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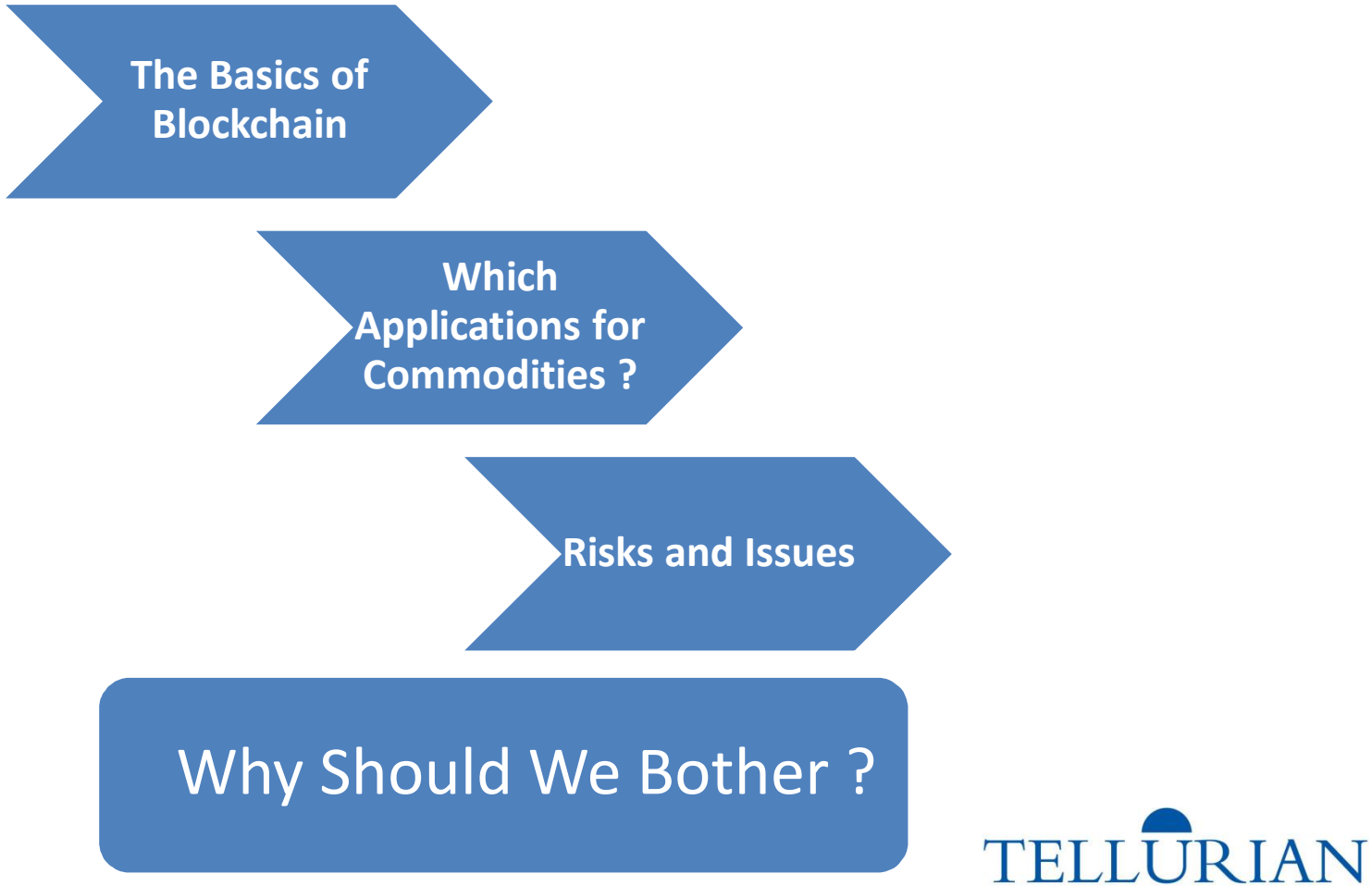
‘Commodities and Blockchain - Distributed Ledger Technology’

Jean-Marc Bonnefous

Energy Risk Summit, London

22/23 June 2016

Blockchain and Commodity Markets



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What Is (Not) Blockchain ?

