Bird & Bird & Smart Contracts and the Law

Münchner Kreis – Blockchain Conference

23 November 2017

Dr. Alexander Duisberg

Overview

- Code is Law?

- A contract is a contract is a smart contract?

- Examples

- Legal issues and challenges

- Suggestions

- Conclusion

"Images are used for educational and study purposes only"

Bird & Bird

Code is Law?

Introduction to the Blockchain Technology (1)
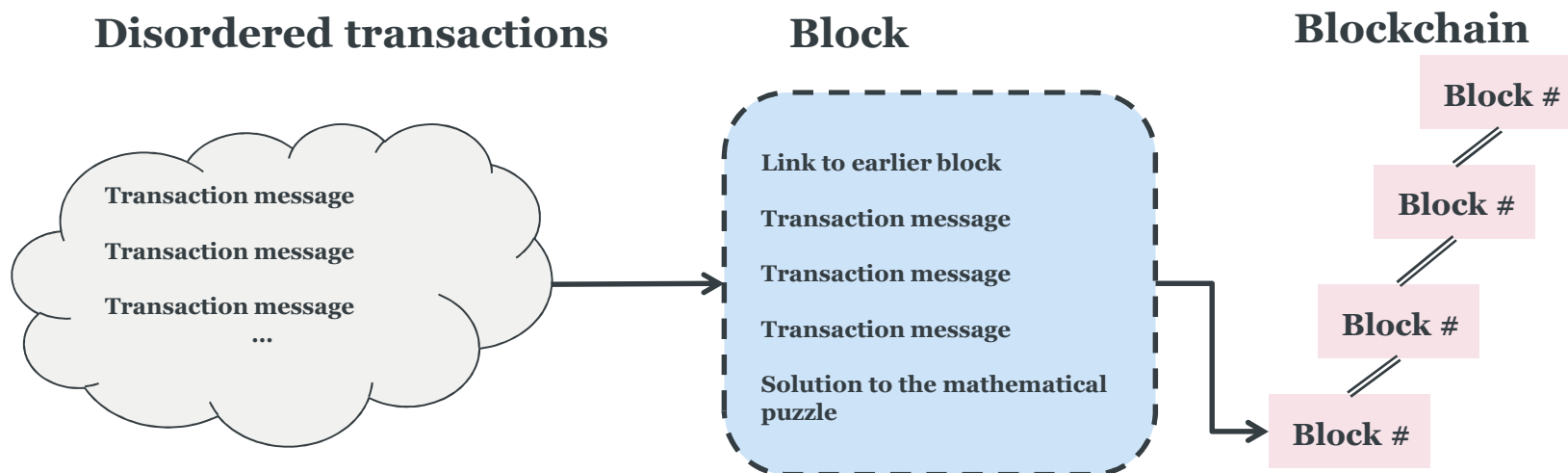
What is the blockchain?

- "Digital account statement" / "public cash book"

- **Database**
  - User pcs form global network
  - Every user has data sovereignty,
    not a third party (e.g. bank)
  - Contains complete transaction protocol

- Arbitrarily expandable sequencing of transaction data-blocks
  ("Blockchain")

