BLOCKCHAIN PIONEERED INCORRUPTIBLE DATA

Activeledger made it interoperable

BLOCKCHAIN BEYOND THE HYPE AND IN ACTION

Activeledger

INTRODUCING ACTIVELEDGER
THIS IS WHAT WE WILL COVER

- 15th September, 2008 – A bad day for Lehman Brothers
- 18th August, 2008 – A good day for technology
- Centralisation vs Decentralisation – a paradigm shift in business and government?
- What is Activeledger?
- Is there a difference between Blockchain and Distributed Ledger Technology (DLT)?
  - What does the word "Blockchain" refer too?
  - What is the difference between a Blockchain and a DLT such as Activeledger?
- Activeledger supply chain use-cases
  - Low cost pre-shipment finance service to a supply chain
  - Insight throughout the supply chain
- Some Activeledger users

15ᵀᴴ SEPTEMBER, 2008

- Banking crisis looming (morning)

- Lehman Brothers Collapse

- Domino effect kicks of worldwide banking crisis

- **Outcomes**

  - Regulator reputation tarnished

  - Alternative market opportunities demand change

  - Fintech is born

- Satoshi Nakamoto publishes Bitcoin whitepaper

- Introduces decentralised settlement of asset transfers

- Bitcoin is many things to many people, but to me it is an experiment which proves ITC can be trusted to a high degree of probability to keep data accurate and safe, and eliminate the double-spend problem.

- Why is decentralisation so important?

  - Central authorities are proven untrustworthy (on a daily basis, they lose our ID's, credit cards and so on)

  - Central authority requires administration, which is friction, which is delay, which is cost

  - Why did we ever trust banks? They lose our money, assets, identities and have lost their own dignity

  - And they continue, and we continue to suffer their high costs and delays, but they are working hard towards improving efficiency and reducing costs (banking bonuses aside). Keep your eye on the leading challenger banks such as Starling and Revolut.

CENTRALISATION VS DECENTRALISATION

- Real world:

  - A centralised service is provided by an entity with customers who have chosen to be bound by their terms and conditions and accept the entity as the arbiter in all disputes except those which can be referred to a court.

  - A decentralised service is provided by an entity, or group of entities, which have opted to remove the power to make decisions from the central authority. Terms and conditions in a decentralised service are governed by an external group. For example, the NHS may have a committee, which includes patients, managing governance for an area of health management.

- Blockchain & Distributed Ledger

  - DLT can offer centralised services, some cases where evidence of verification is managed by a central authority for security or asset based issues is required (such as a bank verifying a customers transaction, or a doctor verifying a prescription).

  - Blockchain is decentralised, changes to rules bust be agreed by all interested transacting parties, that is, rules cannot be changed by a central authority who may have commercial interests which conflict with their customers.

WHAT IS ACTIVELEDGER?

- Activeledger is a Distributed Ledger and:-
  - a development platform used by software developers to create distributed ledger solutions
  - a collection of tools (IDE with intellisense, plus SDK's and API's which target supply chain and financial projects, one community developer has created a drag drop development tool for connecting ERP systems with Activeledger)
  - available with an MIT Open Permissive licence which allows developers to retain IP in their work and without the need to share their work with the Activeledger community, which is different to most open source licenses.
    - Retaining IP in your project allows you to protect your creative work and improves your ability to find funding
  - available at github.com/Activeledger with full documentation in English and Mandarin Chinese
- Built after an 18 month laboratory, funded by a large CSD (EUR 1 Trillion/day turnover)
  - As a heads-up organisation they attracted thought leaders from most industries curious about Blockchain/DLT
- In use within Finance, Shipping and Supply Chain projects

WHAT DOES THE WORD "BLOCKCHAIN" REFER TOO?

- The use of the word Blockchain is confusing:

  - Some say it must only refer to public mined, proof of work, networks such as Bitcoin and Ethereum

  - Others say it refers to any distributed ledger which chains transactions together whether the consensus is reached by mining or not.

  - However:

    - A Blockchain is an immutable distributed ledger

    - …and most non-blockchain distributed ledgers are immutable too

- When I use "Blockchain" I am *usually* referring to a public mined network such as Bitcoin and Etherium

WHAT IS THE DIFFERENCE BETWEEN A BLOCKCHAIN AND A DLT SUCH AS ACTIVELEDGER?