Blockchain is not Bitcoin !

Blockchain is the ledger technology underlying Bitcoin and there are many types of Blockchains beyond Bitcoin

Bitcoin is the most well known ‘Public’ Blockchain

Bitcoin is also a cryptocurrency, meaning a currency created and transferred entirely by cryptographic means (algorithms)

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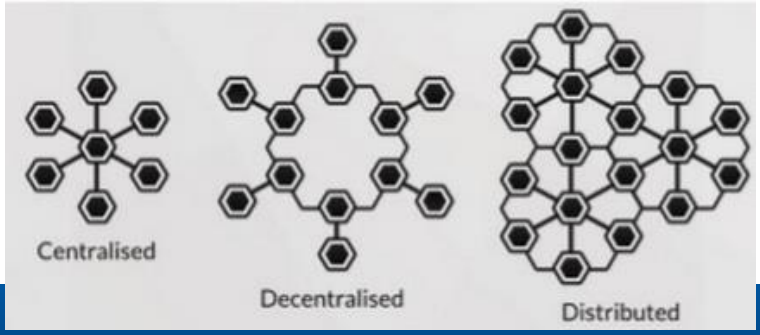
What Is Blockchain (DLT) ?

- A Ledger is a record of a financial transaction
- A Blockchain is a distributed ledger duplicated across network nodes
- Shared using a peer to peer file transfer over the internet
- Transactions validated by all network participants by consensus
- Validates/store/share deals without need for a ‘Third Trusted Party’
- Is decentralised (robust) and encrypted (safe)



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Key Benefits of Blockchain (DLT)

Source: Accenture, 2015

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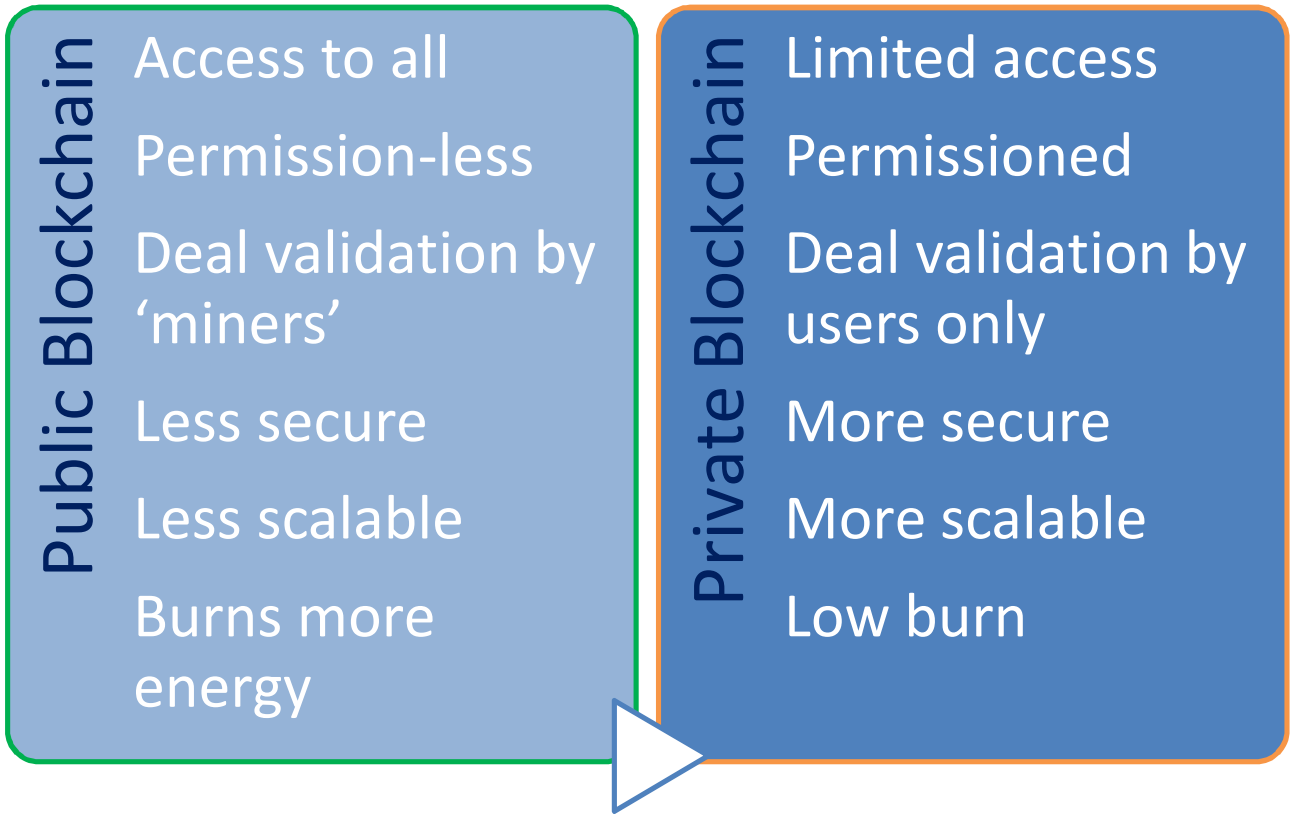
Public vs. Private Blockchain