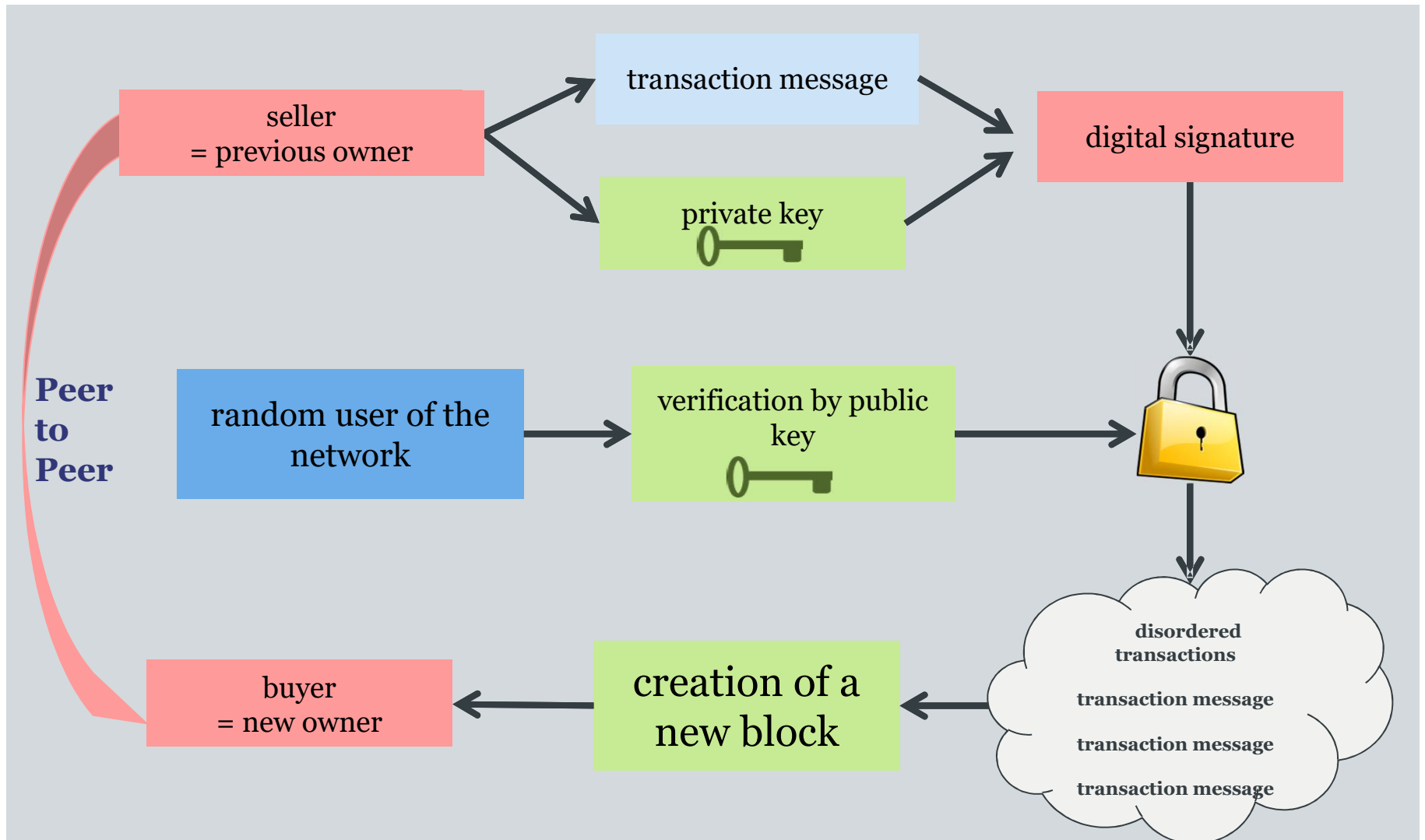- Transactions via public key (~account) and via private key (~
  signature/password)

Bird & Bird
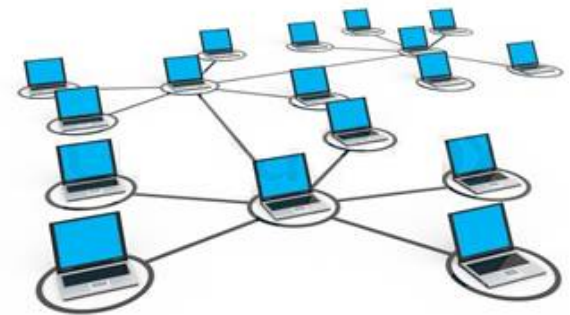
Introduction to the Blockchain Technology (2)

How does the blockchain work?

- Every "Block" in the chain consists of several transactions
- Mathematical puzzle to create a block
- Solved block will be added to the blockchain
- E.g. Bitcoins: New coins are assigned to its creator ("Mining")

Disordered transactions

Transaction message

Transaction message

Transaction message
...

