NERA
ECONOMIC CONSULTING

BLOCKCHAINS AND POWER MARKETS
DO WE STILL NEED INTERMEDIARIES?

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Insight in Economics™

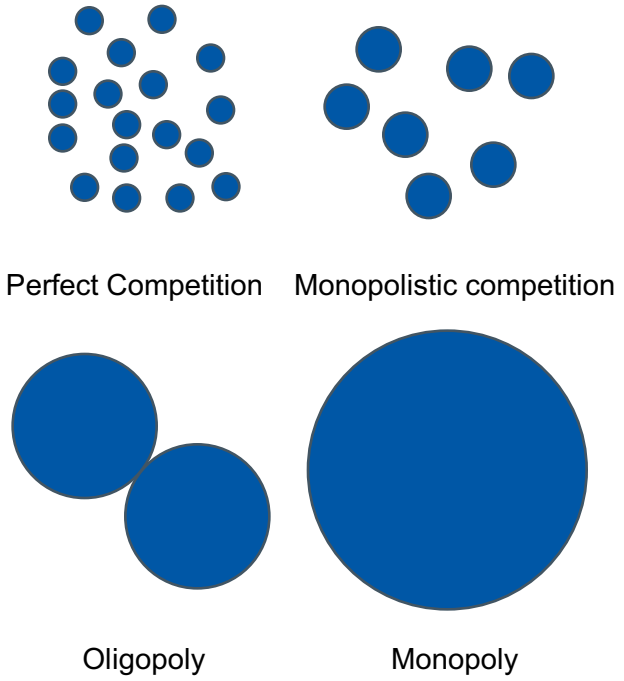
Is blockchain, which provides "trust in the record" going to disrupt power markets, or is the innovation digitisation?

What am I going to talk about?

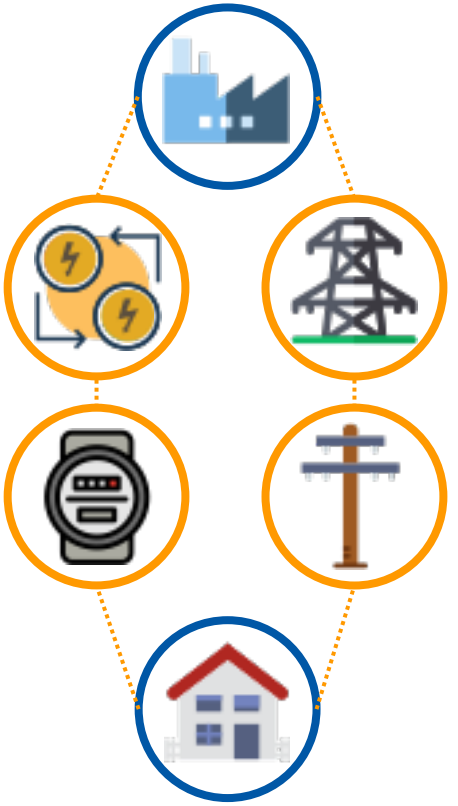
- Who am I?
- The role of trusted intermediaries in energy markets.
- What does blockchain actually do? (spoiler: provide “trust in the record”)
- Do intermediaries provide economic value beyond trust?