FROM RETAIL APPS TO INSTITUTIONAL APPS

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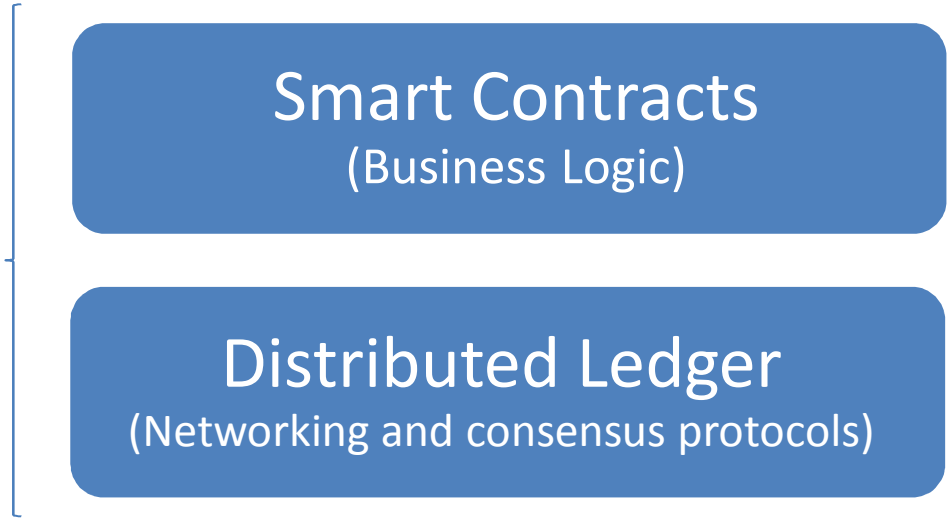
Smart Contracts

A smart contract is a computer program with some embedded logic. Decentralised smart contracts are no different except that they can be trust-less, autonomous and potentially self-sufficient.



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Commodities: Wide Set Of Potential Applications

- Provenance/tracking of assets
- Trade finance
- Electricity trading and balancing
- OTC post-trade process
- Distributed Clearing Networks for OTC derivatives

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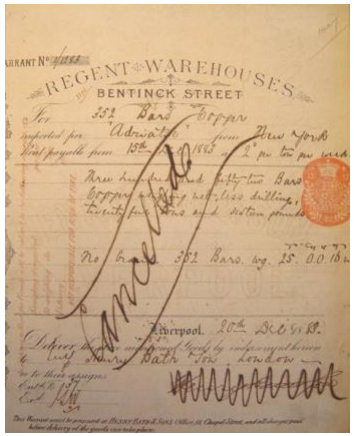
Provenance and Tracking of Assets