Block

Link to earlier block

Transaction message

Transaction message

Transaction message

Solution to the mathematical puzzle

Blockchain

Block #

Block #

Block #

Block #

Bird & Bird

Example: Bitcoin

seller
= previous owner

transaction message

private key

digital signature

Peer
to
Peer

random user of the network

verification by public key

disordered transactions

transaction message

transaction message

transaction message

buyer
= new owner

creation of a new block

Bird & Bird

All good or bad?

Clear upsides

- No intermediary necessary (e.g. bank, credit-card company)

- Direct trade between two parties on the internet

- Fast and cheap transactions

- **Largely safe against manipulation**
  - Decentralised network
  - Data blocks are transferred to all participating computers
  - Accessible by all users
  - Mutual control between the computers

- Better security
  - Decentralised storage of data
  - Anonymous transactions

Bird & Bird

Risks and concerns – flipside of the same (Bit)coin?

- No / limited regulatory control

- Anonymous transactions attract criminals

  - Easy money-laundering through Bitcoin

- No access to public enforcement agencies / courts?

- Inherent limitations on transaction speed

- 51% attack ➡ quantum-computing?

How about limitations in the law?

Bird & Bird

A contract – is a contract –

is a smart contract?

What is a contract? (1)

Two corresponding declarations of will to effect a legal transaction

- Freedom of contract
  - Choose your partner
  - Content
  - Boundaries by law and regulation

- Ability to contract
  - Age requirement
  - Approval requirements for minors

- Offer and acceptance
  - At the same time – period to accept an offer?
  - Waiving receipt of acceptance?

"Images are used for educational and study purposes only"

Bird & Bird

What is a contract? (2)

- Language of contract
  - Verification of consensus
  - Free choice – also in object code?

- Standard contracts
  - Model contracts under Civil Code (sale, rental, works, etc.)
  - Preformulated ➡ judicial control (even in B2B)
  - Consumer protection law – mandatory rules

- German two-fold construct
  - Obligatory agreement (*Verpflichtungsgeschäft*)
    - *I undertake to sell – I undertake to pay*
  - Executional agreement (*Verfügungsgeschäft*)
    - *I hereby transfer ownership – I hereby accept the transfer*

Bird & Bird

How do you interpret a contract? (1)

- Wording and intent of parties
  - Literal meaning
  - Context
    - Purpose and underlying economic rationale
    - History of negotiations

- General clauses and underlying principles
  - "Good faith", "public order", "due care", etc.
  - Reasonableness (e.g. "*within reasonable time*")

- How about mistakes and errors?
  - Erroneous declarations (*Erklärungsirrtum)*
    - Typo mistake (€ 10,000 instead of 100.00)
    - Wrong bank IBAN number

Bird & Bird

How do you interpret a contract? (2)

- ➡️ Revocal of declaration (*Anfechtung*)
  - Nullifies from the begin (*ab initio / "ex tunc"*)
  - You can't revoke motivational error (*I wanted something else*)

- Nullity by law, e.g. breach of
  - Anti-trust law
  - Public order (e.g. usury)

- Good faith reliance
  - On attorney in fact / claimed power of attorney
  - Ownership transfer in (tangible) good from the non-proprietor

- Dealing with change in regulation or circumstances
  - ➡️ Adjust contract or renegotiate
  - ➡️ Termination right (estoppel, *clausula rebus sic stantibus*)

Bird & Bird

What happens if things go wrong?

- Impossibility or impracticality to perform (beyond fault)
  - Release or suspension of performance obligations
  - Termination rights
  - Force majeure events

- Defective performance
  - Re-performance
  - Reduction of remuneration
  - Rescission of contract (reversing the transaction)
  - Damage claims (including for consequential losses)

- Suspension of counter-performance
  - E.g. right to withhold payment

Bird & Bird

So, what's a smart contract? (1)

- A piece of code
  - Do you (need to) understand the language?
  - Free choice – also in object code?

