

Smart Contracts as a challenge to contract law

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Abstract:

The capacity to obtain remuneration from travel insurance without the requirement of submitting a claim, to penetrate seasonal lodging without the involvement of intermediaries as a consequence of the utilisation of interconnected apartments, and to be assured of compensation for a particular service are illustrative examples of the ways in which technology is transforming the manner in which we interact with the world around us. The aforementioned possibilities are made possible by the advent of technology, particularly blockchain contracts, which are commonly referred to as smart contracts. Such contracts are essentially computer-generated restatements of a contractual commitment to insure, which are automatically prosecuted. The blockchain is a database in which all transactions and agreements conducted by users are recorded from the outset. It is distributed and accessible free of charge. The smart contract is not a novel concept; however, with the advent of blockchain technology, it is undergoing a transformation that may challenge traditional aspects of contract law. This study aims to examine the impact of smart contracts on contract law.

Key words: smart contract; blockchain; contract law; concluding; executing.

Introduction:

The subject of blockchain, which has gained considerable attention in recent times due to its association with the Bitcoin phenomenon, is currently one of the most widely discussed topics in the context of potential applications in the context of the fourth industrial revolution. The advent of new technologies and the growing awareness of the need to regulate data on the Internet has led to the primary interest of the 4th industrial revolution being the almost total disruption of historical uses and references. In this context, blockchain raises questions about the traditional regulatory authority of the state, particularly in areas such as banking, but also in the commercial and civil sectors.

Without delving into the specifics, this represents a novel approach to information storage, whereby data is preserved in its original form, accessible, and can be integrated with new information that is inherently verifiable and cannot be forged. This novel data may be generated by the execution of an operation, a transaction, or the automated execution of a computer program. The data is recorded in a distributed register, which is a shared database accessible to all members of the network. This system provides transparency and auditability. Such an architectural configuration gives rise to a radical alteration in the issues of control and security.

It is evident that such an innovation will bring about significant changes on a global scale. From a technical perspective, it has the potential to address the inherent limitations of centralized systems. This represents a response to the lack of confidence in political and economic institutions, with the potential to facilitate more fluid economic and social relations.¹

Blockchain technology has the potential to revolutionise numerous sectors. Among the myriad of prospective applications, two main categories stand out: notary-type applications linked to the maintenance of a shared register and the certification of industrial and financial processes. The technology could transform the way transactions are conducted, goods are transferred and

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people are exchanged. It is also expected to be used in the traceability of medicines and food products. Furthermore, it may facilitate the development of secure online voting systems or digital identification of individuals.

Applications that integrate the transactional dimension with the physical world are referred to as the "value internet". A transaction may be initiated by direct intervention or by the execution of a computer program that may include specific conditions or checks, for example, based on the date or information from the physical world. The advent of "smart contracts" on blockchains marks the advent of programmable transactions, conducted without the need for a trusted third party. The objective of these applications is to establish trust where it is lacking or to supplant centralized trust mechanisms. The elimination of intermediaries and decentralisation of validation processes should result in significant gains in productivity. Upon completion of the development phase, it is probable that this technology will have a profound impact on the economy. It may be possible to certify exchanges that have become totally digitised. The operations surrounding exchanges, including invitations to tender, partial validation by third parties, and conditional payments, could be managed automatically and with confidence thanks to smart contracts. Such processes could be managed automatically and with confidence thanks to the use of smart contracts.

Consequently, blockchain technology offers unparalleled autonomy, including a form of infallible surveillance, without reliance on a third party. The execution of transactions is conducted through the use of computer programs. The functionality of "smart contracts" will enable them to execute themselves.

The advent of smart contracts is perceived by many as a means of enhancing legal certainty and facilitating the fulfilment of contractual obligations by the parties involved. However, it is important to recognise that these contracts are not devoid of implications. They are executed on the basis of predefined performance conditions, as stipulated by the parties in the contract itself, and are binding on the parties concerned. Consequently, it is essential to ensure that contracts can be subject to smart contracts, and that smart contracts are subject to general legal principles and specific contract laws.

In this regard, a number of issues require resolution before this technology can be incorporated into Algerian legislation. The objective is to facilitate contractual optimisation (I). However, it is unclear whether this IT tool can effect a genuine contractual revolution (II).

1- The Smart Contract as a means of executing and concluding a contract

It is first necessary to distinguish between the smart contract system and the blockchain, which provides support for the former.

The blockchain can be defined as a kind of gigantic database.

