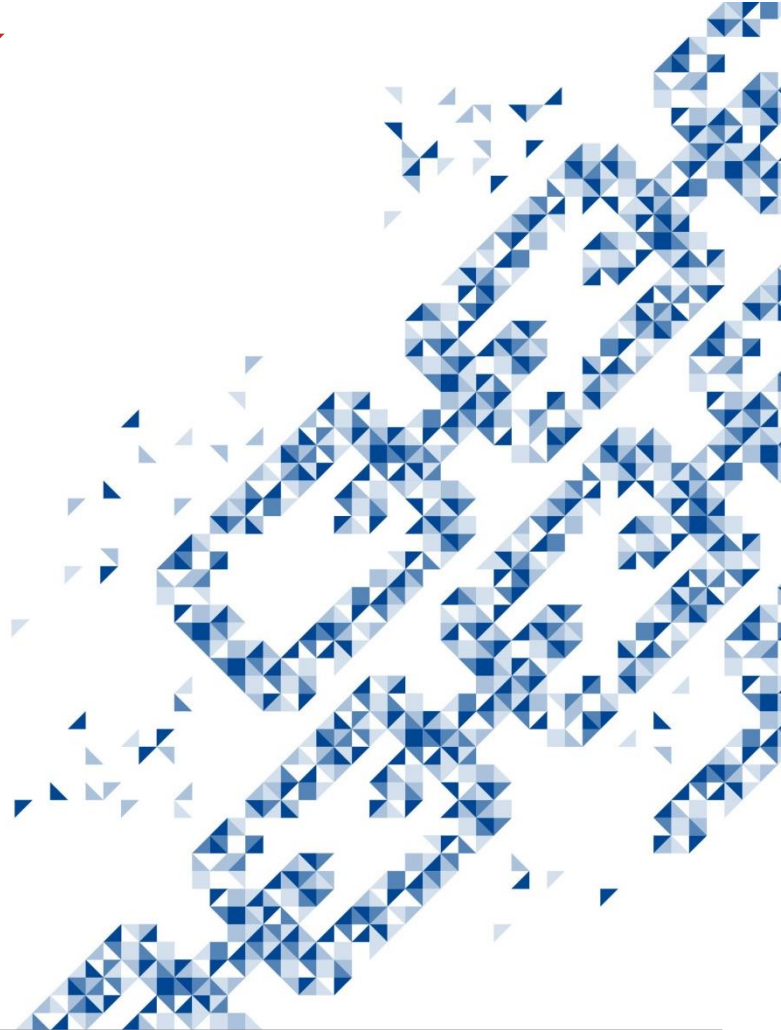# ALLEN & OVERY

Santander dBond No.1:
end-to-end blockchain bond

Daniel Fletcher
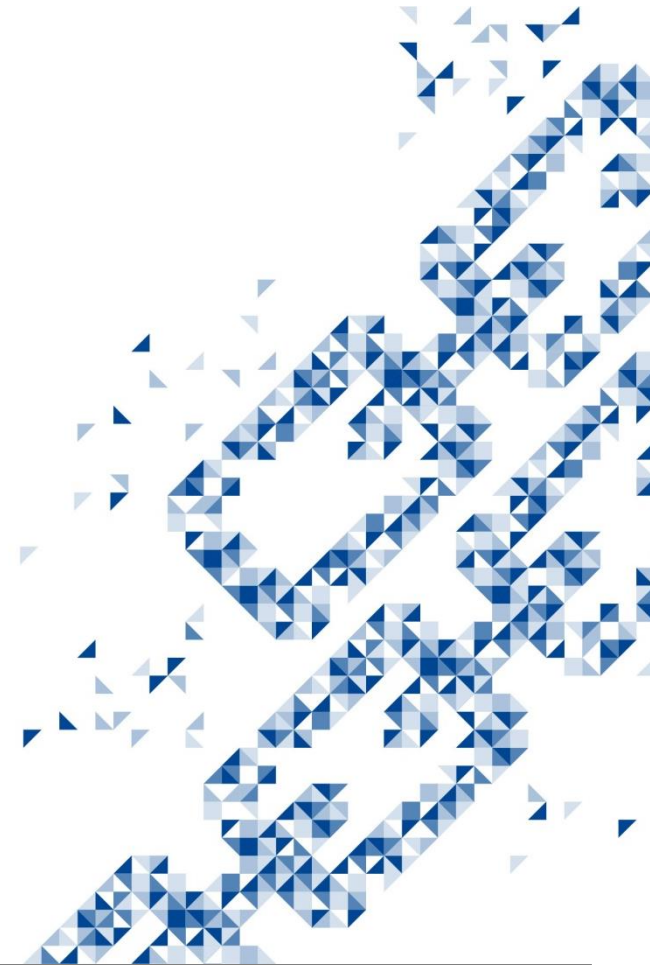
February 2020

Overview

1   What is a blockchain?

