The e-Legal Game 2021

ELIMINATION OF PAPER IN TRANSACTIONS AND OPERATIONS. LEGAL RESTRICTIONS AND NEW DIGITAL TOOLS.

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EXECUTIVE SUMMARY

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1.   Environmental effects of paper

The use of paper on the planet is impacting the natural environment with negative effects, derived mainly from the large amounts of cellulose needed for its manufacturing.

The world lost as many tropical trees in 2017 as would fit in a country like Bangladesh, due to paper production. 15,800,000 hectares have disappeared, which is equal to 40 football fields per minute over the course of a year. 2017 is considered the second year with the worst record of forests area losses since 2001, with the first being 2016 with 29,700,000 lost hectares, according to latest data collected by the University of Maryland and published by the Global Forest Watch Organization in the Tropical Forest Forum in Oslo.

Although the thin sheet of cellulose can be considered small, its usage at a national and international level has a huge impact from an environmental perspective. The role of forests in achieving the objectives of the Paris Agreement to prevent the rise of global temperature by more than 1.5 degrees Celsius is currently analyzed.

After testing the consequences of the lack of use of paper, there is no doubt that paper is needed to a certain point, however many tools are available that reduce paper consumption and minimize its impact on nature, such as digital tools in the tasks carried out by lawyers.

2. Considering the contracts. A synthesis of the history

Life in the cities appeared as a socio-economic political revolution from our ancestors. With a greater number of people concentrated in the cities, social relations became increasingly complex, with different social classes and interactions between individuals and between communities. As a result, needs to register rules and agreements arose.

The bullae, or hollow clay spheres, were the basis for the first commercial contracts held in Uruk in 9,000 BC (now Republic of Iraq). The transaction's information was recorded on the outside of the sphere and on smaller spheres or tablets kept inside. They included information on payment obligations, terms –credit- and interest rate settings.

With the growth of long-distance trade, cities like Catal and Huyuk (now Turkey), Jarmo (now Iraq) and Jericho (now Israel), there is evidence that around 7,000 BC transactions in Asiatic Mesopotamia and Egypt were already recorded in stone and ceramic cylinders, clay tablets with cuneiform writing and papyri, which can be considered the first letters of credit. Contracts and letters of credit based on written documents of trust, the same as in our days.

Around 2,300 BC the need of codifying laws to structure the relationships between individuals arose; and although there is no vestiges of codes, there is a reference to the Urukagina Code as the first legal compilation, but in fact was dictated by the divinity to the king.

In 1,750 BC, the Babylonian king Hammurabi wrote his Code in basalt, distinguishing the civil law (for matters of daily life) from criminal law (to punish crimes).

With the Roman Empire in 753 BC, Roman law was born with provisions on contracting and its solemnities.

With the Law of Twelve Tables in the 5th century BC solemnities are established for the relevant sales contracts:

- Mancipatio requires six roman adult witnesses, male
- In jure cesium requires the presence of a praetor who gives "*publica fides*" of the business, such as a current notary

Currently, we rely on the governmental regulation or confidence, monopolized by the government that defines the solemnities and who is authorized to fulfill them (paper contracts, holographic signatures, witnesses, notaries who attest to the existence of the transaction, physical or digital records under the control of entities arranged by the State, etc.).

3.   But what happens today?

"Today we are going from a written society to a cybernetic society, from an organic society to a digital society, from an industrial economy to an immaterial economy, from a form of disciplinary and architectural control, to forms of microprostethic and media-cybernetic control" Paul B. Preciado, "*Aprendiendo del virus"*, El Pais, March 28, 2020 (published in spanish).