1 What does an economist know about blockchain anyway?

Why I have opinions about blockchain and energy markets



Market structure



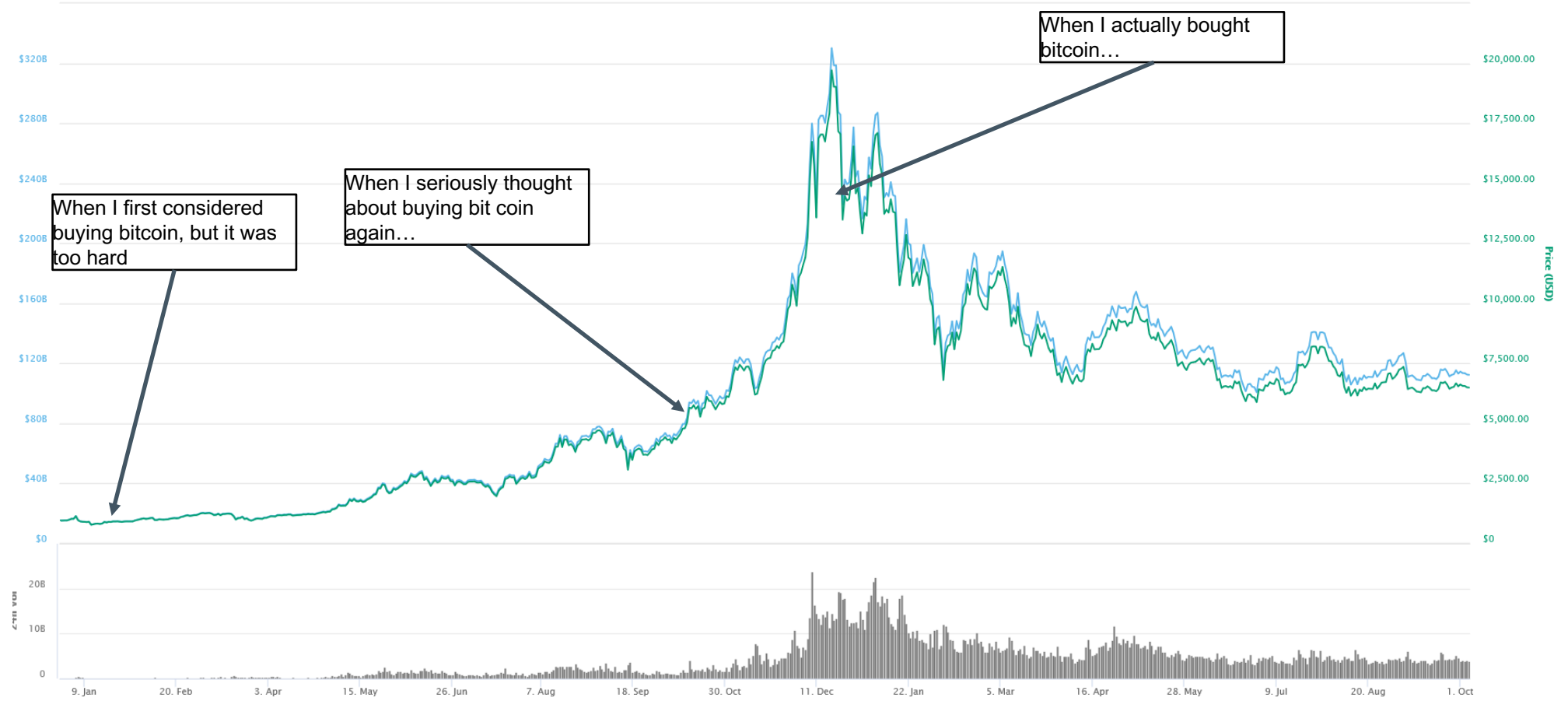
Energy Economics

Geek

Who is NERA?

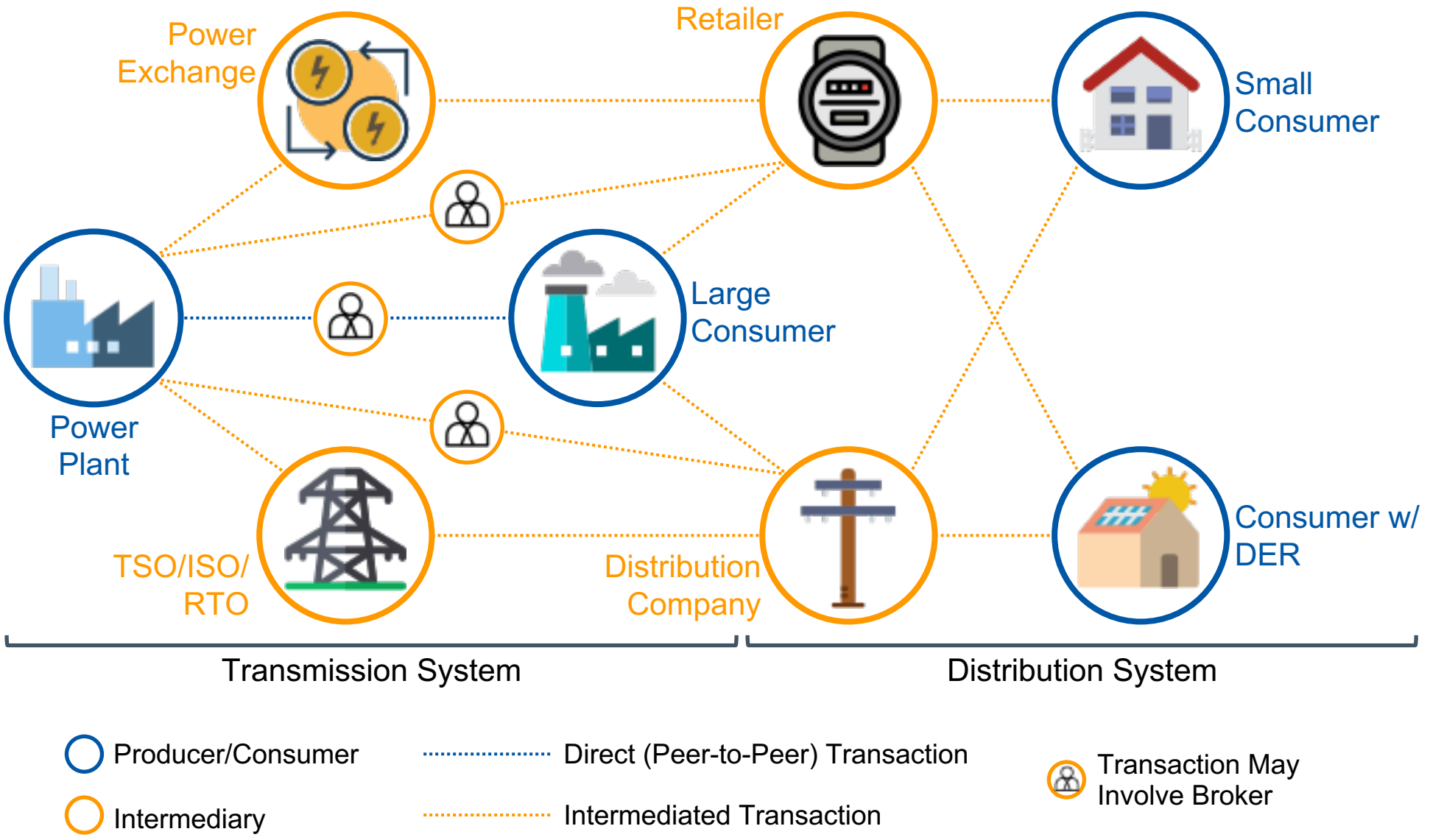
~ 500 economists operating across **>25 offices**

