Proof-Of-Concept
Blockchain Platform For Virtual Power Plants
With Focus On Blockchain-Integrated Privacy Solutions

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Motivation

- Challenges for energy system
  - Climate change
  - Renewable energy
- Emerging technologies
  - Blockchain
  - Internet-of-Things
- Privacy
Revealed: 50m Facebook files taken in record data breach

Christopher Wylie, who worked with a Cambridge University academic to obtain the data, told the Observer: “We exploited Facebook to harvest millions of people's profiles. And built models to exploit what we knew about them and target their inner demons. That was the basis the entire company was built on.”

Documents seen by the Observer, and confirmed by a Facebook statement, show that by late 2015 the company had found out that information had been harvested on an unprecedented scale. However, at the time it failed to alert users and took only limited steps to recover and secure the private information of more than 50 million individuals.

The New York Times is reporting that copies of the data harvested for Cambridge Analytica could still be found online; its reporting team had viewed some of the raw data.

The data was collected through an
General Data Protection Regulation (GDPR)

- 25 May 2018
- Right to Access
- Right to be Forgotten
- Privacy by Design
Thesis

- Virtual Power Plant (VPP) Blockchain Platform
  - Intra-VPP energy logging
  - Inter-VPP energy trading

- Focus on privacy
  - Blockchain-integrated
  - Privacy solutions
Simulation

VPP A

VPP B

VPP C

Icons: flaticon.com
Simulation

VPP A

VPP B

VPP C

Icon: raspberrypi.org
Blockchain Implementations

- Hyperledger Fabric
- Hyperledger Sawtooth
- Ethereum
- Corda
- Quorum
HLF and Raspberry PIs

Raspberry Pi Zero W

Raspberry Pi 3 B

Hyperledger Fabric

Pictures: hyperledger.org, raspberrypi.org
HLF and Deployment

Documentation

Multi-node
Blockchain and GDPR
Thank you for your attention!