A bit of history about the internet:

- 1976: creation of Apple by Steve Jobs and friends
- 1977: personal computers start to be sold on a large scale and low Price (US$ 600)
- 1981: the IBM 5150 (a personal computer) is launched, revolutionizing personal computing
- 1982: Microsoft presents its MS-DOS 1.0 operating system
- 1984: Apple Macintosh is launched
- 1985: creation of Windows 1.0 operating system. The use of computing is imposed and grows in the world
- 1990: internet extends to common users
- 1993: the web enters the public domain. The Conseil Européen pour la Recherche Nucléaire ("CERN") delivers the technologies free of charge for anyone to use the first website in the world created at the CERN. Later the CERN made a release available with an open license
- 1998: Google is founded
- 2000: the use of internet flourishes and extends to millions of users

Documents are dematerialized when digitized, as computer systems allow the creation, storage, retrieval and dissemination of documents through digital codes; there are technological innovations to celebrate and preserve legal acts, with guarantees of validity and authenticity.

4. From trusting governmental authorizations (*"publica fides"*) to trusting the community

At the end of the 20th century the usage of new technologies increased for executing production processes, managing commercial relations and for financial transactions. Money transfers all around the world derived in electronic transactions and the possibilities of contracting internationally from any city in the world without papers.

Legal uncertainty about the legitimacy or the enforcement of these contracts in the national and international context became a challenge for the governments and international organizations to pass regulations and define rules and criteria for the economic operators (companies and individual consumers).

But considering that the platforms and software are an "instrument" for contracting, without a global regulation, local contract law and international law are applicable to the digital economy, as other regulations like intellectual property, data protection and consumers regulations, challenging lawyers and judges to find in a new contractual environment (platforms, digital relationships as collaborative models, information and actions structured, executed and informed by software managed by third parties) the legal aspects and applicable rules in any specific situation.

Under legislative perspective, the challenge is similar, and the transparency of the markets, and tax effects, are additional aspects being considered.

5. From conventional contracts to electronic contracts and Smart contracts

The conventional contract between two parties defining its rules and managing the execution in documents formalized according to the existing regulation is changing as the technology evolves allowing the parties to celebrate electronic contracts and smarts contracts based on blockchain, which provides solutions to fast, transparent, traceable and immutable transactions with a collaborative model.

The electronic contract appears as an agreement perfected without the physical presence of the contracting parties using electronic solutions.

In the smart contract, computer code elements, third parties reporting events related to the contract, deep mining creating the blocks of the transaction and mediating platforms serving as a record book of it, configure the creation, the monitoring and the execution of the party's

intentions. An execution and enforcement of the agreement of the parties controlling automatically and autonomously the fulfillment of the specific conditions.

The solution can include a single sign-on that validates identity, technology as artificial intelligence to verify documents in public registers, and as security mechanisms (QR codes, stamps, etc.) to validate the data, programs to guarantee the inalterability of the agreement. And the parties and anyone authorized can also verify that the program is executed as agreed.

Formalities like the praetor, witnesses and notaries, presence, bullae, papyri or papers are replaced by digitized instruments, like governmental authority, by collaborative methods and communities to validate transactions.

The legitimacy of the smart contract is guarantee when its terms are according to the local (or international, if the case) regulation, morality and public order, and thus to achieve:

- Less ambiguity in the interpretation of the existence of conditions imposed by the parties
- Less intermediaries to execute the contract, like Banks and notaries
- Cost reductions with the fast definition of terms and verifications, and less intermediaries
- Lower risk of execution since the process is immutable and decentralized avoiding the risk of manipulation or mistakes
- Use of paper reduction
- Transparency in the records traced to contractors who can also decide to remain anonymous
- Legal proof since through a blockchain system, reliable transactions can be ensured, and be presented as a proof of the agreements entered by the parties.

Therefore, smart contracts and blockchain technology are new tools to grant certainty and security to a legal act.

6. Legal challenges

Smart contracts pose challenges in the creation of the contract, the acceptances and the validity, since neither local nor global specific regulation exists.

On the other hand, in the legal approach to the special aspects of smart contracts, such as the technical aspects of the software and computer programs "formalizing" the contract, the jurisdiction where the code is created could be different to the jurisdiction where the parties introduce every agreement to constitute the transaction, and different of the jurisdiction where the acts to execute the contract take place. So, the regulation applicable to every aspect may differ.

