Legal sides of blockchain

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With Focus on Digital Media and E-commerce

A #haavindtech Special Report

Haavind

Blockchain.

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Probably *the* tech buzzword of 2017. It will continue to be a much-discussed topic in 2018. Is it just a hype, or will it fundamentally change markets? The truth is probably somewhere in between. Many industries are looking into if and how blockchain will affect their interests. In this report, we are looking into the potential of disruption of operations in the digital media and e-commerce sectors — and the legal aspects.

Introduction by Andreas Bernt, partner/Technology, Media & IPR

Two of the sectors most deeply affected by digitalization are the media and the commerce sectors. Perhaps will these sectors also be among the first to really adopt blockchain technology?

One of the first industries that really felt the effects of digitalization directly on its business models was the media sector. While media content was something users in the pre-internet age was more than ready to pay for, the widespread availability and commoditization of content caused by the Internet changed the whole value chain from author, via generator (typically media conglomerates), to consumers. Secondly, the piracy problem has undermined users' willingness to pay for content. Consumers are now accustomed to having free access to content, although an increased will to pay for premium content is evident. The revenue leakage has only partially been recovered through new consumption models and general increase in media consumption.

Another sector deeply affected is the commerce sector. Slow at first, then deep and fundamentally in the latest years. Almost every thinkable asset is being sold and purchased online. With the rise of Internet of Things (IoT), the e-commerce sector is on the brink of taking new leaps. The e-commerce sector has embraced and met the demand for personalized customer experiences, and the use of data to understand customers' habits and preferences. The next step may be smart purchases, in the meaning of automated purchases made by connected devices.

So will these sectors again be subject to a deep disruption because of blockchain? Nobody knows, but both sectors have inherent traits that make them particularly receptacle for blockchain disruption. And, if so, will it have a legal side to it? Most certainly.

Asking the wrong questions?

For some, asking questions such as the liability of blockchain Decentralized Autonomous Organizations (DAO), enforcability of smart contracts, and the compatibility of blockchain structures with financial regulations is simply asking the wrong questions.

Some might mean that the blockchain is a revolutionary technology, to which the world and legal framework must adapt – and that the concept of blockchains is to render traditional legal concepts obsolete.

That is one view. We believe that assessing blockchain technology in light of present legal frameworks is important. We do not believe that regulators and legislators will allow a technology to remain completely unregulated.

1. What is Blockchain?

One way to explain blockchain in its simplest form is that it is a decentralised technology for recording transactions.

Blockchain is a peer-to-peer technology, providing basis for transfer of payments and contracts without the need for an intermediate. In some ways, it is as underlying as the transmission protocols which enabled peer-to-peer communication via the Internet.

Blockchain is possible due to several factors; such as the communication means provided by the Internet, the dramatic increase in data calculation power in the world, and the ever-decreasing cost of data storage.

The blockchain technology first became known in 2008-2009, supporting the Bitcoin digital currency. The principles are now used more widely. A blockchain is a digital, immutable, and distributed ledger which records transactions as they occur.

In an ideal blockchain system, the ledger is instantly replicated in a large number of decentralized, but identical, databases. The databases are individually hosted and maintained by an interested party.

When transactions are entered in one copy, all copies of the database are simultaneously updated. The databases all stores records of the transactions. And because there is a prerequisite that each transaction is built upon the previous transactions (creating a "chain"), and by a consensus of the different databases (nodes), all transactions are permanently and irrevocably traceable in all ledgers.

The potential fundamental effect of the blockchain system is that transactions can happen in real time, without the need for third-party intermediaries to verify or transfer ownership.

An example: Real estate transactions.

When real property is sold today in the Norwegian market, the transaction is agreed to when seller and the buyer enters into an agreement. However, the process of effecting the purchase may take weeks. The buyer needs to be sure the seller actually has ownership of the property, and that title will be transferred to him, before releasing the funds. On the other side, the seller wants to be sure to receive the funds before transferring the title.

