Roma
via di Porta Pinciana, 34
tel. +39 06 454 954 70
fax +39 06 454 954 76

Milano
via S. Pietro all'Orto, 17
tel. +39 02 87199502
fax +39 06 454 954 76

info@cmplaw.it
www.cmplaw.it

SENIOR ASSOCIATE
Claudia di Bernardino
claudiadibernardinocmplaw.it

Blockchain technology in the fashion industry: opportunities, applications and challenges

scritto da Claudia di Bernardino

1. What is blockchain and how it works

Blockchain is a distributed digital system maintaining records of events across a public or private computing network.
It is a form of distributed ledger technology (DLT).

Blockchain is made up of a series of blocks linked together.
In this context, a block is a collection of data. Each block contains:

- the information about transactions;
- the information about who is participating in the transactions;
- a unique code called a "hash" that allows you to tell it apart from every other block.

Every piece of information is automatically encrypted and added as a new block to the chain of historical records. Various consensus protocols are used to validate a new block with other participants before it can be added to the chain. When that new block is added to the chain, it becomes immediately visible to all users. It is possible to have access to transaction data, along with information about when ("Time"), where ("Height"), and by who ("Relayed By") the block was added.
The ledger can also be programmed with "smart contracts", a set of conditions recorded on blockchain, so that transactions automatically trigger when the conditions are met.
To summarise, blockchain can be defined as a continuously growing list of records.

The central feature of blockchain technology is a shared ledger based on consensus.
It is a shared ledger because the members of the network can have access to information contained, depending on the type of permits and keys available. Every participant has a copy of the ledger that contains the whole story of the transactions in the network.
Blockchain provides also a system of a distributed consensus in the digital universe. It fosters trust between all participating parties in the data chain as it eliminates the need for a third-party to validate the information.

Blockchain's core advantages are:

- decentralisation meaning it doesn't have any governing authority or a single person that control the data;

- immutability because the contents of the payload of each block cannot be changed after it is committed to the chain;
- transparency as every transaction and its associated value are visible to anyone with access to the network.

Blockchain can be:

- Public (or permissionless ledger): anyone can have access to the network, read, send transactions and add information or hold a copy of the record. It is considered to be entirely decentralised, in fact, no one has control over the network. (Examples: bitcoin, ethereum, litecoin).
- Private (or permissioned ledger): only certain individuals or single organisation are allowed to partecipate in blockchain network. Since its participating nodes are highly and intentionally restricted, it is considered a partially democratised version of distributed technology. It allows companies to create and centrally administer their own transactional networks that can be used inter or intra-company with partners. (Examples: Hyperledger, Multichain).
- Managed by a consortium: there are several organisations participating in its management. Each organisation runs one or more nodes and the data only allows desired user-identities within that system to read, send transactions and/or record data. (Examples: Quorum, Hyperledger and Corda).

There are many benefits of blockchain technology such as time saving, cost saving and tighter security.
The fact that no central authority verification is needed and the participants can share assets directly without no need of a mediator make the process faster and cheaper.
The system is also safe against cybercrime and fraud because there is no unauthorised access to blockchain made possible through permissions and cryptography.

2. Blockchain opportunities for the fashion industry: traceability and transparency of the supply chain and protection of intellectual property

Blockchain has been defined as "an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value" and in fact can be used in many different fields such as finance, insurance, payments, health care and many more.
In the fashion industry this technology has the potential to transform the way in which supply chain and intellectual property work.

Traceability and transparency of the supply chain

Blockchain offer many opportunities to guarantee traceability and transparency along the entire supply chain. With the application of this technology to the production and distribution chain of a company is possible to identify the different actors mapped as components of the network. The passage of a product from one actor to another is recorded in the network where each transaction is visible to all.

Blockchain allows consumers to know the origin of a product and potentially upstream the raw materials of which it is made of, to monitor and to control leaks from selective distribution networks, to assist in enforcing such agreements, to prevent unauthorised parallel imports and to prove country of origin for all parts of a product.
The traceability of a product also means that it can be safely traced back to a production entirely made in a territory, capable of increasing the reputation of the brand and its value on the market because consumers can verify the history of the product before buying it.
Moreover, the traceability of the production and distribution chain could reduce the cost and time of the audit activities thanks to a system that immediately reports and is able to provide a photograph of the state of compliance.
Today, the traceability and transparency of the manufacturing and distributing process with the identification of all the actors involved is particularly important for all the companies that intend to follow the rules of environmental and social sustainability and show sustainable-driven practices to consumers.
Sustainability, gains in the form of reduced environmental impact and better assurance of human rights and fair work practices, seem to be promising outcomes of blockchain applications.
A clear record of product history helps consumers to be confident about the choice of raw materials and their processing with minimal environmental impact, the respect of certain established criteria or standards in terms of energy consumption and the conditions of the workforce employed.
This is very close to the taste of the neo consumer, who now wants to buy sustainable and ethical brands.

Protection of intellectual property

Other opportunities of leveraging blockchain in the fashion industry are related to the protection of intellectual property.
Blockchain allows the ability to improve the protection of intellectual property for designers and brand owners.
The combination of blockchain and QR (Quick Response) code or RFID (Radio-frequency Identification) chips could represent a disruptive tool against counterfeiting. Blockchain in conjunction with identification labels could be used to track the entire manufacturing process. It will be possible for consumers to verify the

authenticity of the product as well as the path that led it from processing to the shelf only by approaching the label with a QR code or a microchip. This will reduce counterfeits and fraud even when the products are sold as second hand goods or through outlets or resales.
In addition, where there is a geolocation it will be possible to check, besides the validity of the trademark and its territorial protection, the respect by the licensee or distributor of the exclusive areas where the product can be marketed.
Adding scannable blockchain connected tags to products would also enhance the effectiveness of customs enforcement in the fight against counterfeits and assist when it comes to validating a genuine product by customs authorities.
Blockchain could also play an important role within the contest of copyright and unregistered design rights. It can provide evidence of the creation, existence, ownership and/or first use, qualification requirements and status of it.

