



USE CASE

GREEN BOND TOKENIZATION WITH ERC-3643

Discover how ERC-3643 empowers ABN AMRO's tokenized bonds to enforce control and compliance onchain, using a digital identity framework.



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The Leading Onchain Finance Operating System

Tokeny provides compliant tokenization with the open-source ERC-3643 token standard and advanced white-label software solutions for financial institutions. The enterprise-grade platform and APIs unify fragmented onchain and offchain workflows, integrating essential services to eliminate silos to enable seamless issuance, transfer, and management of tokenized securities.

6 years

of track record

\$32.6bn

in assets tokenized

120+

security tokens issuers

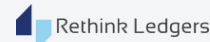


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We are the founding member of the non-profit ERC3643 Association



The association is supported by large traditional institutions



INTRODUCTION

ABN AMRO Tokenized Green Bond with ERC-3643

ABN AMRO has marked a historic achievement by tokenizing a green bond on a public blockchain. Utilizing the market standard ERC-3643, ABN AMRO has established robust control over its digital bonds, ensuring on-chain enforcement of regulatory requirements, on the Polygon permissionless network. The initiative resulted in Vesteda securing EUR 5 million in funding from DekaBank, marking a decisive leap forward in sustainable financing.

Martijn Siebrand, Digital Assets at ABN AMRO

*"With implementing the **ERC-3643 standard**, we have successfully embedded compliance rules into our digital bonds. They can even seamlessly and compliantly interact with other applications on the public network thanks to native interoperability. This marks the beginning of a transformative journey, where the possibilities for innovation in the financial sector are boundless."*



Overview

ABN AMRO Bank issued a digital bond on Polygon using ERC-3643

Product Type

Green bond

Launch Date

12 September 2023

Current Phase

In the production phase, with successful transactions completed.

Benefits

- Enforces compliance on a public blockchain
- Provides a digital solution for clients seeking sustainable financing and innovative financial services.

Achievements

- First Dutch bank to register a digital green bond on the public blockchain.
- Successful funding of EUR 5 million for Vesteda from DekaBank.
- Implementation of ERC-3643 standard for compliance and regulatory adherence.



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„DekaBank

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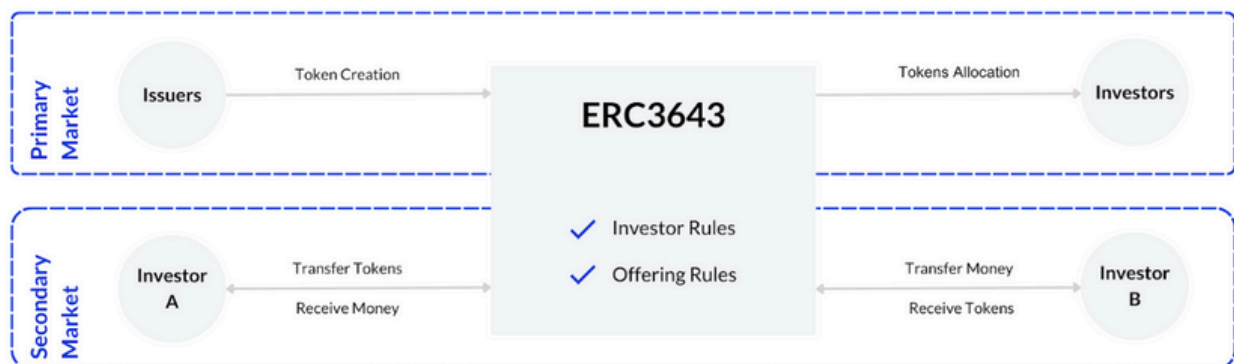
CLIFFORD
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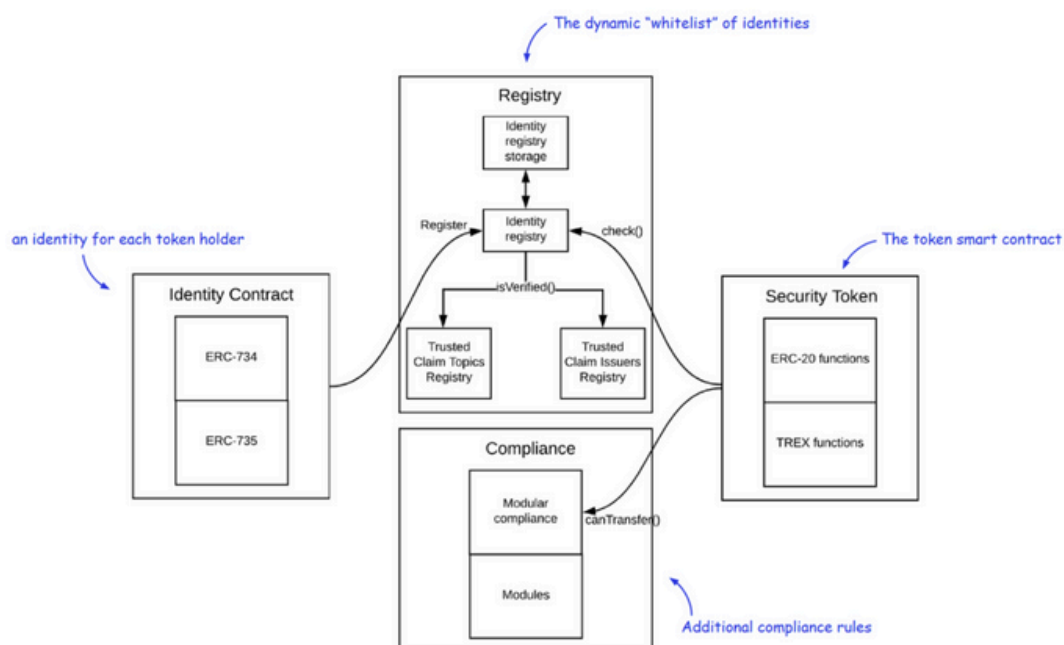
HOW IT WORKS

