

Blockchain Regulation and Smart Contracts



Latvijas tiesību institūts

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OUTLINE

1. Introduction: A storm is coming...
2. What is “Money”?
3. What is “Bitcoin”?
4. How does “Bitcoin” work & what’s the point?
5. What are other “cryptocurrencies” and how are they different?
6. What is a “Smart Contract” and what can we do with it?
7. What are the strengths and weaknesses of Blockchain technology and cryptocurrencies?
8. What kind of regulation do we need to harness the strengths and deal with the weaknesses?
9. Who should be regulating and how?
10. How is that going so far?
11. What kind of problems are lawyers already seeing?
12. What is the future going to bring?

1. INTRODUCTION

Blockchain and Smart Contracts Are Disruptive Technologies

- Disruptive innovation fundamentally changes the way consumers and businesses interact and operate.
- Disruptive technology replaces entire systems and existing structures.
- Example: electric automobiles
- Blockchain is potentially disruptive, changing the way we use the internet, and transact with each other.
- Blockchain transactions aim at **cutting out trusted intermediaries** like lawyers, commercial banks, central banks, securities- and commodities exchanges, etc.

1. INTRODUCTION

- Many early investors and potential users got burned in the ICO craze of 2017/2018
- Most of the sexy companies that raised many millions in those times don't exist anymore
- But the nerds kept on working and now we are seeing actual solutions come to market
- And the money jumped right back in because both the nerds and the venture capitalists know that Blockchain and Blockchain apps are something real and potentially very valuable
- In 2017/18 almost anybody with a really good website could attract plenty of investor money
- In 2022/23 almost anybody with a really good business application can still attract plenty of investor money

1. INTRODUCTION

By now, the basics of Blockchain technology, how data is stored and encrypted in distributed ledgers that are both open and private and controlled by nobody, is widely understood.

Understanding the finer details of the technology is not important, however, unless you want to become a full-stack developer.

What you need to understand is that the Blockchain can be compared to the **internet** or to a **smart phone**. Most users will never really understand how it works. But those who do understand will develop more and more apps to run on the platform and make use of its unique strengths. And everybody else can just use the apps to make their lives more interesting and their business options better.

The more apps we get, the more ideas will emerge, and they will, in turn, lead to more apps and yet more ideas.

1. INTRODUCTION

A solution that increases efficiency or reduces cost or makes an experience more secure or better by **a factor of 10%** is an evolution, not a revolution.

A solution that increases efficiency or reduces cost or makes an experience more secure or better by **a factor of 10x** is disrupting all previous solutions.

Tony Seba famously said: “I have looked at disruptions going all the way back to Gutenberg. Every time there is a 10x improvement in cost [or quality] for the same product or service, there has been a major disruption. Every single time. I know of no case where a 10x improvement did not lead to disruption.”

1. INTRODUCTION

The Blockchain makes transactions on the internet more secure

by a factor of 100x

We are still working on cost and speed, but the potential for 10x and more is absolutely there as well...

Blockchain will not only disrupt existing business models, it will trigger the development of entirely new business opportunities, just like smart phones did.

1. INTRODUCTION

More than half of all the work done by attorneys, from registration of companies and patents, to the drafting of contracts, and the filing of motions in court, is **routine work**.

Much of this routine work can and **will be standardized and automated** and offered at much lower prices on the Blockchain.

The combination of Blockchains and Smart Contracts enhanced with Artificial Intelligence (AI) will be a perfect storm for many service providers in the financial and legal sector!

Mark my words, in the next 10 years, **at least one third and possibly as much as half** of the work done traditionally by attorneys will be taken over by Blockchain application companies!

2. WHAT IS “MONEY”?

Money is supposed to fulfill **three functions**:

- 1) **Medium of exchange** = commonly accepted for payment transactions
- 2) **Store of value** = commonly accepted method of holding value for spending later
- 3) **Unit of account** = commonly accepted measure of value or price of other goods and services

2. WHAT IS “MONEY”?

Emphasis = “commonly accepted”

Historically, money was accepted to be

- Coins made of gold, copper, and other (precious) metals,
- Paper money endorsed by banks or governments,

but also

- Cowry shells, stone wheels, strings of beads, salt, furs, cattle, cigarettes, etc.

And more recently: digital representations in our online accounts

2. WHAT IS “MONEY”?

Modern money, at least the widely convertible fiat currencies of the wealthy developed countries, make life easier:

- Much easier for transactions than barter trade;
- Securely storable and easily transportable;
- Holding value over time, outside of modest inflation...

In our Western democracies, we don't need cryptocurrencies for most of what we do. We can already do online banking and we usually trust our government and banks.

But much of the rest of the world is not such a nice place...

And our financial service providers have not exactly soiled themselves with glory in recent years. We either hear about record profits or about demands for bailouts...

3. WHAT IS “BITCOIN”?

Bitcoin was the first so-called “cryptocurrency”.

We will use it to understand certain features of cryptocurrencies.

Subsequently, we will talk about other cryptocurrencies with different features and qualities.

3. WHAT IS “BITCOIN”?

How is Bitcoin similar, yet different, from the “money” in your online bank account?

- 1) You can “see” your account balance online for both and keep value stored that way.
- 2) You can convert both balances into Dollars or Euros or other fiat currencies at any time and “take out” cash.
- 3) You can make payments with both, although not every seller of goods or services accepts Bitcoin (but that depends on where you are and which fiat currency alternatives you have).
- 4) Prices for goods or services can be quoted in both types of “currencies”.

=> Bitcoin fulfills all three functions of “money”

3. WHAT IS “BITCOIN”?

BUT...

- 1) Except for El Salvador and the Central African Republic, no country has Bitcoin as legal tender, meaning...
- 2) There are no physical bills and coins;
- 3) Bitcoin is neither issued nor supervised or guaranteed by any government or (central) bank;
- 4) Bitcoin use is actually illegal in certain countries (China, Saudi Arabia...), and
- 5) The value of Bitcoin has fluctuated considerably over time and may fluctuate by 5-10% in a single day.

3. WHAT IS “BITCOIN”?

NEVERTHELESS...

- 1) Every single Bitcoin cost \$28,500 on 20 April 2023.
- 2) The total market cap was about \$550 Billion on 20 April 2023.
- 3) The 24 hour transaction volume on 20 April 2023 was over \$86 Billion.
- 4) Over 100 million people around the world held Bitcoin in their online wallets or on exchanges on 20 April 2023 (almost 1 Billion people have some crypto).
- 5) If you bought Bitcoin for \$1,000 in July 2010, your stash was worth about \$3 Billion on 20 April 2023.

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

In particular, when large amounts are at stake, people don't trust strangers with their money or assets = **trustless environment**.

People also don't want to keep large amounts of money in their homes and carry large amounts of cash to make payments = **trustless environment**.

Instead, we use “**trusted intermediaries**” to store our money and make our transfers.

These are banks and other financial institutions, stock brokers, etc.

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

After the Trillion \$\$\$ bailout of the banks in 2008, Satoshi Nakamoto proposed an alternative to central bank currencies, a mathematically determined peer-to-peer payment system!

Instead of untrustworthy “trusted” intermediaries (= banks), the system relies on blockchain technology, cryptography, and distributed ledgers...

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

Distributed Ledger Technology (DLT) is really just an update on our good old library card catalogs



4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

The library card catalog had a couple of weaknesses, however:

- The entire catalog is only **in one place** and can only be consulted by a **small number of people** at any one time and only **during library opening hours**
- If a card is consulted and then not put back carefully into exactly the right place, it becomes basically unfindable
- If an entire drawer full of cards fall down, the librarian will jump out of the window in despair
- If several **entries are made incorrectly or later falsified**, the users will soon not trust the entire system any more
- Therefore, we can only let the professionals make entries and do searches
- However, that makes the entire catalog not particularly useful

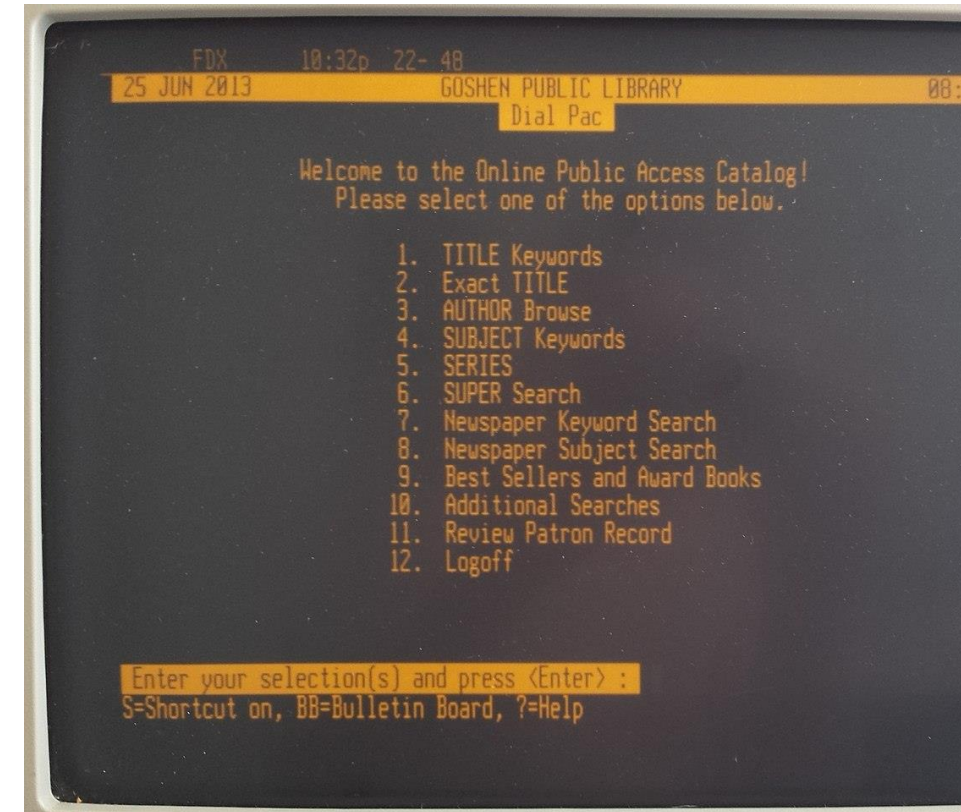


4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

Many of these problems were solved when we digitized and put the **library catalogs into computer databases**:

We can now do **full text searches** in all entries, not just by title or author in alphabetical order; **Many users** can access the electronic catalog from **any place** at **any time**, as long as they have internet access;

Even if a terminal falls down, the **database** itself remains unharmed, it is **secure**.