- Self-executing transaction
  - Binary structure
  - If ➡ then
  - Digital nature of the executable
  - Irrevocable execution

- Ensures performance without recourse to courts

- Excising human discretion from contract <u>execution</u>

Bird & Bird

So, what's a smart contract? (2)

- Transaction history
  - Protocol of all trigger events
  - Documents previous transactions

A couple of questions

- What about offer and acceptance?
  - *Invitatio ad offerendum* and waiving explicit acceptance

- Not knowing whom you're contracting with?
  - Nothing new ➡ e.g. coin machine

- Does the other side need to understand the language?
  - Yes, but can agree on code as relevant language
  - Reproduction in court?

Bird & Bird

So, what's so great about a smart contract?

- Opportunities
  - Digital evidence of legal status (ownership, power of representation)
  - Solves issue of pretended rights (*Rechtsschein*)

- Anonymity
  - Predictable / secured performance / execution
  - No (personal) trust needed between contracting parties

- Reduces transaction cost

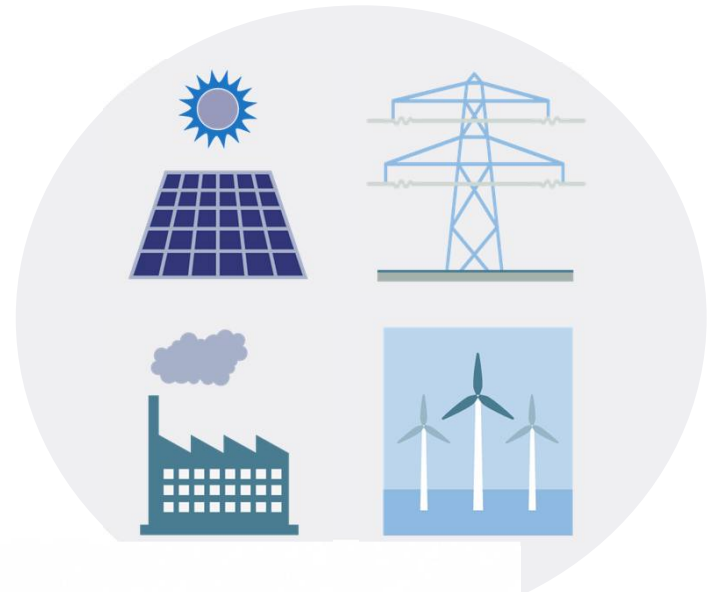<p style="color:red">Good for any and all kinds of transactions?</p>

Bird & Bird

Examples

Financial services

- Financial transactions
  - Exactly defined parameter – with limited variance
  - E.g. credit swaps

- Insurance – mass contract management
  - Updating policies
  - Release of payments (trigger events, discounts, rebates, etc.)

Bird & Bird

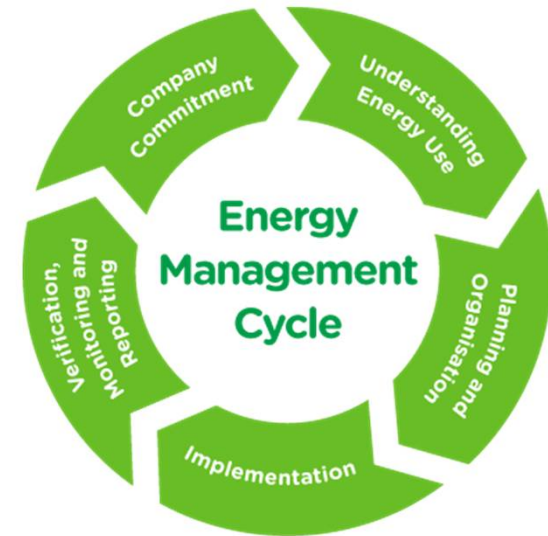# Energy trade

- Energy trade – emission trade swaps
- Relying on the ledger

Embodied energy trade

Major embodied energy trade (more than 1.0 EJ)
* All the trade to/from rest of OECD is combined

"Images are used for educational and study purposes only"

