

**Peacebuilder**  
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Peacebuilder  
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**Overview.** Helping to interconnect people, businesses, and governments. Bridging the digital divide from the intersection of Law and Technology with Peace Studies.

Peacebuilder is an innovative online dispute resolution platform that brings agility and systematization to dispute resolution. Efficiency and traceability increased by the use of artificial intelligence, smart contracts, and *blockchain*.

## 1. Introduction

We all want to live in peace, but how can we achieve it?

Eleanor Roosevelt is credited with the phrase *"It isn't enough to talk about peace. One must believe in it. And it isn't enough to believe in it. One must work at it."*

Peace requires both conflict resolution (negative peace) and infrastructures for its construction (positive peace).

Participating in peacebuilding has led us to create a platform and infrastructure (positive peace) that allows people to resolve their conflicts online (negative peace), with or without the assistance of a neutral third party (conflict operator), without the need to go through courts and tribunals.

The fundamentals of peacebuilding are dialogue, facilitation, and mediation, which enable people to use their voice and vote to resolve differences before they escalate into violence and create infrastructures for peacebuilding.

Today's technology provides powerful tools for peacebuilders to bring people in conflict together to listen to each other, understand each other, and gain insight into each other's multiple perspectives on the conflict that unites them. Virtual encounters are essential for addressing underlying tensions (which are often fertile ground for grievance and escalation of violence in conflict).

The traditional ways of conflict resolution by third parties outside the conflict (called exogenous forms, e.g. courts, arbitration, etc.) have given way to forms of conflict resolution in which the parties to the conflict jointly assume the task of finding a solution (called endogenous forms, e.g. negotiation, mediation, etc.), in their evolution towards the virtual world, gave rise to the development of new ODR processes.

The COVID-19 pandemic has accelerated the digital transformation, now people have lost their fear of virtuality, which has favored the rapid growth of online dispute resolution methods (hereinafter ODR acronym for *online dispute resolution*).

The first problem that arises in the management of any conflict is its diagnosis, prognosis, and prescription of the most appropriate intervention to find its solution.

Another difficulty we face is the fact that most of the scenarios in which rights and obligations agreements are documented still suffer from the inherent weaknesses of the trust-based model.

The electronic signature contains a timestamp that gives the signature a date certainty but says nothing about the content of the document, i.e. the problem of the alterability of the document persists. Even after it has been signed, the parties can claim different interpretations.

Finally, the third and last challenge is to improve non-forced compliance with the agreements reached. Ensuring respect for a right and/or non-enforced compliance with an obligation is not possible, since antagonistic (personal and commercial) inter-relationships (personal and commercial) cannot be avoided.

By moving from a trust system to a documentary registration system based on cryptographic proof, we would be assuring the parties willing to agree, total protection against fraud, increasing legal, computer, intellectual, and ethical security, without the need for a trusted third party.

However, the vast majority of existing projects at present consist of dispute adjudication systems through arbitration and/or popular vote that resolve disputes exogenously. The arbitrator or judge will award victory to the party that comes closest to the material and objective truth through evidence. Others organize a competition between arbitrators or judges, apply game theory to determine the winning arbitrator or judge, and even for the payment of their fees.

Some of these projects assume the prior existence of a smart contract as the origin of the conflict<sup>1</sup>.

In other words, there is no real paradigm shift, since one of the parties will win and another will lose.

## 2. What needs are addressed

Every product or service starts from a need or desire that is so strong and painful that people are willing to pay enough money to solve it. If people are willing to pay little money unless it is a huge volume of people with that problem, the company has no business.

*According to Verónica Deambrogio, "It is not the same to look for someone to sell your solution than identify a demand and provide a solution".*

*We must put the focus on demand "Who fails to resolve conflicts and is so hurt by that they would be willing to pay anything for the remedy? »*

The approach has to be from the demand, from the unresolved need (for example the market has shown that large companies fail to resolve their conflicts with customers and this causes them to lose 20% of loyalty, our tool manages to reduce this percentage by 15%).

It is necessary to find out who has the problem and does not solve it, and would be paying for the solution.

*"Who has that really need that makes them uncomfortable enough to pay a lot of money to solve it? How many people have the problem that my product or service can solve? ».*

From the point of view of the target customer, it can be stated that our solution serves - according to the table and explanation below - the needs of governments, secondly the needs of companies and finally, thirdly and lastly, the needs of individuals.