4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

However:

- Incorrect entries are still a concern and would quickly diminish the value of the database and undermine the trust of the users in the system!
- Therefore, as before, we can only let „the professionals“ (i.e. the librarians = trusted intermediaries) make entries in the database

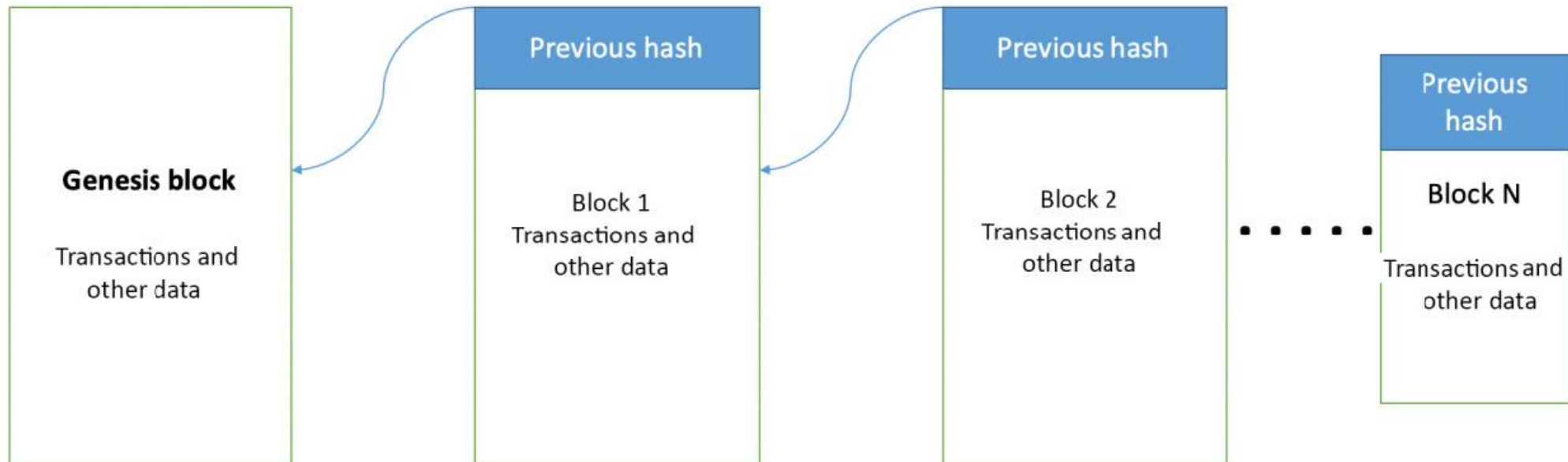
4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

- ▶ If the database is just a library catalog, the incentive for clowns or crooks to make false entries or to corrupt current entries is quite low
- ▶ But if a database has real monetary value, for example because it shows financial transfers from one user to another, more sophisticated hackers and criminals will be attracted
- ▶ And that's exactly where Blockchains and Distributed Ledger Technology come in:

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

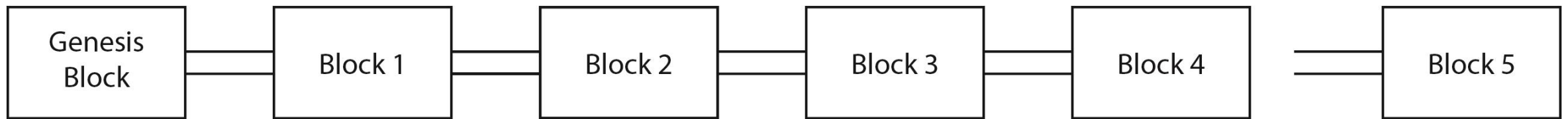
Fundamental Innovations:

#1 The cards or records (= **Blocks**) in the database get linked up in a chain (= **Blockchain**) → they can neither be mixed up or be exchanged without breaking the chain



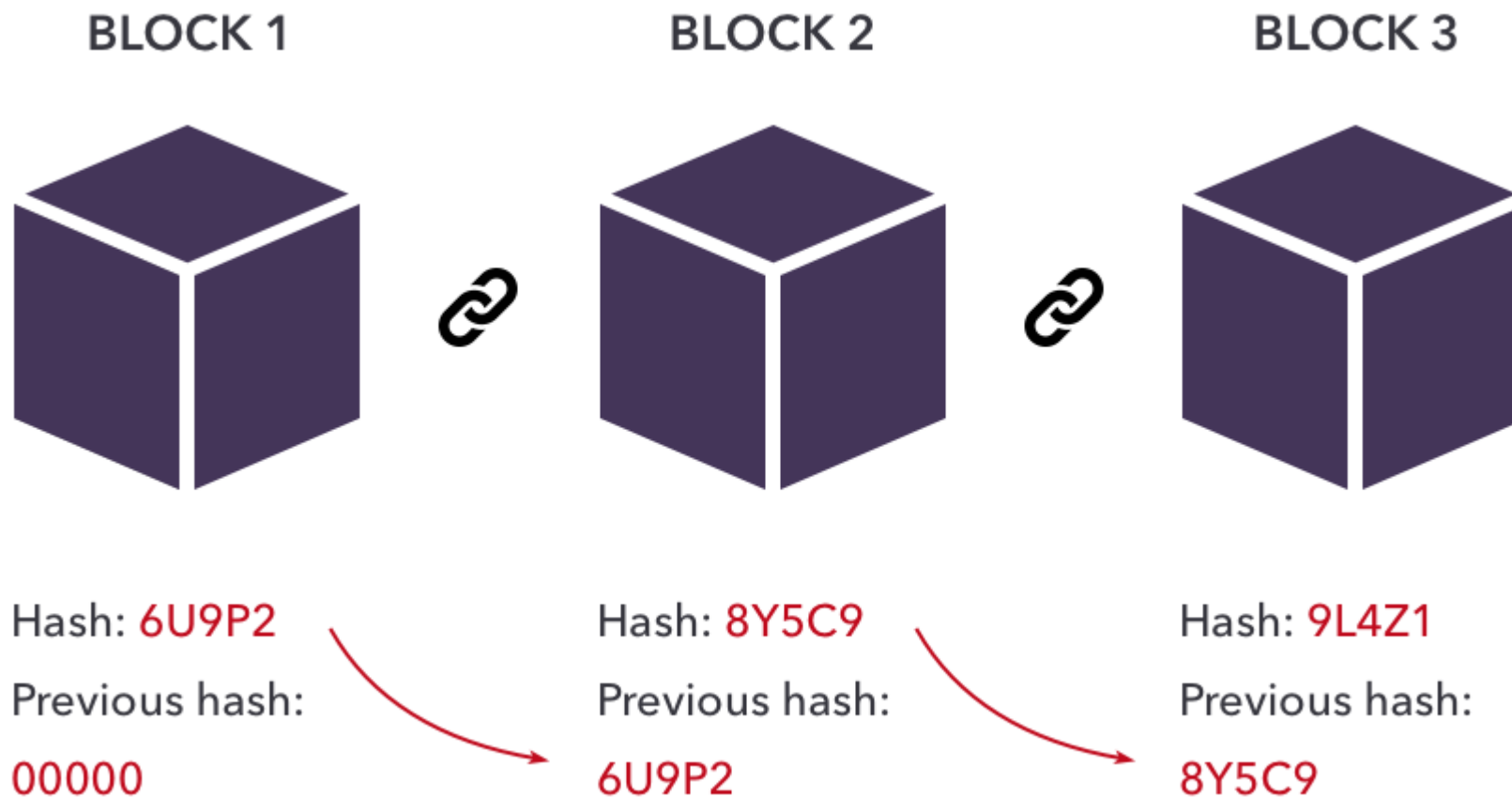
4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

After the genesis block is cryptographically created and saved on a server, new blocks are chained to it about every ten minutes, each one recording about 200 transactions.



Remember, any tampering with a record would break the chain... and we would know about it.

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

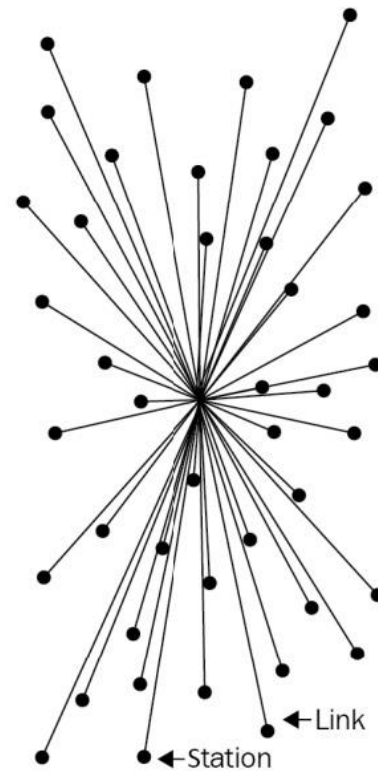


4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

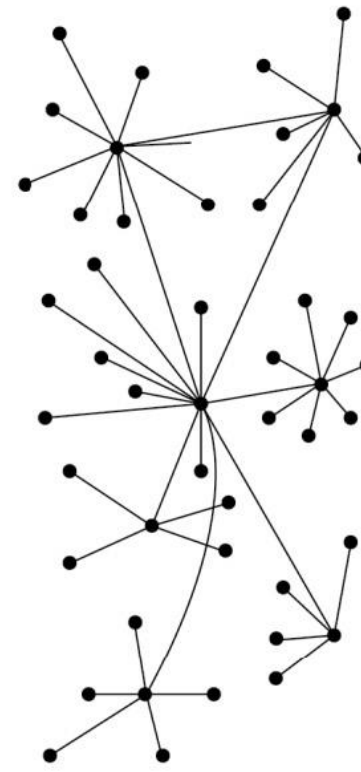
#2 Then the chain is saved on many servers, creating redundancy...

As a result, the records are “immutable”.