Bird & Bird
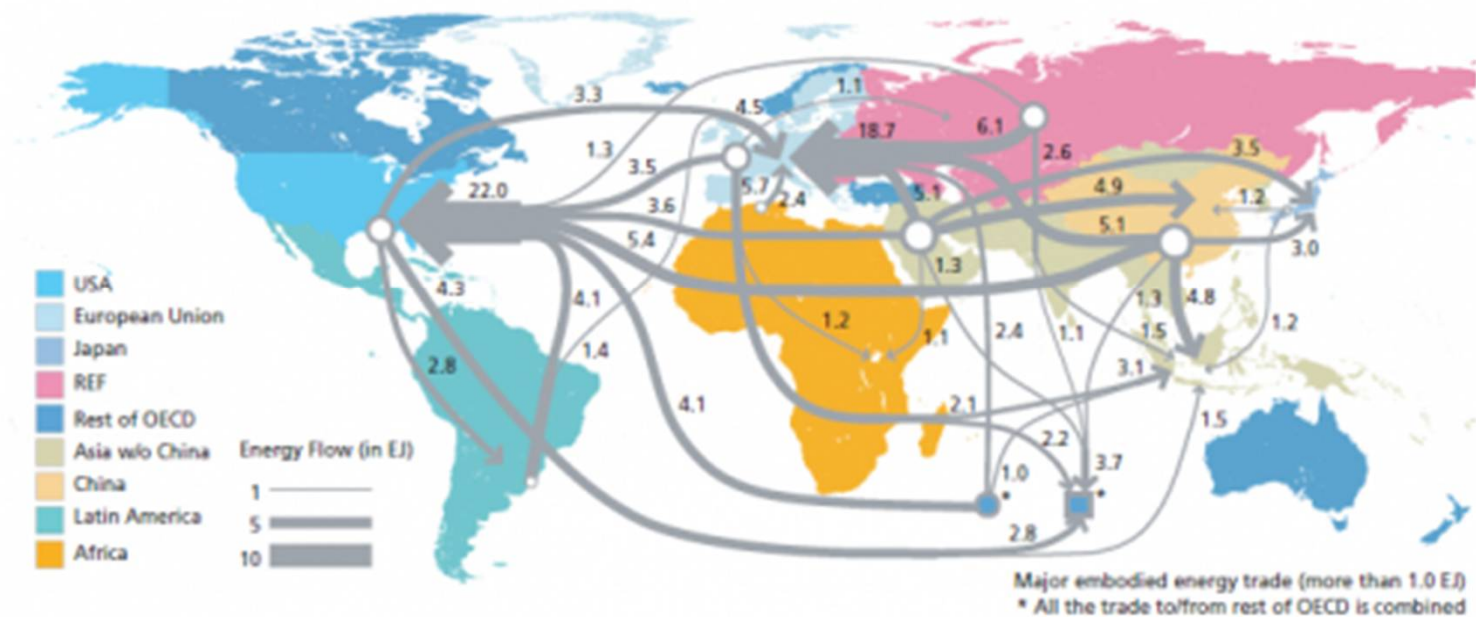
Managing smart meter data

- Challenges through privacy issues?

"Images are used for educational and study purposes only"

Bird & Bird

IoT contract management

- E-Mobility
  - Managing recharge payment

- Car lease
  - Door shutter checks lease payment

- Get your plumber paid
  - Sensor reports defect ➡ digital prepayment ➡ repair service
  - Do you want to pay in advance?

"Images are used for educational and study purposes only"

Bird & Bird

General and personalized medicine

Zero failure tolerance throughout the value- and contract chain

1.
pharmacist

ingredients

pharmaceutical company

2.
pharmaceutical company

brand, ingredients, price

pharmacy

3.
pharmaceutical company

dose, ingredients

doctor

4.
doctor

dose

patient

Bird & Bird
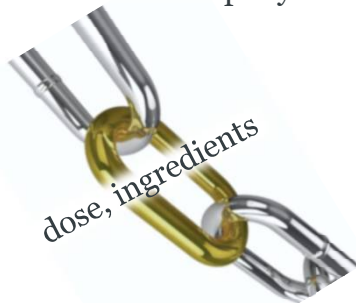
Helping the composers and performing artists?