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<sup>1</sup> A decision tree is an explicit representation of all the scenarios that can result from a given decision. The root of the tree represents the initial situation, while each branch corresponds to a possible scenario.

One of the possible arguments is that by providing effective conflict resolution mechanisms built into governments (and eventually businesses), we will not only successfully resolve individual conflicts, but we will also be able to prevent problems, thereby increasing people's trust in government (or business). Technology is an invaluable tool for detecting problematic patterns and instituting effective, often automated, solutions.

Table. 1 Needs covered by Peacebuilder.

	People in general	State	Companies and Organizations
<b>Level of knowledge of the solution offered.</b>	Low.	High.	Low/Medium.
<b>Level of acceptance of an arbitration clause.</b>	Medium.	Medium.	Medium/High.
<b>Need to implement the solution. Demand for a solution.</b>	Medium/High. Solve your problems quickly and economically.	Public policies. Provide security and offer spaces for rapid and effective conflict resolution. Transparency, open justice, governance, and sustainable social transformation. Access to Justice.	Social or corporate responsibility. Customer satisfaction. Build customer loyalty and trust. Decrease the number of customer churn. Self-managed solutions. Efficient and effective conflict management.
<b>Willing to pay for the solution. Financing.</b>	Low.	High.	Medium/High.
<b>Recommended methodology.</b>	Negotiation automated scalable to mediation, and arbitration.	Scalable model: direct negotiation, mediation or collaborative law (moderated discussion), arbitration (expert opinion), and online surveys (citizen participation).	Tree of decisions, facilitation oriented negotiation blind. Scalable to mediation and arbitration.

Own elaboration.

Both conflicts and their management take place in a multiplicity of scenarios. We could identify as many areas as we wish, it all depends on the parameters we use to do so.

*A priori*, one might think that wherever there is a problem, there is a potential customer, however, this is not true for two simple reasons: 1) that the person who has the problem wants (or wishes) to use our solution and, 2) that he/she is willing to pay for it.

Therefore, we have two questions to work on: *Who would want to use our solution, and who would be willing to pay for our solution?*

When trying to answer the first question: *Who wants to use our solution?* I notice that the first thing we should establish is the categories of persons: a) natural persons, b) public legal entities and c) private legal entities; and then, establish whether our solution is known (or not) by each of them.

A) Individuals: there is a consensus that online dispute management is still an unknown resource for the majority of the population. And, as we already know, what is not known is neither chosen nor desired.

The traditional dispute management channels (courts, police, and municipalities) continue to dominate the market, although other dispute management and resolution channels are slowly becoming known.

The first conclusion is that people do not know our solution, which is equivalent to saying that they do not want to use our solution. However, this early conclusion is not conclusive. *What can we do to make our solution known to people so that they will want to use it?*

Since we cannot force people to use our solution, the answer is: an arbitration clause must be introduced to use our solution whenever there is a divergence between the parties.

This is not the only possible way to make our solution known, there are many more, such as, for example, diffusion and publicity in public media.

The COVID-19 pandemic has accelerated the digital transformation, now people have lost their fear of virtuality, which has favored the rapid growth of online dispute management and resolution methods.

Let us assume then that if a person today is offered the arbitration clause, he/she would accept to use our solution.

However, since the traditional services of conflict management (courts, police, and town halls) are provided to people free of charge (financed by a third party, the State), the gratuity is an obstacle or condition for the acceptance of the arbitration clause.

B) Public legal entities: where there is legal regulation, it can be argued that the solution is known to public legal entities. However, whether they wish to use it depends on bureaucratic factors that require a political decision.

The State must adopt a public service criterion and make available to citizens a solution such as ours to respond, for example, to the inefficiency (measured in time) of traditional justice.

In a scenario of governance and sustainable societies, the central purpose of our society is and will be Peace. Conflict resolution is one of the two sides of the coin in peacebuilding.

By applying the platform's tools to processes of conflict resolution, online debates, participatory dialogues, facilitative convening, public information sharing, much of the promise of deliberative democracy can be achieved.

This should be a State policy, which is also contemplated in the Sustainable Development Goals (SDGs) 13 and 16 of the United Nations 2030 Agenda.

*"When patterns can be identified, the conflict resolution system can go beyond the resolution of individual conflicts and enhance system-wide prevention."* Rabinovich-Einy Orna, and Katsh Ethan 2012, p. 45.