- Legal aspects of Blockchain - Who owns what ?
- Blockchain can provide immutable ledger with authoritative and transparent ownership log
- Provides traceability and transparency over the supply chain
- Mitigates risks of fraud and double counting of assets
- Could be used for commodity warrants or precious commodity assets

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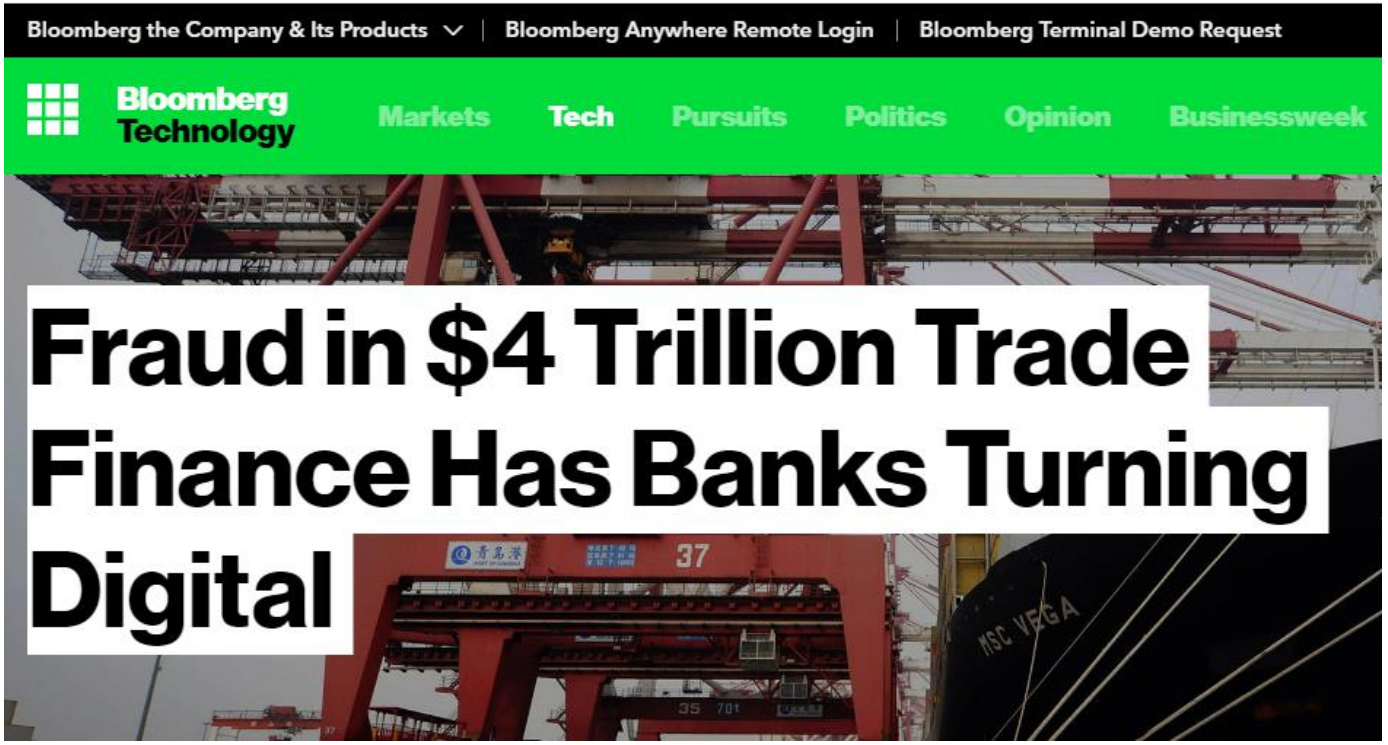
Commodity Trade Finance



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Commodity Trade Finance

- Key issue for banks and traders:
  - Existence of the underlying commodity
  - Risk of re-hypotetication of assets/warrants to another lender

- e.g. Copper loans issue at Quindao, China, in 2014 when banks and traders found that some of the metal they were "repo-financing" wasn't there


Bill of Lading

PPD COLL COD

Pro No.