I’m not a blockchain sceptic… But don’t trust me with your money…



2 The role of intermediaries and trust in energy markets

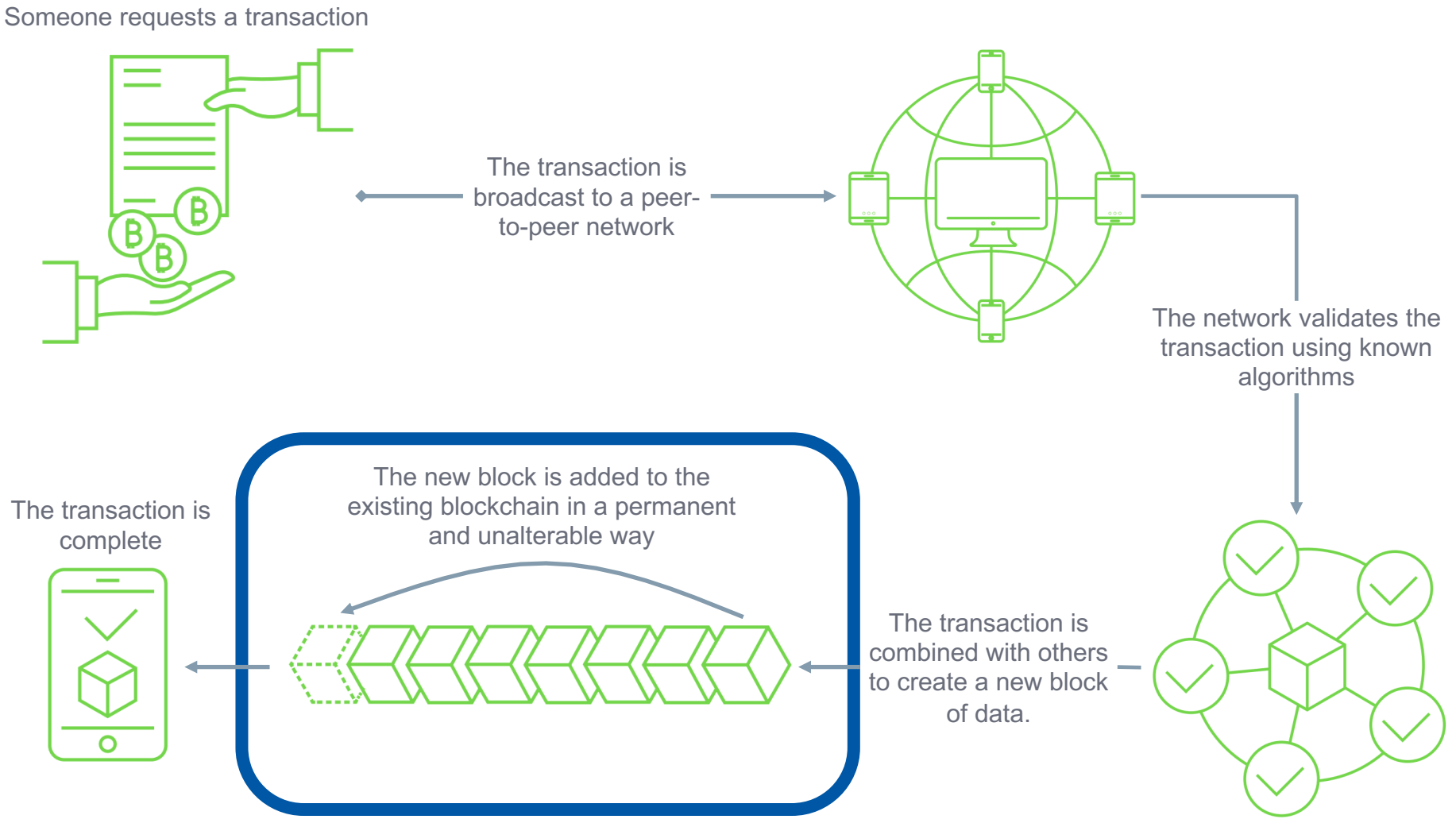
Many Power Market Transactions are Intermediated