2   The Santander dBond

3   Legal and regulatory considerations

4   Is it the future?
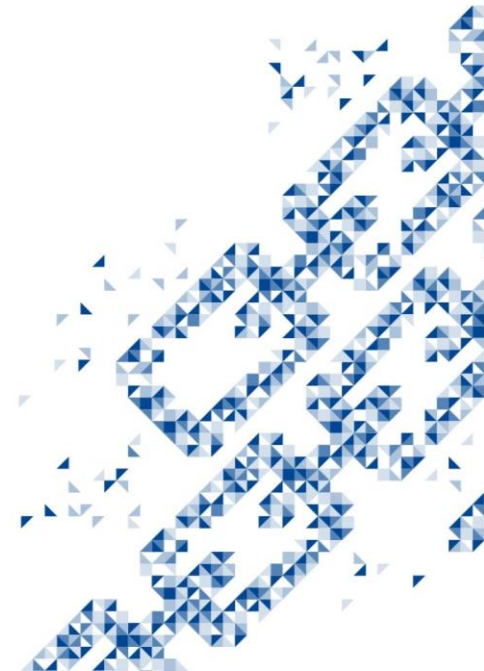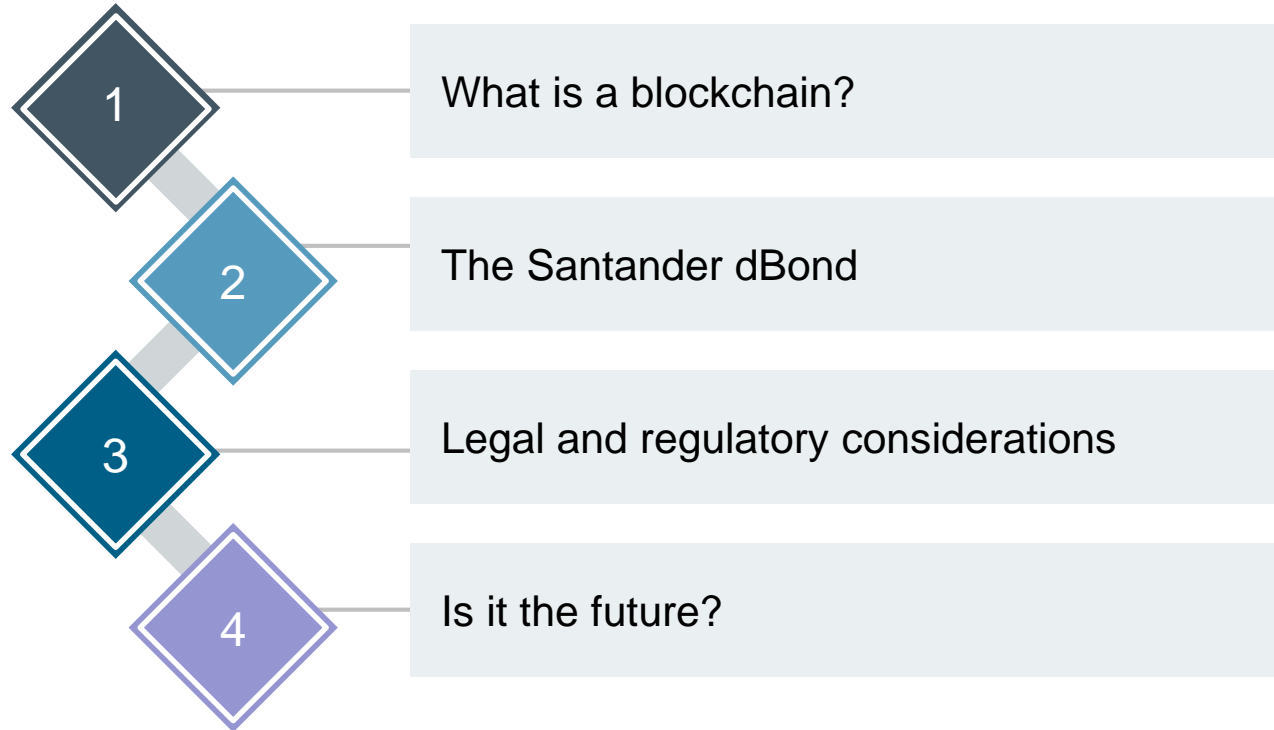
What is a blockchain?