Without delving into the specifics of the subject matter, it is sufficient to provide an overview of the new tool workshop. In order for a sale to be conducted on the Internet, it is necessary for an instrument to be provided by a trusted third party. This could be a bank, a public body, a notary, an insurer, or another entity. In order to prevent fraud, this conciliator is responsible for maintaining a record of all transactions. The blockchain facilitates this exchange on a peer-to-peer network, thereby eliminating the need for a conciliator. The transaction between two parties on the Internet is recorded in a ledger that tracks all the operations conducted. The aforementioned tally is not stored in a single, centralized location; rather, it is distributed across the computers of all relevant actors, who are referred to as "bumps." For each transaction, the members of the network verify the history to ascertain whether the individual in question is indeed the proprietor of the asset in question. Furthermore, transactions are grouped together and validated in blocks, thereby forming a blockchain. Each new block of transactions is added to the chain, linked to the preceding block by a cryptographic process. The blockchain therefore contains all validated transactions from the inception of the chain to the present day. To gain a deeper understanding of this

description, the analogy of mathematician Jean-Paul Delahaye seems apt a veritably large tablet, which anyone can read freely and without charge, on which anyone can write, but which is indestructible and irrevocable.²

Admittedly, discussing *smart contracts* forces us to use our imagination by favouring a speculative approach over a descriptive one. To better understand the introduction and implementation of *smart contract* technology linked to *blockchain*, we need to recall what we are talking about, particularly in the legal sphere (1), and then illustrate how it works in order to better understand its various aspects (2).

1.1- The legal validity of the smart contract :

Intelligent contracts, tone- executing contracts, smart contracts, the terms vary, and in the same direction, the precise delineations are each too divergent and scattered for the time being, there's no legal description of smart contracts. There are several explanations for this diversity of delineations originally, we need to take into account the relative freshness of this technology. Although the Bitcoin blockchain has been since 2008, and smart contracts were imagined as early as 1996 by Nick Szabo,³ they've only come more known and have been tested in the last three times, since 2014. Before that, they remained unknown to the general public, although for numerous people they still are moment. The alternate reason that could justify this lack of cohesion is the complexity of smart contracts with their primary affinity with IT, this is a fairly delicate technology for attorneys and controllers to grasp, who are frequently attached to pragmatism, preferring to observe before proposing exorbitantly restrictive fabrics that could decelerate down the technology and its progress. Eventually, the last possible explanation lies in the multifariousness of cases and operations of smart contracts in terms of leasing, trade, data transfer, there are a multitude of possibilities for enforcing smart contracts, and it seems delicate for legal experts to encompass all these forms in a single description. still, several have tried.

First of all, the smart contract is not, literally speaking, an intelligent contract. It is n't a contract. It's computer programming that takes the terms of a contractual commitment(restated into computer language, in law), conditioned on the " If. also." model and, when the conditions agreed by the parties are met and vindicated, enables these commitments to be executed automatically(without any mortal intervention). The pattern of logic remains fairly simple if a condition is vindicated, also the consequence is tone- executing as set out in the smart contract law.

In other words, and by way of comparison with a " contract", a smart contract is an agreement between two or further people which is intended to be executed automatically as soon as the conditions for prosecution laid down by the parties in the original contract law have been met. It enables the constricting parties to record and authenticate their contractual commitments with certainty, and also to automate their performance. These two characteristics define the veritably substance of the smart contract. Whereas a traditional legal contract defines the rules of an agreement between several parties, a smart contract goes further and freezes these rules in a blockchain while icing the transfer of any asset when the contractual conditions are met.

Smart contracts are still too embryonic and untested to be honored in the legal sphere. still, it's clear that we need to take a forward- looking approach and look at the legal generalities that could be incorporated into this technology, which is decreasingly percolating the digital, profitable, social and other surroundings.

Before they come implicit objects of law, smart contracts are still considered only as protocols and computer programmes relating the contractual commitments of the parties.⁴ They make it possible to reduce costs, detainments and sources of query during the contract conclusion phase. The advantage of setting up smart contracts in a blockchain is the guarantee that the terms of the contract can not be modified. A smart contract that was n't in the blockchain would be a programme whose terms could be changed during prosecution. Smart contracts thus promise to optimize the contract conclusion phase, so much so that for the time being there are several

contending propositions about their legal nature. For some authors, they're digital contracts grounded on blockchain technology, enabling them to control the commitments of each party to the contract.⁵ For others, still, they look an awful lot like contracts, albeit a little peculiar and veritably strange. But in reality they're not. They're nothing further than software, a specialized operation of an formerly being legal contract, so we're talking about using the smart contract as a means of executing a once agreement. The smart contract is a way of rendering a contract and making its operation automatic, and thus easier, briskly and more secure.⁶ It would also simply be a motorized dupe of the contract, and more precisely a dupe of the clauses fitted into an algorithm to execute the contract, but would not be the contract itself.