ERC-3643 enables onchain compliance through permissioned tokens and digital identity.

The transfer of ERC3643 tokens can only be triggered when both the investor rules (via ONCHAINID, a decentralized identity framework) and offering rules are fulfilled, ensuring compliance at the smart contract level.



Whenever an onchain transaction is required, ERC-3643 tokens verify whether the counterpart's identity contract (ONCHAINID) contains a verified claim issued by trusted claim issuers. Additionally, all the additional compliance rules have to be met before a transaction can take place. This ensures the entire compliance validation process takes place onchain, utilizing blockchain as an eligibility verification system.



Identity registry ensures auditability

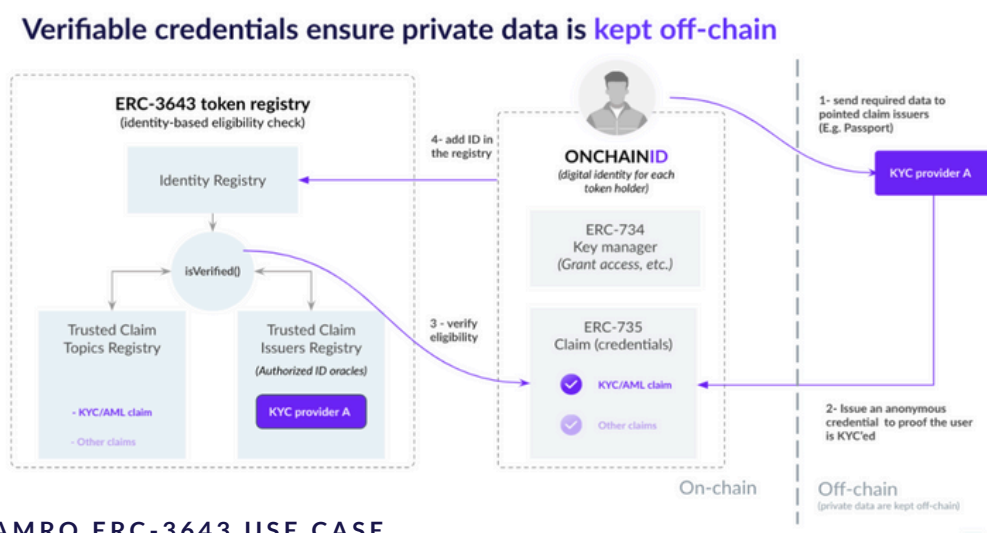
By using identity contracts (ONCHAINIDs) as the ownership of the tokens in the Registry, it ensures the immutability and auditability of the onchain ownership registry. Each identity contract can be connected to multiple wallets, and ERC-3643 tokens can be stored in any linked wallet. If a wallet is lost, the tokens can be recovered to another wallet associated with the same identity contract. This process does not affect the identity registry itself, as only the wallet address for storing the ERC-3643 tokens changes.