What is a blockchain?

1 Blockchain is a **cryptographically** secured **distributed database (ledger)** that maintains a continuously-growing list of **records** called blocks

2 Each block contains a **time stamp** and a **link to a previous block**, and is **validated** by **consensus** amongst multiple computers

3 The chain is **immutable** - data in a block cannot be altered retrospectively

4 Data on the blockchain is **not stored in any single place. It is distributed** across many different nodes **(resistant to attack)**
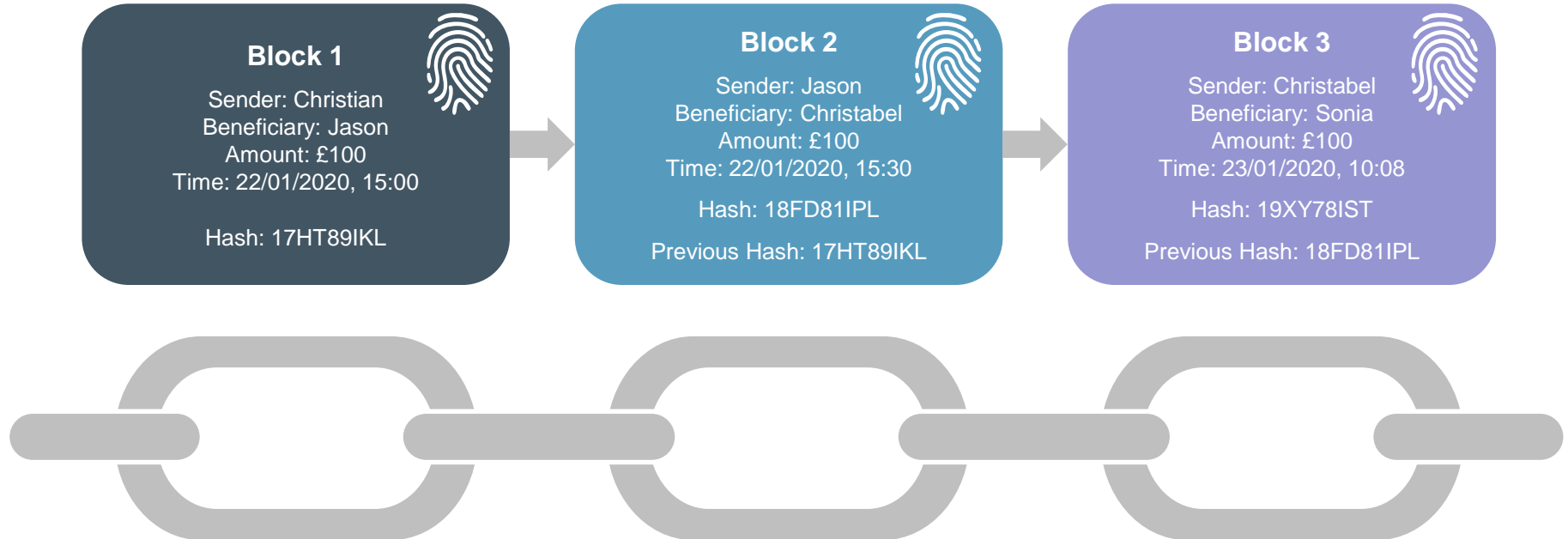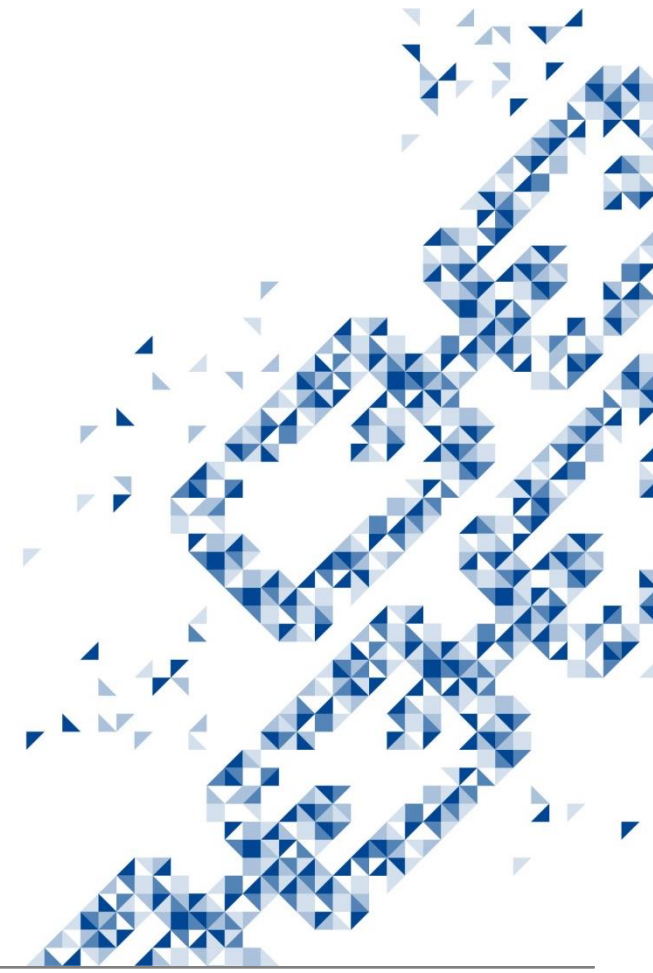
In other words | a register