Date:

Receiver:

Name
Address
Phone #

Ref. No.:

Description / Dimensions | Remarks

Driver Name: Date:

Time In:

Receiver: Time Out:

Printed Name: Date:

damage due to improper packing or labeling.
a maximum of $50.00 per shipment for loss or damage to contents.

- Need to have an authoritative and secure record of ownership

- Market community would benefit from a distributed platform for tracking and lending vs. warrants

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Blockchain And The Electric Grid

Energy utilities already use big data & analytics to better understand and manage customer usage, and improve client service - e.g. energy grid operations and smart metering

Now use Blockchain tech to decentralize and optimize electricity metering and exchange

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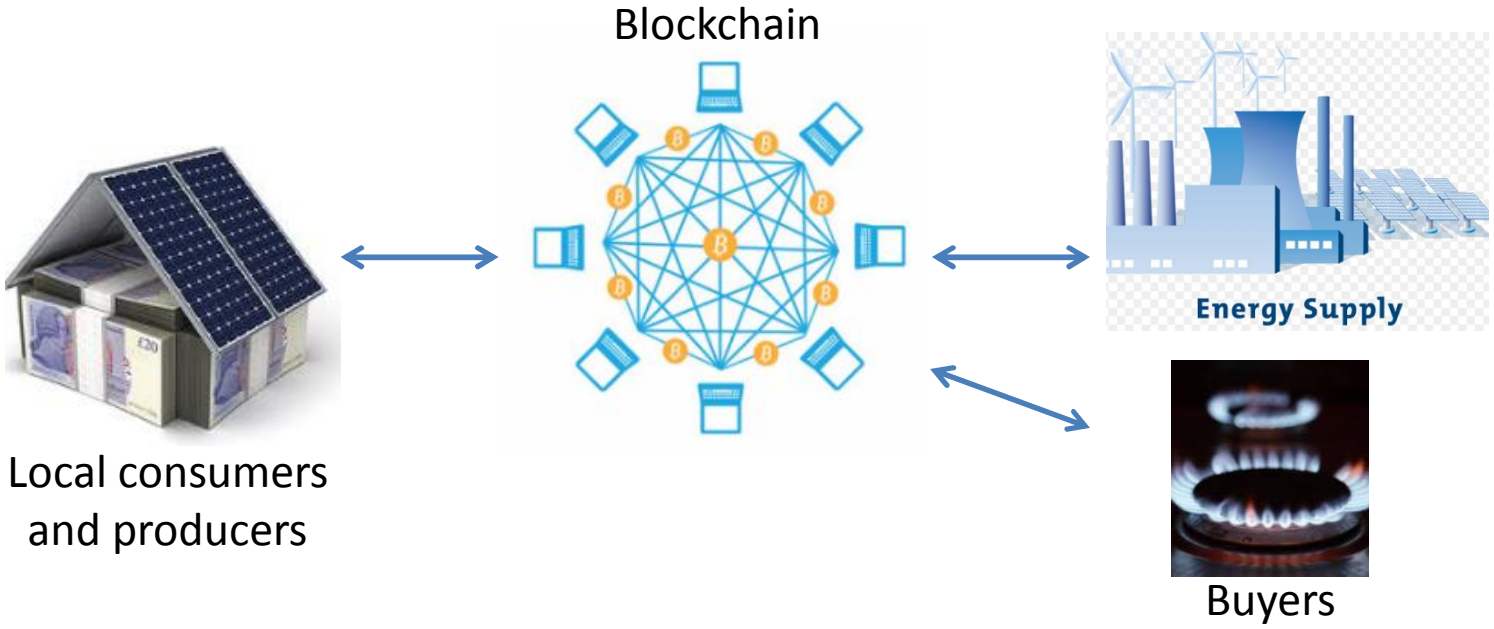
Peer-To-Peer Electricity Trading



Decentralised marketplace to trade surplus renewable energy (e.g. from solar panels) within a micro grid

