assetfoundry

Bond Tokenization, EDF Trade

AEFR Presentation

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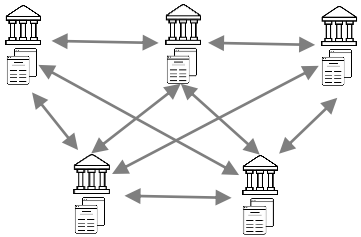
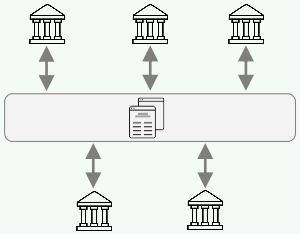
BNP PARIBAS

The bank for a changing world

Blockchain 101



Multiple ledgers maintained by each party, with constant reconciliations

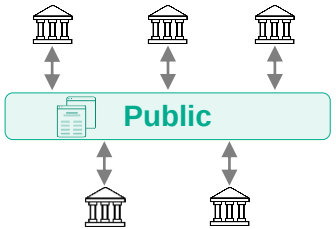


One shared ledger, between multiple parties

Private vs Public

Blockchain types

ethereum
Tezos



Pros

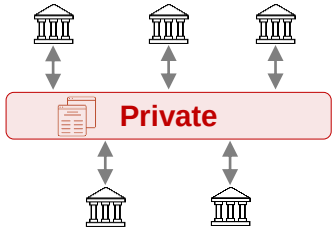
- **Global distribution** from day one with public read access
- **Resilience and maintenance:** high number of nodes[1]

Cons

- Lack of anonymization, in some cases
- Low throughput of transaction rate, in some cases

(Both can be solved, e.g. with Layer 2 approach)

HYPERLEDGER FABRIC
HYPERLEDGER BESU

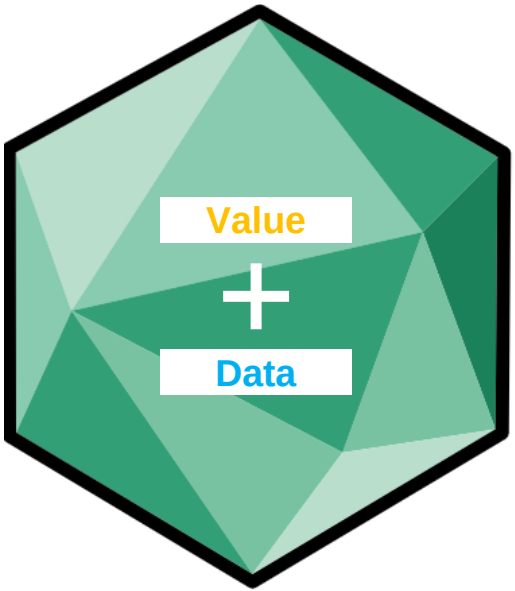


- **Ability to make private transactions**
- **Throughput of transaction rate**

- Limited market distribution (only participants can access, needing to have contracts in place)
- Need to maintain network between parties
- Need to potentially run a Node (involving extra costs)

Notes: 1) Versus private blockchains, to be maintained between parties

Tokenization's Unique Selling Point



Blockchain technology enables **digital unicity** thanks to tokenization:

- Tokens can encapsulate **value** and **data** on the Blockchain
- Tokens can be **passed to other actors almost instantly**, in a **traceable manner** and with the **benefits of digital** (e.g. distribution via digital channels, programmable enabling automation, costs efficiency etc.)

Combination of **value** (Financial Instrument) and **data** (e.g. underlying asset, ESG) ensures **integral flow of information** along the value chain of financial ecosystem

In particular, bond issuers and investors can access wider opportunities more transparently

Issuers benefits

- **Wider distribution opportunities** bringing additional liquidity
- **Improved granularity** ensuring better management of financing strategy
- **Faster access to funding** while reducing risk given increased efficiency
- **Enhanced visibility** on ownership

Investors benefits

- **Expanded investment universe**: tailored to market conditions
- **New opportunities to access private markets** in a safe regulated format
- **More granularity** leading to specific strategies
- **Full transparency** on underlying data (e.g. ESG)

A concrete use case

Issuer

Projects below 20m€ struggle to be financed. In particular, **ESG Solar-based microgrids** projects, despite a strong need to finance the energy transition

Problem Fit

Investor

Looking for new ESG investment opportunities, with the right risk-adjusted return. Need for **better transparency of ESG data** along the value chain