What is a blockchain?

Each block contains: (i) data; (ii) the hash of the block (its 'fingerprint'); and (iii) the hash of the previous block.

Block 1

Sender: Christian
Beneficiary: Jason
Amount: £100
Time: 22/01/2020, 15:00

Hash: 17HT89IKL

Block 2

Sender: Jason
Beneficiary: Christabel
Amount: £100
Time: 22/01/2020, 15:30

Hash: 18FD81IPL

Previous Hash: 17HT89IKL

Block 3

Sender: Christabel
Beneficiary: Sonia
Amount: £100
Time: 23/01/2020, 10:08

Hash: 19XY78IST

Previous Hash: 18FD81IPL

The Santander dBond

Santander dBond: constitution

Dematerialised registered bond

Constituted by deed poll under English law

Full conventional* bond T&Cs in English language T&Cs

* mostly

Bond manifested solely on the public Ethereum blockchain

Blockchain acts as the bondholder register, recording legal and beneficial title

Cash tokenisation, with payment discharge upon transfer of cash tokens

Santander dBond: token flows

PLATFORM

All transactions on the Platform are managed by the Platform Manager and recorded on Ethereum's distributed ledger, which constitutes the Register for the Notes.

Key

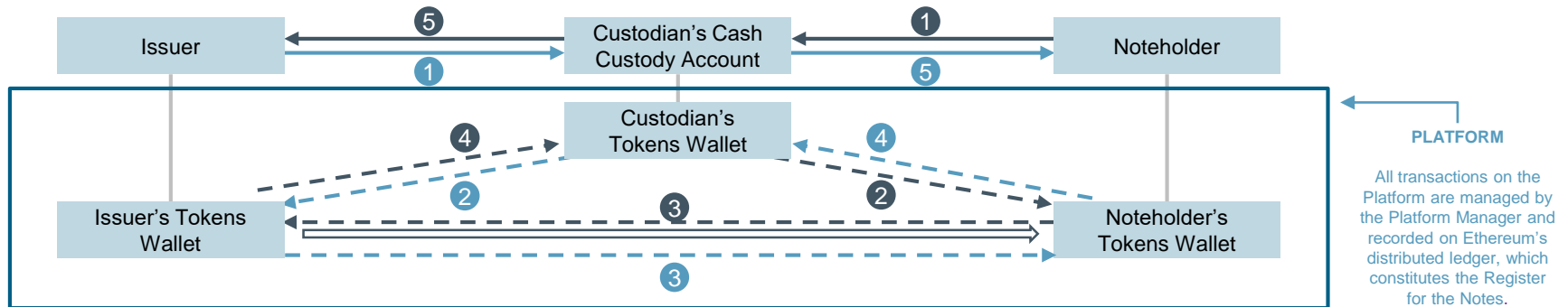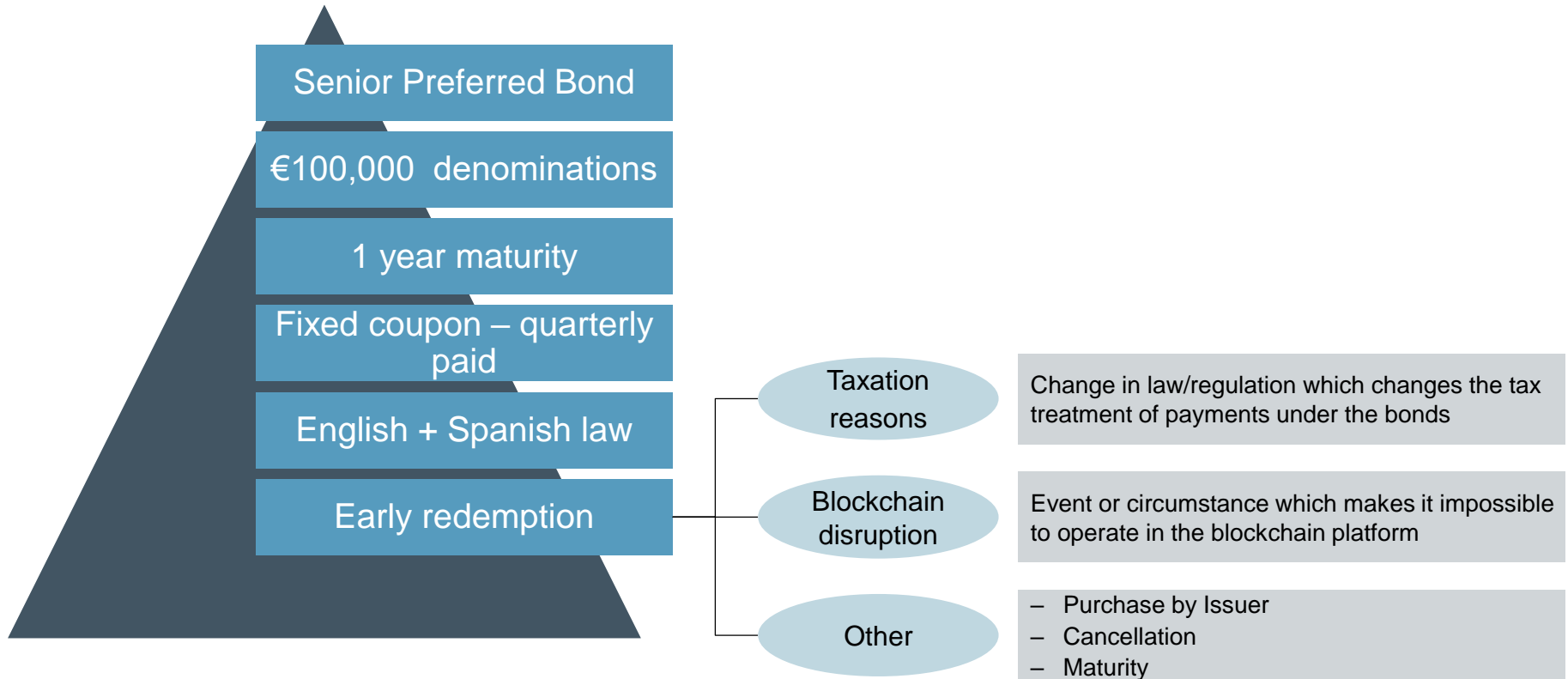|	
⟶	Transfer of fiat currency
⇢	Transfer of cash tokens
⇒	Transfer of Notes

Issue of Notes

1. Investor transfers fiat currency (**Cash**) equal to the purchase price to the Cash Custody Account for 'tokenisation'