In the United States, colorful recent legal vittles essay to give further ultramodern delineations of the Smart Contract. therefore, art.47-10-201 al. 2 of the Tennessee Code Annotated of March 2018 defines a Smart Contract as (a) n event- driven computer program, which runs on a large, distributed, decentralized, participated, and replicated electronic registry; used to automate deals, including, but not limited to, deals that (A) guardianship and direct the transfer of means on similar large registry; (B) produce and distribute electronic means; (C) attend information; or (D) Manage stoner identity and access to software operations.

It's clear from the onset that the term " Smart Contract" is particularly ill- chosen, given that a Smart Contract is neither a contract in the legal sense of the term, nor is it smart. It is n't a contract in the legal sense of the term, but a computer programme used to conclude and execute real contracts. Nor is a Smart Contract intelligent (smart). On the contrary, Smart Contracts automatically (indeed stupidly) execute what their creator has programmed, but veritably reliably. The term " smart" thus refers to the Smart Contract's capability to interact autonomously with other operations, i.e. to connect with them and exchange data with them.⁷

In fact, the law would have nothing to do with them if the counsel, always on the lookout to transfigure any mortal exertion into law, had n't decided to take an interest in them, for the simple reason that it made it possible to produce scores preliminarily defined in computer law and to have them carried out by the machine.

Let's take the illustration of a payment to be made in return for a service. For this to be carried out via the blockchain, the conditions for carrying out the sale will have to be decoded in a smart contract. The sale will be automatically executed by the machine as soon as the programmed conditions have been met. The following is an illustration of how a smart contract workshop, to give a better understanding of its colorful aspects

1.2- How the Smart Contract works :

As we've formerly said, smart contracts are neither particularly intelligent nor, rigorously speaking, contracts. That said, they do give a conceit for their utility automating connections grounded on data. Nick SZABO, the father of smart contracts, illustrated how they work by comparing them to a dealing machine. When the buyer puts in the exact quantum (or further) of the product chosen, the dealing machine accepts the coins and, through a simple medium, releases the product and gives change according to the price displayed. In this way, the dealing machine could be used to conclude a deals contract with anyone anyone with coins could initiate an exchange with the dealer.⁸

The description given on the Monax website⁹ is more precise Script hosted on a blockchain representing a unilateral pledge to insure prosecution grounded on deals that are transferred to the script. We'll break down this description to more understand the different aspects of a smart contract

A smart contract is a script, in other words a computer program like any other. The programming language used depends on the platform, or rather the blockchain, on which the smart contract is hosted. At the moment, the most popular smart contract platform is Ethereum, and *Solidity* is the most generally used language.¹⁰ Once finalised, the programme is stationed (or collected) into sale canons and stored on the blockchain. An address (in hexadecimal) is also

issued for this smart contract. This is the address where the deals will be transferred to spark the contract. It's important to flash back that the blockchains developed since the creation of bitcoin can execute the law contained in smart contracts. Blockchains are no longer simply decentralised databases (like the bitcoin blockchain), they're also "Turing Complete", which means they're able of executing more complex programs (those of smart contracts)

Finally, the smart contract is actuated by deals. Without going into too important detail, the smart contract program contains one or further functions that will be actuated by deals transferred from stoner accounts. The functions are commands, or specific execution,¹¹ which can be ordered automatically or by external deals.

The smart contract enables constricting parties to record and authenticate their contractual commitments with certainty, and also to automate their performance. There are, still, two suppositions to be distinguished the first enterprises the case where the smart contract acts as a translator, and the alternate concerns the situation where the entire contract evolves solely on the blockchain. In the first case, the smart contract is grounded on the physical world, being simply the nonfictional restatement into computer language of the commitments of the parties, and thus a means of prosecution. This restatement will be recorded on the blockchain and time- stamped. In the alternate case, the smart contract is created entirely on the blockchain, in which case there's no supporting contract, and the smart contract moves from being a means of performance to a contract in its own right.

In both cases, the operation of smart contracts is theoretically simple it's grounded on the "If. also" model. Intelligently contracted connections and scores profit from the security sense of blockchain and the increased verifiability offered by blockchain networks. Indeed, in practice, if a condition is fulfilled and also vindicated, the consequence (s) previsioned by the parties are automatically executed. This automatic prosecution is touched off by the confirmation of "If. also" conditions, in particular the verification of power of finances by the parties. For illustration, if an individual A holds 5 Bitcoins in his virtual portmanteau, and enters into a smart contract with an individual B subject to the fulfilment of a condition (e.g. another sale by B with a third party), the network bumps, and thus the miners, will have to check not only that A holds the Bitcoins, but also that B has completed the sale with the third party (the condition). The conditions may be internal to the blockchain, as in the former illustration, but they may also be external, since they cannot be vindicated within the blockchain. In the case of external information that occurs in the physical world (an accident, the damage of a parcel, a death, etc.), in this case a recap within the blockchain will be necessary to spark the prosecution of the contract, and the use of blockchain mystic services responsible for furnishing information about the fulfilment of these conditions will be necessary to make the link between the physical world and the blockchain. The end is to establish a marketable relationship between two people without trust between them and without the intervention of a third party. In this way, smart contracts add an intelligent dimension t" for real".