In contrast, wallet-based whitelist standards fail to enforce onchain compliance validation and cannot provide an auditable onchain registry, requiring additional reconciliation on the tokenization platform and introducing a significant single point of failure risk. This approach compromises the integrity of the onchain registry and should be avoided. With ERC-3643, even if Tokeny's platform encounters issues, compliance enforcement will continue to function onchain and the registry remain fully auditable and intact.

How identity and claim (proof) work in practice

In ABN AMRO's case, the bank acts as the trusted claim issuer (the role shown as KYC provider A in the diagram). Tokeny's platform allows ABN AMRO to securely collect the necessary data for KYC/KYB checks off-chain. Once verified, ABN AMRO issues a verifiable KYC claim to the investor's identity contract (ONCHAINID), without sharing any actual data, protecting privacy.

The ERC-3643 token registry then uses the `isVerified()` feature to verify if a KYC claim is obtained in the investor's identity contract (ONCHAINID) before adding users to the onchain identity registry. Even after registration in the identity Registry, each transaction triggers the `isVerified()` check to ensure the user's claims are still valid. If ABN AMRO revokes the claim, the user will no longer qualify to transfer tokens.



Modular compliance add-ons bring a powerful onchain self-validator

The modular compliance add-ons enable issuers to design customizable smart contracts that include offering and transfer restrictions. With Tokeny's platform, these comprehensive modules—developed in response to the needs of hundreds of clients—allow issuers to easily set country restrictions, enforce token holding limits, control monthly transfer caps, and manage token supply. The platform also has compliance modules that support fee collection during transactions and provide flexible access management, ensuring seamless onchain compliance. The strength of the open-source ERC-3643 standard is that these modules can be effortlessly combined and expanded with new contracts to meet any complex compliance requirements.

Upgradable smart contracts assure the future-proof approach

Upgradable smart contracts are essential for securities issuers to maintain control and adapt to evolving regulations and business requirements. Once deployed, traditional smart contracts cannot be altered, which is problematic when updates or security fixes are needed.

ERC-3643 addresses this challenge by using the proxy method, allowing the token logic to be directed to a new implementation contract when upgrades are necessary. The central Implementation Authority contract stores the address of the active implementation, enabling seamless updates across multiple tokens. Multi-token issuers benefit from this system as all tokens can be linked to the same Implementation Authority, ensuring simultaneous upgrades.



Additionally, the Onchain Factory, developed by Tokeny, automates the deployment of the entire ERC3643 suite in one transaction, assigning ownership directly to the relevant stakeholders and supporting consistent token addresses across EVM blockchains. This reduces dependency on individual networks and ensures more streamlined multi-chain operations. The upgradability feature ensures that issuers can future-proof their tokenized securities while maintaining compliance and security.

KEY TAKEAWAYS

ABN AMRO's use of ERC-3643 demonstrates that securities can be effectively represented on a public blockchain without compromising compliance. ABN AMRO can track token ownership, recover digital securities from external wallets, and protect investors' rights. The smart contract ensures authorized transfers, exclusively permitting them to qualified investors.

The achievement emphasizes the industry's potential to adopt public blockchains for tokenized securities, offering a new level of efficiency, transparency, and compliance. As institutions like ABN AMRO pioneer these advancements, the financial industry is poised for transformative changes with tokenization via the market standard ERC-3643. As a result, institutions will bring high-quality assets on-chain using the same token standard, which sets the foundation for the ecosystem to build distribution rails that deliver a more inclusive and liquid private market.



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