2. Custodian creates 'Cash Tokens' equal to the amount of Cash deposited and sends them to the Noteholder's 'Tokens Wallet'

3. On settlement, Noteholder sends Cash Tokens to the Issuer's Tokens Wallet and Issuer sends Notes to the Noteholder's Tokens Wallet on a 'delivery versus payment' basis

4. Issuer may, if it wishes, send its Cash Tokens to the Custodian for 'detokenisation'

5. Custodian cancels such Cash Tokens and transfers an equal amount of Cash to the Issuer's (fiat currency) bank account

Payments of Principal and Interest

1. Issuer transfers Cash to the Cash Custody Account for 'tokenisation'

2. Custodian creates Cash Tokens equal to the amount of Cash deposited and sends them to the Issuer's Tokens Wallet

3. On the payment date, Issuer sends Cash Tokens to the Tokens Wallets of the Noteholder. In the case of redemption, the corresponding Notes are cancelled (destroyed/removed from Ethereum's distributed ledger)

4. Noteholder may, if it wishes, send its Cash Tokens to the Custodian for 'detokenisation'

5. Custodian cancels such Cash Tokens and transfers an equal amount of Cash to the Noteholder's (fiat currency) bank account

Santander dBond: main features

Senior Preferred Bond

€100,000 denominations

1 year maturity

Fixed coupon – quarterly paid

English + Spanish law

Early redemption

Taxation reasons — Change in law/regulation which changes the tax treatment of payments under the bonds

Blockchain disruption — Event or circumstance which makes it impossible to operate in the blockchain platform

Other
– Purchase by Issuer
– Cancellation
– Maturity

Santander dBond: parties

Issuer	Banco Santander
Manager	Banco Santander
Custodian	Santander Securities Services
Platform Manager	Banco Santander

Santander dBond: documents

Note Instrument (Deed Poll)