Therefore, lawyers and judges are beginning to recognize the technology, as they are users also of the new digital solutions, to analyze new facts and wills to define the applicable law in any part of the contracting journey.

This explains why in e-commerce foreign defendants accept local jurisdiction and the judicial sphere to determine the applicable law and the validity of what has been agreed in electronic contracts and smart contracts, using also computer experts to validate and proof communications and transactions registered on internet.

7. Technology challenges

The enormous computer capacity, and therefore energy use, in the blockchain technology, since a vast decentralized network of computers operated by "miners" to independently verify and record the creation of every block containing the transaction, presents a challenge in relation to electronic transactions and smart contracts.

The more computers compete to maintain the blockchain, the more secure it becomes, but the energy consumed increases.

El bitcoin usa más energía que Argentina

Si el bitcoin fuera un país, estaría entre los 30 países que más utilizan energía en el mundo
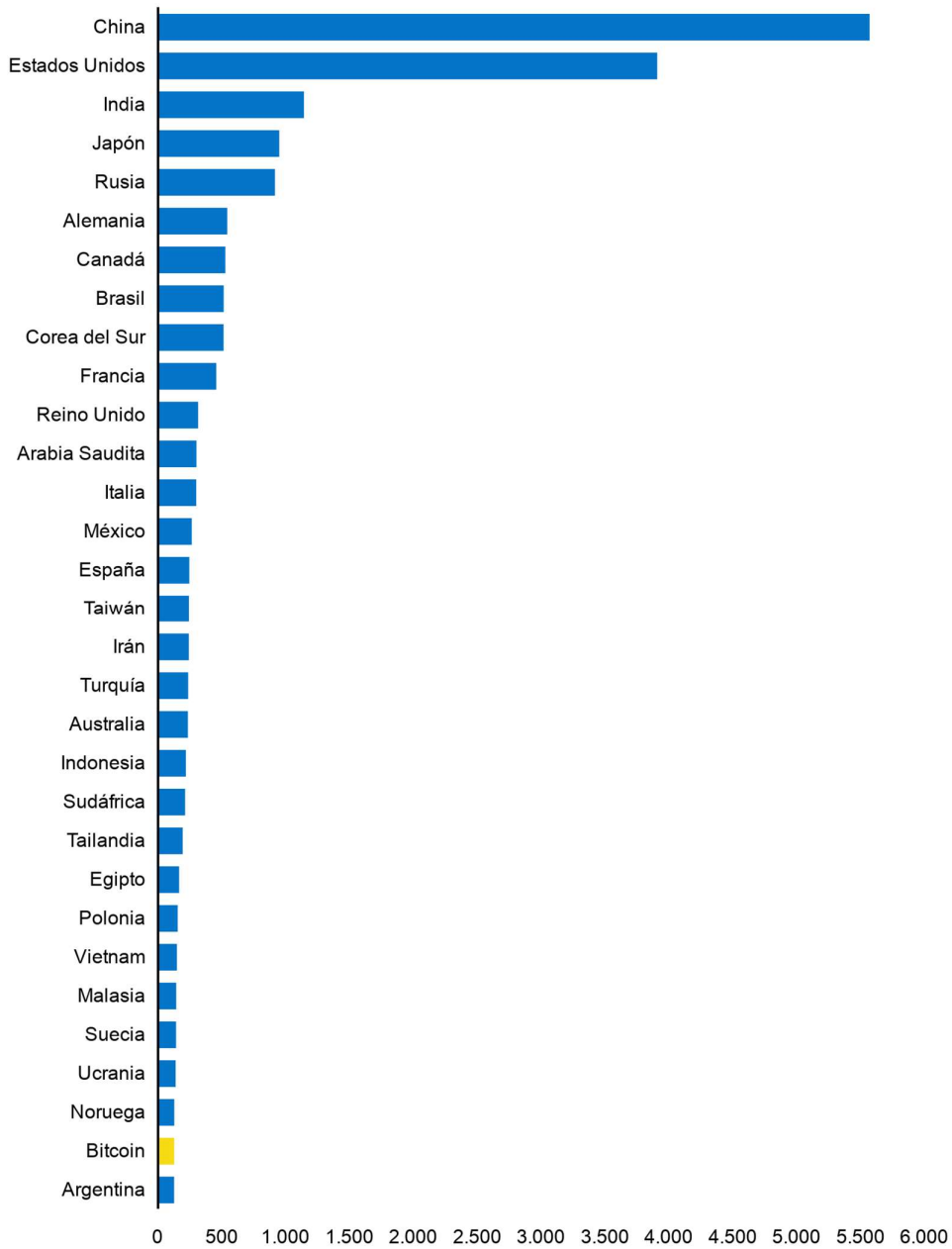
Uso nacional de energía en teravatios-hora (TWh)