Once drafted and made available to the relevant parties, smart contracts are publicly accessible on the blockchain. Subsequently, they "live their own life"¹² and are executed until the end of the term agreed upon by the parties, in accordance with the provisions established during the pre-smart contract phase. The generation of new contractual relationships is contingent upon the acceptance of the terms set forth in the smart contracts by new users. This process will continue for as long as the smart contracts possess the necessary "funds"¹³ to enable their execution.¹⁴

Still, it's a fact that blockchain is of interest to a large number of sectors. First and foremost, there are those sectors(similar as banking, insurance or fiscal institutions) in which there are a large number of contracts that can be impeccably automated and whose characteristics are impeccably controlled. The figure of 100 billion bones has been put forward as an estimate of the cost of covering the billions of banking deals carried out worldwide each time in 2024, and 462 billion in 2030. Smart contracts are also of interest to all sectors or players whose exertion is

grounded on the establishment of a register and induce a notarization function. So, like other trusted third parties, notaries are taking a close interest in the impact of smart contracts on their conditioning.

The insurance assiduity is particularly interested in the use of smart contracts, as demonstrated by the creation of the Effervescent platform, presented by Axa as 100 automated and 100 secure. Remittments are made automatically as soon as a aeroplane is delayed by further than two hours, without the need to fill in a form or make a claim.¹⁵

Smart contracts thus appear to be an ideal way of managing large figures of contracts they enable the parties to be bound by clear scores. They're also preferable for slinging contracts or contracts with multiple commitments, where it's possible to use smart contracts to model their perpetration. still, not all contracts are inescapably smartisable. Business- to- client(B2C) contracts are likely to be more complicated to apply in this way, as numerous of their clauses are sensitive and natively debatable. Contracts with a high degree of unknown or unlooked-for events will also be more complex to convert to smart contracts.

Although smart contracts have n't yet set up a place in Algerian law, it's nonetheless judicious to consider transposing and conceivably conforming being mechanisms to accommodate this new conception.

2. Legal issues relating to smart contracts

numerous questions are being asked about the legal governance applicable to blockchain, and to smart contracts in particular, as was formerly the case with the arrival of the internet and-commerce several times ago . It's easy to imagine the confusion that will control in different situations regarding the applicable law, the competent governance, or indeed more, the validity of the smart contract in terms of contract law, which is the subject of our study.

Smart Contracts enable not only the conclusion(1) but also the prosecution(2) of bilateral contracts. Through a decentralised independent organisation(DAO), multinational contracts can also profit from Smart Contracts.

2.1. The smart contract and the conclusion of the contract

A contract may be defined as an agreement of choices between two or further persons, intended (art. 54 c.c.) to produce legal goods.

In a consensual system similar as that elevated in Algerian law, the contract is validly formed by the meeting of the choices of the parties on its essential rudiments, from which its conditions of validity are distinguished. For a Smart Contract in the form of a computer programme to serve as a means of concluding (or performing) a contract, the (future) parties must be suitable to manifest their common will to conclude (or perform) their contract through the Smart Contract. As a result, the issue of concurrence is a veritably important aspect of the conformation of smart contracts, given the specific nature of this technology and its novelty. still, given the robotization and decentralisation of blockchain, two major issues arise the actuality of the necessary concurrence of the parties, and the transmission of that concurrence.

When the Smart Contract acts as a "translator" serving only to execute a contract, the parties have formerly concluded their contract within the meaning of art. 54 et seq. of the Civil law (support contract concluded off chain), which will also simply be executed by means of a Smart Contract. still, the parties may also conclude their contract within the meaning of art. 54 et seq. of the Civil law via the blockchain (contract concluded on chain). This is the case when a party defines the conditions for concluding a contract in a Smart Contract. These conditions can also be treated in the same way as the transferring of price lists or pro forma checks, which do n't constitute an offer to enter into a contract. still, the transferring of these or analogous documents may exceptionally constitute an offer, where the philanthropist must conclude in good faith from all the concrete circumstances that the author of these documents is formerly expressing his intention to

enter into a contract. In the case of blockchain, this will be the case if the conditions defined in the Smart Contract formerly express the other party's intention to enter into a contract.

The first question that deserves our attention in the environment of Smart Contracts is whether, in principle, the parties have the possibility of expressing their will by means of a Smart Contract, i.e. a computer programme. The answer is yes, as art. 60 of the Civil law does n't specify any specific means of expressing the will. But in the absence of mortal involvement, the expression of this will is n't easy to identify, and its transmission indeed less so!