Custody Agreement

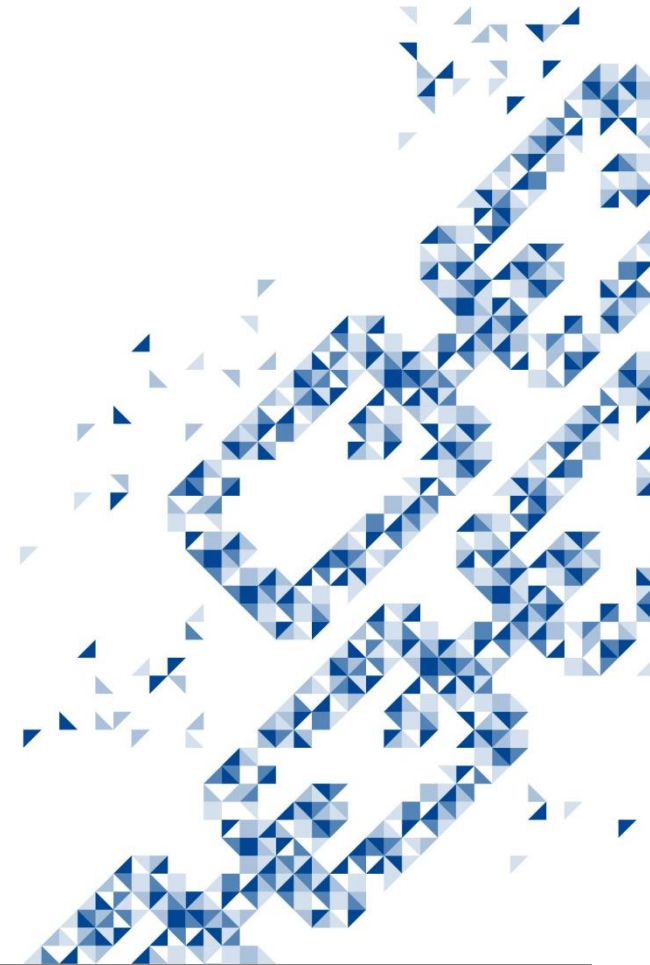Platform Manager Agreement

Platform T&Cs

Placing Agreement

Spanish Public Deed

Legal opinions