BBC

Cambridge Center of Alternative Finance at the University of Cambridge ("CCAF"), which studies the business of cryptocurrencies, estimates that bitcoin´s total energy consumption is between 40 and 445 terawatt hours per year, with two-third of this coming from fossil fuels.

As there is no government office or organization that officially tracks where bitcoin is mined, and/or what kind of electricity miners use, there is no possibility to know if they are using electricity from renewable non-conventional energy or fossil fuels.

One solution could be to provide miners with incentives to use solar energy or other renewable energy sources when processing transactions, such as more cryptocurrencies for use green energy. More mining companies are focused on locating and developing its plants in regions with access to renewable energy in order to complete all the activity without fossil fuels.

On the other hand, while Bitcoin, Bitcoin Cash and original Ethereum rely on solving energy inefficient cryptographic problems in other ways, since they use "Proof of Work" ("POW") systems which require the server owners to compete fastest for a reward, consuming a lot of energy, many newer blockchains are using "Proof of Stake" ("POS") systems defining the server owners as "validators" and not "miners" and choosing by algorithms who is participating in the validation and creation of the blocks in any transaction, eliminating the competition among validators and reducing the energy consumption.

Delegated Proof of Stake system is a second step in POS technology, choosing validators among who is part of the system, looking after energy consumption reductions in other ways. Like sidechains also try to reduce the energy impact working with two layers, one in which the transaction is validated in a POS system, and another which accesses the blockchain to record it in a POW system or taking advantage of launched or failed hashes to reuse them and alleviate the main blockchain.

As security in POW and POS systems differs, the evolution in any technology of the third generation blockchain and the validation of its goals are primordial and essential.

8. Proposals

In order to provide security and reduce the environmental impact of paperless legal transactions, we must focus our efforts as internal lawyers on two aspects:

- Let´s prepare the data

Until now, the communications and historical records between lawyers and colleagues from other areas, go in general by email to individual boxes, some are uploaded to common platforms such as SharePoint.

As internal lawyers we must have a platform for management and repository of the communications, documents, records and legal services and assessments within each company.

- To prepare the conditions for transactions to be made on third generation blockchain:

  - Encouraging mining farms with thousands of computers to be installed next to non-conventional renewable electricity generation plants, and in low-temperature climates
  - Encouraging miners and pools to seek agreements with non-conventional renewable generators at valley prices or for surplus energy
  - Promoting the use of blockchain networks that only accept miners and pools that consume non-conventional renewable energy
  - Initiating basic transactions in third generation blockchain networks, in which the validator is not the total number of miners competing to do so, but the validator that the protocols and algorithms randomly choose and consequently a single computer validates reducing the energy consumption to create the block, or sidechains are used.
  - Actively participating in forums on the legal recognition of blockchain transactions
  - Actively participating in forums on the evolution of technology that reduces the environmental impact of smart contracts in blockchain

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