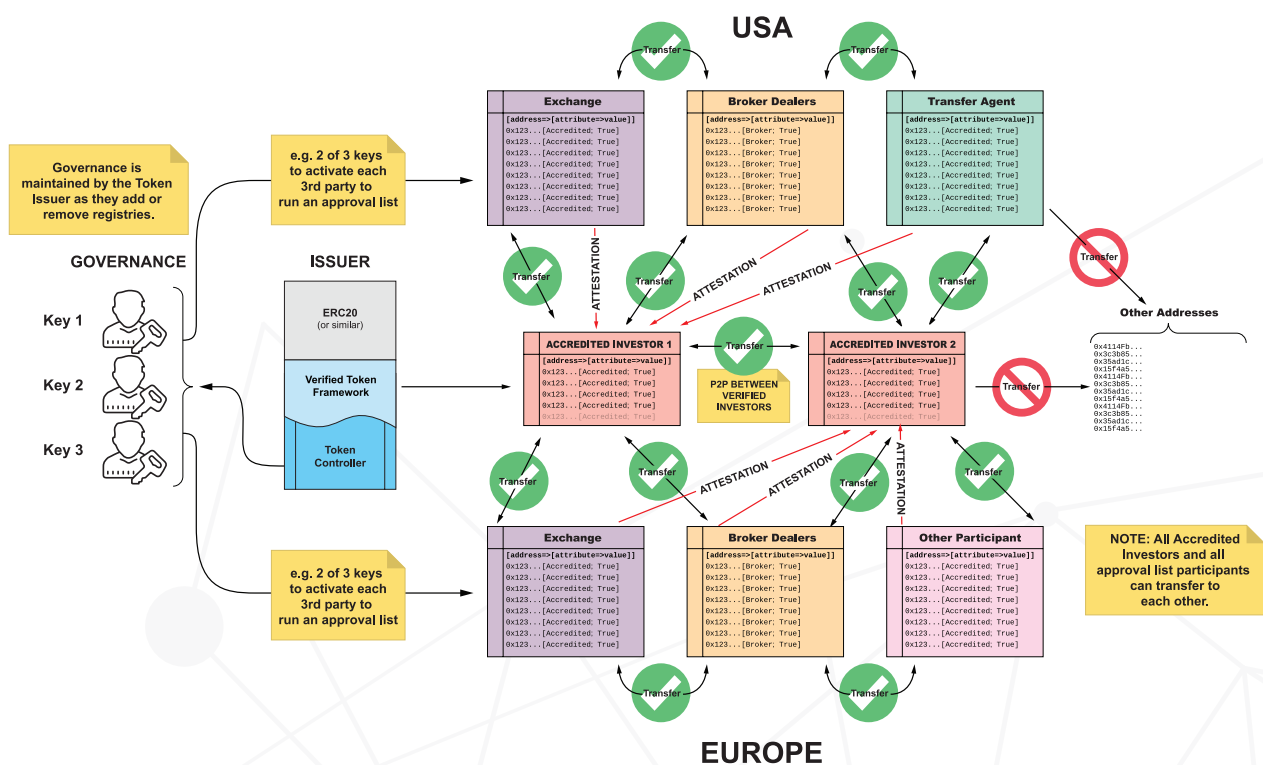
The Verified Token Framework can be configured with specific rules that are checked on each transfer. For example you could have a set of rules that followed AML/KYC, checked accreditation, stopped sanction list transfers, and restricted transfers to US citizens for 12 months after issuance (RegD).



12. Bringing it all together

12.1. How can the Verified Token Framework be used to facilitate the new ecosystem of Tokenized Securities

As the landscape of Security Token Exchanges, Broker Dealers and identity services evolve, the Verified Token Framework provides a flexible permission layer that enables governance of a rule set that can be applied to use cases as simple as limiting the transferability to one security exchange platform, right through to enabling complex rule sets like Investor Accreditation and RegD compliance.



Under a “Federated Model”, networks of trust are established between compliant market participants and investors, within each Jurisdiction. As market participants from various jurisdictions engage under this VTS model, investors can receive attestations locally, yet peer to peer transfer compliantly, globally.

13. Appendix

13.1. Personally Identifiable Information

Information related to the eligibility of a particular public addresses' ability to receive different tokens in different regulatory environments will be discoverable on the blockchain. Although in some cases this information may already be inferred through transaction analysis - i.e. the transfer of a Security Token will always infer information about that sender.

13.2. Infrastructure

As our proposal is only an extension to the current generation of token standards, we would expect all of the current exchanges and wallets to be compatible with this extension. Although they would require enhancements to be able to describe to the user why a particular transfer has failed.

We expect this could be remedied in the first instance by a "Block Explorer" website that can indicate the eligibility/ineligibility of a particular public address to receive specific Security Tokens.

13.3. Third Party Data Integrity

At first, Token Issuers may only rely on the original KYC information that they have gathered from their token holders during the initial Security Token distribution to restrict the transfers of their tokens. As they look to broaden the possible holders of their Security Token they may adopt other identity providers, in which case they will have to rely on the integrity of their Verification Entities. Verification Entities will be subject to their own legal and compliance processes in their own jurisdictions, this would include ensuring that investors aren't on Governmental sanctions lists or embargoed in some way.

Token Issuers should retain control over the ability to add/remove Verification Entities from their Verified Token Interface. The removal of a 'corrupted' registry will ensure that future transfers of Security Tokens (or dividend payment splits) will only be completed to addresses within the 'trustworthy' registries.

13.4. Usability

We imagine several modules and tools will be built out by the community to make the Verified Token Framework useful in everyday circumstances.



13.5. Managing a Verification Registry

A systematic interface would be required for a Verification Registry, in order to attest and add addresses to a registry.

Example: KYC/AML/CFT is completed on a user by an Exchange Operator. Once compliance is passed and an account is opened with the provider, the provider needs a low-admin method of attesting. Expanded modules may include reporting and analytics like many registrars or transfer agents use today for managing day to day operations.

13.6. Look-up of qualified addresses

Not dissimilar to a block explorer, ecosystem participants will require a way to view a specific address before committing to a trade, so they know if the recipient's address is capable of receiving a particular Security Token or not.

Example: If a buyer calls an OTC desk and wants to buy ABC Security Tokens, the OTC desk would ask for the buyer's wallet address, before quoting a price. The OTC desk would need a simple tool capable of pasting in an address and displaying if the address has the attestations required to receive those Security Tokens and if not, where they could go to open accounts with to qualify.

13.7. Jurisdictional

Different jurisdictions have different tests to determine Accredited Investor status (or similar). Each Verification Entity will need to determine which jurisdictions they are able to accredit investors in and Verification Entities will have to ensure that Verified Investors have accreditation appropriate to their domicile.

13.8. Credits

Developed for the Blockchain Token Association
by: Techemy.co and BlockchainLabs.NZ

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13.9. GitHub Repository

<https://github.com/BlockchainTokenAssociation>

13.10. License

Specification and its related documentation, code examples, etc. are licensed under the MIT License.

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