3 What does blockchain actually do?

Blockchains offer a way for **untrusted** parties to reach agreement on a common digital record.

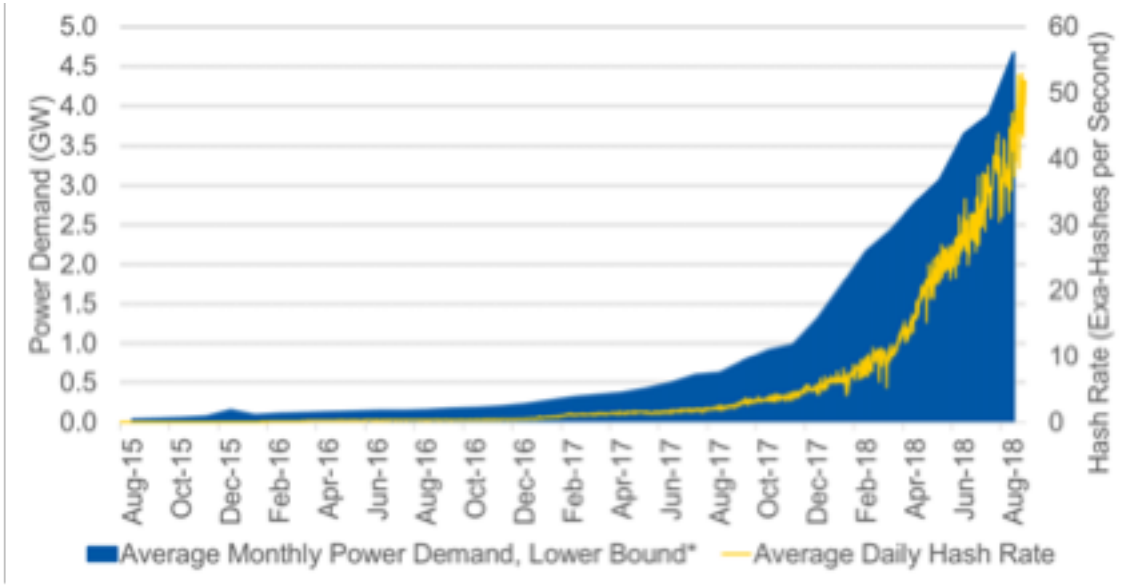
Blockchain-Based Transactions are Decentralised and Unalterable



But sometimes Blockchain is a solution in search of a problem

The Bitcoin network also uses a lot of power…

Demand



*Calculated using the power efficiency of an Antminer S9 (0.098 Joules per Giga-Hash), the most widely-deployed and one of the most power-efficient Bitcoin mining machines (these machines are called application-specific integrated circuits, ASICs).