- Music file release and payment
- Solving the peer-to-peer non-monetization
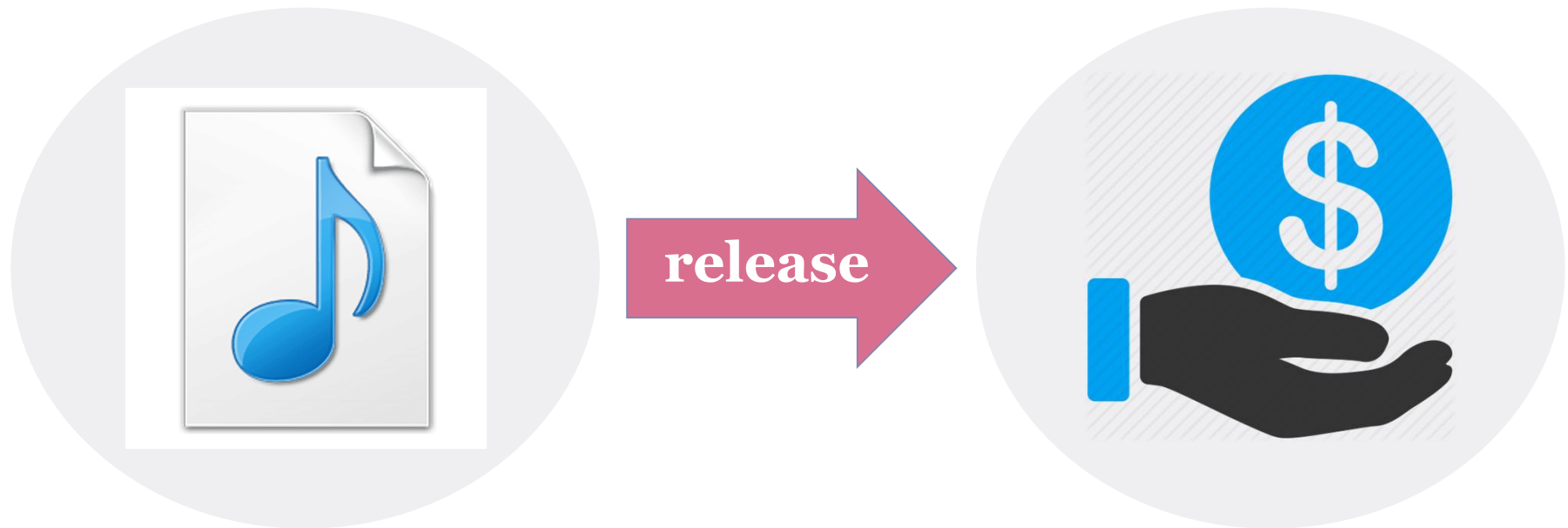
- Time to effect transaction?
- Suited for low-price retail products?

"Images are used for educational and study purposes only"

Bird & Bird

The Strad-Guarneri gamble – is it the same instrument?