To ensure the interests of both parties, they use a trusted intermediary (in Norway a real estate broker) who receives funds from the buyer and does not release them to the seller before the buyer has been entered into the official registries as owner. The blockchain technology has the potential to remove the need of the intermediary, completing the transaction in real time and with absolute notoriety.

5 Principles of blockchain

To further explain the blockchain technology, it might be advantageous to keep in mind the following five principles, as formulated by Marco Iansiti and Karim R. Lakhani in "The Truth About Blockchain", Harvard Business Review, Jan–Feb 2017 issue (p. 127, pp.118–127):[1]

1. Distributed Database

Each party on a blockchain has access to the entire database and its complete history. No single party controls the data or the information. Every party can verify the records of its transaction partners directly, without an intermediary.

2. Peer-to-Peer Transmission

Communication occurs directly between peers instead of through a central node. Each node stores and forwards information to all other nodes.

3. Transparency with Pseudonymity

Every transaction and its associated value are visible to anyone with access to the system. Each node, or user, on a blockchain has a unique 30-plus-character alphanumeric address that identifies it. Users can choose to remain anonymous or provide proof of their identity to others. Transactions occur between blockchain addresses.
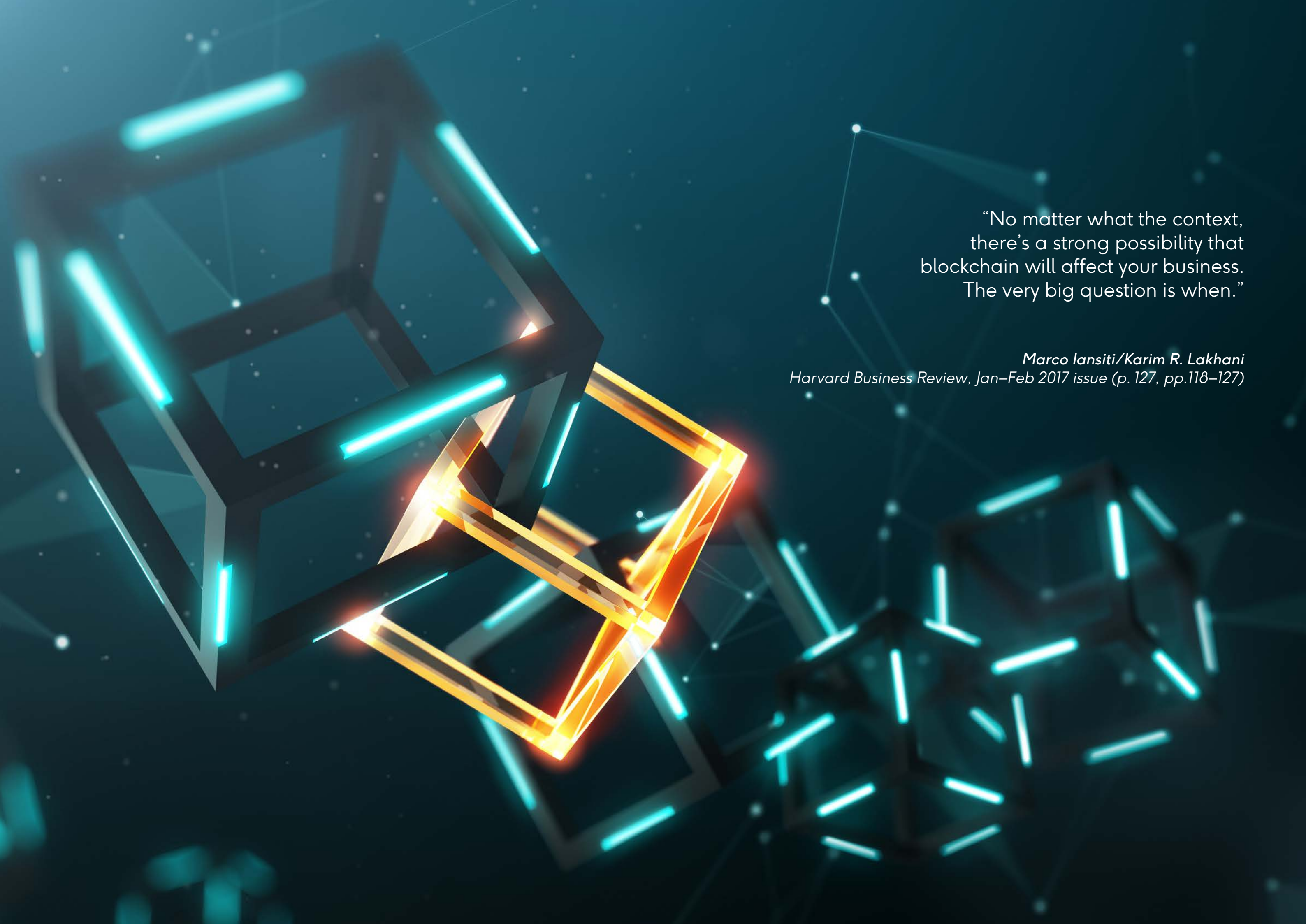
4. Irreversibility of Records