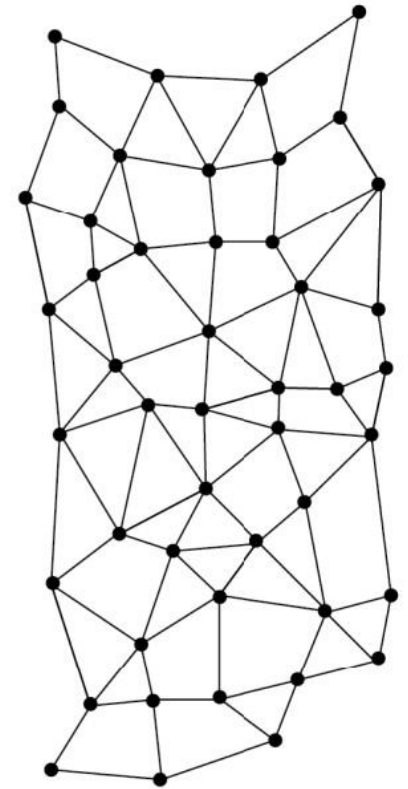
And no single entity has any amount of control over them.



CENTRALIZED



DECENTRALIZED



DISTRIBUTED

HOW DOES “BLOCKCHAIN” WORK?

Definitions for “Blockchain”

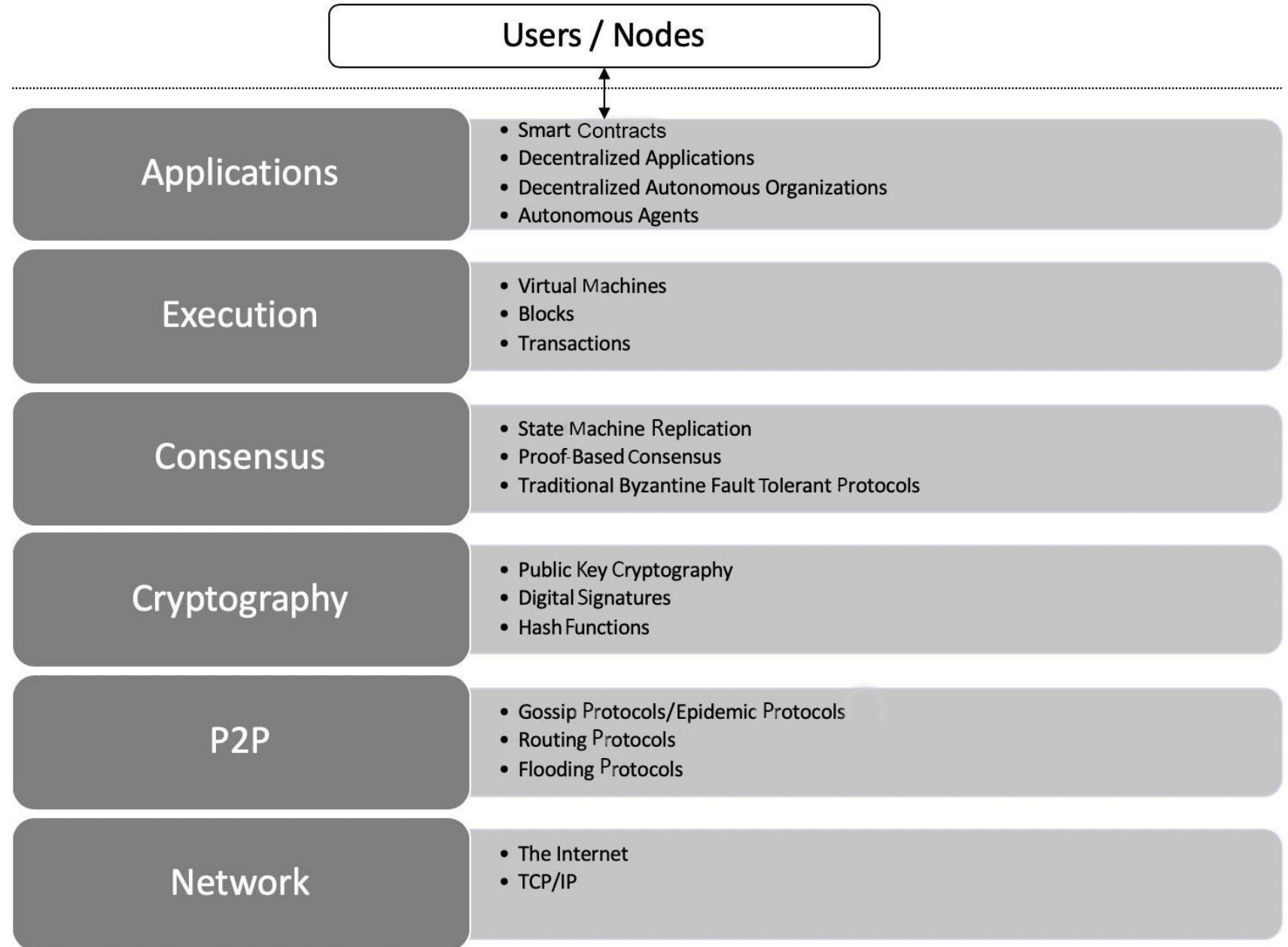
Blockchain is a continuously growing, shared recordkeeping system (= distributed) in which each user of the data holds a copy of all records (= P2P), which can only be updated if all parties involved in a transaction agree (= consensus based).

There is no centralized authority, participants don't need to know or trust each other, and data, once entered, is immutable. Changes can only be made by adding to the chain in time-sequential order, for example to reverse a transfer.

For business purposes, Blockchain is a platform where peers can exchange value (information, e-money) without the need for a centrally trusted arbitrator like a bank or broker or clearing house.

HOW DOES “BLOCKCHAIN” WORK?

This graph shows
multiple layers
built on top of the
good old Internet



How Does “Blockchain” Work?

Let's take a closer look...

State = advanced encryption algorithm defining
10-14 rounds of encryption to achieve
maximum arbitrariness and unpredictability

VM = virtual machine

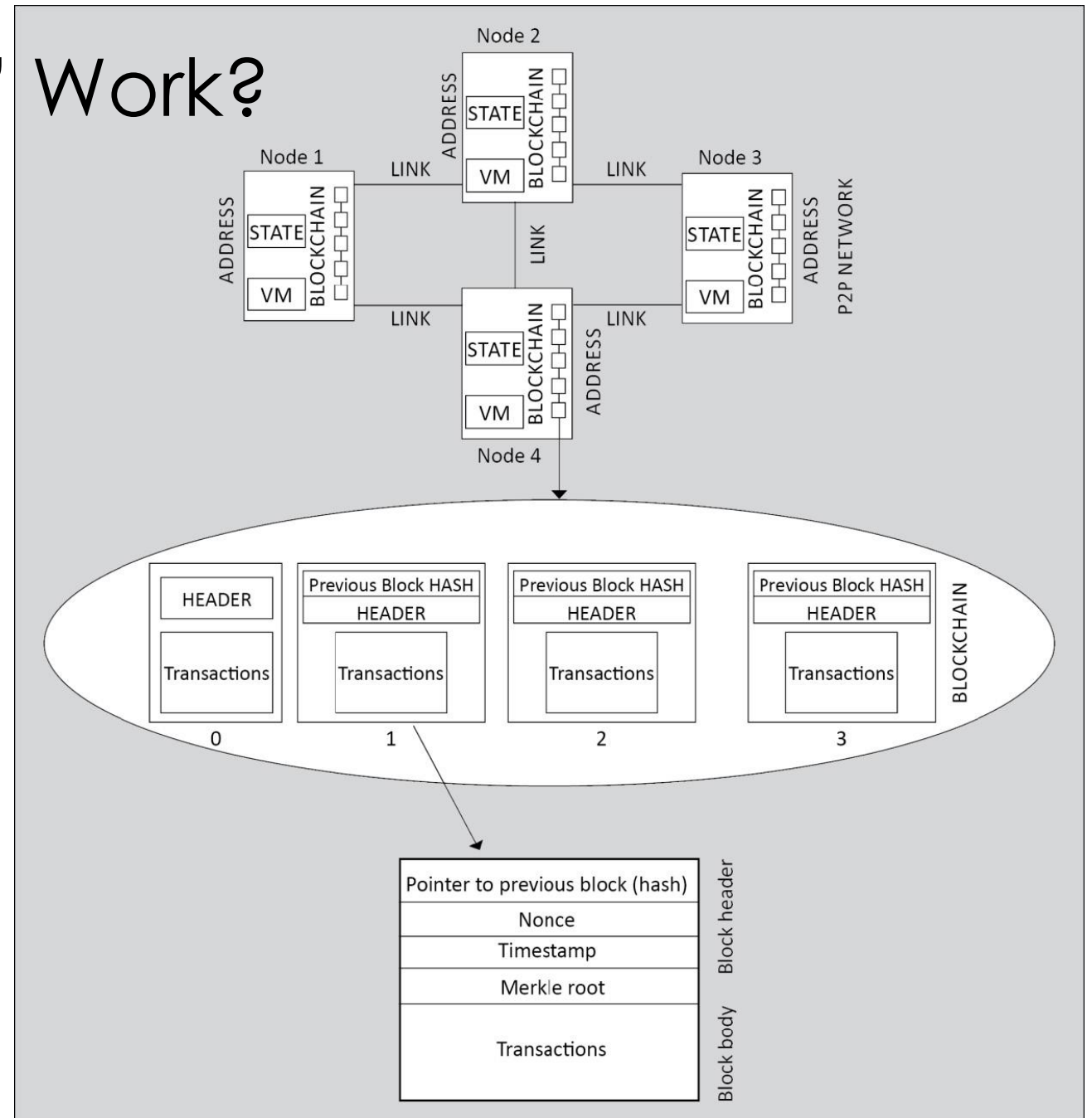
Node = computer in the P2P network

Hash = cryptographically secured information
in particular about the sender/recipient
of a message, used for authentication