Legal and regulatory considerations

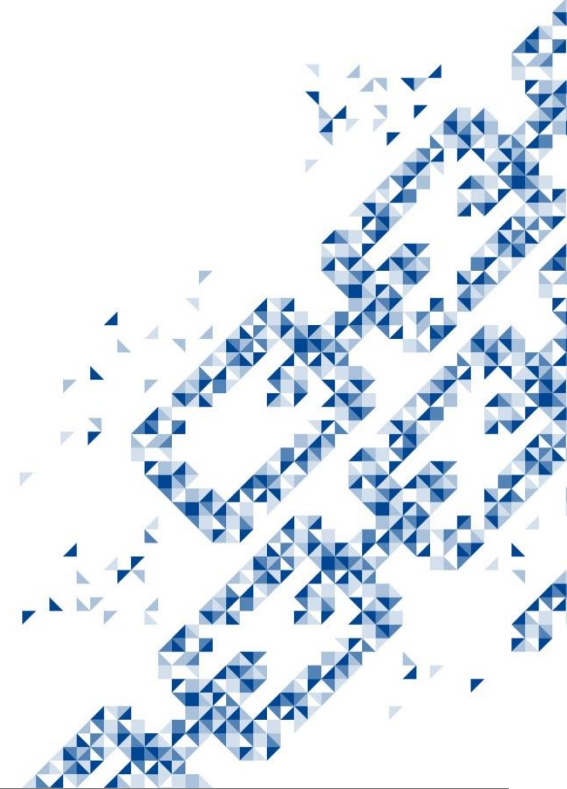# Santander dBond: Legal & Regulatory – Categorisation
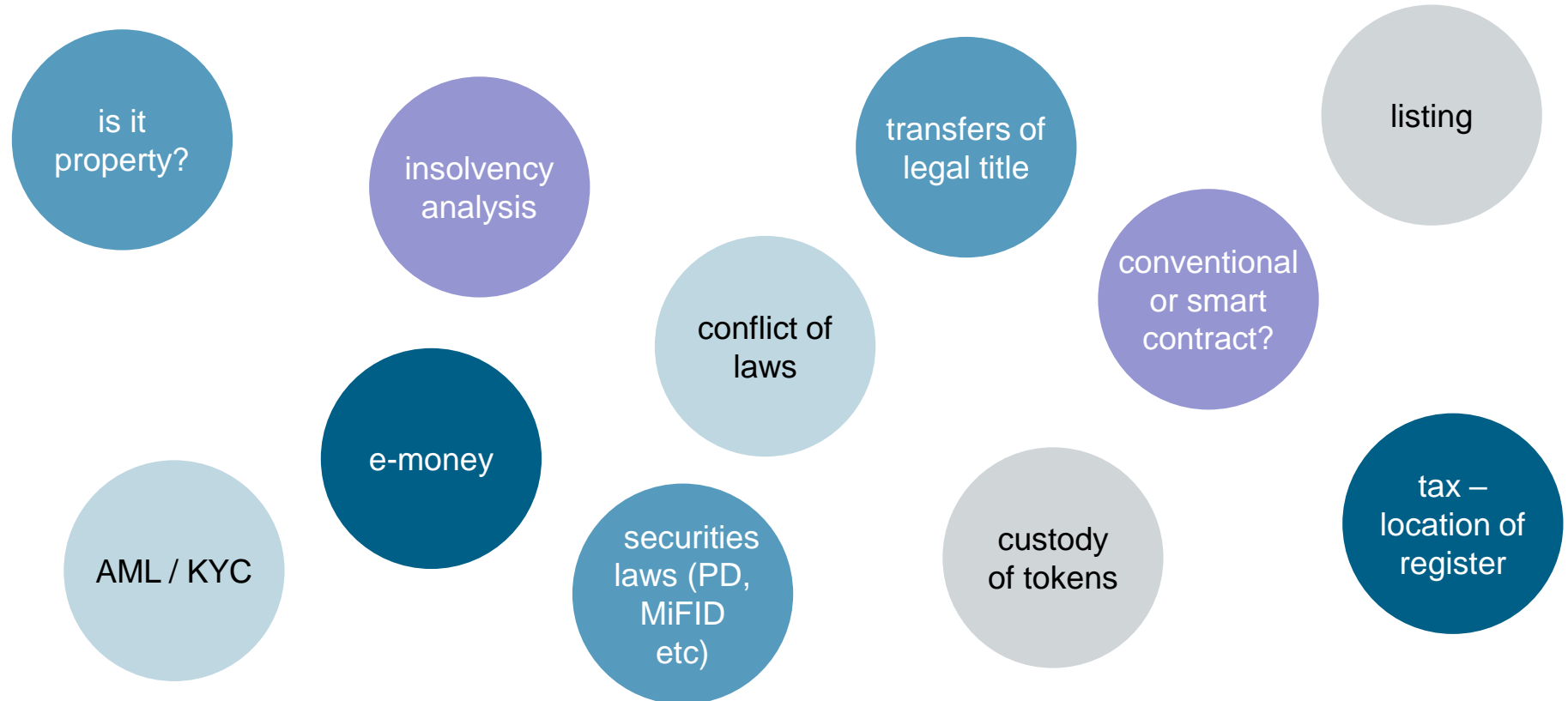
Crypto-asset?