The need to consult those affected by the process being designed is as indisputable as the use of an expert designer is necessary. There is no doubt that underlying the design and evaluation of dispute systems is the overcoming of the new physical and conceptual professional boundaries that the challenge of governance presents us with.

*"In time, ODR technology may change the very nature of government and government dispute resolution, but until then, the technology has a very solid place in the present, serving and resolving disputes within government agencies, disputes between government agencies and citizens, and disputes between private sector organizations seeking government resolution assistance."* Rainey Daniel, and Katsh Ethan. 2012. "ODR and Government." In *Online dispute resolution: theory and practice. A treatise on technology and dispute resolution*, edited by Mohamed S. Abdel Wahab, et al. The Netherlands: Eleven international publishing, pp. 248-249.

Online reputation is equally important in all possible scenarios including governance and sustainable societies.

Online reputation systems will bring with them user demand for fairness, justice, and transparency.

*"Sites that overlook these elements will see their visitors migrate to sites that don't overlook them either."* (translation belongs to me) Rule, Colin and Singh Harpreet. 2012. "ODR and online reputation systems." In Online dispute resolution: theory and practice. A treatise on technology and dispute resolution, edited by et al. Mohamed S. Abdel Wahab. The Netherlands: Eleven international publishing, p. 184.

C) Private legal entities: in this category I will perform the analysis concerning the scenario in which they carry out their activities, assuming that even if they do not know our solution, they all need it and perhaps it is only a matter of presenting the solution in such a way that they perceive it as a necessity.

c1) C2C (Consumer To Consumer) scenario: sites such as Wallapop, Vinted, Airbnb, Rentalia, etc., are a communication bridge between consumers (individuals) who, for a commission, facilitate access to a platform for the exchange of goods and services on which consumers carry out their economic transactions, through buying and selling, auctions, exchanges, etc.

In this scenario, companies could be seen as prescribers, being our customers the platform users themselves.

These companies usually implement a channel for complaints or scoring of their users. We propose that they include in their service contracts an arbitration clause to voluntarily come to our platform to resolve disputes that may arise between them.

They would provide a service and take a problem off their hands.

*"Companies that understand this need, and proactively address it by integrating online dispute resolution services into their websites will benefit from increased customer loyalty, higher transaction volume, and significantly higher profits."* Rule, Colin. 2002. Online dispute resolution for business. B2B, E-commerce, consumer, employment, insurance, and, other commercial conflicts. San Francisco, California, USA: Jossey-Bass, p. 90.

c2) B2C (Business To Consumer) scenario: some companies sell their products and services online, from food delivery companies to telephony. Here the commercial relationship is established between a company such as Amazon and a consumer. These are so-called e-Commerce transactions, i.e. sales contracts (often contracts of adhesion) made over the Internet. In this scenario, cross-border transactions have to be taken into account and nowadays even blockchain has to be considered as another specific area.

In this scenario, companies usually have complaint channels, which are generally deficient and do not satisfy the customer. Many of them outsource the management of complaints, within the idea of facilitation processes.

Here, a decision tree<sup>2</sup> could be elaborated that, in agreement with each particular company, would offer solutions previously designed and approved by the company.

We would be in the field of decision support systems (DSS). These systems improve the user's competence by supplementing his knowledge. The system stores use, receives, and presents knowledge relevant to the decisions being made.

*"Its capabilities are defined by the types of knowledge it can work with, how it can represent these various types of knowledge, and its abilities to process these representations."* Lodder Arno R., and Zeleznikow John. 2010. Enhanced dispute resolution through the use of information technology. United Kingdom: Cambridge University Press, p. 86.

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<sup>2</sup> Satoshi Nakamoto. 2008. 'Bitcoin: A Peer-to-Peer Electronic Cash System.' <https://bitcoin.org/bitcoin.pdf>

These processes are divided into three stages: a) diagnosis, b) prognosis and, c) prescription of the intervention to be performed.

Companies should assume the cost of our services, valuing their return in terms of social or corporate responsibility and customer loyalty.

Here the barrier to overcome is to persuade companies of the need and convenience of having a service such as ours, custom-designed and personalized for them.

