Blockchain Yes,
But Which to Choose?

Blockchain algorithms
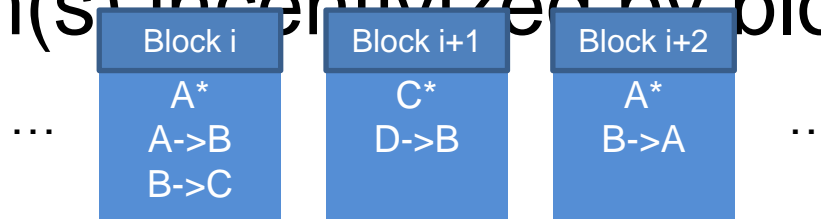
QueZolutions

Motivation

- The current energy market
  - Is an established, centralized and sluggish system
  - Relies on manual paperwork and human interactions
  - Does not provide answers to future problems
    - Highly decentralized energy production
    - Storage integration
    - ...

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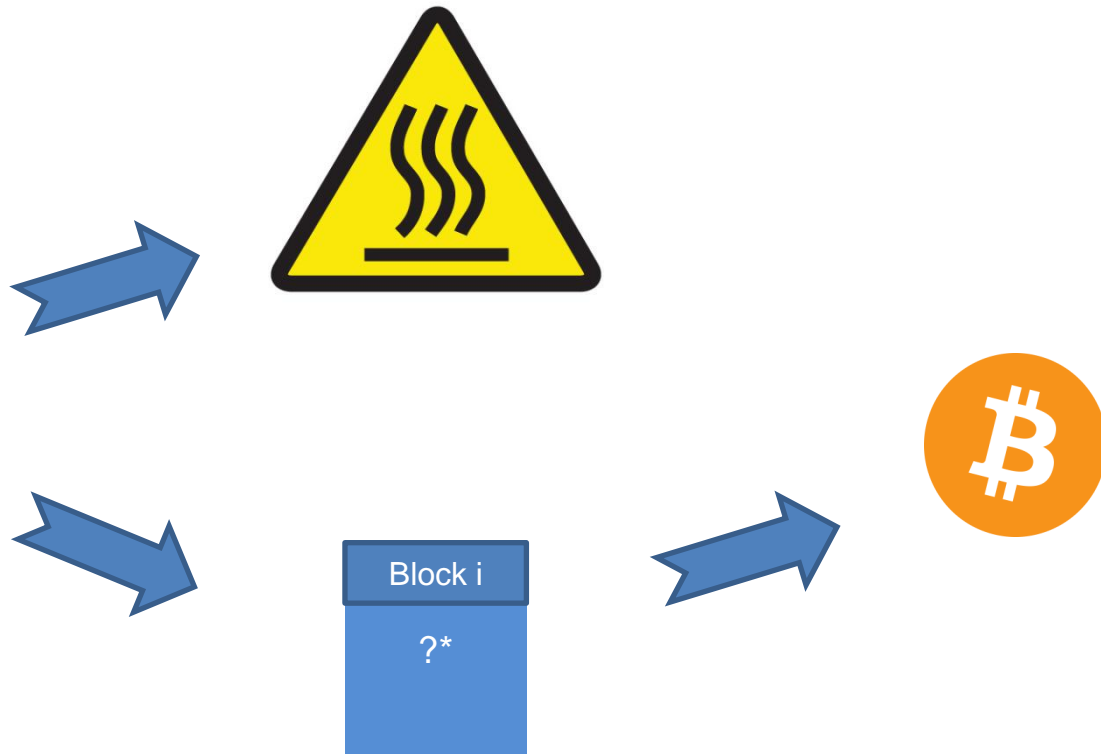   - Storage integration
    - ...

Blockchain

- Block: list of information (e.g. transactions)
- Creation of blocks = controlling the blockchain
- Running security/block creation algorithm(s) incentivized by block reward

Block i	Block i+1	Block i+2
A*	C*	A*
A->B	D->B	B->A
B->C		

...   ...

* = Block Creator

Proof-of-Work

Block i

?*

08cf224e4fc5c24aa00159ea3e827e4383289e1af8d54bcb8a9a903172e074e3

Proof-of-Work

- Hashing algorithm
- Only one hash solves a cryptography lottery for the creation of a block
- The fastest computer has the highest chances

- Problem: Wasteful
  - In 2014 Bitcoin had an energy consumption comparable to Ireland[1]

Proof-of-Stake

Energy Efficient

Block i

?*

Proof-of-Stake

- Energy-efficient
- The chance of block creation depends on amount of coins

- Problem: Matthew-Effect

Proof-of-(Solar)Work
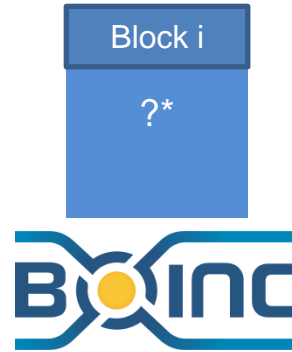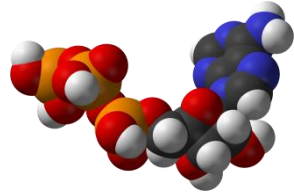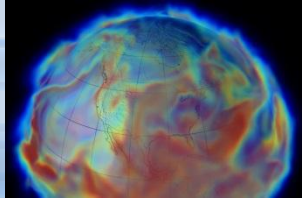
SolarCoin Foundation

Proof-of-(Solar)Work

- 1 SolarCoin = 1 MWh

- Manually sending feed-in bill of PV modules to SolarCoin Foundation to get coins

- Problem: Pre-mined, manual MWh check

Proof-of-Research

Proof-of-Research

- Proof-of-Stake + (optional) Proof-of-BOINC

- Scientific computations instead of hashing
  - Gridcoin supports volunteer distributed computing on the BOINC network

- Problem: Gridcoin is unknown

Conclusion

- Blockchain can solve future problems of the energy market

  - Fast and cheap machine-to-machine communication

- If we choose blockchain as future foundation of the whole energy market, we should choose the right one

Thank you for your attention!

Questions, Criticism, … ?

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Sources

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