Blockchain and Solar:
Two Sides of one Coin?

Digital Optimization vs. digital Transformation

Digital Optimization

- Maximizing the revenue of existing products or business models
- Using digital solutions to increase the efficiency of existing technologies, processes and institutions
- **Should be a short term strategy!**

Digital Transformation

- Creating new ways of value creation
- Develops new products and new business models
- Makes existing products, business cases, technologies or institutions obsolet
- **Should be a long term strategy!**

Blockchain:
One of the Holy Grails of digital Transformation

- **Blockchain may revolutionize the exchange of value and creation of value itself**

- **Blockchain seems to be a promising solution to cope with an energy market and an energy infrastructure, which become more and more complex and decentralized**

But it is a software driven solution…

An Obstacle for Adoption: Utilities' Investments in digital Infrastructure

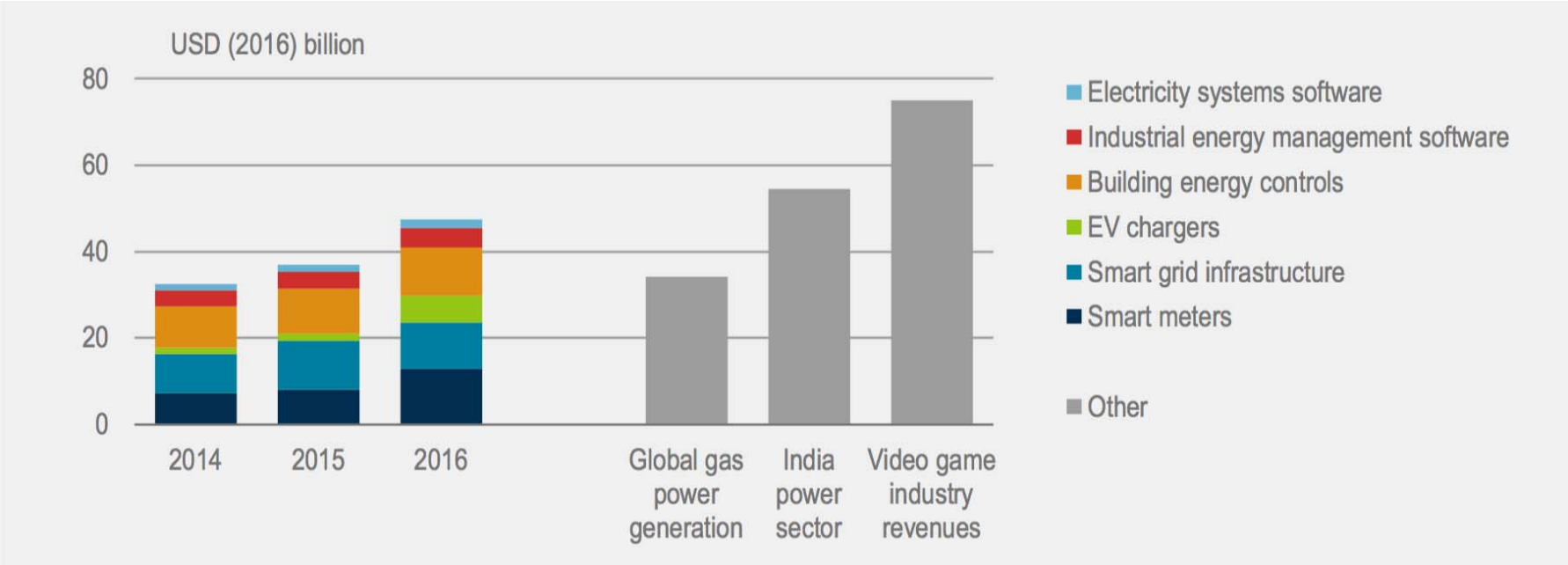

Figure 1: Investment in digital electricity infrastructure and software (source: IEA 2017)

Innovator's Dilemma: the digital Transformation is jeopardized by a Hardware focused digital Optimization

Reasons for a Hardware focused Investment

- Higher costs of hardware
- Long-term planning for critical infrastructure (in comparison, software is still a new phenomenan)
- Planning the business case decades in advance
- Regulation (especially regarding smart meters)
- Mindset: hardware over software

Consequences of a Hardware focused Investment

- Software has to follow the needs of hardware and not vice versa
- Making the implementation of new business models more difficult
- Actors from outside the energy sector are more likely to solve the challenges of the digital transformation for the energy sector

Why solar could be the paradigmatic use case for blockchain in the energy sector

Solar is associated to:

- Particular decentralized energy production
- An increasingly liberalized energy market
- New producing entities like the prosumer
- New business models like tenantable electricity
- Peer-to-peer economy

Checklist: When do I really need a Blockchain?

- ✓ I want to transfer or receive (digital) value
- ✓ I cannot trust anyone in the process
- ✓ I want to get rid of centralized trust authorities (disintermediation)
  - ✓ In order to lower the transaction costs
  - ✓ Because centralized trust authorities have the tendency to abuse power
- ✓ I want to automatize settlement
  - ✓ In order to lower personnel costs
  - ✓ Saving time (sometimes)
  - ✓ In order to conclude contracts in new ways or without relying on law (**beware:** the intrinsic and automatic enforceability of blockchain is just given for digital goods)
  - ✓ In order to introduce non-human entities to settlement (e.g. machines)
- ✓ I want to ensure the integrity, immutability, reliability of any data
- ✓ I want to make money by becoming a miner
- ✓ Cryptoincentivs and token design

Do I need a public or a private Blockchain?

Public Blockchain

- I cannot trust anyone
- I want to get rid of centralized trust authorities
- I want to make money by becoming a miner

Private Blockchain

- I want to transfer or receive (digital) value
- I want a partial disintermediation
- I want to automatize settlement
- I want to ensure the integrity, immutability, reliability of any data

What kind of consensus mechanism do I need?

Proof of Work (PoW)

- Pros
- In theory truly decentraliced

- Cons:
  - Speed and scalability
  - Energy consumption
  - In reality blockchains with PoW tend to oligopols of few powerfull miners validating the majority of the blocks

Proof of Stake (PoS)

- Pros
- Speed and scalability
- Energy consumption

- Cons:
  - Speed and Scalability
  - Energy consumption
  - Presetting the pool of validators

SolarCoin:
A Blockchain-based Solar Energy Incentive

SolarCoin uses blockchain technology to create a phenomenon that is:

- A free, additional reward for solar energy producers
- The first digital currency to protect natural capital
- The first global, decentralized, non-governmental solar energy incentive program
- SolarCoin's blockchain uses a low energy proof of stake algorithm designed to use less than 0.001% of the power of Bitcoin when compared on similar scale

Exclusive SolarCoin Briefing – hosted by BSW-Solar and SolarLux

When: June 20, 2018 | 14.00h – 15.30h

Where: Intersolar/Room B12

Contact

Mathias Böswetter

Projekt Manager

BSW - Bundesverband Solarwirtschaft e.V.
Lietzenburger Straße 53

10719 Berlin

Tel 030 29 777 88 57
Mobile
Email boeswetter@bsw-solar.de