Once a transaction is entered in the database and the accounts are updated, the records cannot be altered, because they're linked to every transaction record that came before them (hence the term "chain"). Various computational algorithms and approaches are deployed to ensure that the recording on the database is permanent, chronologically ordered, and available to all others on the network.

5. Computational Logic

The digital nature of the ledger means that blockchain transactions can be tied to computational logic and in essence programmed. So users can set up algorithms and rules that automatically trigger transactions between nodes.

[1] Marco Iansiti and Karim R. Lakhani, "The Truth About Blockchain", Harvard Business Review, Jan–Feb 2017 issue (p. 127, pp.118–127). Buy the full article here: https://hbr.org/product/the-truth-about-blockchain/R1701J-PDF-ENG, or read an online version here: https://hbr.org/2017/01/the-truth-about-blockchain

"No matter what the context, there's a strong possibility that blockchain will affect your business. The very big question is when."

2. Blockchain in the Media Sector

Micro payments and smart contracts may create new sources of revenue in the media and entertainment sector and change business models.

In the recent years, the media value chain has experienced huge shifts in their revenue models. The Internet and digitalization fundamentally changed many ways in how consumers of media content paid for their consumption, and what the consumers are willing to pay for. Still – the legal and financial framework is traditional.

The current revenue structures
The music industry is of course the traditional and well-worn example. Ten years ago, consumers were buying albums on CDs for NOK 180 apiece. Now, most consumers pays for music through a NOK 89 per month streaming subscription.

Arguably, the value chain have not changed as much as the revenue models. The value chain still consists of the same players: Creators, aggregators, distributors, and consumers. And, as parties throughout this chain: Payment providers.

When a consumer listens to a piece of music, revenue typically goes through a distributor (as Apple Music) and a collecting society (as PRS or TONO) before finding its way to the creator.

Similarly, the news media are establishing new revenue sources. Taking advantage of the increased willingness to pay for premium content online, the typical fee structure for the news media is to sell subscriptions to consumers, giving access to all of the premium content published by the media company in question.