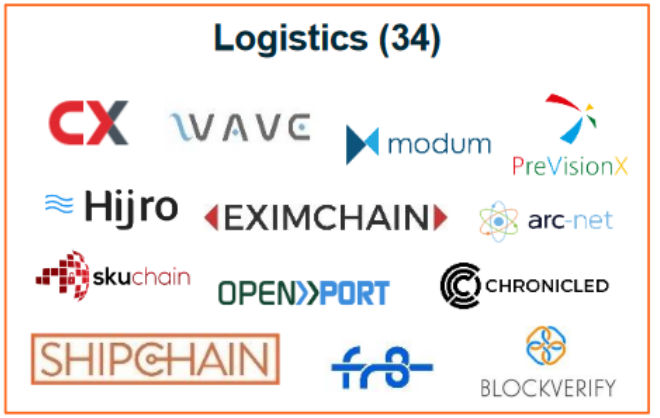
Consumption

2017: >20 TWh

2018: >40 TWh

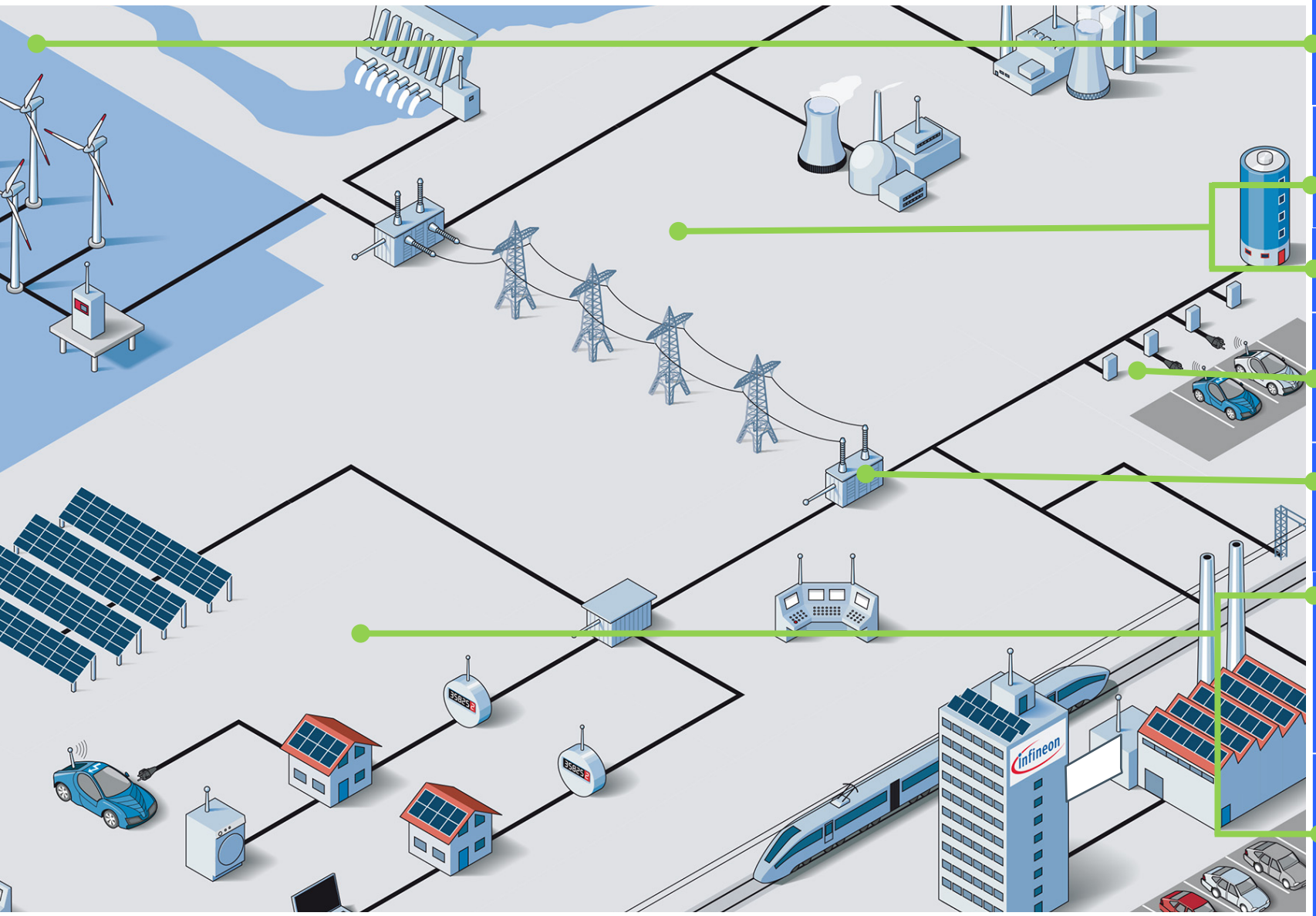
4 Does blockchain spell the end for intermediaries in energy markets?