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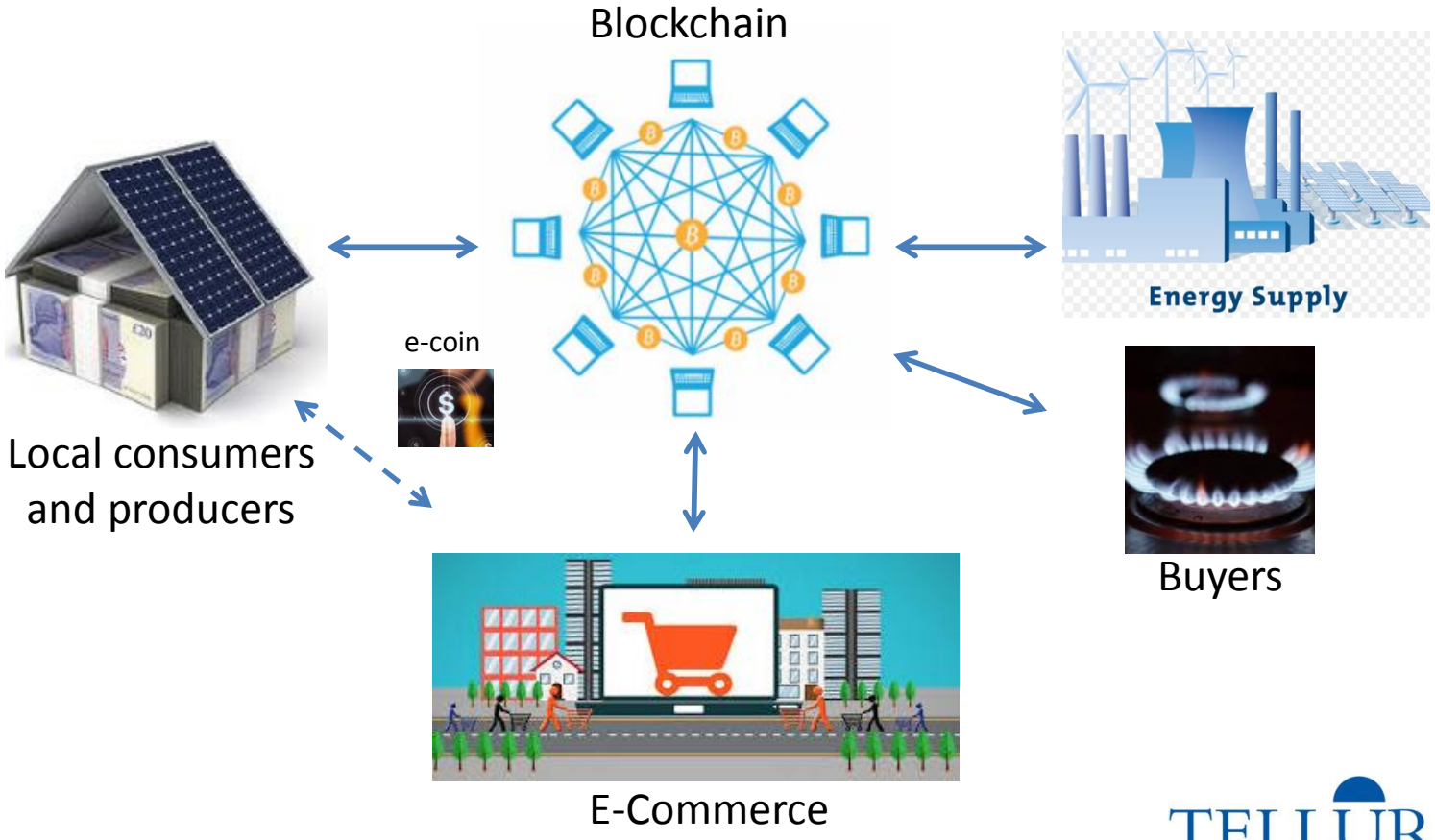
…Integrated With e-Commerce World ?



