Legal Questions surrounding the Blockchain & Bird & Bird

The 6th Vienna Forum on European Energy Law
Austrian Supreme Court of Justice
Vienna, 28 September 2018, 09.45 – 10.00
Dr. Matthias Lang
Overview

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1. Background
Background

Blockchain - An overview & the legal issues

Bird & Bird partner Jonny Emran speaks about blockchain: what it is, how does it work and what are some of the legal issues, based on his experience advising clients in this space.
Background

Nodes

• Blockchain software installed and running by user on a machine is called a node.
• Each node stores a copy of the database (list of transactions).
• Nodes used to set up accounts (used by users to participate in the blockchain: create and send new transactions).
• Private keys (a secret number generated for an account) are used to operate accounts.
• Public keys (a public number generated for an account) identify each account on the blockchain.
Background

New Transaction

- X and Y users want to send a new transaction to the blockchain (X user transfers Z digital currency to Y).
- X and Y broadcast cryptographically secured digital signatures (combination of their public and private keys) and the details of their transaction to nearby nodes in the network.
Background

Validation

- Transactions are sent by accounts and validated in accordance with the consensus protocol (process embedded in the blockchain software used by nodes to reach agreement on whether a transaction can be validated).
- There are different consensus protocols used by different blockchain networks. “Proof of work” is used for the Bitcoin blockchain. Proof of work involves mining.
Background

Blockchain Record

- Once a transaction is validated it is recorded on the blockchain.
- Assuming nodes follow the proof of work consensus protocol:
  - Nearby nodes invest compute power to solve a mathematical puzzle required to produce the next block within which the proposed transaction is recorded (this is mining)
  - When the first node solves the mathematical puzzle they win a fee and the pending transaction is recorded in a new block of data
  - That new block is double checked by other members of the network until a majority agrees it is correct and then its added to the blockchain and becomes part of the database
Background

Blockchain & Nutshell

- Blockchain is a database of all transactions across a peer-to-peer network
  - For details, see Satoshi Nakamoto

- Seen as the main technical innovation of Bitcoin and other cryptocurrencies
  - But not limited to cryptocurrencies

- There are different blockchain flavors
  - Public blockchain: open and anyone can participate, decentralised, typically has an incentivizing mechanism to encourage more participants to join, special security/consensus features (e.g. proof of work, proof of stake), needs substantial amount of (computational) power, Bitcoin best known public blockchain network, slower
  - Private blockchain: Requires invitation and validation by network starter or his rules, pre-approved participants, known identities, centralised, permissioned read and/or write, faster
Background

Blockchain & Business Model

● Missing basis for blockchain business models?
  • Technical: "It's never going to work"
  • Regulatory: "Our regulatory framework does not allow this"
  • Commercial: "It's impossible to make money with this"

● Lack of vision
  • Google: "Stupid idea to think that you can make money with a free internet search engine"
  • Amazon: "I have a great local bookstore – don't need an internet one"
  • Twitter: "You cannot say anything meaningful with 140 characters"
  • Apple: "I already have a great mobile phone"
Background

Blockchain & Physics

- Blockchain moves/stores data, not power
- Energy is physical, requires generation/production, storage, transformation, transportation and delivery
- "Energy supply is not a computer game, but the real world"
- Someone needs to make sure that the energy physically gets to where it is supposed to go. Really. Reliably. Lawfully. Always
- On the other hand
  - Renewables have lead to vast increase in number of decentralised, intermittent producers, with ever increasing need to balance supply and demand, ever increasing data requirements to match supply and demand
  - Data ever increasingly relevant to supply power, really, reliably, lawfully, always
- Need to understand interdependence to understand and resolve legal issues
Background

Blockchain & Energy Digitalisation

- Blockchain part of broader energy digitalisation challenge
- Modern technology meets existing energy law landscape not originally designed to address specific challenges and opportunities of digital world
- Digital, internet driven industries historically did not heat homes or produced the power to run the computers
- Tech & Comms legal framework not geared towards very long term investments in industrial assets, with different security of supply concepts
- Energy digitalisation means combining two previously separate, strongly regulated worlds with different rules
- Challenge: Ensuring that legal system work in such a way that secure, inexpensive, efficient and consumer and environmentally friendly energy will be available also in tomorrow’s digital world
2. Legal Questions
## Background

### Two Worlds Collide (e.g. Germany)

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Legal Question

Blockchain & Legal Issues

- Key Issue is to identify relevant issues for energy sector
- Examples of currently discussed issues
  - Energy law, including renewables law, grid law, competition law, market access
  - Commercial law, including smart contracts
  - Data protection law, including GDPR
  - Financial markets law, including REMIT, MiFID
  - Tax law
  - And more
- Harmonisation on international level, including EU?
- Getting blockchain platforms to work in practice
Legal Question

Blockchain & Renewables

- Idea: Promote buying, selling or trading of clean energy between individuals (peer-to-peer trading)
- 2016 initiative by Brooklyn Microgrid (BMG), with owners of PV systems selling their power in the neighbourhood using Ethereum blockchain
  - Communal energy network, with utility provider still maintaining and balancing the electrical grid, the actual energy is generated, stored, and traded locally by members of the community
- But: Potential tensions with national energy and renewables support regimes
  - Allocation of grid fees and renewables transfer payments to directly traded energy?
  - Regulatory requirements for energy suppliers?
  - Binding rules for energy supply agreements?
Legal Question

Blockchain & Commercial Law

- Smart contracts too smart for the law?
- The easy part: Smart contracts are computer protocols that embed the terms and conditions of a contract
- The attractive part: Many kinds of contractual clauses may be made partially or fully self-executing, self-enforcing, or both
- The difficult part: Things go wrong. Drafting a contract (and code) that takes into account all possible contingencies and states all their responses is not possible
  - How do you deal with unforeseen events that lead to unexpected behaviour of the smart contract or errors in the computer code?
  - How do you get all applicable legal rules into the code, from which country?
  - Consumer protection?
  - How do you explain it to a judge?
Legal Question

Blockchain & GDPR

- GDPR harmonises EU data protection regulations, but conceptually predates blockchain
- Issue: blockchains are in principle growing, append-only databases, where data is added, not removed
- GDPR gives individuals right to have their data changed to ensure accuracy or erased
- In permissionless blockchain difficult to identify responsible "data controller"
- GDPR requirement of equivalent level of protection for transfer of data outside EU
- To be resolved. Privacy by design?
Legal Question

Blockchain & European Union

- It's just starting
- October 2017 [European Council](#) asked Commission to look into blockchain
- February 2018 Commission launches [EU Blockchain Observatory and Forum](#)
- 10 April 2018 [Blockchain Partnership Declaration](#)
  - Signed by 25 EU Member States: Austria, Belgium, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, UK, Greece, Romania, Denmark, Cyprus, plus Norway
  - Shall support the delivery of cross-border digital public services, with the highest standards of security and privacy
Legal Question

Blockchain & Simple Lawyers

- We are just starting to understand the legal implications
- Get your experts together from different areas
  - Energy lawyers
  - Commercial lawyers
  - Data protection lawyers
  - Banking lawyers
  - IP lawyers
  - Tax lawyers
  - Common sense lawyers...
- We'll surely find a solution to all the exciting new challenges
Thank you & Bird & Bird

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