- Blockchain utilises a network of competing miners to maintain consensus (Bitcoin ~9,000, Etherium ~ 6,300)

- A Blockchain network is as powerful as the last machine to forge a block

- 7.5 to 15 TPS *accepted by the network, completion per transaction 5 minutes to hours

- Interoperable via interstitial systems only (loss of single version of the truth)

- Expensive to operate (requires gas/tokens)

- Inability to scale (performance or data volume)

- Activeledger utilises the combined power of the network to deliver a proof of reputation consensus.

- 200 completed transactions per second (typical 4 node network). Increase performance by adding nodes (computers).

- Native interoperability, API & SDK's for most languages and ERP systems. Maintains single version of truth throughout third party systems.

- Unlimited business models (free, freemium, subscription, one off price, and more)

- Unlimited data volume (stored on chain or referenced).

- Private DLT with governance & smart contracts

PRO'S AND CON'S (FOR SUPPLY CHAIN USE)

BLOCKCHAIN

- Blockchain requires specialist developers

- A Blockchain network needs funding to operate

- Not scalable and slow

- Limited business models

- Very likely to be operating and maintaining todays transactions in 1,000 years.

- Already trusted. Operating 10 years and not lost a single transaction or ever been "down"

ACTIVELEDGER

- Activeledger uses industry standard tools familiar to enterprise developers. Nothing new to learn.

- Activeledger is free to use

- Scalable and fast

- Unlimited business models

- Solutions evolve resulting in lower longevity of data, that is, immutability lasts the life of the consortium

- Trust is earned by the consortium's ability to manage and implement governance rules (… of *Maersk and IBM* the CIO of CMA CGM said "You can't trust your biggest competitor to do you any favours")
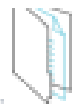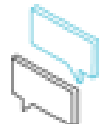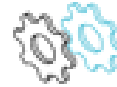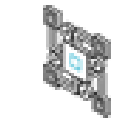
SUPPLY CHAIN USE-CASES

SUPPLY CHAIN MANAGEMENT AND SUPPLY CHAIN FINANCE

PRE-SHIPMENT FINANCE

- Anchor buyer issues an order which creates Advance Payment Obligations (APO's)

- Supplier elects to convert APO's with a funding source

- Funder has access to buyer supplier history

- Funder recognises anchor buyer through APO

- Funder can incentivise performance improvements

- On invoice approval anchor buyer authorises their bank to convert APO's to cash on 1:1 basis

- Anchor can mitigate negative market forces and increased risk, by altering conversion, for example 1.1:1 would give 10% increase to suppliers.

FUNDING REMOTE FARMS IN CHINA

- YANGXIAN, a top ten farmer in China, provides bank guarantees throughout its supply chain

- Data collected and stored in a central database:-

  - animal health (by IoT and analysed by AI)

  - feed sales (by accounts/invoicing), feed usage (by IoT)

- Activeledger replaces central database and shares data to:-

  - Funders willing to make loans without guarantees (after DD)

  - Insurers providing lower cost production assurance

- Releasing capital has enabled expansion and new R&D programs (750 employees, 12 PhD's and looking for more!)

INSIGHT THROUGHOUT THE SUPPLY CHAIN

- Funders and Insurers receive insight into animal welfare and development progress
  - Feed matched to type, age and size of herd
  - Outcome monitoring to manage future risk and growth predictions
- Traders predict quality and assess predelivery sales opportunities
- Feed mill uses supply chain data to assess results and improve feed production
- Compliance monitors product delivery against regulations
- Equipment maintainers alerted to issues in real time

- YANGXIAN develops automated feeding equipment
  - Feeder ensures animals receive correct feed by animal age (face recognition)
  - Feeder listens to animals and uses AI to determine health and happiness
- Utilises Activeledger APO's to finance equipment
- Collates data by individual equipment
- Provides real time data to:
  - Vets and Farm Management
  - Funders and Insurers
- Enables more incentives to funders and insurers to impact behaviour

ACTIVELEDGER ECO-SYSTEM