

Blockchain: Inflated hype or value-adding technology for the energy sector?

Dr. Felix Cebulla
Senior Expert, Corporate Technology, innogy SE
Essen, Germany

Keywords: *Blockchain, distributed energy, renewable energy*

Abstract

Blockchain is a hype topic in public communications on emerging technologies. Over the last two years, more than half a million new publications have been published [1], while worldwide patent applications have increased more than twentyfold during that time [2]. The World Economic Forum expects that 10 % of the global GDP will be stored on blockchain in 10 years [3]. This raises the question: Is Blockchain an overinflated hype, value-adding technology, or even disruptive? And how will it impact the energy sector?

As of today, a sound analysis of the technologies' potential for the energy sector is missing. In this context, a cross-industry consortium of partners from utilities, TSOs, manufacturers, academia, and industry associations recently finalized a collaborative project to assess the capabilities and limitations of Blockchain technology in the energy sector. In addition of gaining a fundamental understanding of the technology [4], one major objective was to identify use-cases where the technology is potentially value-adding in comparison to established or alternative IT processes [5]. Therefore, the methodology not only incorporates the technological aspects, but also takes regulatory and legal frameworks into account.

Based on desktop research, expert interviews, and workshops, more than 90 use-cases were identified and evaluated. From the total number of use-cases, five applications were identified as particularly promising: Energy labeling and distributed asset management platforms, peer-to-peer energy trading (C2C as well as B2B), simplified (and faster) switching of electricity providers [6], and the proof of providing operating reserve [7]. Moreover, through prototyping a test Blockchain, hands-on insights on "energy labeling" and "faster switching of energy suppliers" as potential use-cases were gained.

Furthermore, the results highlight the importance of smart meters for Blockchain applications. On the one hand, smart meter gateways can provide the required interface between the hardware and the Blockchain. In this sense, Blockchain acts as an enabling technology. On the other hand, the standardized and tamper-proof data acquisition of smart meters is likely to undermine some of the Blockchain use-cases, as they are built on providing transparency in inherently uncertain environments.

A follow-up project will be started in 2019 to extend the practical experience with the technology and to validate real world business cases. The project will emphasize the use-cases "energy labeling and asset logging" through implementation in the field with around 50 assets in three different regions.

References

- [1] McKinsey, [Online]. Available: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/blockchain-beyond-the-hype-what-is-the-strategic-business-value>. [Accessed 01 12 2018].
- [2] acatech, "acatech Horizonte: Blockchain," 2018.
- [3] World Economic Forum, "Deep Shift: Technology Tipping Points and Societal Impact," 2015.
- [4] Forschungsstelle für Energiewirtschaft, "Die Blockchain-Technologie: Chance zur Transformation der Energieversorgung? Berichtsteil Technologiebeschreibung," 2018.
- [5] Forschungsstelle für Energiewirtschaft, "Die Blockchain-Technologie: Chance zur Transformation der Energieversorgung? Berichtsteil Anwendungsfälle," 2018.
- [6] M. Hinterstocker, F. Haberkorn, A. Zeiselmaier and S. von Roon, "Faster switching of energy suppliers – a blockchain-based approach," *Energy Informatics*, 2018.
- [7] M. Hinterstocker, C. Dufter, S. von Roon, A. Bogensperger and A. Zeiselmaier, "Potential Impact of Blockchain Solutions," in *15th International Conference on the European Energy Market*, Lodz, 2018.

note: This document will be opened to the participants on IERE website before the Workshop and opened to the public afterward.