A priori, the criterion of the meeting of choices does n't pose any difficulty, since if the programme provides for the tone- prosecution of the data validated by the parties when their conditions are fulfilled, this amounts to an implicit incarnation of the parties' assent. also, the declared intention, a unilateral legal act, cannot be separated from the conclusion or performance of the contract, but forms an integral part of it.¹⁶ The dimension of time is therefore set away. still, a number of difficulties arise at the contract conformation stage. As a general rule, a contract is formed by the meeting of an offer and an acceptance, by which the parties express their intention to enter into a commitment (art. 59 C. civ.). Since the parties bound by a Smart Contract are n't in each other's presence, their will is expressed between absent parties within the meaning of art. 67 of the Civil law. The transmission of such an expression of will generally involves two crucial moments, videlicet transferring by the sender and damage by the philanthropist. On a blockchain, a party can shoot an expression of intent by subscribing it with his private key.¹⁷ Damage involves attaching the block containing it to the blockchain so that it's distributed to all the computers sharing in the network.¹⁸

likewise, since the trustability of the blockchain network depends on the number of actors, who are responsible for vindicating and validating its information,¹⁹ and thus on the number of blocks in the chain, the blockchain tends to exclude its shortest branches (chains of blocks)²⁰ and therefore abate the affirmations of intent contained in them. In this case, if the protestation is an act generating scores, the incarnation should be considered as not having passed and would thus simply have no legal effect. However, on the other hand, it's an act of disposition, If. 141 C. civ.) or those on overdue payment (art. 143 C. civ.). It has also been proposed that the incarnation of intent should be considered as pending until similar time as a bifurcation of the blockchain and thus the elimination of the shortest blockchains) can be ruled out with certainty.²¹ In practice, utmost actors in a blockchain consider that a protestation has been entered when it's contained in a block following which there are at least six other blocks. It's only at this point that the virtual currency is transferred, for illustration, or an order paid for in bitcoins is touched off.²²

The special point of the smart contract lies in the fact that when the contract is concluded, at least one of the parties does n't(yet) want to perform a legal act with a specific person at a specific time. rather, this act will be generated automatically by the Smart Contract on the base ofpre-programmed parameters. This is why the analogy with the protestation generated by the dealing machine does n't make it possible to grasp the problem of insinuation of expressions of will generated by the Smart Contract. From the point of view of Algerian law, the installation of a dealing machine represents a public offer, and the client accepts this offer by fitting the coins corresponding to the price displayed. still, the abecedarian difference between a Smart Contract and a dealing machine falsehoods in the fact that the ultimate is only partial- automated only the prosecution by the machine is automated, whereas the prosecution by the client involves mortal conduct(fitting a coin and choosing a product). And yet, not being a subject of law, all the conduct generated and touched off by the Smart Contract must be covered by the legal will of the parties to the contract in order to produce legal goods.

In fact, in the environment of the smart contract, we're talking about what might be called apre-programmed protestation of intent, or automatic intent, which would be the logical specialized consequence of the intent expressed via a smart contract. This would be the expression of the agreed will of the parties to the contract that the smart contract is authorised to perform

fairly valid conduct if the conditions defined in the source law are met. From a legal point of view, we believe that the pungency of the content of the automatically touched off protestation justifies its content by the legal will of each of the parties to the contract.

Eventually, the question that arises at this stage is what's the boundary between active use that gives rise to the conclusion of a contract and automatic activation by the software? Can a smart contract come enforceable on its own? Different countries have different answers. attorneys in the UK, for illustration, believe that automated systems are unable of binding the parties to a contract. In the United States, there are differences in case law. Some judges consider that a response to a contractual offer via smart contracts is n't valid, while others take a different view.²³

2.2- The smart contract and contract performance: irreversible and definitive performance

In certain contractual situations, the parties may not have complete confidence in each other the fiscal stakes are high, factors external to the contract may suddenly impact the parties' amenability to perform their scores, etc. presently, in these situations, a mortal conciliator in whom the parties have confidence intervenes. This conciliator costs plutocrat and, being mortal, is bribable, fallible and prejudiced. The smart contract eliminates the need for this mortal conciliator by replacing him with computer law that can be checked by all the parties. The conduct of this conciliator are set out in a series of instructions that the parties can consult in complete translucency, but which cannot be changed unilaterally, thanks to the use of the blockchain.²⁴ Smart contracts are a way of "easing" the prosecution of contracts. Since contracts are basically digital, they can initiate orders or formulate requests on their own (similar as vindicating the publication of accounts, requesting the product of documents, etc.). The blockchain can interact with the entire digital ecosystem.