Nonce = unique number

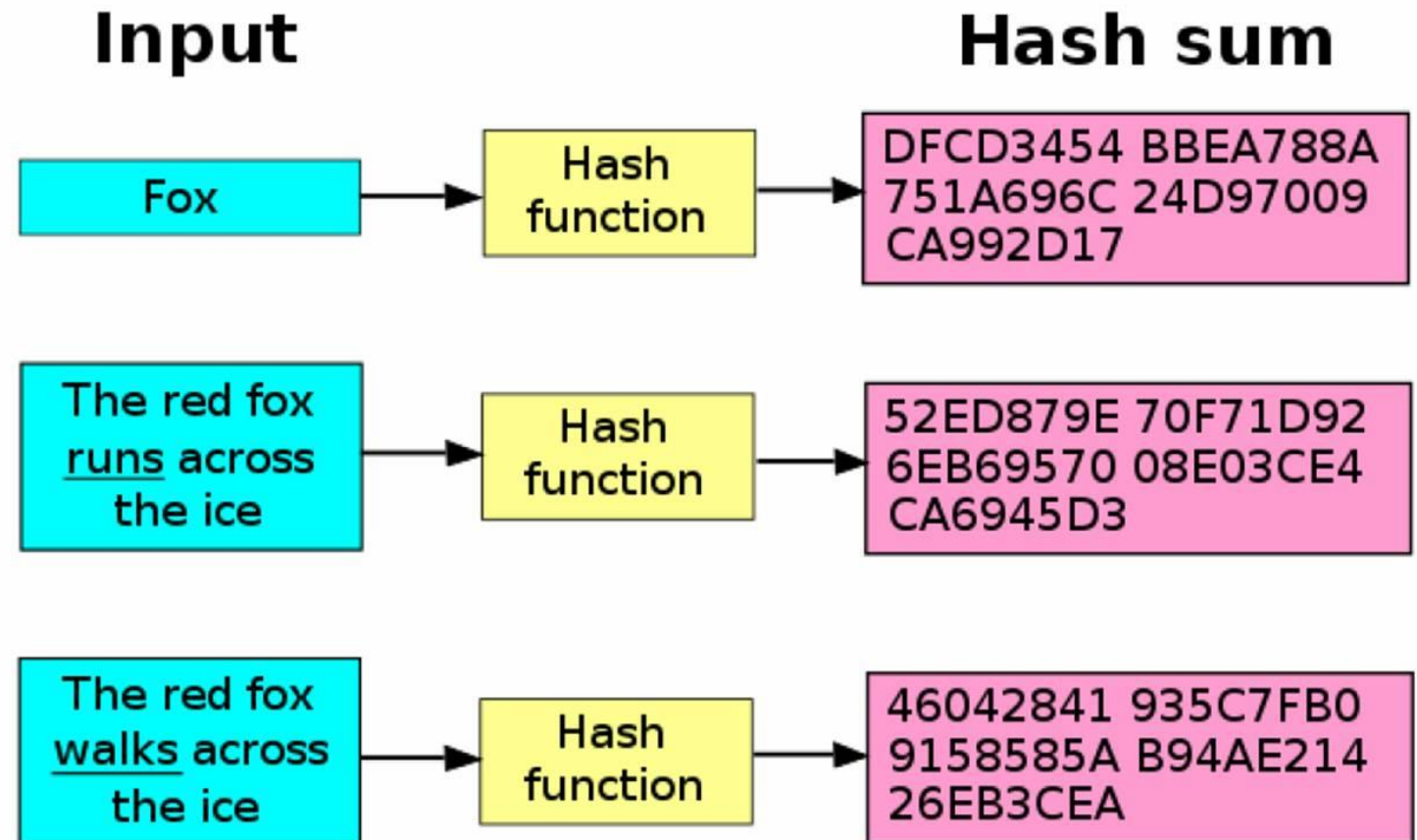
Timestamp = unique time when the block is
validated

Merkle Root = encrypted hash containing
large sets of information compressed
in multiple rounds



4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

10 – 14 rounds of encryption get to the point that there is no reverse engineering. Even if you know that some fox is running or walking, the hash sums are totally different.



HOW DOES “BLOCKCHAIN” WORK?

The last graph showed a third critical innovation for the benefit of transparency with simultaneous protection of data:

#3 The identity of any user or wallet holder has to be detectable (accountability); at the same time, not everybody should be able to see what everybody else is doing with their money, let alone interfere with it (anonymity) => **cryptographic encoding**

Nota bene: When we use credit cards, we do not have control over our data! We have to trust traders and bankers to safeguard our data and those seem to get hacked on an ever faster and grander scale. They also sell our data to professional marketing companies and data traders...

When we use DLT, we also do not have full control over our data in the sense that we can hide (illegal) transactions or assets. However, the data is already openly available and nobody can hack or sell it (what gets hacked are private keys to people's wallets, not the system where the wallets are kept...)

How does cryptographic encoding work?

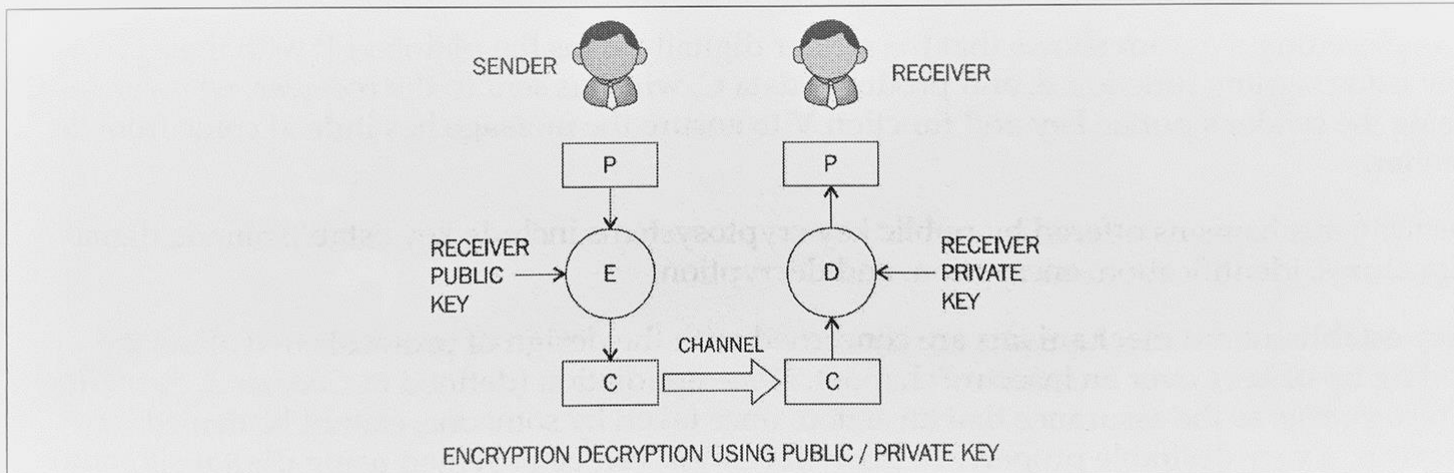


Figure 4.1: Encryption/decryption using public/private keys

By using Sender's own Private Key, Sender ensures that Receiver gets also Sender's Public Key and has certainty who sent the message.

Private Keys are NEVER sent!

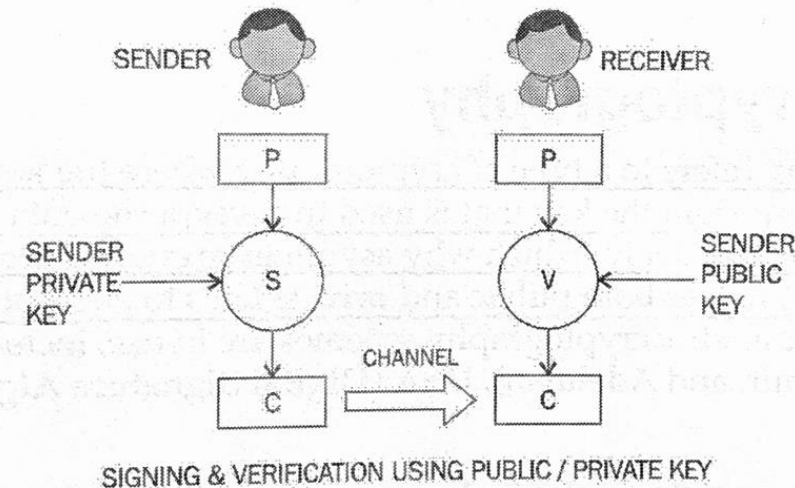


Figure 4.2: Model of a public-key cryptography signature scheme

By including Receiver's Public Key, Sender ensures that only the person with the corresponding Private Key can decrypt the message.



Token InBit Token ①

FinTech

Sponsored: Crypto.com - Buy ETH at True Cost - Lowest fees for credit/debit card purchases. [Download App.](#)

Overview [ERC-20]

PRICE

\$0.00 @ 0.000000 ETH (+3.03%)

FULLY DILUTED MARKET CAP ①

\$858,728.15

Max Total Supply: 846,442,656 InBit ①

Holders: 3,115 (0.00%)

Transfers: 4,893

Profile Summary [\[Edit\]](#)

Contract: [0x9c12d9b1223130b641154d8d3db35f91d...](https://etherscan.io/address/0x9c12d9b1223130b641154d8d3db35f91d...)