Crypto-currency

Utility token

Security token

Santander dBond: Legal & Regulatory – Considerations

is it property?

insolvency analysis

transfers of legal title

listing

conflict of laws

conventional or smart contract?

e-money

AML / KYC

securities laws (PD, MiFID etc)

custody of tokens

tax – location of register

Is it the future?
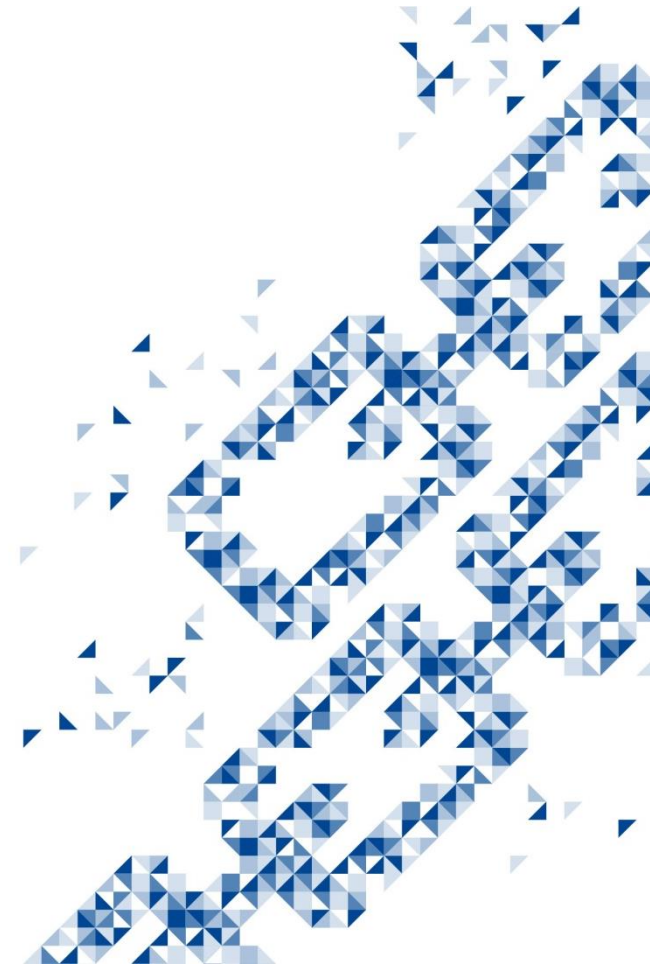
Advantages of using the blockchain

| | Security | Ownership is recorded on the blockchain which becomes the register – validated by consensus and immutable |

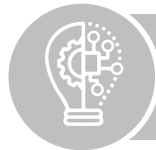| | Simplicity | No split between legal and beneficial title |

| | Efficiency | Simplifies the legal documentation and processes required for issuing debt securities |

| | Transparency | Visibility with pseudo-anonymity |

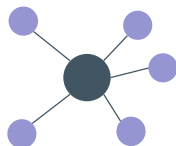| | Automation | Smart contracts: e.g. payments; enforcing sales restrictions (through whitelisting) |

Some challenges

Tech

– scalability (throughput, latency)

– resilience

– energy efficiency

Legal and regulatory

– listing – registration with a CSD

– conflicts of laws

Cultural

– "it's crypto!"

– if it ain't broke…

Questions?

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