What is further, blockchain does not forget anything its automatic prosecution function makes it easier to manage contractual or legal conditions. As a "register", it also ensures traceability of conduct taken and the dates on which they were taken. So there is no longer any debate about whether a commitment has been fulfilled or not.

also, robotization is one of the main strengths of smart contracts, in that it automatically reduces the threat of (mortal) error in the prosecution of contracts, or of non-compliance with commitments, and thus of being indicted of violating a contract (or indeed of missing out on a right). As a result, the threat of action is reduced. What is further, you cannot stop a blockchain! In fact, smart contracts make it possible to combat unjustified rescissions. This same characteristic makes it possible to deal with contracts involving multiple players and/ or subject to multiple conditions. The blockchain makes termination just as insolvable, unless it falls rigorously within destined and codified orders. At the same time, it should be emphasised that the automatic and intertwined nature that's the strength of blockchain can also prove to be a weakness, particularly when it comes to terminating a contract beforehand or amending its terms. The notion of modification or correction is n't at each compatible with smart contracts,²⁵ since their prosecution is unrecoverable and definitive. It's not indeed worth asking whether the principle of *good faith*, a general principle of contract law (art. 107 C. civ.), is compatible with a contract whose operation is automatic. Good faith can not be taken into account by a smart contract whose veritably operating principle is to disregard the geste of the parties.

What is further, let's not forget that the smart contract is in no way an intelligent contract. It can only do what the programmer has planned it to do; it is n't possible for it to manage the unlooked-for for the time being.²⁶ Accordingly, the unpredictability of composition 107 of the Civil law, and the unforeseeability of fortuitous events or force majeure (composition 176 of the Civil law) cannot be smart contractualised, as the invariability of smart contracts does n't allow for the addition of the query associated with these generalities.

Still in this environment, as we've formerly seen, the smart contract with its formula " *If.... then....*" automatically extinguishes the contract when a condition is n't admired by one of the parties.²⁷ Composition 119 of the Civil law provides that where one of the parties fails to perform

its obligation, the other party may, after giving the debtor formal notice, demand performance of the contract or apply for its termination (.) The court may grant the debtor a period of time depending on the circumstances. He may also reject the operation for abortion where the breach of the obligation is of minor significance in relation to the performance promised as a whole. Indeed if the operation of the exception of perpetration by the smart contract can integrate a formal notice, the automaticity does n't allow the significance of the perpetration to be assessed by the judge. or by the smart contract for that matter- failing that! How can generalities similar as "important, serious, reasonable, applicable, licit" be algorithmised? In addition, smart contracts contradict rules of public policy, similar as the grace period or judicial review of the contract (arts. 107, 110, 281. C. Civ), particularly where contractual terms are illegal or generally produce significant imbalances between the rights and scores of the parties (arts. 110, 184 C. Civ). Eventually, how can a contract be terminated suddenly and automatically without falling into the order of vituperative breach of contract?

On a fully different note, because they can beget damage, particularly fiscal damage, Smart Contracts are, in proposition, legal data likely to give rise to a liability action. still, they come up against a number of potentially problematic practical considerations. On the one hand, given the pseudonymity of utmost blockchain platforms, it's delicate to establish the identity of those responsible for planting a smart contract on the blockchain. All the more so because, indeed if an 'account' were linked as specifically responsible, since smart contracts can be executed autonomously, they will continue to operate anyhow of what happens to their generators.²⁸

So, indeed if it's theoretically possible to criminate the generators of a Smart Contract that's at the origin of a wrong, this wo n't serve to stop the Smart Contract, which will be executed every time someone carries out a sale towards this contract. On the other hand, since Smart Contracts are executed in a decentralised manner, there's no central driver who can be held responsible for their prosecution. It could thus be said that there's a distributed responsibility, between all the active bumps in the network, all of which share in part in immortalizing the detriment. Generally speaking, still, the decentralised nature of the blockchain community makes it delicate to bring ahead the courts. Shared responsibility between the point proprietor and the programmer would be desirable. likewise, what standard should be applied to assess liability? In the case of an individual, legal experts use the standard of the reasonable person or the professional versus thenon-professional. Should programmers be compared to professionals? What is further, establishing a unproductive link in the event of detriment is far from egregious, given the complexity of blockchains. Eventually, in the case of software designed by humans, it has been proposed that liability for a imperfect product should be considered if the system causes detriment to a third party.²⁹ still, we are n't induced by this point of view and refuse to apply this proposition, stating that software (Smart Contract) of an entirely digital nature is a service and not a product.

Acceptance of threat also seems to be a bone of contention. However, like faxes or telephones, which convey the will of individualities, If we consider smart contracts to be a simple communication tool. Anyhow of how these new technologies are classified, we can also consider that individualities have accepted the pitfalls implicit in them, as underscored by the axiom "code is law".³⁰

Conclusion:

The concept of smart contracts is already a reality, but its implementation is currently limited to industries where specific, standardised contracts are in place within a closed network. It is evident that there is a considerable distance to traverse before the implementation of these contracts in our everyday lives. Nevertheless, the pace of technological advancement is rapid, and it is imperative that we prepare ourselves for this inevitable revolution.