There are lots of companies in the energy space with blockchain based products



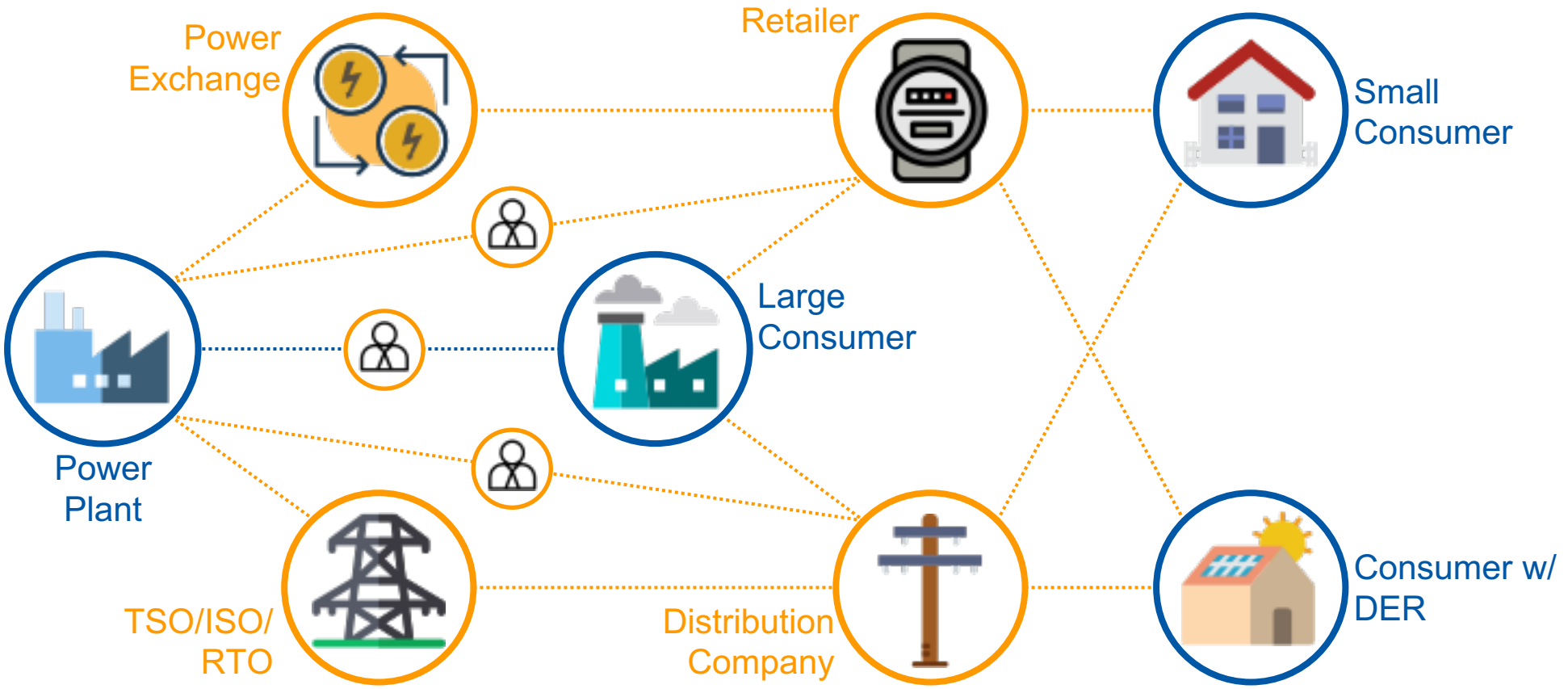
Source: Cleantech Group

Current Projects Span the Entire Sector

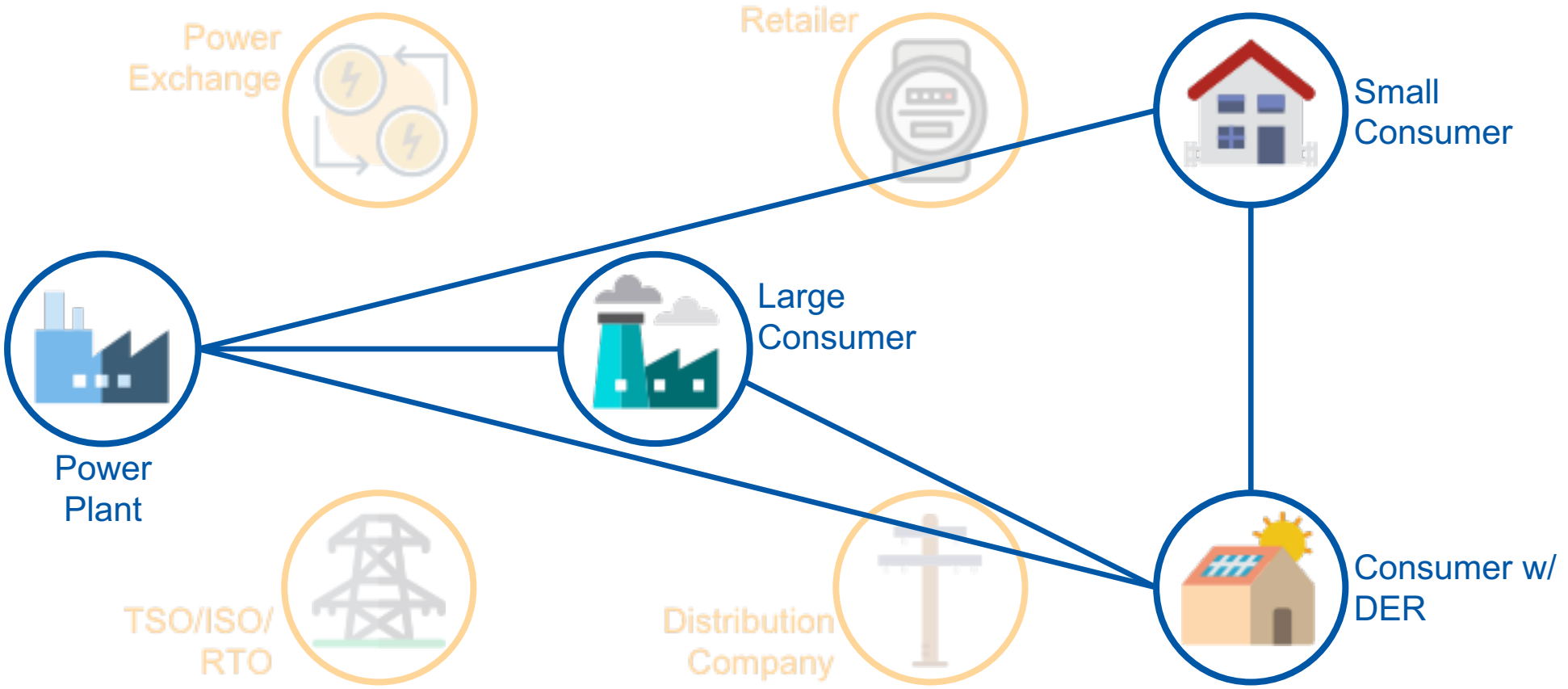


- Environmental attribute markets
- Wholesale energy trading
- Flexibility services
- Electric vehicle charging and coordination
- Network management and security
- Retail electricity markets
- Peer-to-peer marketplaces

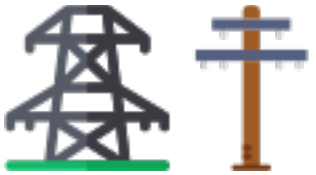
Could Blockchains Cut Out Intermediaries?



Could Blockchains Cut Out Intermediaries?