Decimals: 18

Official Site: <https://prepayway.com/>

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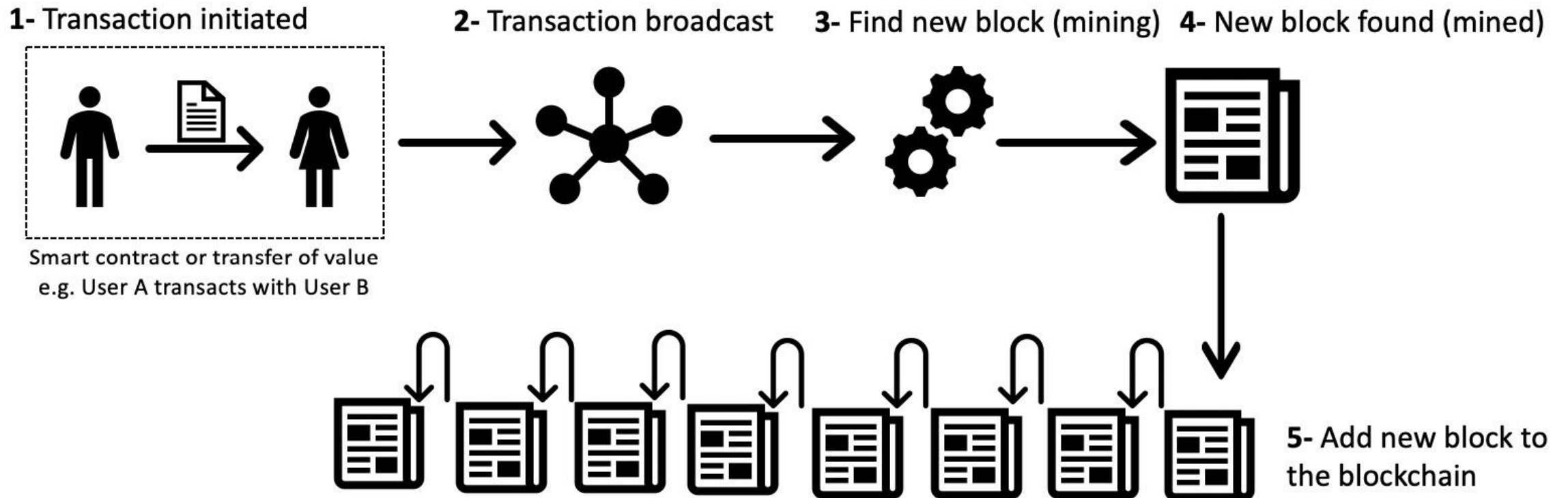
A total of 4,893 transactions found

First < Page 1 of 196 >

Txn Hash	Method ①	Age	From	To	Quantity
0xb5332fd14e186ed287...	Multicall	19 hrs 18	0xd08e4b5aed3ead574f...	Uniswap V3: InBit	2,687,140.3186638919922

HOW DOES “MINING” WORK?

The individual records or “Blocks” are chained together as follows:



WHAT CAN “BLOCKCHAIN” DO FOR US?

- #1 Decentralized → nobody controls it and nobody can manipulate it
- #2 Transparent → provides trusted information
- #3 Immutable → secure (more secure than any other record keeping system we know)
- #4 Redundant → secure
- #5 Cryptographically encoded → secure
- #6 Globally accessible → particularly valuable for less developed nations
- #7 Fast → well, currently not so much
- #8 Direct → “middlemen” like banks or clearinghouses are not needed → lowers costs
- #9 Virtual Machines enable „Smart Contracts“ (I will explain)
- #10 Evidentiary function → specific objects of value (art, real estate, intellectual property rights, bank accounts, etc.) can be allocated clearly and securely to their rightful owner in front of the entire world and – if necessary – can be transferred to third parties by the owner in full view of the entire world

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

So far, this system is actually MUCH more transparent and less prone to tax evasion and money laundering than our banking system!

To access the chain, each user needs a public key (= account number or address) and a private key (= password).

This is a public key: `0xe098cef78407973b73d6490cf76278fc4df5114d`

Like a social security number, this can be traced. Each and every transaction, and forever! (example, the getaway car)

Bitcoin ownership is proven via an uninterrupted chain from the first mining all the way to the current owner = transparent and secure!

4. HOW DOES BITCOIN WORK & WHAT'S THE POINT?

=> this system can generate and transfer value without any central bank or government issuing the money and without any banks, brokers, or clearing houses involved in the transfer or storage!

5. WHAT ARE OTHER “CRYPTOCURRENCIES” AND HOW ARE THEY DIFFERENT?

More than 23,000 cryptocurrencies have been created. More are being added every day.

Most of them do not fulfill the three functions of “money”.

Some are **utility tokens** = in-house currencies

Some are **non-fungible tokens (NFTs)** = unique representations, often used for art

Some are **stable coins** = pegged to the US\$ or another fiat currency

Some are used like common stock for **fundraising via ICOs**, ownership, staking, speculation...

Some are used in **games**, etc.

And quite a few are just vanity projects...

5. WHAT ARE OTHER “CRYPTOCURRENCIES” AND HOW ARE THEY DIFFERENT?

Each of these tokens and coins fulfills different functions. More and more **business applications** are being developed to make use of them.

Bitcoin records are quite basic, creation and transfer of value.

Ethereum's virtual machine (EVM) is the foundation of smart contracts.

6. WHAT IS A “SMART CONTRACT” AND WHAT CAN WE DO WITH IT?

Smart Contracts are programs that do certain things if certain conditions are fulfilled. Things are easy if performance is instant, for example the transfer of funds, just like a cash transaction in a shop. But if the contract merely contains a promise that something will happen in the future?

Example: Buyer B orders a customized machine from Seller S. B does not want to pay in advance, not sure that S will deliver. But S does not want to spend time and money, not sure that B will still be willing and able to pay... = trustless environment

Solution: a smart contract can hold the value while the transaction is pending!

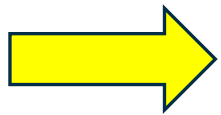
Contracts intended to do more than just transfer an amount of a digital currency from one person to another usually cannot be fully encoded on the Blockchain.

Looks simple: Goods X in exchange for money Y after delivery.

However it is not so simple: In particular, if parties are from different countries/languages/legal and business cultures, more details are needed:

- ✓ Quantity?
- ✓ Quality?
- ✓ Place and time of delivery?
- ✓ Warranties?

- ✓ Limitations of liability?
- ✓ Payment terms?
- ✓ Applicable law?
- ✓ Forum for settlement of any disputes? etc.



Most commercial contracts need one text version and one code version to become really "Smart" Contracts!

EXAMPLE 1

International Money Transfer

e.g. foreign workers sending remittances back home to their families

The Problem

- Many are unbanked
- Western Union is extremely expensive

The Solution

- Direct transfer from crypto wallet to crypto wallet, accessible on any device, incl. mobile phone (**Revolut** or **Venmo** are cheap and fast but not on chain for fiat) – this can be done with Bitcoin

The Remaining Problem

- Conversion into fiat without intermediaries?

EXAMPLE 2

Record Keeping

The Problem

- Data should be accessible to many, potentially everybody = public
- Yet, data has to be attributable, secure, and immutable

The Solution

Data storage on a (public) Blockchain – this is better done on Ethereum

Business Examples

- DeBeers **Tracr**
- **Artory**
- Healthcare records management (**Trustgrid**, and others)
- Supply chain records for pharmaceuticals (**AWS Track and Trace** on Amazon Managed Blockchain)
- Intellectual property rights (publicity function vs. evidentiary function?)

EXAMPLE 3

Comprehensive DeFi

The Problem

- Banking without banks?

The Solution

- **BlockFi** provides money transfer and lending operations; users earn interest on crypto holding AND users can borrow fiat using crypto as security
- Some providers even have ATMs for crypto and fiat transactions

The Remaining Problem

- Licensing? Regulatory oversight? Deposit insurance? etc.
- BlockFi has banking license in certain jurisdictions but not in others
- If DeFi needs all the regulatory oversight and licenses, won't it be just like normal banks?