The prevailing consensus is that smart contracts present two significant challenges. Firstly, they create a lack of distinction between the terms of the contract and the act of its performance.

Secondly, it is not necessarily the case that greater technical security will lead to greater legal certainty.

The prevailing approach to the legal analysis of smart contracts is to focus on contract law. Our analysis focuses on a narrower definition of smart contracts, namely, "the use of computer code to articulate, verify, and execute an agreement between parties."³¹ In the context of contract law, the primary legal concerns pertain to the issues of notice, consent and consumer protection, which frequently emerge as contentious matters in the domains of click-wrap and browse-wrap agreements. Others perceive the challenges in terms of the conventional concepts of fraud, force majeure, and unforeseen circumstances.³² Some commentators, however, view smart contracts as a novel form of self-help that aligns with existing contract law principles when used to automate the performance of a legal agreement.³³ Finally, several commentators have proposed a potential conflict between smart contracts and relational contract theory. These authors have acknowledged that a smart contract is essentially a type of computer code, which may represent either a complete, partial, or even non-existent legal contract. Consequently, even when a smart contract represents the entirety of an enforceable legal contract (often referred to as a smart legal contract), it remains subject to the same body of contract law as any other contract written in natural language.

For those presiding over legal proceedings, the management of evidence and, more generally, the question of liability will undoubtedly represent two of the most significant challenges to be addressed. With regard to evidence, it remains to be seen what value will be ascribed to evidence derived from blockchain technology in a court of law. Lawyers are already encountering significant challenges in the production of logs and connection data. It is therefore pertinent to consider the potential implications of blockchain technology in this context. With regard to liability, the absence of a designated individual in charge, of governance, and therefore of a legal representative, which is a defining feature of blockchain technology, also presents a significant challenge. Although there is a great deal of discussion about smart contracts, few people have had a genuine opportunity to engage with them. Nevertheless, it is evident that blockchain is a subject of interest to a considerable number of sectors.

Citations:

¹ Report of the working group chaired by Joëlle Toledano, Les enjeux des blockchains, France stratégie, JUNE 2018, P. 9.

² Patrice Lefort-Lavauzelle, comprendre la technologie blockchain, quelle application dans la defense, Défonce, n°187, Juillet- Aout 2017, p.44.

³ For this author, the Smart Contract was a set of contractual clauses translated into computer programs (software) in such a way that the party violating these contractual clauses would have to pay a high, even prohibitive price, Christoph Müller, Les Smart Contracts en droit des obligations suisse, 3e Journée des droits de la consommation et de la distribution, Blockchain et Smart Contracts - Défis juridiques, Unine (univ. Neuchâtel), Switzerland, 2018, p.54

⁴ These smart contracts are necessarily linked to a contract, but can also be used outside the contractual sphere: automation of voting processes, automation of mailings to organize meetings, etc.

⁵ Definition, or rather the beginning of a definition by Régis de Boisé, the founder of the blockchain company LeBonBail, La révolution des " smart contracts " : quelle intelligence pour quels contrats ?, Les Echos, published online on 16 December 2016, available at: <https://www.village-justice.com/articles/Blockchain-smart-contracts-droit-public-des-affaires-une-combinaison-gagnante,25065.html#BJhyhmpbGJv5jgkP.99>

⁶ Éric Barbry , Smart contracts, Aspects juridiques, Réalités Industrielles, August 2017, p. 77

⁷ Glarner Andreas & Meyer Stephan D., Smart Contracts in Escrow-Verhältnissen, Jusletter 04.12.2017, no. 18, quoted in Christoph Müller, Les Smart Contracts en droit des obligations suisse, op. cit. p. 55.

⁸ 15 Stanislas de Quénétain, Est-ce que les Smart Contracts peuvent être appliqués à nos vies de tous les jours, BEX - Blockchains Expert, available at (last access 19/5/2024) <https://www.blockchains-expert.com/smart-contracts-peuvent-etre-appliques-a-nos-vies-de-jours/>

⁹ Monax , officially *Monax Industries Limited* , is a smart contracts and blockchain technology company established in 2014. Monax's product is a contract lifecycle management platform via blockchain, and smart contracts using business process models to manage contracts. Incorporated as 'Eris Industries' and previously known as 'Eris', the company changed its name to Monax in October 2016. The company has offices in Edinburgh , London and New York, official website: <https://monax.io/>

¹⁰ See Wikipedia, the free encyclopedia , Solidity , <https://en.wikipedia.org/wiki/Solidity>

¹¹ as defined by Monax, https://monax.io/learn/smart_contracts/

¹² Primavera De Filipi & Benjamin Jean, Smart Contracts, the new augmented contracts..., Conseils & Entreprises - La revue de l'ACE, DOSSIER: "LA BLOCKCHAIN" - Révolution ou Evolution de notre profession, September 2016, No. 137, p. 41.

