Blockchain in Energy Commodity Trading and Financing markets

OPEC-IEA-IEF

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Vienna • 15 March 2018

thinkforward

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Introduction

- **Arnoud Star Busmann**
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  - ING Wholesale Bank – Innovation and Trade & Commodity Finance
  - Initiative lead for Easy Trading Connect

- **ING**
  - World's #1 commodity bank
  - One of most advanced blockchain labs
  - Initiator of Easy Trading Connect

- **Easy Trading Connect**
  - Digital transformation of commodity trading and financing markets
  - Initiative joined by SG and ABN AMRO
  - Building blockchain-powered platform ventures

Content

Blockchain technology in physical energy commodity trading and financing markets

1. Blockchain primer
2. Applied to energy commodity trading & financing
3. Case studies – Mercuria trade, Louis Dreyfus trade (soft commodities), “OilCo”
4. Considerations for the future

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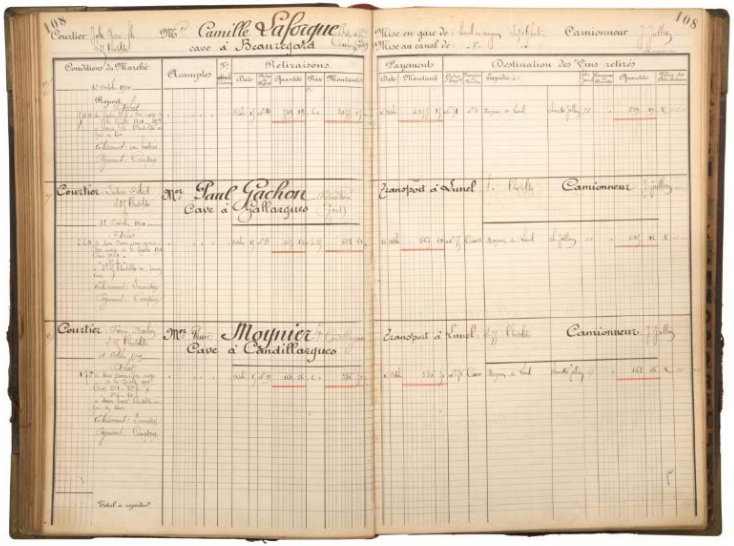
Necessary functionalities of ledgers



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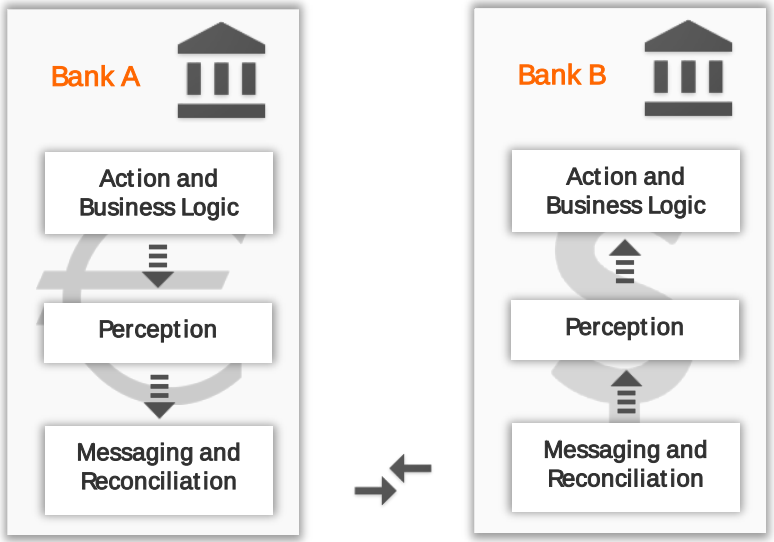
- Provenance
- Order
- Finality
- Auditability

The problem with both traditional and electronic ledgers:
The ledger should be in one place while we want to do transactions in many places simultaneously