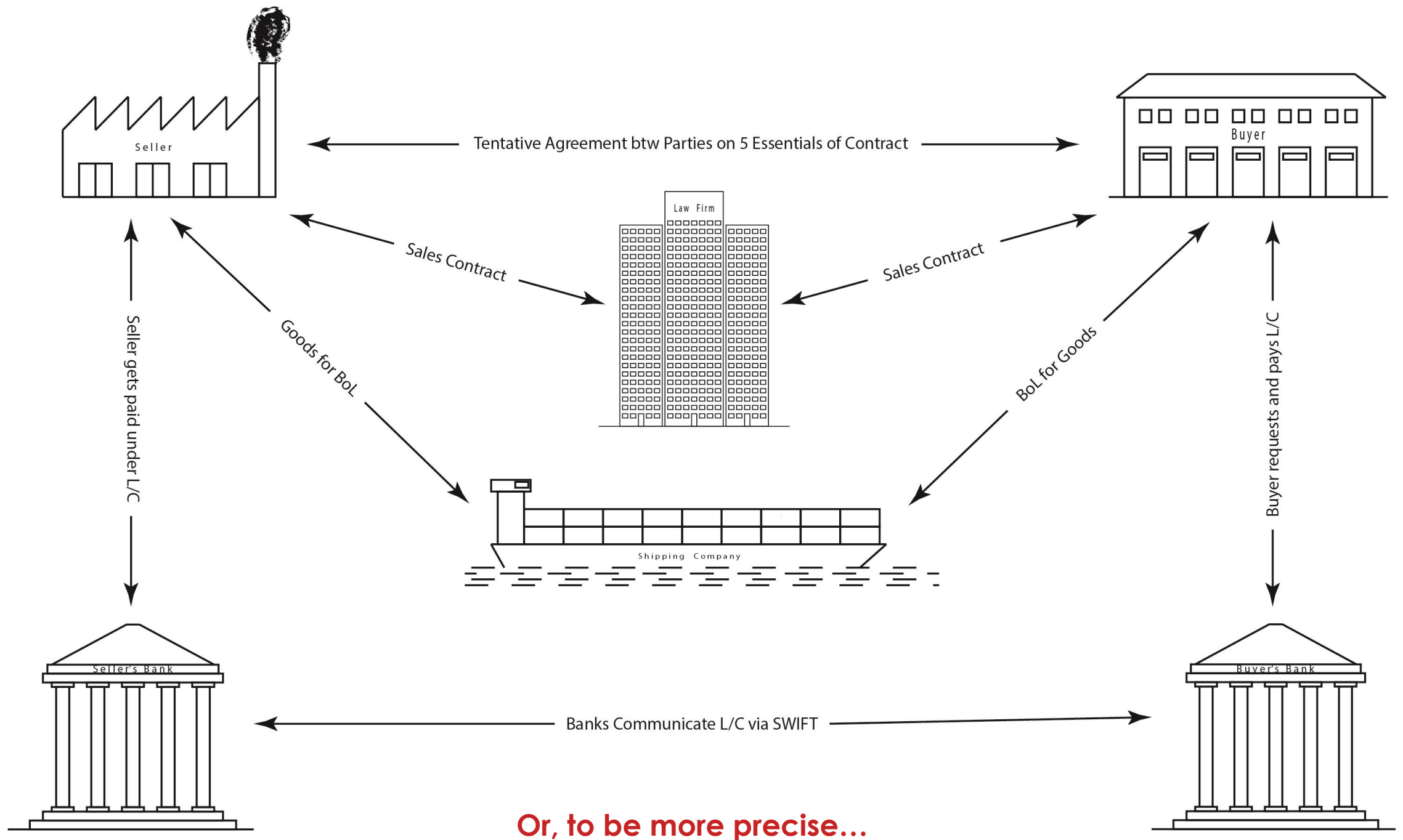
EXAMPLE 4

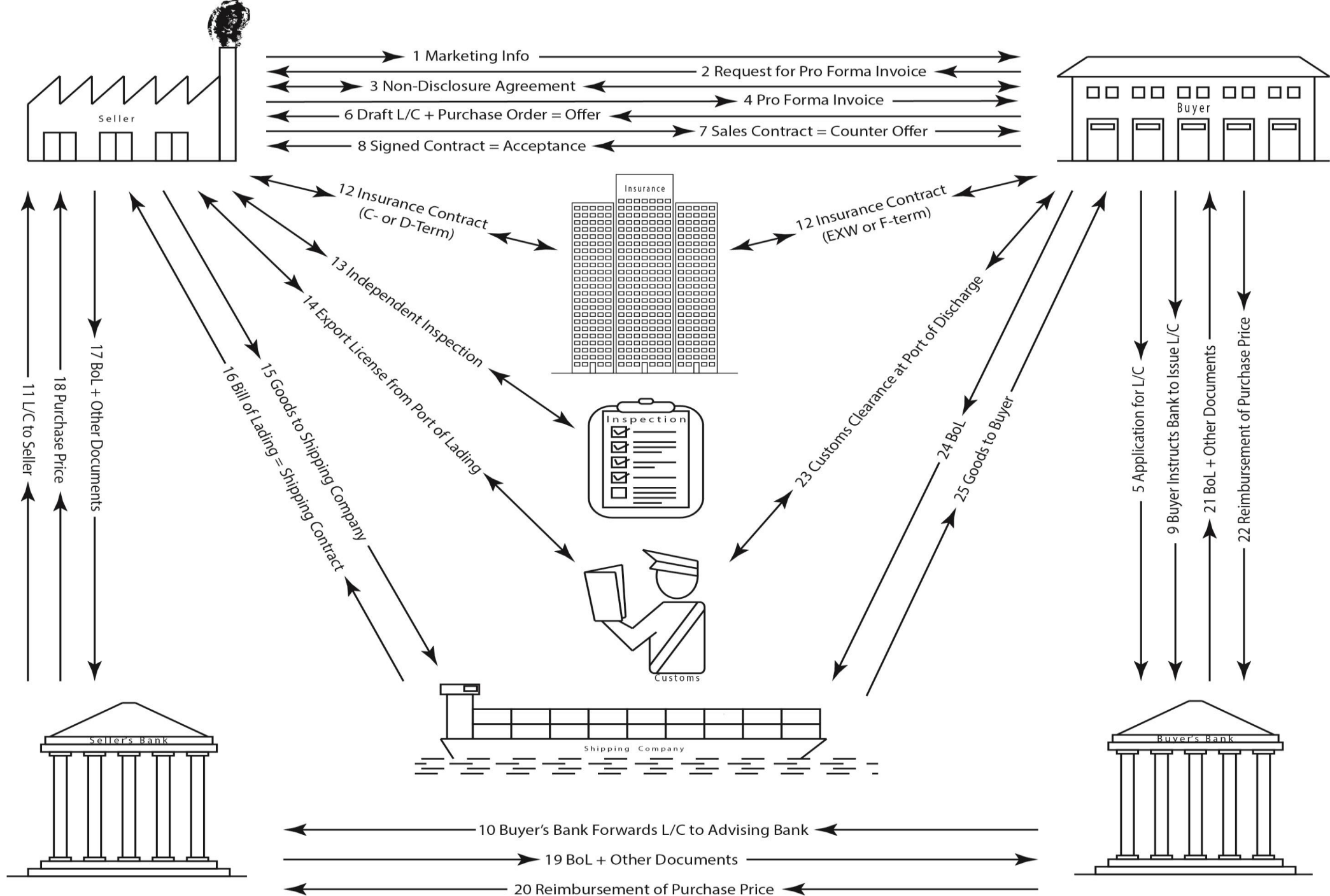
International Export – Import Transactions

These are at the same time more complicated than domestic sales (e.g. choice of law, choice of forum, int'l shipping and insurance) and more risky (country risk, counterparty risk, currency risk, etc.)

This is the traditional solution:

In a trustless environment, intermediation by lawyers & banks can provide security but the cost is high

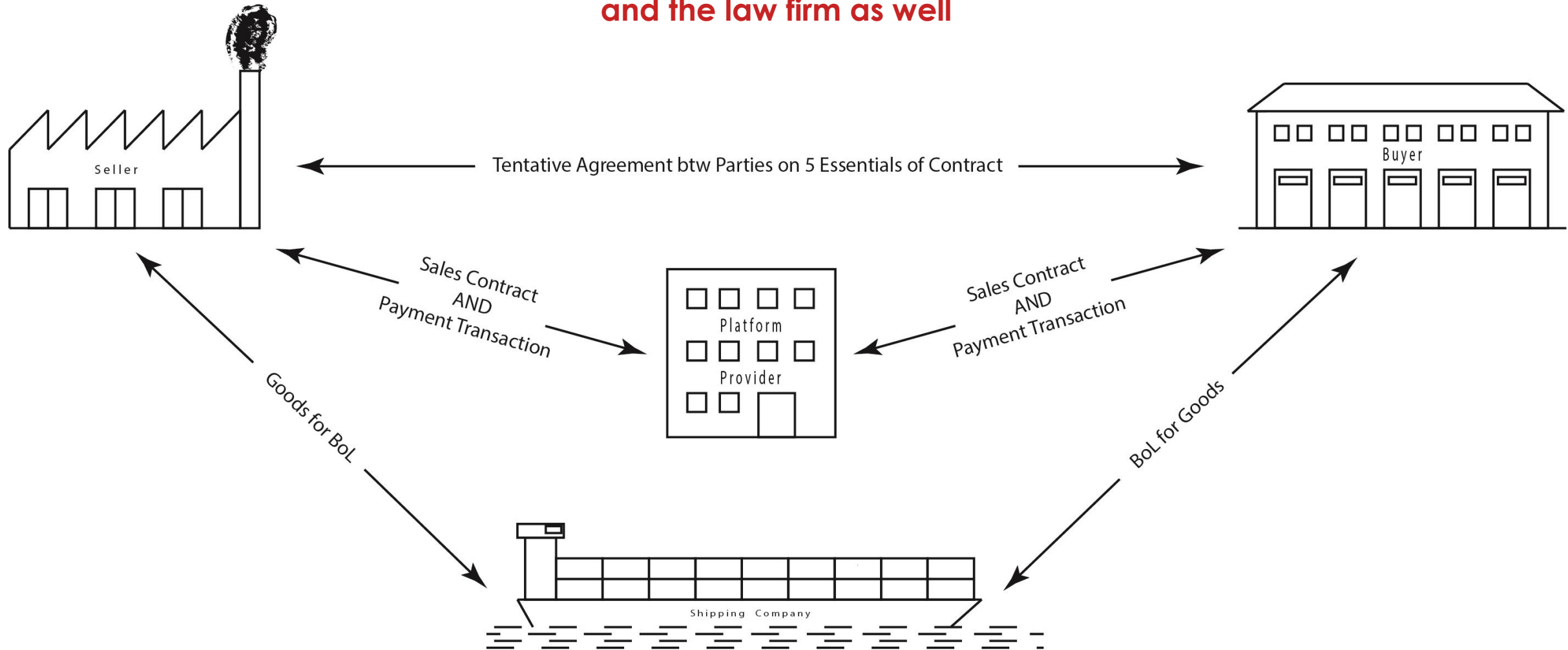




6. WHAT IS A “SMART CONTRACT” AND WHAT CAN WE DO WITH IT?

- Blockchain technology cuts out the banks...
- Artificial Intelligence will reduce the need for lawyers in repetitive or standard transactions...
 - Stage 1: intelligent but pre-programmed offers for contract clauses
 - Stage 2: intelligent offers for contract clauses learned from experience
 - Stage 3: merging in current data, e.g. about port congestion, to help make better choices with contract clauses

**With a smart contract, we can potentially cut out both banks,
and the law firm as well**



7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

1. Security

While the Blockchain itself is secure, users have to enter their private keys to access it. Nobody can remember those, we all copy/paste from some file on our computer. This is where **hackers** can attack... your data on your PC to find this kind of information:

Example for a transaction hash on the Ethereum Blockchain:

0x8de8d4861171a6bc04454f4c28232c025495472167f1ec79abd03
38e08942088

Example for a public key:

0xe098cef78407973b73d6490cf76278fc4df5114d

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

While public keys are traceable, anyone wishing to conceal their identity can open many wallets and not all service providers do the KYC and AML as required...