Do existing intermediaries provide other services besides “trust” that are difficult to provide in a decentralised way?

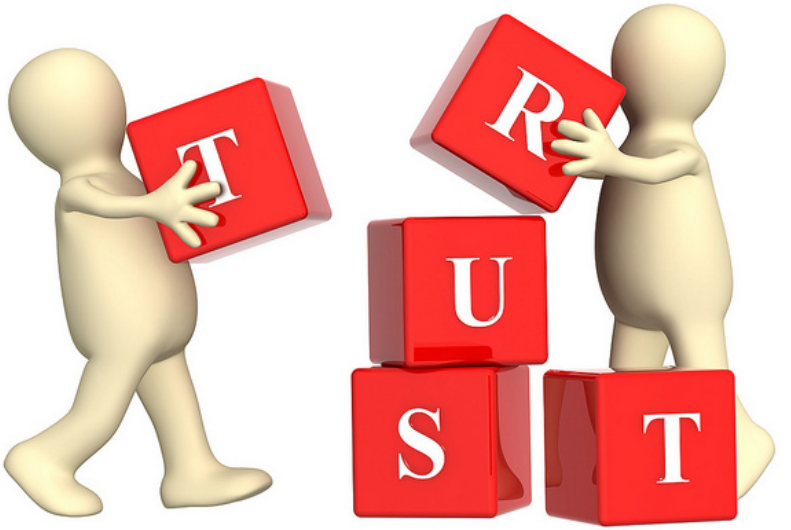
Intermediary		Economic value beyond “trust”
Power exchanges		• Eliminates counterparty risk for participants
Retailers		• Risk management/flat tariffs • Economies of scale in retailing/DER aggregation
System operators		• Reliability and security services which require coordination and manual intervention
Brokers		• Matching and reconciliation, **but blockchain could provide trust more efficiently…**