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Take Back Control…

…Of The Post Trade Process

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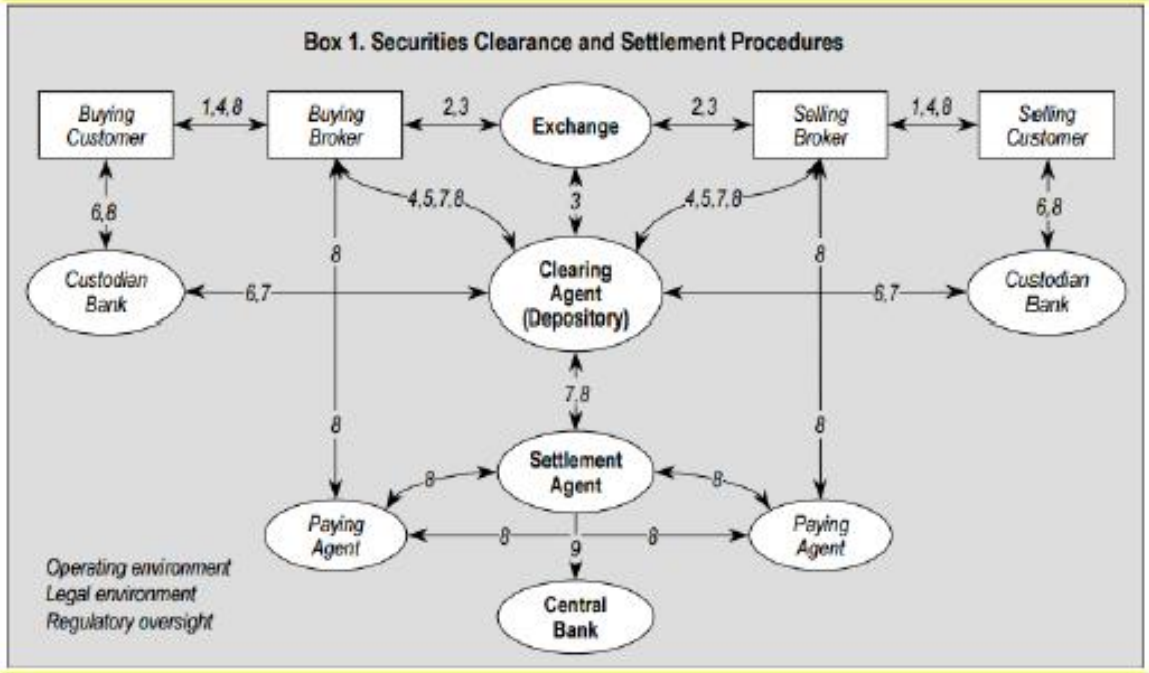
The Existing Post-Trade Process

Figure 1. Securities Clearing and Settlement requires many intermediaries



Source: Securities Clearance and Settlement Systems, Mario Guadamillas and Robert Kepler, The World Bank

A somewhat complex and costly process…

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The Bank of England Sees Benefits

…securities settlement is now ripe for innovation. A typical settlement chain can involve many different intermediaries, meaning securities settlement is comparatively slow. Transactions that take nanoseconds to execute settle in days. This also means large costs and operational risk. And, like in payment systems, economies of scale introduce concentration and create single points of failure. All of that ties up potentially tens of billions of pounds worth of capital. With the economics of wholesale banking under pressure, cutting inefficiencies is a high priority for industry.

That is why it is welcome that FinTech innovators are exploring the potential of distributed ledger technology to simplify the settlement chain, reduce its cost, and raise its speed while increasing resilience…

Mark Carney, The Mansion House, London, 16 June 2016

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It’s Not Just About Speed…

- Blockchain is not about speed and trading faster but about efficiency and costs
- Present trading infrastructure already addresses speed issues
- …but creates problems at the post-trade level who’s playing catch up
- Distributed ledger technology (DLT) may help address these issues

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Benefits For OTC Derivatives

Benefits are particularly significant for **un-cleared OTC derivatives**:

- Deals with the issue of trust
- Automation of computations, less manual intervention
- Benefits in margining and collateral management
- Overall reduces capital needs

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More On Collateral Management

- Collateral management is a key issue particularly for non-financials in OTC markets
- A DLT with smart contracts and digital cash could facilitate the process
- A unified model calculates margins, reducing need for reconciliations and litigations
- Collateral frequency and accuracy improves speed and reduces capital needs

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What Functions Does a CCP Perform ?