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

2. Mining and electricity consumption

To secure the “trustworthiness” of the blockchain, Bitcoin uses a Proof-of-Work system. Computing centers (“miners”) have to solve complex math problems to confirm new blocks on the chain = add more transactions

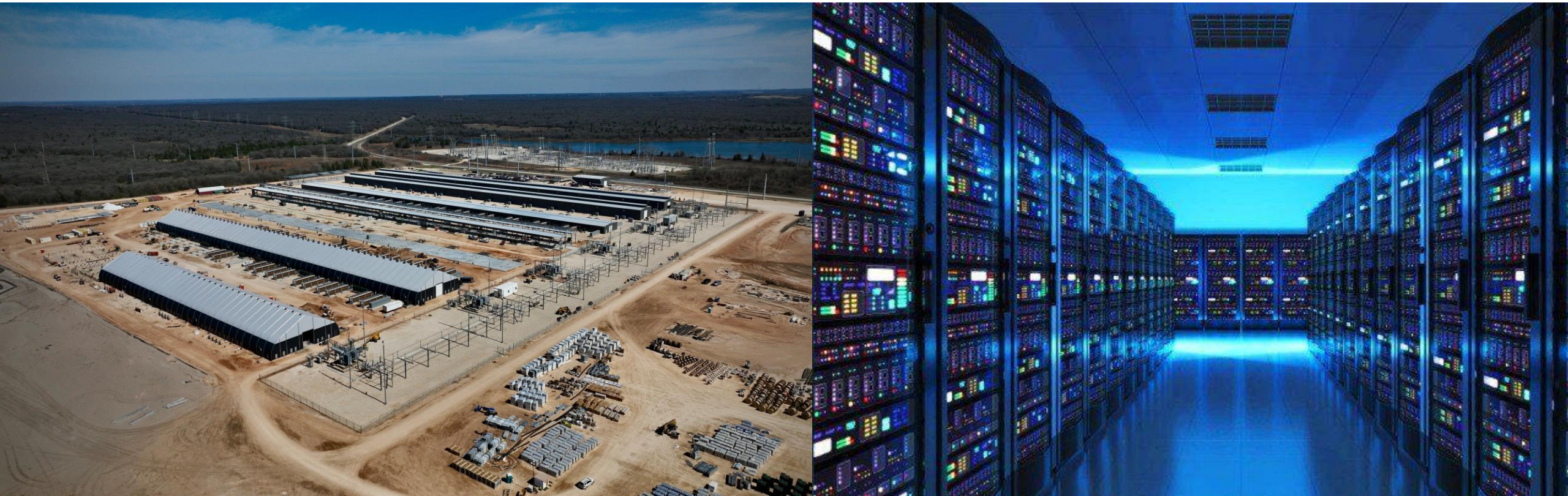
Bitcoin rewards successful miners currently with 6.25 Bitcoin for each new block = about every 10 minutes.

1 Bitcoin is currently around \$28,235 (20 April)

=> the miner gets about \$176,000 for a new block

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

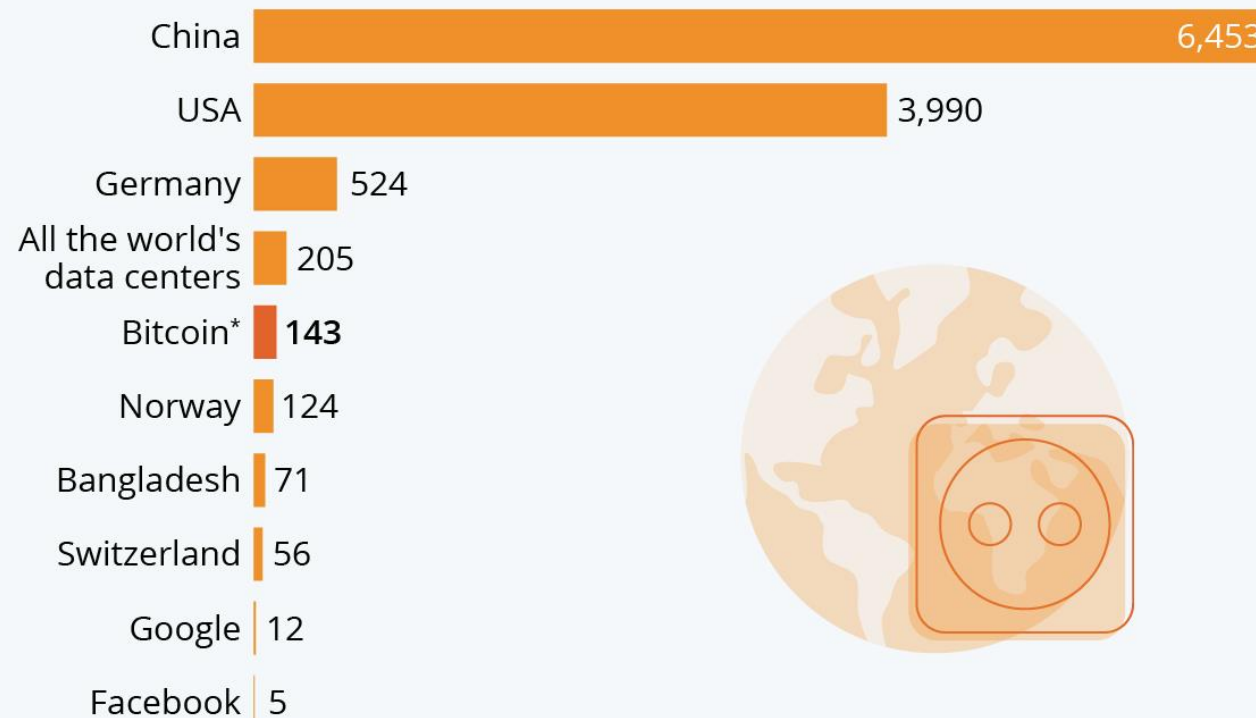
As a result, thousands of computer farms (“miners”) are competing to confirm each new block...



7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

Bitcoin Devours More Electricity Than Many Countries

Annual electricity consumption in comparison (in TWh)



And since much of the electricity in countries like China and Kazakhstan is made from coal, this also has a **HUGE** climate impact

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

3. Scalability and Cost

Transactions on a major blockchain (in particular Ethereum, the “Layer 1” chain for the vast majority of smart contracts and transactions) can take several minutes and cost “gas fees” in excess of \$10.

Imagine yourself in the checkout line at the supermarket...

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

4. Cross-Platform Integration

Integration of IoT Devices vs. Manual Data Entry in the global supply chain

- **Trackx** and **LaneAxis** are in the cloud but not on a Blockchain
- IBM – Maersk **TradeLens** and **Zerynth** claim to be on chain but how many partners and how does data enter?

=> In a trustless environment, trust can be created by third party intermediaries (expensive etc. see above) or by automated devices = IoT devices

The Problem

- Tens of thousands of service providers in 200 countries around the world have to get connected and use the IoT devices

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

5. Legal

And here are some things we are still struggling with on the business application and legal side...

- Int'l harmonized rules for crypto traders, exchanges, markets in crypto assets
- Int'l harmonized rules for other financial services using crypto assets
- Elimination of exchange rate risk fiat -> crypto -> fiat with stablecoins

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

Legal Recognition of Smart Contracts for purposes such as

- Enforcement by courts
- Choice of arbitration vs. exclusive jurisdiction of courts, e.g. in real estate transactions
- Direct access to land registers and other public registers via Smart Contracts
for example payment obligations secured by charges on mobile assets entered into a public register (EBRD Model Law on Secured Transactions)

7. WHAT ARE THE STRENGTHS AND WEAKNESSES OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCIES?

6. Dispute Settlement

Have fun, trying to explain Blockchain technology to a judge who is still trying to figure out two-factor authentication to get into his e-mail.

Yet, this same judge has lifetime tenure. He will be in charge of your case and his courtroom for another 25 years.

Because of his tenure and his rather modest salary, he is neither particularly interested in educating himself about Blockchain, nor is the Government, always trying to cut budgets, going to offer much help.

And that is just the beginning...

=> When are **Automated Arbitration Procedures** via multi-sig Smart Contracts coming from **SmartArb**, **SVAMC**, others?

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

- Blockchain-based transactions are being conducted in an open marketplace, peer-to-peer. Anyone with access to internet can participate.
- There are hundreds of thousands of sellers and millions of buyers of Blockchain services.
- The technology is poorly understood by most of them.
- Large amounts of money are being transacted.
- Traditional, long-standing, and sophisticated oversight of financial service providers is easily circumvented.
- The potential for fraud, tax evasion, money laundering, crime- and terrorism funding, etc. is significant.

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

- The price of crypto money is not regulated but determined in the market
- The price you get is the price somebody else is willing to pay
- Millions of people around the world have bought into the crypto market and strong demand can drive the price up very fast
- This facilitates “pump and dump” schemes
- Some coins or tokens have increased by more than 100% in a single day; others have crashed by more than 90% in a single day
- The interests of tax authorities, crypto users, third parties, developers, investors, platform operators, etc. all need some level of **protection!**
- The problem is that our legislators and regulators don't understand exactly who has to be protected, and how and how much...

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

- At the same time, Blockchain applications are complicated and development is time consuming and expensive.
- Developers of the technology, developers of business applications, and investors supporting the developers, need **a predictable legal environment** to commit time and money.
- Regulatory guidance should provide reliable information what will be allowed, and on what conditions, in the foreseeable future.

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

Three Questions and Not a Lot of Answers

#1 What would be the ideal regulatory environment for Blockchain and DLT technology that encourages the development of legitimate use cases of the technology while providing a high level of protection for investors, developers, users, consumers, tax collectors, public security, and the environment?

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

- Internet and Blockchain technology are **global and not subject to national borders**.
- Restrictive regulations in one country can be circumvented by moving operations to other countries.
- At the same time, companies complying with high quality protections in one country should be able to operate in other countries (passport system).

⇒ Regulation should be global.

Option 1: Common standards in int'l treaties and conventions

Option 2: Mutual recognition of high quality national standards

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

#2 As long we don't have a widely recognized and applied global convention, and we certainly don't seem to be willing to start some mutual recognition, what can the EU, the U.S., and other countries do to provide the best possible solution to the goals outlined in the first question at the national level?

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

- Drafting int'l conventions with 200 countries is hard, getting wide recognition and effective application is harder.
- We rarely even manage at the level of the wealthy Western democracies, let alone globally.
- However, high quality legislation/regulation by the most technologically advanced country would present **a model** many would follow in national law and mutual recognition.
- Unfortunately, our governments are either too busy with self-enrichment, self-preservation and partisan posturing (U.S.), or too slow and complex (EU) to achieve any meaningful regulation.

8. WHAT KIND OF REGULATION DO WE NEED TO HARNESS THE STRENGTHS AND DEAL WITH THE WEAKNESSES?

#3 While we are waiting for clear legislative guidance from the EU or the United States, i.e. in our current real-world situation, what can and what should the different actors do, i.e. national regulatory agencies with direct powers, the governments of the several states, the self-regulatory bodies in the (financial) industry?

9. WHO SHOULD BE REGULATING AND HOW?

- Blockchain and DLT is the ultimate kryptonite for **parochial politics**. Any kind of regulation at the local, state, national, or even regional level is easily circumvented by bona fide developers and, in particular, criminal enterprises...
- The best solution would be a **worldwide agreement** in the form of a convention that sets certain standards and protections and is ratified and applied by all countries.
- That is not going to happen as long as we don't fully understand all the risks and opportunities and as long as some jurisdictions can benefit by having more welcoming laws.
- Until then, we will have a patchwork of rules, forum shopping and arbitrage, and, hopefully, at least some international cooperation and mutual recognition...