Record Sharing Progression

Bilateral Reconciliation

- Costly Matching
- Extensive Reconciliation
- Source of Systemic Risk

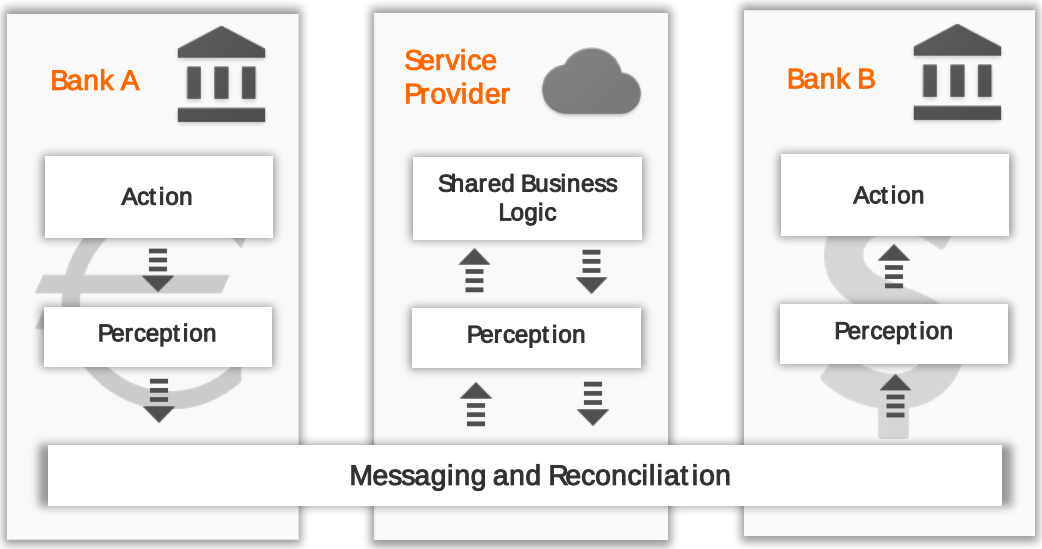


Source: Adapted from https://r3cev.com/blog/2016/8/24/the-corda-non-technical-whitepaper

Record Sharing Progression

Third Party / Market Infrastructure

- Gains in Matching Efficiency
- Need for some reconciliation remains
- Standardized Messaging

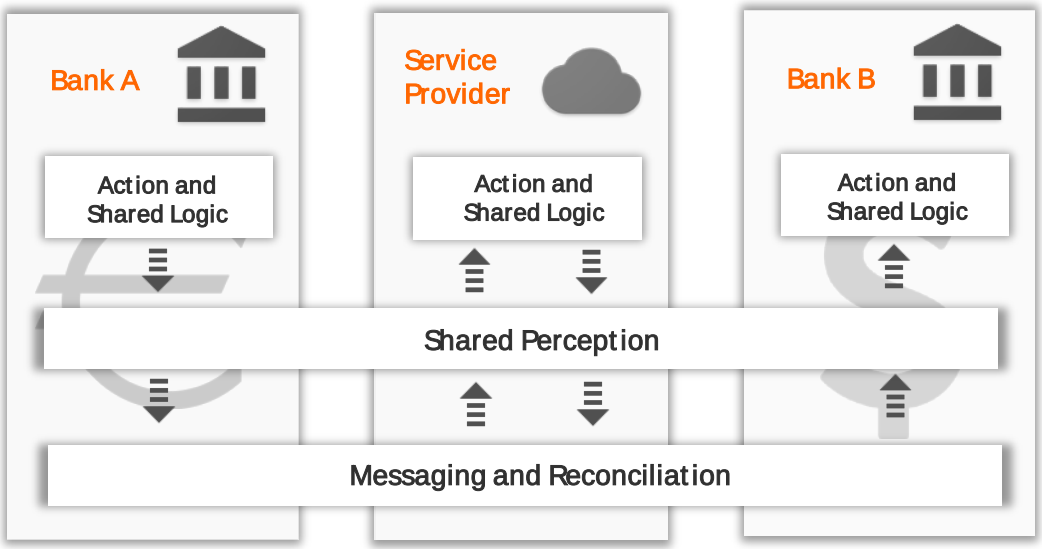


Source: Adapted from https://r3cev.com/blog/2016/8/24/the-corda-non-technical-whitepaper

Record Sharing Progression

Real-time shared view

- Ideal Situation
- Near-real time access to shared reality
- Standardized Messaging



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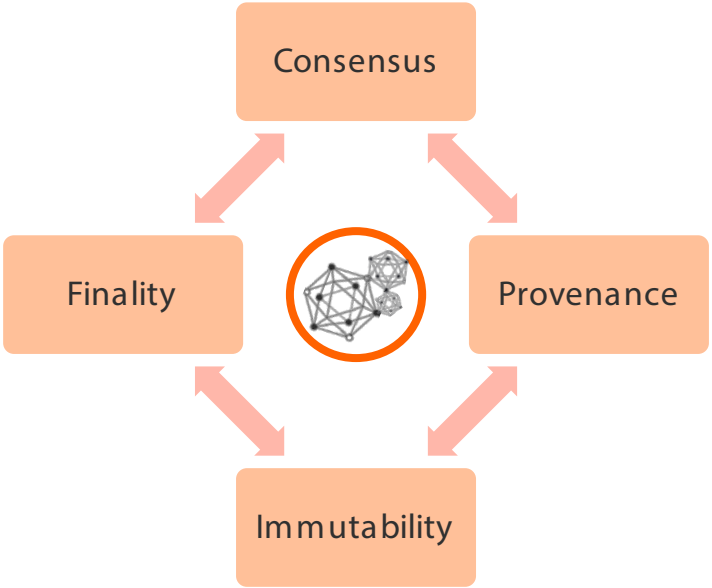
What does Blockchain mean to us?

