How can Blockchain change the energy market

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Blockchain is a digital technology for distributed ledger

Blockchain networks are distributed databases that maintain a continuously growing ledger of data records that are immutable, cryptographically secured (tamper-resistant), and transparent.

Blockchain protocols can ‘automate’ trust and remove 3rd party

Smart contracts allow for business logics
There are different types of blockchain networks

- Level of Openness
  - Public blockchains:
  - Private blockchaines:
- Consensus algorithm
  - Proof of Work and Proof of Stake
Why are Fortum as a utility company looking into blockchain?

• First interests from a technology perspective
  • What can this technology do?

• What are the most interested use cases for utilities?

• Case study:
  • Peer2peer trading and Ev charging
  • How can blockchain change the energy market?
Using blockchain to sell energy to your neighbor and share batteries

Peer2Peer trading
- Sell electricity
- Share storage

Peer2Peer trading
- There will not be enough production from the solar -> grid connection needed
- Higher income from solar production if you just feed it to the grid than to store
- Taxation
- How to make a price competitive with the external (spot) market?
- This solution is more “certificates of origin”
- Hard for the business case in a system as in the Nordics
Peer2Peer trading
- Sell to your neighbor
- Share your storage

Peer2Peer trading
- Better match in micro/nanogrid in India
- Hard with today's Nordic regulation

Open Flexibility Market
- Create a blockchain open protocol for a flexibility platform
- The platform aggregates available flexible resources from consumers and sells to DSOs, TSOs, BRs etc.

Open Distributed Network
e.g. Company designs open-source protocol for use-case-specific blockchain ecosystem. Releases open source protocol.
Charge and pay easier with blockchain

Oslo2Rome
- Easier and cheaper

- Easier access to charge infra
- No contracts
- Network in many countries and partners

• Easier and cheaper than todays roaming services

Collaboration with several partners
  - Integration to blockchain
  - Pilot from “Oslo2Rome”
  - Governance and way of working for the future
Charge and pay easier with blockchain

- **Service**
  - Easiest and best experience to customers
  - (map, planner)

- **Electricity**
  - How to sell it – minutes/kWh
  - How to pay for it

- **Infra**
  - Share your infra

- **Taxation discussions with tax authorities**
Blockchain in trading

- Peer2Peer (prosumers/consumers, B2C)
  - Will it really be selling electricity? Rather certificates of origins

- Bilateral trading (B2B)
  - Fits well
  - Will it be more efficient than a spot market? Maybe not, but might gives other values
    - Back-office, settlements …
    - New kind of products
  - Compare Enerchain – focus on physical trading in Europe
  - In which markets has this solution highest potential? Europe – will start.

- Can blockchain also be used for making a more efficient energy market in todays processes
  - Yes (compare Vienna Energy)
In the right environment blockchain can make an revolution

- Renewables
- Storage
- Customer interaction
- AI
- Robotics
- IoT and Connectivity
- Blockchain
A developed market design – what could it mean?

- Demand side can be a more active part also in the price setting mechanism (spot market) and really help in find the needed flexible resources

- What will that mean for
  - Trading operators
    - Floating products – peer2peer
  - Suppliers
    - Rather sell services
  - TSO
    - Settlement process
• Start from the business perspective
• Blockchain can bring totally new aspects of business
• One challenge is to change part of a larger system
• Together with other technologies blockchain can make a revolution
The journey towards digitalized energy has started

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