

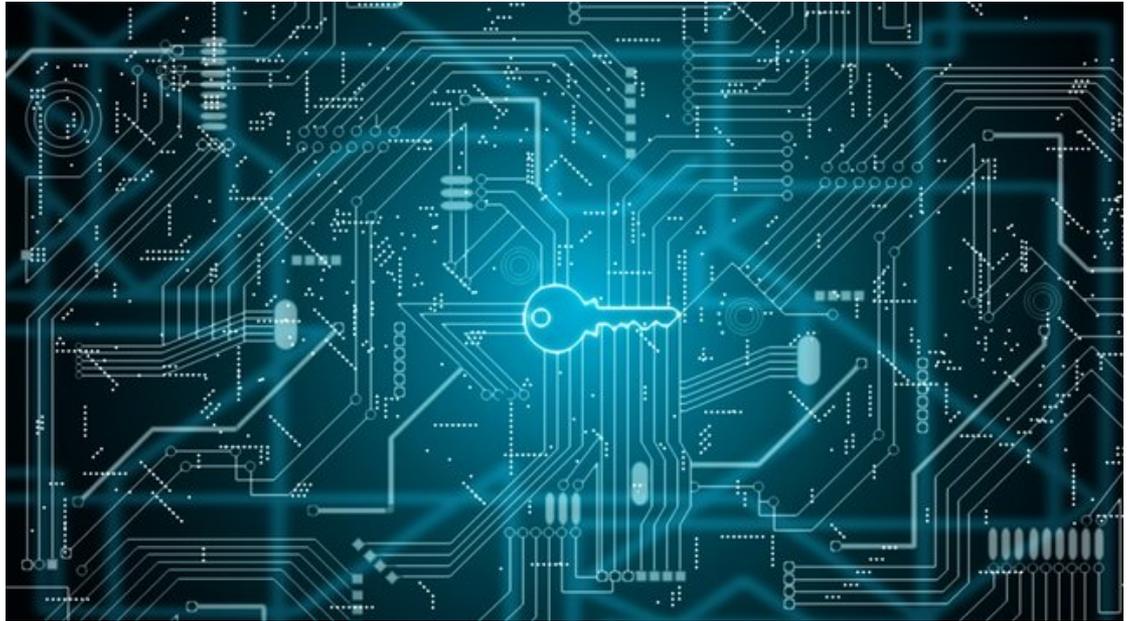
Blockchain & Commodities Trading

New York Energy Forum

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How blockchain works

- Blockchain works by verifying and recording transaction data in a permanent way on a single, secure digital ledger shared by trusted counterparties.
- <https://www.youtube.com/watch?v=mognFKZvke&feature=youtu.be>

Blockchain in Oil Markets

- S&P Global Platts blockchain project at the Port of Fujairah in the UAE launched in February 2018
- Uses a permissioned blockchain to collect and publish weekly aggregated data on oil terminal stock levels
- Project shows how blockchain can create networks for natural partners to securely share potentially confidential information

Blockchain in Oil Markets

- Technology innovation leaders from Baker Hughes, Chevron and Fluor discussed blockchain at the Platts Global Energy Outlook Forum last week
- They see opportunities, but have yet to widely adopt the technology
- Fluor mentioned data delivery and safety training certification as good fits for blockchain

Blockchain in US Power Markets

LO3 Energy

- Brooklyn Microgrid
- Micro-level energy hedging in Texas
- eMotorWerks partnership in California

Leap

- Demand response aggregation
- Could use smart contracts to verify identity
- Could scale from hundreds of participants now to millions

Blockchain in European Power & Gas Markets

- Europe's Enerchain project for large-scale peer-to-peer wholesale gas and power trading
- Over 35 companies including major traders: E.ON, Enel, Iberdrola and Vattenfall
- Proof of concept established
- Enerchain software powered by blockchain engine Tendermint

Regulatory hurdles and other challenges

- Regulation around the world is not usually set up for decentralized peer-to-peer energy trading
- Only approved providers can sell power in most US markets
- In retail-choice states, like New York, you have to register as an energy service company
- Utility perspective

Regulatory hurdles and other challenges

- Converting paper contracts into smart contracts
- Can it be read and understood by a judge?
- Data shape standardization
- Distributed ledger platform itself introduces new risk