"A distributed ledger is a system that allows ***parties who don't fully trust each other*** *to come to consensus about the* ***existence, nature and evolution of a set of shared facts*** *without having to rely on a fully trusted centralized third party."*

Gendal Brown, R3 CTO



Blockchain at ING: https://www.youtube.com/watch?v=uphngE7oPQs

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Distributed Ledger Technology has great potential

- Operational simplification
- Regulatory efficiency improvement
- Counterparty risk reduction
- Clearing and settlement time reduction
- Liquidity and capital improvement
- Fraud minimization

Potential via Dan Oswald, hrhero.com

http://www3.weforum.org/docs/WEF_The_future_of_financial_infrastructure.pdf

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Opportunity for physical energy commodity trading & financing

• Costs / Efficiency

- Automation of labour-intensive processes
- Financing and logistics (e.g. demurrage)
- Enable internal digitalization

• Security

- Authentication of data
- No fake data can enter the process midway
- Privacy

• Speed

- Shared data and status – real time, reliable
- Workflow across actors – act when prompted, to do lists
- Authentication and authorisation immediate

• New frontiers

- Digital tokenisation of physical assets
- New financing & settlement models
- IoT & Artificial Intelligence

Challenges

- **Legal & regulatory changes**
  - Recognition of digital title (e.g. eBL)
  - Smart contracts
  - Local and supranational regulations
- **Technology**
  - Performance and scalability
  - Immaturity
  - User adoption
- **Standardisation**
  - Contracts, T&C
  - Reference data
  - Transaction execution
- **Industry effort**
  - Critical mass adoption
  - Global & supranational by nature
  - Needs change agents with:
    - Speed of startups
    - Power to align key market actors

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What difference does blockchain bring?

- No need to trust **a central** "Database Administrator"
- Cryptographically secured **privacy** of information
- **Certainty** in (future) contract execution
- **Tokenisation** – digital representations of physical assets

- Removes key hurdles to building a **digital utility** for industry
- Benefits of digitalization, workflow and shared data and logic now at **industry level**:
  - Not just internal or within a semi-trusted supply chain
  - But between direct competitors
- **Automation of trust** – no need for third parties
- Digital transfer and exchange of **value**

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Case studies – Mercuria experiment

- Developed by **ING – SG – Mercuria**
- **Crude oil** from Africa to China
- **Actors:**
  - Mercuria – Chemchina
  - ING - SG
  - SGS – LBH
- Focused on **LC & LoI**

- **Goal:**
  - Measure potential efficiency & speed benefits
  - *Demystify and make the potential tangible*
- **Validation:**
  - x 4 efficiency in banks
  - x 1/3 in trading house
  - Speed of LOI issuance
- **Outcome:**
  - Inspiration for "OilCo" (announced Nov 2017)

Case studies – Louis Dreyfus experiment

- Developed by
  ING – SG – ABN AMRO - LDC
- **Soybeans** cargo from US to China
- **Actors:**
  - LDC – Bohi
  - RMG – Bluewater
  - ING – SG
  - incl USDA
- Full transaction – **Commercial agreement, logistics, documents, LC**

- **Goal:**
  - Measure benefits in corporate process
  - Push tech boundaries & production readiness
  - *Demystify and make the potential tangible*
- **Validation:**
  - x 5 efficiency in trading house
  - Speed (too fast..)
  - Tech almost there
- **Outcome:**
  - Inspiration for "AgriCo"?

Case study – "OilCo", a blue chip Startup

Trading Houses
- Mercuria
- Gunvor
- Koch

Majors
- BP
- Shell
- Statoil

Banks
- ING
- ABN AMRO
- SocGen

Focus
- Digital post-trade settlement of physical energy commodity transactions
- Focused on solving common operations problems
- Is NOT a marketplace!

Key milestones
- Initial meetings – April 2017
- Agreement to build business case – June 2017
- Incorporation – Dec 2017

Current status
- Interim CEO appointed
- Staffing of exec and product team in progress
- Technology selection in progress

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Considerations for the future

• Cybersecurity

- Digital assets worth >=$100m
- Identity, authentication & authorisation control

• Decentralization?

- “Winner takes all” platforms
- Governance of business models and access - Gated communities

• People impact

- Efficiency & automation
- One-way change – loss of knowledge

• Market structure

- Standardisation & simplication of risk allows new entrants
- Erosion of competitive advantage of internal value chains