5 Conclusions

Beware block washing

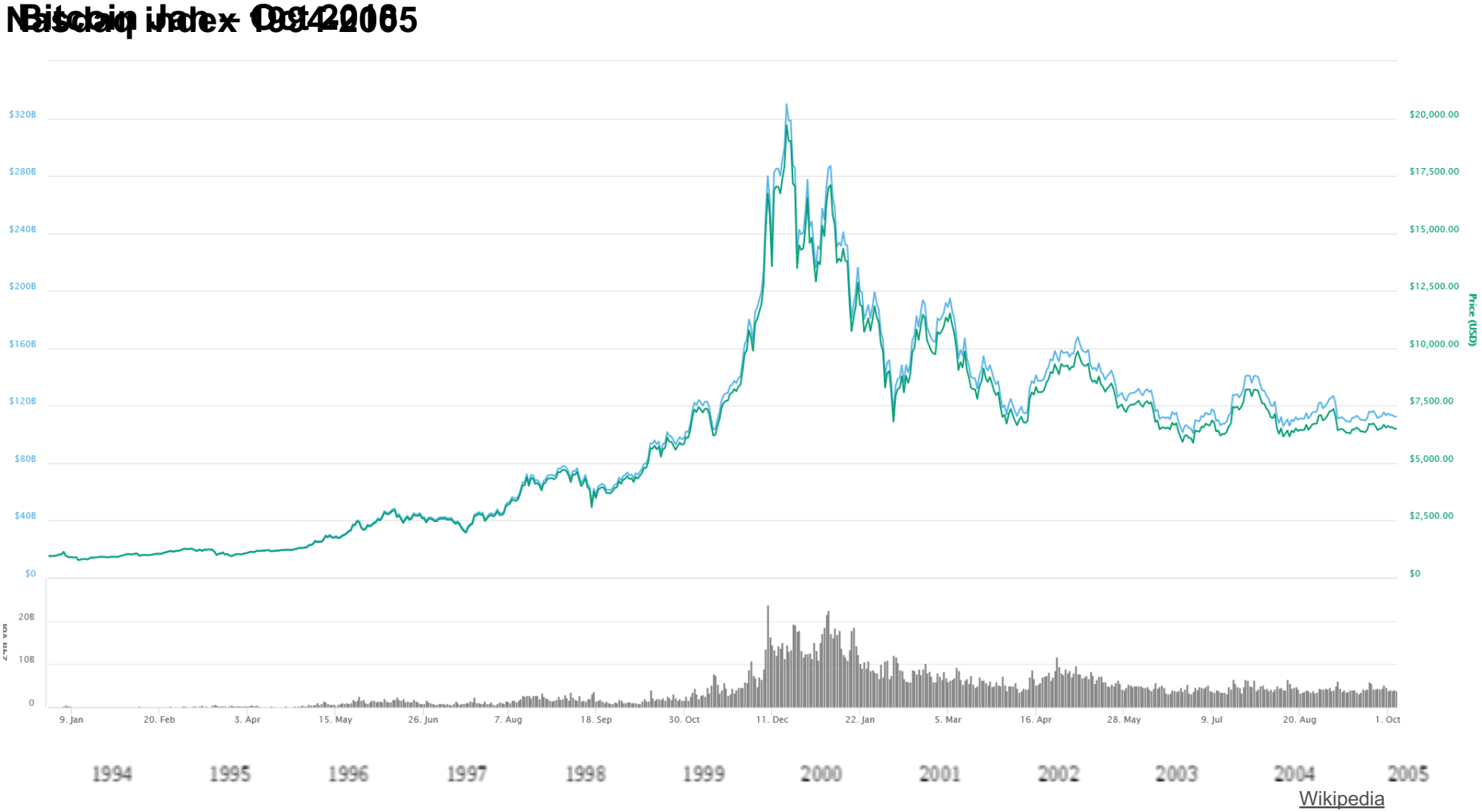
Is the innovation digitisation or solving a trust a problem?

VS



Flickr/Vic

Cryptomania feels a lot like the dotcom bubble…



Wikipedia

But that doesn't mean there aren't valid applications…

Amazon share price

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