We can add the streaming TV providers to the mix, where the typical successful revenue model is selling access to a large menu of content to consumers for a *monthly subscription fee*.
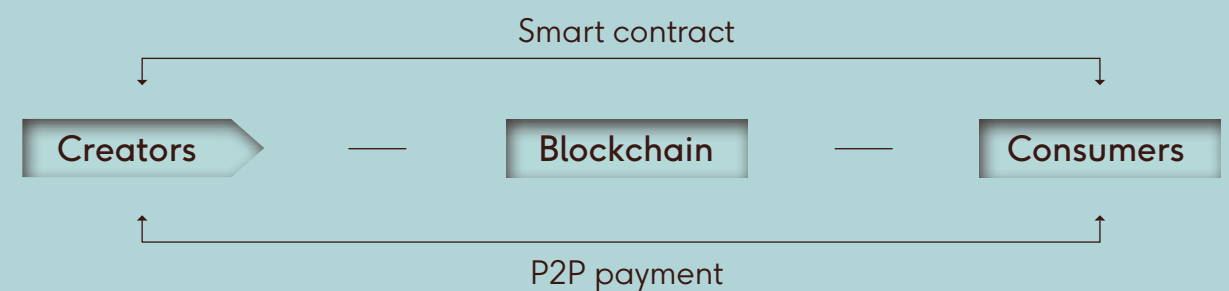
The model makes perfect sense in today's world: The model ensures steady revenues for the media providers, and an effective payment system.

On the legal side, the mechanisms of such a model is largely traditional. The consumer enters into a contract with the provider, establishing a legal basis for a recurring payment and access to the content. Through an agreement with a *payment intermediate,* the consumer is in a position to set up a recurring payment to the media provider. On the other side of the transaction, the media provider has entered into other contractual arrangements, which facilitates the reception of those funds.

Current revenue structure

Creators — Aggregators — Distributors — Consumers — Contratual relations — Payment provider
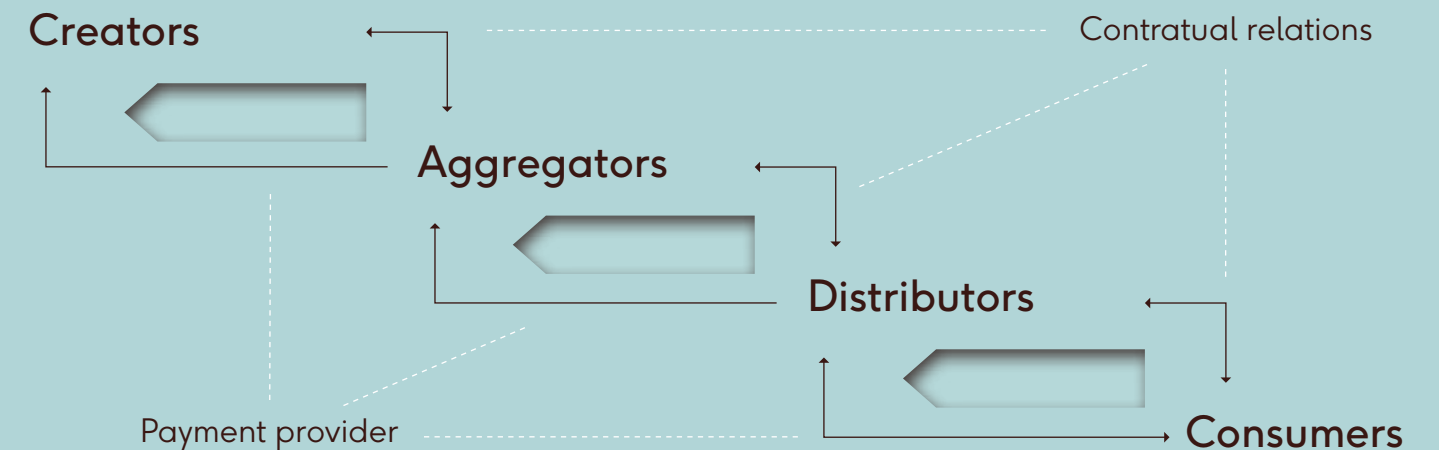
Possible new revenue structure

Smart contract

Creators — Blockchain — Consumers

P2P payment

Taking the music business example, the value chain is somewhat more complex, with consumers, media providers, multiple collecting societies, and authors. All these are connected by traditional agreements and with payment providers facilitating transfer and disbursement of fees and revenue. Still, the basis for this revenue model is found in the legal framework made by different contracts and payment solutions.

Changing revenue structures?