- Creating trust in high-value transactions
- Ledger of transaction history

release

Images from wikipedia and schleske.de for education purposes only

Bird & Bird
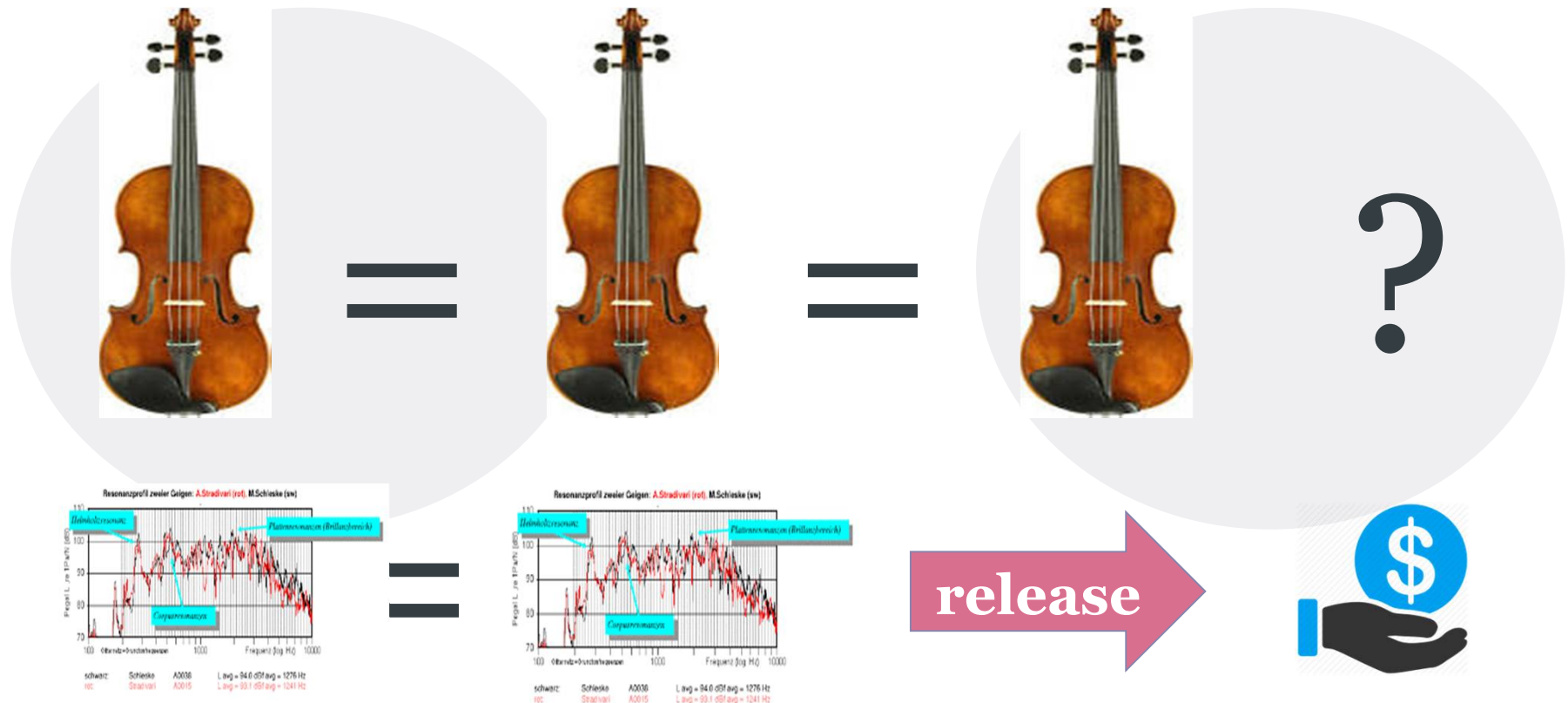
What it cannot solve...



=

 ?

Bird & Bird

Legal issues and challenges

Couple of issues (1)

Irreversible contract execution – no adjustment *ex posteriorem*

- Formation of contract issues
  - Erroneous declaration ➡ *ab initio* nullity won't work

- Nullity for breach of mandatory law (e.g. anti-trust law)
  - Self-executing transaction cannot be reversed

- Conflict with standard terms law
  - Irrevocable / factual waiver of remedies ⬌ consumer law

- Cutting off statutory rights
  - Breach of warranty / statutory rights
  - How does the coin-machine solve the problem?
  - Solution through reverse transactions
    - Into the ledger, at least for the most recent transaction?

Bird & Bird

Couple of issues (2)

- General clauses and discretionary legal terms
  - Good faith (*Treu und Glauben*), public order (*gute Sitten*), due care (*verkehrsübliche Sorgfalt*), reasonable notice (*angemessene Frist*)

- Algorithms aiding contract interpretation?
  - Generally not yet
  - Maybe for bespoke mass-contract management?