9. WHO SHOULD BE REGULATING AND HOW?

At the very least, the agencies, the local governments, and the industry associations, should start talking to each other and **pulling in the same direction**.

We could do even better, however, by remembering also the full-faith-and-credit clause = the **passport system**.

And the **procedures and requirements** for SEC or CFTC and similar registration need to be **streamlined, made more accessible, and cheaper**.

10. HOW IS THE REGULATION GOING SO FAR?

The **SEC** qualifies digital currencies as securities pursuant to laws and legal precedent from the 1930s and 40s, requires registration of issuers

The **CFTC** qualifies digital currencies as commodities pursuant to laws from the 1930s, requires registration of brokers and exchanges

The **IRS** qualifies digital currencies as property and NOT currency, collects capital gains taxes

FinCEN qualifies digital currencies as currency, requires KYC and AML procedures

The **Fed** is wondering whether to issue a federal stable coin

The **OCC** is gradually trying to bring banks into the crypto space to prevent their marginalization

The **CFPB** seems to be at least awake now, after Biden's executive order

And the **several states** are competing with inviting (Wyoming, Utah...) or uninviting (New York...) Blockchain businesses

10. HOW IS THE REGULATION GOING SO FAR?

For example, if you want to do business with crypto in new York...

You probably need to register with the SEC and with the CFTC

You definitely need to observe the rules of and report to FinCEN

You have to follow the rules of OFAC

You may need a license from OCC (for example if you are doing DeFi lending etc.)

And then you have to get a NY BitLicense.... Have fun with that:

10. HOW IS THE REGULATION GOING SO FAR?

The New York BitLicense in a nutshell...

- \$5,000 application fee
- Organization chart
- Complex disclosures about identity and background of all owners, senior managers, and funds managers (incl. fingerprints etc.)
- Full financial disclosures for all of these, incl. verification of tax compliance, criminal record etc.
- Detailed description of the business model, customer base, marketing strategy, etc.
- Full disclosure of all banking arrangements
- Submission of all written policies and procedures, incl. insurance policies
- Explanation of the methodology of valuation of all virtual currencies AND maintenance of crypto in the full amount owed or obligated to any third persons
- Regular reporting requirements

If approved, license does not apply to any changes in the business model, and can be withdrawn at any time = stricter than any obligation on traditional financial service providers in NYC

10. HOW IS THE REGULATION GOING SO FAR?

- The SEC definition of investment contracts is broad enough to cover (most? all?) NFTs as **securities**
- The CFTC definition of **commodities** is broad enough to cover (most? all?) NFTs => the question will be about derivatives or futures trading

=> Issuers also have to comply with FinCEN and OFAC controls

The SEC, in particular, has become quite impatient with unregistered and unlicensed issuers...

=> I have been URGING issuers to register with the SEC

AND to incorporate in Wyoming only (or maybe Utah next)

And even that does not protect against NY BitLicense law, which is required for anyone engaging in virtual currency business „involving New York or a New York Resident“ regardless where they are based

10. HOW IS THE REGULATION GOING SO FAR?

And What Good Do All These Regulations and Procedures Do?

Sam Bankman-Fried's FTX Exchange, seeking to be fully compliant,

- sought and obtained registration with FinCEN as an MSB,
- relied on Fenwick & West LLP for its BSA KYC documentation and compliance program,
- was a registered and regulated commodity derivatives exchange and clearinghouse, held three licenses with the U.S. Commodity Futures Trading Commission (CFTC),
- implemented an extensive audit program for anti-money laundering (AML) compliance,
- maintained full US GAAP financial audit compliance with the help of Grant Thornton LLP,
- and was separately licensed in no fewer than 31 of the several states

And yet, the 36 Trillion \$\$ business basically imploded within 36 hours in November 2022.

10. HOW IS THE REGULATION GOING SO FAR?

And What Are Other Countries Doing?

3 basic approaches

#1 prohibit everything (until their central bank/authorities have an official digital currency and control everything = China, Russia, India)

#2 allow everything (to attract investors and high tech jobs, devil may care = Wyoming, El Salvador)

#3 try to write sensible regulation without fully understanding what is going on and what will be needed beyond the present day (= EU, UK, Switzerland, Japan, Australia, Singapore, South Korea)

10. HOW IS THE REGULATION GOING SO FAR?

And the EU, in particular?

- In the absence of common EU law, the MSs can legislate (Estonia, Malta, etc.)
- The **EU Regulation for Markets in Crypto Assets** has been intensely negotiated since 2018 and was finally adopted on 20 April 2023 – talk about timing 😊
- It is supposed to enter into force by 2024 or early 2025 for all 27 MSs
- It has 168 pages of legalese and is part of a 700 page „digital finance package“ of new EU legislation
- That is multiple times the volume of the UCC statutory language and competes nicely with the entire civil codes of France or Germany
- And it will be about 5 years outdated by the time it enters into force
- But otherwise, „A“ for effort

10. HOW IS THE REGULATION GOING SO FAR?

In other words...

... there are still golden opportunities for alternative legislative drafters, for example

- The ABA has presented a pretty decent “White Paper on Digital and Digitized Assets: Federal and State Jurisdictional Issues”
- The Uniform Law Commission has already drawn up the changes recommended for the UCC, including a new Article 12 on Controllable Electronic Records
- The Law Society of the UK has presented Legal and Regulatory Guidance for Blockchain

We just have to read and put together the best of everything 😊

11. WHAT KIND OF PROBLEMS ARE LAWYERS ALREADY SEEING?

Instead of 2 participants in a contract, we now have 3

→ 3 x 3 potential disputes

Buyer ↔ Seller

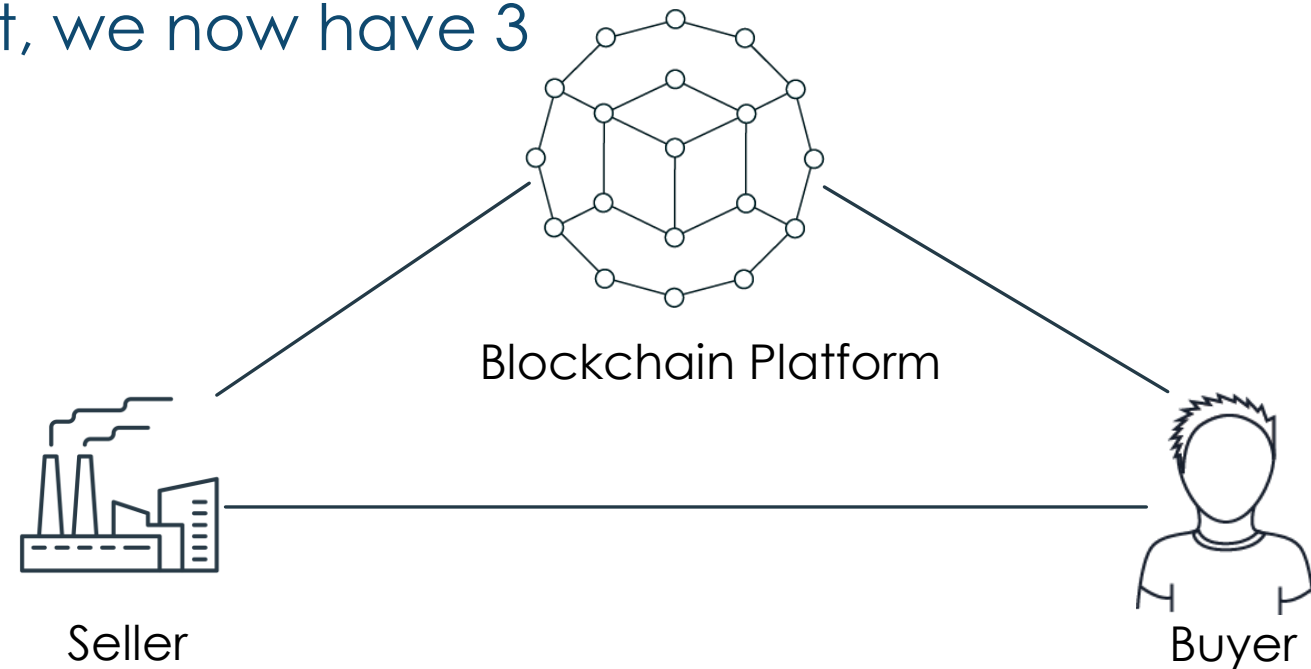
Buyer ↔ Platform

Seller ↔ Platform

Problems over contract formation

Problems over contract performance

Problems during contract enforcement



11. WHAT KIND OF PROBLEMS ARE LAWYERS ALREADY SEEING?

For now, most of the work is in compliance for crypto businesses, from patent and trademark, KYC and AML, and all the fun stuff the regulators throw at us!

But attorneys are also seeing clients who lost their cryptocurrencies to hackers, or in “pump-and-dump” schemes; and attorneys and arbitrators already have to deal with smart contracts that did not execute as intended but it may not be clear whether that is a user / data entry problem or a platform / programming problem;

and more is coming, that's for sure!

12. WHAT IS THE FUTURE GOING TO BRING?

The future has always been uncertain

In our times of ever faster changes, the future is probably more uncertain than ever

My crystal ball is as good
or as bad as yours...



12. WHAT IS THE FUTURE GOING TO BRING?

But a few things are pretty much guaranteed:

#1 Blockchain and smart contracts are here to stay

#2 Regulation will be patchwork, lagging behind at best, becoming an obstacle at worst

#3 Smart lawyers will be called upon to solve the problems via contracts and arbitration

#4 Not-so-smart-lawyers will increasingly be replaced by smart contracts and AI

12. WHAT IS THE FUTURE GOING TO BRING?

The Choice Is Yours

Every single one of us has to make a choice:

Do you want to embrace the technology and survive and thrive?

Or do you want to stick your head in the sand and hope to live out your career days without having to deal with this stuff?

Just remember that I have been doing this for a while and yet, I have consistently underestimated the speed and depth of the changes as they are coming at us...

12. WHAT IS THE FUTURE GOING TO BRING?

If you are an optimist, watch
“Better Than Us” on Netflix



If you are more of a pessimist,
(re-)watch the Terminator movies
and Skynet taking over...



Thank you!

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