¹³ Upon publication of a Smart Contract on the Ethereum platform, a specific number of credits must be allocated to it. This system enables Ethereum to be freed from the obligation of maintaining old Smart Contracts that are no longer operational.

¹⁴ It is possible for a smart contract to impose limitations on the potential beneficiaries of the smart contract, whereby only the designated beneficiaries will be able to activate the smart contract.

¹⁵ . <https://fizzy.axa/fr/>

¹⁶ Bruno ANCEL, op. cit, p.17.

¹⁷ Each participant in the network is afforded the ability to add new transactions to the blockchain. In order to facilitate this process, each participant in the network is provided with both a public and a private key. The public key enables the generation of a unique address, which may be considered a sort of account number, that can be utilized to receive transactions made on the blockchain by other participants. The private key, which generates the public key, is employed for the management of one's own transactions on the blockchain. In order to execute a transaction, the sender is required to sign it with their private key and transfer the asset to the recipient's address.

¹⁸ The moment of receipt marks the point at which the declaration enters the recipient's sphere of influence, thereby placing the onus on the recipient to take cognizance of it (art. 61 c.c.). The blockchain is a distributed ledger that comprises a continuously growing list of records, stored on numerous computers that are connected to form a network. The register guarantees the authenticity and completeness of data transfers (transactions) occurring on the network by redundantly mirroring all transactions on all computers participating in the network (peer-to-peer, P2P). Consequently, each computer within the network serves as a duplicate repository for all transactions recorded on the blockchain; s. Chouli Billal, Goujon Frédéric, Leporcher Yves-Michel, Les Blockchains, De la théorie à la pratique, de l'idée à l'implémentation, St-Herblain, 2017, pp. 28 ff.

¹⁹ Indeed, if millions of disinterested and correctly functioning computers simultaneously verify a given piece of information, the probability that this information corresponds to reality is extremely high.

²⁰ At a certain point in time, the blockchain bifurcates into multiple branches due to the fact that the computations necessary for the attachment of new blocks are distributed across a number of servers operating in parallel. It is inevitable that, at some point, one of these branches will become longer than the others.

²¹ Christoph Müller, op. cit. p. 75.

²² Chouli Billal, Goujon Frédéric, Leporcher Yves-Michel, *op. cit.* p. 26.

²³ Bruno ANCEL, *op. cit.* p. 17

²⁴ L'equipe du cabinet Mathias-avocats, Quel potentiel pour les smart contracts?, 3 April 2017, available at: (last accessed 06/05/2024) <https://www.avocats-mathias.com/technologies-avancees/smart-contracts>

²⁵ Elaine Ou, Smart Contracts Don't Have to be Dumb, BLOOMBERGVIEW, 21 Oct. 2016, available at link: (last accessed 07/05/2024) <https://www.bloomberg.com/opinion/articles/2016-10-21/smart-contracts-don-t-have-to-be-dumb>

²⁶ Elise Huber, Les smart contracts : contrats non identifiés ?, Actualités juridiques du village de la justice - rub. Droit des TIC, informatique, propriété intellectuelle, 29 JUIN 2018, available at (last accessed 10/05/2024): <https://www.village-justice.com/articles/les-smart-contracts-contrats-non-identifies,28893.html>

²⁷ To illustrate, in the event that a tenant's lock is secured due to an outstanding rental payment, the smart contract will enact a non-performance exception.

²⁸ Primavera De Filippi & Benjamin Jean, *op. cit.* p. 42

²⁹ Bruno Ancel, *op. cit.* p. 18.

³⁰ Formula of L. Lessig which means "The code is the law" (C.A.D The code, the architecture of cyberspace is this regulator) , vr. for more details Lawrence Lessig, Code Is Law On Liberty in Cyberspace, Harvard Magazine, in the January-February 2007: <https://harvardmagazine.com/2000/01/code-is-law-html>

³¹ Josh Stark, How Close Are Smart Contracts to Impacting Real-World Law?", Coindesk ,Apr 11, 2016: (last access May 14,2024) <https://www.coindesk.com/blockchain-smarts-contracts-real-world-law>.

³² Lee Bacon, Nigel Brook & George Bazinas, "Smart Contracts:" Where Law Meets Technology, Clyde&Co, June 22, 2016: <http://www.clydeco.com/insight/article/smartcontracts-where-law-meets-technology>

³³ J. Dax Hansen , Laurie Rosini , Carla L. Reyes , More Legal Aspects of Smart Contract Applications, Perkins Coie LLP, March 2018, p. 4.