What if... the blockchain technology facilitates a completely new commercial and legal basis for media consumption?

Today, using *micro payments* for individual access to streamed songs or articles are not commonplace. The transactional costs and the practical difficulties in agreeing to access and processing payment for a one minute read of single article or one stream of one song means that it is simply not practicable. A subscription and access to a larger library of content is the practical solution.

With the blockchain this structure could change. Blockchain technology may permit bypassing several of the traditional players in the media value chain, and facilitate practicable payments through smart contracts.

While not all elements of the blockchain technology is explored, let us try to imagine where it might go:

Smart contracts are basically computer codes that act as a "contract" – as the code execute a certain activity when certain criteria are met. The terms of the agreement can be pre-programmed with the ability to self-execute and self-enforce itself. They are linked to blockchain technology, whereby an occurrence sets of a smart contract and a

connected transfer of funds directly peer-to-peer. Perhaps a piece of music can be integrated with a smart contract code which executes when a consumer listens to a song: The activity of listening to the song automatically executes a smart contract between the consumer and the copyright holder, and a fee in a digital currency is instantly and directly transferred to the copyright owner. The activity and the immediate payment is recorded in the blockchain, decentralized, transparent and without the need for identification other than provided by the pseudonyms in the chain.

If blockchain technology enables this, the need for an intermediary such as a payment provider or an aggregator (e.g. a collecting society) disappears. It can be argued that blockchain may shift power to the original copyright owners, making aggregators, platform providers, and collecting societies obsolete.

In the digital news market, one could imagine that a news article sets of a smart contract code, self-executing when a consumer reads the article. A micro-payment is similarly and in real time executed from the consumer to the news provider, removing the need for tiresome acceptance of T&Cs or the provision of an external mean of payment. If this ever becomes practically possible, it may change the fundamentals of how news media sets up its commercial basis.

Legal issues with blockchain

While the examples above may seem trivial enough, they are merely scratching the surface of blockchain and smart contracts. How this translates into the established legal structure is not straight-forward.

There are obvious legal challenges.

Smart contracts might not be 'contracts'

What we describe as smart contracts are codes run on a blockchain, which means that the consensus base of blockchain technology must be taken into account. Secondly, a smart contract may control assets in the blockchain, such as digital currency. And thirdly, since it is executed by the blockchain, it cannot be altered or interfered with after it is recorded in the ledger.

Most legal systems in the world has a framework for contracts. There are rules on how a contract is entered into, how it is enforced, and how it is cancelled. A 'smart contract' may fail to meet the legal definition of a 'contract', and the blockchain system may mean that it is impossible to remove or cancel a deal recorded in the chain.

How the legal system will respond to the concept of 'smart contracts' and blockchain remains to be seen. The key takeaway is still that the technology enables payments directly from users to content owners without the need for intermediaries. It may change the balance of the market.

Jurisdictional issues

While jurisdiction online in general is a challenging issue, this can potentially be even more challenging in a blockchain environment.

As other Internet-based tools and services, blockchain has the ability to cross all jurisdictional boundaries. A blockchain transaction is at its core decentralised, and may be performed and recorded simultaneously on nodes in numerous locations, all operated under different sets of rules (or absence of such). In an event of an erroneous transaction – which jurisdiction apply? This is a question which must be solved in a commercial operation.

The question may also arise if a new model is to be adjusted according to the existing legal frameworks for creators and media companies. For instance, if micro payments are a viable business model for content creators within music, how would that affect the largely exclusive mandates of the current collecting societies? Today, licenses are often entered into with collective societies on a jurisdiction by jurisdiction basis. The blockchain technology is not terrestrial, and may challenge this practice.

Data privacy

Another legal issue with blockchain is of course the ever present issue with data protection and privacy.