- No judicial redress / access to courts ⟷ rule of law?
  - No identity of other party
  - Built-in alternative dispute resolution?

"Images are used for educational and study purposes only"

Bird & Bird
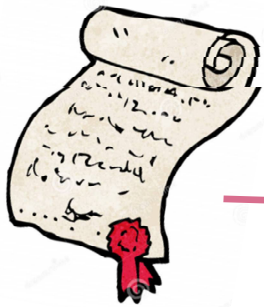
Couple of issues (3)

- Privacy issues if personal data on the ledger
  - Data subjects rights cannot be effected
    - Right of correction
    - Right of erasure?
  - Managing consent?
  - Need to handle pseudonymous data

So, seems all close to impossible after all?

Bird & Bird

Suggestions

Areas for the legislator? (1)

- Improving framework for networked contracts
  - Trend from linear / bilateral to networked / multilateral
  - Already in discussion, but will take time

- Legal recognition of self-executing contracts
  - Necessary, helpful or superfluous?
  - Some use cases won't fly without legislative ease (B2C)

- Shift towards advance payment models?
  - Suited for easy-executable contracts
  - None or limited remedies (music filesharing, coin machine)

- Reverse transactions – a need to have
  - In lieu of retrospective / *ab initio* invalidation of transactions

Bird & Bird

Areas for the legislators? (2)

- Shorter periods for reverse transactions
  - Only most recent transaction
  - Statute of limitation?

- Issues with wider picture problems
  - Anti-trust law breach, breach of public order

- Compulsory ADR mechanism (alternative dispute resolution)?
  - Framework outside the blockchain for redress issues?

- Pseudonymisation – help for the privacy dilemma
  - EDPB to develop criteria for smart contracts
  - Access, correction, right of erasure, won't work back through the chain
- Allocation of risk for regulatory incompliance?

Bird & Bird

Standardization (1)

ISO/TC 307

- "Standardisation of blockchain technologies and distributed ledger technologies."

- Creation date: 2016

- 14. - 17. November 2017 meeting in Japan

- ISO/TC 307/SG 5: working group "Smart Contracts"
  - Blockchain terminology standards
  - Standards for privacy, security and identity issues
  - Governance and risk related issues
  - Reference architecture for blockchains
  - Interoperability amongst blockchain systems

Bird & Bird

Conclusion

Things to think about

- Some compelling use cases out there
  - ➡ Many more to come

- Challenges, in particular for B2C
  - ➡ No general waiver of statutory rights

- Legislative framework for self-executing contracts
  - ➡ Networked contracts
  - ➡ Reverse transactions instead of *ab initio* nullity
  - ➡ ADR mechanism

- Very difficult re data subjects' rights
  - ➡ Pseudonymisation standards needed

- Standardisation should help

Key role for lawyers!

"Images are used for educational and study purposes only"

Bird & Bird

About Bird & Bird

The Bird & Bird Vision

The number one law firm in the world for organisations being changed by Technology or the Digital World

About Bird & Bird

- A truly international firm with over 1,200 lawyers worldwide

- Our German offices in Düsseldorf, Frankfurt, Hamburg and Munich are home to over 160 lawyers

- Leading-edge expertise across a full range of legal services, with a particular focus on technology driven, IP-rich and regulated industries

- Specialists in cross-border and multi-jurisdictional work

- Excellent at managing complex projects across multiple regions with a seamless one-firm approach

Bird & Bird

The most trusted guide for clients in a changing environment

Sector focus → deep industry knowledge

International reach

Excellence in client service

CLIENT CHOICE 2016
RECOGNIZED FOR EXCELLENCE IN CLIENT SERVICE

Bird & Bird

Leaders in what's new

"Well-staffed and dedicated team providing a broad range of services across IT, media and telecommunications. Experienced in handling cross-border mandates and advising clients from the financial services and life sciences sectors. Also represents clients in contentious matters."

Chambers Europe 2017

Bird & Bird

Thank you!

Dr. Alexander Duisberg

alexander.duisberg@twobirds.com

twobirds.com