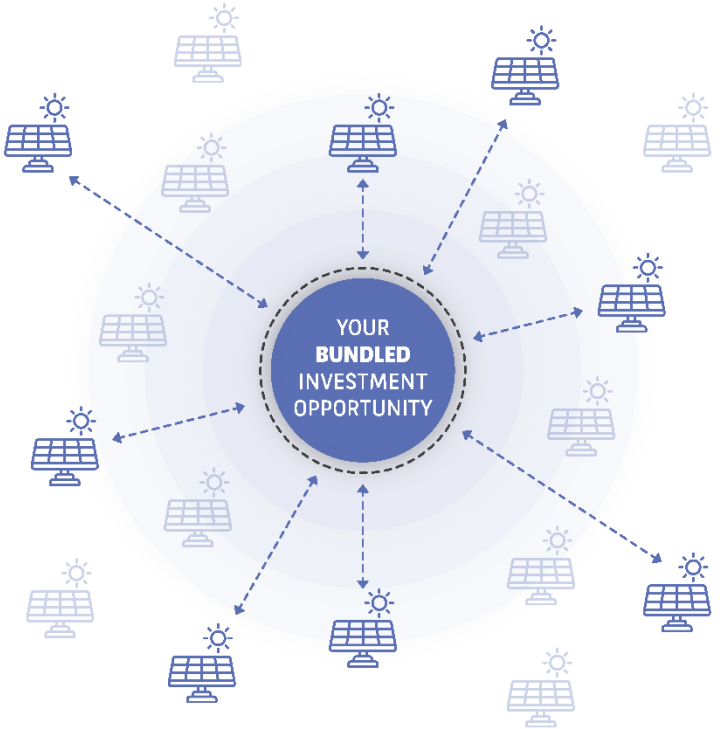
Microgrids

Solar–based electricity production is the leading energy transition segment, with several trillions of financing needs in the near future. Almost half of these financing needs will come from smaller projects

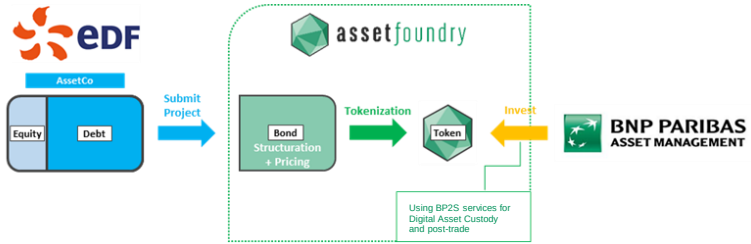
Tokenization can offer dynamic bundling opportunities to investors

Digital allows **tokenization of small projects financing and their bundling in larger opportunities**, to be proposed to traditional investors **at scale**

The buy-side can benefit from **by-products**, such as traceability, automation, and reporting (e.g. potential to increase self-servicing and transparency)



EDF ENR trade overview and key outcomes



Overview

- On July 7th, **BNPP structured, tokenized and distributed a bond to refinance a solar energy project sponsored by EDF** through its subsidiary EDF ENR
- BNPP Group leveraged its tokenization platform, **AssetFoundry** and **BNPP Securities Services** managed the custody aspects of this token. **BNPP Asset Management** acted as the investor
- The issuance was performed on **public Ethereum blockchain** under French law for unlisted securities, with legal advice from Jones Day
- Utility tokens were minted with low carbon energy by **Exaion** to ensure clean energy usage of the blockchain

Key Outcomes

- **First renewable energy bond tokenization** on the project financing market (focusing on small assets)
- **Legally binding native bond issuance**, including ESG data of the underlying asset
- Origination done with red-flag approach (standardization) **allowing submission by issuer and booking by investor to be done in less than 15 minutes**
- **Bond issuance on blockchain in less than 10 minutes** – ad-hoc delivery vs payment done intraday
- **Test of token reversibility**, a key element for the interoperability with traditional systems. The tokenized bond was seamlessly switched back to a traditional bond within 48 hours

Note: 1) EDF subsidiary dedicated to Blockchain and High Performance Computing services

AssetFoundry was used for this renewable project finance to structure and issue the tokenized bond

Issuer

assetfoundry

DIGITALIZATION	*TOKENIZATION*	
Origination	**Structuration**	**Distribution**
Automated Standardisation & Due Diligences	*Cost-efficient* Structuration of financial instrument using tokenization	*Optimized* Self-service, Personalized & Dynamic

Business: Business processes and deal structuration

Legal: Bond and contracts structuration, Platform T&Cs, Service Agreements (incl. custody)

Compliance: Permissioning and regulations

Technology: Token creation, issuance and distribution, as well as custody

Investors

Project Financing Use Case Illustration

EDF

- **Standardization of Microgrid Project Financing:** templates, due diligence, technical & legal advisory ecosystem
- **Pricing automation**, based on project data, relevant expertise and models

- **Token creation** and content definition (Bond term Sheet, ESG data)
- **Legal framework setup,** with legally binding native digital asset
- Platform T&Cs and Service agreements, **incl. roles & responsibilities**

- **Whitelisting,** Transfer, **Delivery vs Payment**
- **Wallet** and gas fees management
- **Digital Assets Custody** (with BP2S)
- Based on BNP Paribas **state-of-the-art security** (e.g. SSO, API layer)

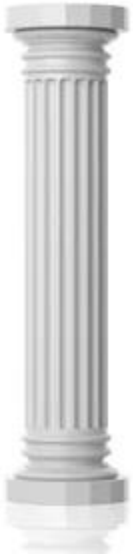
BNP PARIBAS ASSET MANAGEMENT

The three pillars of tokenization

Tokenization of **securities**

Issuance and distribution of tokenized securities (Bonds, then Loans and Equity)

Tokenization of **cash**



Tokenization of cash, to facilitate DvP[1] or coupon payments for example

Digital assets **custody**

Custody of tokenized securities' private keys

Note: 1) Delivery versus Payments


Interoperability

It is a journey…

Do to ***understand*** (vs the opposite)

THANK YOU!

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