All over Europe, media providers are currently adjusting their business operations to the new GDPR data protection regime. All personal data is subject to regulation. While blockchain databases are in theory created to ensure peer-to-peer transactions without the need for the parties to identify one to each other, the databases do contain vast amounts of information on the activities and transactions of individuals. It is suggested that it is possible to deanonymize Bitcoin users.[2] If so, use of blockchains for media companies in Europe may have a side to the usage of data in the chain.

[2] Biryukov/Khovratovich/Pustogarov, Deanonymisation of Clients in Bitcoin P2P Network, University of Luxembourg, arXiv:1405.7418 [cs.CR]

"We're All E-Commerce Companies Now"

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B. Bonin Bough
Vice President of Global Media and Consumer Engagement
at Mondelez International, 2012 Harvard Business Review, May 03, 2012

3. Blockchain in the E-Commerce Sector

While the obvious use for blockchain in the e-commerce sector is crypto currency, further implications are possible.

In May 2012, B. Bonin Bough of Mondelez International wrote the article "We're All E-Commerce Companies Now". The introduction of the article was clear: "The day of e-commerce is finally here".

Five and a half year later, the commerce sector has taken giant strides into e-commerce. From 2014 to 2016, Alibaba enjoyed 50% annualized growth rate, while Amazon grew 55.8% annually. The year of 2017 saw the growth in e-commerce continue, with consumers buying everything online. Delivery methods are currently evolving from parcel delivery to a variety of delivery methods including express delivery to doorsteps and in parked connected cars.[3] Another Norwegian retailer is experimenting with self-driving delivery cars.[4]

Delivery methods does not by itself have much to do with blockchain – but blockchain may have an impact on that and other sides of e-commerce.

Embracing blockchain

That e-commerce players are embracing blockchain currencies is clear. Already in 2014, a major player such as Expedia announced it was accepting bitcoin as a form of payment. Accepting digital currencies is a leap, but that alone will not disrupt the e-commerce sector.

Perhaps the digital currencies have greater ability to change e-commerce in emerging countries. The concept of leapfrogging is well known, where emerging economies leapfrogs straight from analogue concepts to second (or third, fourth, etc.) generation digital technologies. Because it was explicitly designed to function in an environment where participants cannot necessarily trust each other, blockchain may prove particularly useful in economies suffering under the absence of reliable payment intermediaries. Secondly, the concept of an international digital currency might help to overcome challenges caused by unstable currencies.

On a general level, blockchain may disrupt the e-commerce sector by providing payment and smart contracts, which eliminates the intermediaries.

Today, a consumer buying goods online will typically use a payment provider that provides a form of security for delivery. Either by built in insurance policies in credit cards, or by a digital payment provider releasing funds upon a confirmation of receipt.

Does blockchain solve the "trust" issue when physical deliveries are involved?

The key of blockchain technology may be the technology facilitates "trustless" transactions, i.e. eliminating the need for a trusted intermediate. Secondly, it opens for smart contracts, e.g. whereby the payment automatically is executed when a certain criteria is met.

The smart contract is stored in the blockchain, making it impossible for the parties to change the contract before delivery. One can imagine that the smart contracts can be automatically set of upon delivery, e.g. by having a smart contract which determines that a payment of 0,05 bitcoins shall be performed when delivery has been confirmed by the closing of the boot of a connected car.

However, hybrid digital/physical transactions is not currently without complexions. The complexity arises whenever the exchange is payment for the delivery of a physical item. Delivery of physical items would require intervention which lies outside the blockchain. One solution is for the smart contract to provide an escrow service until delivery has been completed, but it leaves the sender exposed to essentially the same risks as in any escrow arrangement: Such as the party receiving the physical item not releasing the funds.

It can be argued that the blockchain does not offer more "trustless" transactions than the presence of a traditional payment provider when physical deliveries are in play. As soon as parts of the transactions happens outside the blockchain (as opposed to solely digital transactions) the trust element must be worked out.

Consequently, the qualities of blockchain technology in by self does not necessarily revolutionise commercial transactions, such as in e-commerce, but usage is dependent on concrete circumstances and further development.