Blockchain enables designers to document every phase of the creative process proving precisely when a feature was added to a design and by whom. This will provide unalterable proof in the event of a dispute. In addition, anyone who grants licenses to their designs or brands will be able to use this technology to track sales payments and royalties.

3. Blockchain applications in the fashion industry

The fashion industry has experienced several applications of blockchain to track the origin of products, prove their authenticity and quality and assert ethical claims and fair trade practices.
In 2015 Greats x Beastmode 2.0 Royale Chukka produced sneakers with smart labels that are recorded on blockchain, accommodate by Chronicaled. The smart label comprises the digital information and each item's limited edition number.
Another operative case of this technology in fashion is exemplified by the collaboration between London designer Martin Jarlgaard and Provenance. At Copenhagen Fashion Summit 2017, they presented garments that have smart tags integrated with blockchain, so that each phase of the production process is recorded and all actors involved in the process from farmer, designer, manufacturer until customers can register and track each step on blockchain via Provenance website or application.
Similarly, Babyghost in partnership with VeChain provided immutable ledger which is paired with either an NFC (Near-Field Communication) chip or QR code on each Babyghost product. Using the VeChain app consumers have access to all the information about the product and verify its authenticity by easily scan it.
In May 2019 LVMH, in collaboration with Microsoft and blockchain software company ConsenSys, launched a blockchain platform called Aura with the aim of providing the traceability and authenticity of the production process from the raw materials to the

point of sale and beyond.
This platform will make possible to have proof of provenance of products, to follow their life cycle, to protect intellectual property and to combat counterfeiting. It will be activated in the form of a white label and will allow absolute confidentiality of the data.
Recently Travis Scott has inspired a limited edition with Nike, Australian designer Chase Shiel and Australian company The Kickz Stand powered by VeChain blockchain. Sneakers are implanted with NFC chips that are linked to the Nike x VeChain application, accessible by smartphone, where consumers can see the certificate of authenticity, detailed product information, the journey of the sneakers, and exclusive Nike content, all stored on the VeChain blockchain.

4. European and Italian actions on blockchain

The European Commission put in place different actions on blockchain with the intent of developing a common approach to blockchain for the European Union.
The initiatives that the European Commission launched so far are:

- International Association for Trusted Blockchain Applications (INATBA),
- European Blockchain Partnership (EBP);
- European Union Blockchain Observatory and Forum;
- Horizon Prize on Blockchain for Social Good;
- Financing blockchain and distributed ledger technologies research and innovation projects. European Union sees at blockchain as a potential game changer with uses that include smart contracts in areas such as certifying product origin, education, transport, mobility, shipping, land registry, customs, company registry, and healthcare amongst others. The goals of these initiatives are to foster the understanding within European Union Institutions and Member States on the true nature and potential of this technology and to ensure that upcoming regulations promotes and boosts innovation in Europe.

Blockchains initiatives are starting to take place in Italy.
On 13 March 2019 MISE (Italian Ministry of Economic Development) presented the first project promoting the application of this technology in the textile sector in order to more effectively protect the Made in Italy.
This project represents the Italian contribution to a European initiative launched by UNECE (United Nations Economic Commission for Europe) in partnership with the European Union entitled “Transparency and Traceability for Sustainable Textile and Leather Value Chains”, founded by the European Commission.
With the support of IBM and SMI (Sistema Moda Italia), this pilot project identifies the advantages of blockchain for the textile sector as for traceability of products along the supply chain, certification of provenance and composition of the product, prevent

counterfeiting, social and environmental sustainability of Made in Italy productions.
The project started with a screening step carried out by IBM followed by a cooperative design thinking session with the participation of textile companies and associations in order to share informations regarding current production processes and related problems, identifying potential solutions based on blockchain.
This kind of cooperation has enabled IBM to get a full picture of production processes, supply chain and related issues. The screening showed that the most effective way of protecting Made in Italy products is through traceability. Thanks to blockchain, every step of the production and supply chain can be registered in a scalable, tamper-resistant, and permanent universal ledger.
Companies could benefit from a program that enables them to reach a high level of reputation without high costs and subsequently protect their products from counterfeiting.

5. Challenges for the legal sector

The surprisingly high pace with which blockchain has been evolving in the recent years brings challenges for the legal sector.
As this technology become more used the law is expected to face looming questions concerning whether and how blockchain can be regulated, the risks of removing intermediaries from transactions, the creation of key principles or operating standards, the security risks or gains of using blockchain, how to manage digital rights, the implications for data privacy, how the general principles of traditional contract law can be applied to smart contracts.
These and many other issues will occur whilst developing a set of rules to be applied for the purpose of regulating the application of this technology.
Blockchain may represent a great chance for innovation for contracting. The implementation of blockchain will involve the necessary rewriting of the contract law considering the automated and deterministic nature of smart contracts that will also need new criteria to ensure their validity and enforceability. In order to do so, the technological and legal fields will have to play a constructive role and cooperate to show how this is achievable.
Indeed, blockchain has been appointed as the biggest social change since the internet and, like the internet, is a foundational technology that can have an impact on potentially everything.
In order to move forward blockchain solutions and legal frameworks need to work in partnership.
All the above is a call for action to all stakeholders, including regulators and legislators.