VALUATION	valuing positions
MARGINING	calculating intitial margin
SETTLEMENT	settling margin payments
CUSTODY	custody of loss-absorbing capital
NETTING	multilateral trade compression
DEFAULTS	managing close-out on member default
COUNTERPART	acting as counterpart to every trade

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But A Distributed Clearing Network….

… Can perform these functions also:

VALUATION	valuing positions
MARGINING	calculating intitial margin
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MARGINING	calculating intitial margin
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CUSTODY	custody of loss-absorbing capital
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… Without this:

~~COUNTERPART acting as counterpart to every trade~~

And would reduce CONCENTRATION RISKS

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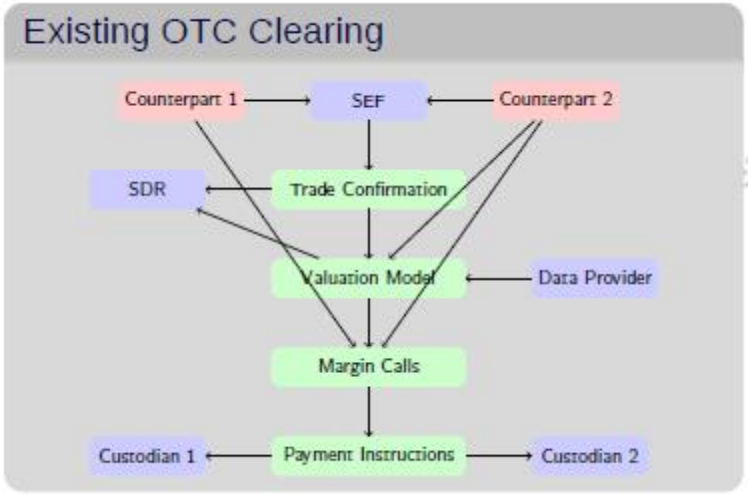
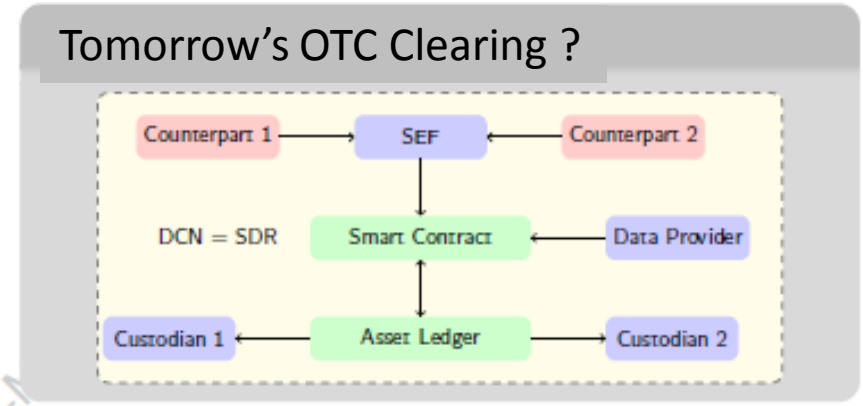
A Disruptive New Model ?





Could radically simplify most settlement and exchange clearing processes
So can it replace the CCP model ?

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Some Support Coming From Regulator ?

Distributed Ledger Technology

…may make possible new "smart" securities and derivatives that can value themselves in real-time, report themselves to data repositories, automatically calculate and perform margin payments and even terminate themselves in the event of counterparty default.

CFTC Commissioner J. Christopher Giancarlo
April 12, 2016

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Still A Nascent Technology…

- Scalability
- Privacy
- Security
- Regulation

*Proof of Concept stage with a few emerging Commercial Applications

*Importance of Interoperability

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Let’s Make Commodities Great Again !

Thank You

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