Legal issues with blockchain

Legal uncertainty regarding 'smart contracts'
As stated under the media chapter, how the legal system will respond to the concept of 'smart contracts' and blockchain in general remains to be seen.

If IoT and blockchain is combined one might soon see transactions initiated without human intervention, such as a fridge buying milk based on a criteria in a smart contract. However, the enforceability of such smart contracts remain uncharted territory.

Consumer protection
The commerce sector is heavily regulated in Europe, especially when targeting consumers. Consumers have established rights when buying goods and services online. The use of automated smart contracts, and anonymous parties to a trade seriously challenges this extensive legal framework.

The smart contracts are often insufficient to regulate a number of matters often regulated between a buyer and a seller, such as liability, damages in case of delays and force majeure. While much may change, it is difficult to see at this point that e-commerce may be "liberated" from ordinary contractual relationships even if implementing blockchain technology on a wider scale.

Liability issues
Doing transactions using blockchain can mean that Decentralised Autonomous Organisations will be in play. The legal status of the DAOs (which is essentially a self-governing software) is highly unclear. What, if any, kind of liability a DAO or its founders, creators or operators may have in case of failure or fraudulent activity remains uncharted territory.

History so far has shown that blockchains also may be strictly controlled by a few individuals. One evidence was when a hack of ethereum was reversed through a 'hard fork', proving that blockchain transactions could be reversed – despite its fundamental principles of irreversibility through distribution. Such control also raises liability issues.

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[3] E.g. the Norwegian retailer marked.no delivering direcly to Volvos through Volvo In-Car Delivery (https://www.marked.no/mat/volvo-in-car-delivery)

[4] Kolonial.no: http://www.at.no/transport/2016-11-11/Automatisert-varelevering-23944.html

Trust in anonymity?

While blockchain may facilitate "trustless" and anonymous transactions, this may be at odds with traditional laws of obligations in transaction.

If the seller of digital or non-digital assets is anonymous, the rights established for consumers in Europe will quickly become illusory. There might be no one but a pseudonym to direct claims to in the case of faulted products or liability.

Compliance with financial regulation

While some may hold the opinion that blockchain by nature is intended to render established legal concepts and financial regulation obsolete, commercial players still need to assess usage of blockchain solutions in light of existing financial regulation.

In its 2017 report, the European Securities and Markets Authority stressed that the presence of distributed ledger technology "*does not liberate users from the need to comply with the existing regulatory framework*".

Commercial players should be aware that regulatory changes might occur, although many aspects are still uncharted. ESMA put it this way in February 2017: "*ESMA believes that it is premature to fully appreciate the changes that the technology could bring and the regulatory response that may be needed, given that the technology is still evolving and practical applications are limited both in number and scope*".[5]

VAT and taxes

The use of blockchain technology has already given rise to a number of new tax questions. Already in 2013 Haavind represented a Norwegian Bitcoin exchange with challenging the Norwegian Tax Authorities' former view that both sales and exchange of Bitcoins were subject to VAT. As late as in February 2017 the Norwegian Tax Administration finally made a u-turn announcing that Bitcoins were to be deemed as VAT exempt means of payment.

For Norwegian income and wealth tax purposes crypto currencies are considered as taxable assets. Combining this with the current extreme volatility of crypto currencies, the sale or even the use of crypto currency as means of payment may result in taxable profits or tax deductible losses. Haavind has produced a guideline for how such income and wealth should be reported for Norwegian tax purposes.

We expect that numerous new tax and VAT questions may arise from blockchain technology being adopted into other business sectors e.g. as means of recording a transaction, a claim, an enterprise share or a right to receive a service or goods. Who are the parties? What are the rights and obligations of each party? How should we report this? These and many other questions are yet to be examined.

