Altoros Hyperledger Demo

Bond Issuance and Trading
Introducing Hyperledger

A **collaborative** effort created to **advance blockchain** technology by identifying and addressing important features for a **cross-industry open standard** for distributed ledgers that can transform the way **business transactions** are conducted globally.
Introducing Altoros

Altoros is a 250+ people consultancy helping banks and insurance companies digitize revenue streams. For blockchain applications we integrate solutions offered by the Hyperledger ecosystem.
Insurance

- needs to raise money
- exposed to a risk of a disaster when it needs to pay out claims

Investor

- needs to invest money
- needs to diversify with an instrument less dependent on market conditions
Insurance

- needs to raise money
- exposed to a risk of a disaster when it needs to pay out claims

Investor

- needs to invest money
- needs to diversify with an instrument less dependent on market conditions

Catastrophe Bond

- pays attractive rate
- principal is forgiven if a disaster happens
Insurance needs to raise money exposed to a risk of a disaster when it needs to pay out claims.

Investment Bank advises on terms connects with investors keeps records forwards payments administers the catastrophe trigger.

Investor needs to invest money needs to diversify with an instrument less dependent on market conditions.
Insurance

needs to raise money

exposed to a risk of a disaster when it needs to pay out claims

Investment Bank

advises on terms

Investor

needs to invest money

needs to diversify with an instrument less dependent on market conditions

Smart Contract
Trust

While software can execute the tasks of a custodian it needs to be trusted by Issuer and Investor at least as much as they trust Investment Bank.
Trust

While software can execute the tasks of a **custodian** it needs to be trusted by Issuer and Investor at least as much as they trust Investment Bank.

Blockchain

Shared immutable ledger

records are kept by all involved parties: Issuers and Investors

Consensus
Automation

Blockchain not only keeps records but executes smart contracts that automate the functions of a financial instrument.

Open market: Issuer and Investor discover each other on the blockchain

Terms of the bond contract are codified in a smart contract

Coupon payments are triggered by the smart contract

Maturity and payment of principal is automated by the contract

Catastrophe event is automated on a trigger by a public record
Confidentiality

Hyperledger provides for confidentiality of transactions unlike public blockchains

Terms of the agreement are visible to counterparties only

Only vetted parties are allowed to participate
Efficiency

Minimum investment in infrastructure or software

Built in security by advanced cryptography. The architecture of blockchain is safer than any single enterprise system or a combination of them.

Blockchain peer software is deployed at every participant's server

Low cpu load. Unlike public blockchains where peers run intensive and wasteful proof-of-work calculations

No single point of failure
Payment

The blockchain does not run any cryptocurrency but relies on traditional payment systems to tell it that a money transfer occurred. These payment systems like SWIFT, FedWire or ACH are agreed to be trusted by members.
Discovery

1. Issuer and Investors install blockchain software
Discovery

1. Issuer and Investors install blockchain software

2. An authority run either by the Issuer or a regulator enrolls market participants
Discovery

1. Issuer and Investors install blockchain software

2. An authority run either by the Issuer or a regulator enrolls market participants
Discovery

1. Issuer and Investors install blockchain software

2. An authority run either by the Issuer or a regulator enrolls market participants
Discovery

1. Issuer and Investors install blockchain software

2. An authority run either by the Issuer or a regulator enrolls market participants

3. Issuer deploys a smart contract with a new bond terms
Discovery

1. Issuer and Investors install blockchain software

2. An authority run either by the Issuer or a regulator enrolls market participants

3. Issuer deploys a smart contract with a new bond terms

4. Investors query the blockchain, discover the bond
Investor buys a bond contract

1. Investor invokes bond smart contract with his identity and enters into an agreement with the Issuer
Investor buys a bond contract

1. Investor invokes bond smart contract with his identity and enters into an agreement with the Issuer

2. Investor issues payment instructions to SWIFT to pay Issuer
Investor buys a bond contract

1. Investor invokes bond smart contract with his identity and enters into an agreement with the Issuer

2. Investor issues payment instructions to SWIFT to pay Issuer

3. SWIFT invokes smart contract with the payment confirmation
Investor buys a bond contract

1. Investor invokes bond smart contract with his identity and enters into an agreement with the Issuer

2. Investor issues payment instructions to SWIFT to pay Issuer

3. SWIFT invokes smart contract with the payment confirmation

4. Smart contract is activated
Issuer pays coupon to Investor

1. Smart contract is invoked on coupon date

Tcoupon
Issuer pays coupon to Investor

1. Smart contract is invoked on coupon date
2. Smart contract issues payment instructions to pay Investor on behalf of Issuer

Tcoupon

pay

SWIFT
Issuer pays coupon to Investor

1. Smart contract is invoked on coupon date
2. Smart contract issues payment instructions to pay Investor on behalf of Issuer
3. SWIFT invokes smart contract with the payment confirmation
Catastrophe trigger

1. Catastrophe Oracle like a National Weather Service invokes smart contract with a trigger
Catastrophe trigger

1. Catastrophe Oracle like a National Weather Service invokes smart contract with a trigger

2. Smart contract is unwound
Bond contract is traded

Another smart contract implements a marketplace where investors meet and trade bond contracts.
Bond contract is traded

1. Investors agree to trade via Marketplace smart contract
Bond contract is traded

1. Investors agree to trade via Marketplace smart contract
2. Payment instructions are issued
Bond contract is traded

1. Investors agree to trade via Marketplace smart contract
2. Payment instructions are issued
3. Payment confirmed

paid

SWIFT
Bond contract is traded

1. Investors agree to trade via Marketplace smart contract
2. Payment instructions are issued
3. Payment confirmed
4. Marketplace invokes bond smart contract
Bond contract is traded

1. Investors agree to trade via Marketplace smart contract
2. Payment instructions are issued
3. Payment confirmed
4. Marketplace invokes bond smart contract
5. Bond smart contract changes counterparty
Bond Issuance on Hyperledger

Hyperledger technology provides confidentiality of financial agreements committed to a common ledger.

Smart contracts run by on Hyperledger blockchain allow to automate and model financial instruments.

A smart contract can model a distributed marketplace with complex workflows where smart contracts invoke each other.