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[5] ESMA: The Distributed Ledger Technology Applied to Securities Markets, pp. 2-3
(https://www.esma.europa.eu/sites/default/files/library/dlt_report_-_esma50-1121423017-285.pdf)
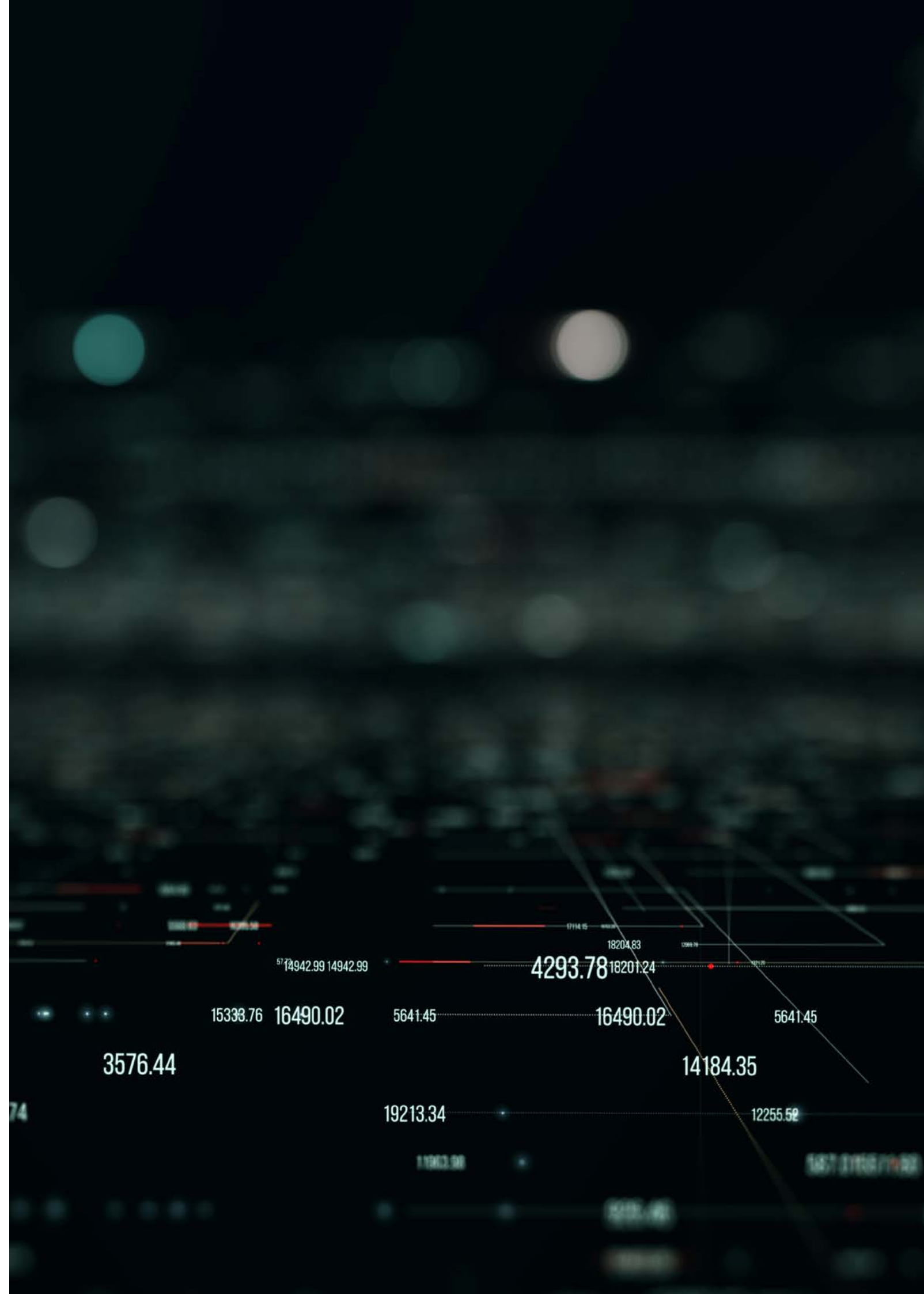
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