*"The main reason why so many organizations have called for the development of ODR to support e-commerce is the number of cross-border transactions being conducted online." "In an ODR process, the legal location of the dispute does not matter, because the resolution is worked out based on the parties' preferences or other rules administered by an arbitrator. There is no need to use a lawyer in another country because the decision is not going to be based on the law. You can also select a neutral who has the expertise most appropriate to the nature of your dispute. Whatever decision is made regarding the legal location of disputes, there will be compelling reasons for all e-commerce disputes to be resolved through online dispute resolution. " Rule 2002, p. 95.*

c3) B2B (Business To Business) scenario: within this category are business transactions involving two companies that may be equal to each other (in terms of resources: time, money, etc.) or between a wholesale company and a retailer (or a freelancer) and that seek to exchange products and services with each other.

In this case, it is necessary to ensure that anything that goes wrong will be handled efficiently and effectively.

Compromisory clauses can be included to come to our platform. Costs will be borne proportionally.

Online exchanges offer unquestionable value to the companies that participate in them. Companies will use them as long as and when transactions are transparent and reliable.

*"ODR is an important way to keep the marketplace well-lit, reassuring buyers and sellers, and underscoring the reliability of exchanges. "Rule 2002, p. 134.*

c4) B2I Scenario (Business to Investors): transactions for the acquisition, analysis, and standardization of projects, carried out in the virtual space of the Internet, between companies and investors.

The design of systems to resolve disputes is the model to follow in this category.

*"[...] patterns of disputes can be found in closed environments and, therefore, by institutionalizing avenues to address disputes, the conflict will be handled more effectively and successfully than through ex-post measures. " (translation belongs to me) Rabinovich-Einy, Orna and Katsh Ethan. 2012. "Lessons from online dispute resolution for dispute systems design." In Online dispute resolution: theory and practice. A treatise on technology and dispute resolution, edited by Mohamed S. Abdel Wahab, et al. The Netherlands: Eleven international publishing, p. 44.*

To answer the second question: *Who would be willing to pay for our solution?* We must bear in mind that if we take the parameter of who would pay for our service, then the scenarios are reduced to 3 (although certain combinations would increase this initial number).

These three financing possibilities are a) costs shared by the parties, b) costs borne unilaterally by one party, and c) costs financed by interested third parties.

As I have already mentioned, both in the case of individuals and public legal entities, the financing model is:

Financing: *"The model involving external sources of financing is based, in principle, on public funds. This model is rarely used alone. Even cyber courts are not exclusively financed by public funds, as the parties pay court fees and thus participate in the costs of the process. However, it is often used together with other funding models, in particular with the bilateral fee model" Kaufmann-Kohler and Schultz 2004, p. 66.*

In the C2C (Consumer To Consumer) scenario: we must not lose sight of the fact that in this type of transaction, small amounts of money are involved and, since they are relatively low, they are often much lower than the cost of a dispute management service provided by a neutral third party.

*"This model does not create any risk of bias. It is well suited to medium to large cases, where the amount at stake justifies fees sufficient to cover the actual costs of the process. It is therefore unsuitable for smaller litigation unless used in combination with other sources."* Kaufmann-Kohler and Schultz 2004, p. 66.

The cost of our service could be borne by the companies (as a way of building confidence in their business proposition) we should not rule out the idea of consumers paying a small amount that will serve to discourage frivolous claims.

The most ideal model would be that of an automatically assisted negotiation between parties.

Here we speak of a model of conflict management and resolution a negotiation between parties, followed by mediation and eventually escalation to arbitration.

In the B2C (Business To Consumer) scenario: *"Most merchants who have built some brand in a particular space understand that being flexible to make customers happy is often a good investment, even if it comes at a cost of modes. Since customers are often satisfied with a replacement product rather than a cash refund, the merchant can often resolve the issue at a much lower out-of-pocket cost."* Rule 2002, pp. 119-120.

This can serve as a precedent for the one-sided one-party cost model.

*"Frequently used in B2C cases, the unilateral user fee model provides that the commercial enterprise that is a party to the litigation bears the entirety of the costs. It may do so in the form of an annual contribution (e.g., membership or trust mark fees) or a case-by-case payment. The dispute resolution process is then dependent on funding from one of the parties alone. This reliance creates the risk of actual bias. It may also lead to a perception of bias among potential users, with the result that they resort to other dispute resolution mechanisms, most likely the courts."* Kaufmann-Kohler and Schultz 2004, p. 66.

Here we are talking about conflict management and resolution model based on facilitation with some orientation towards automated negotiation based on algorithms and/or artificial intelligence.

In the B2B (Business To Business) scenario: in this category, bipartite and unilateral financing models apply (and under certain circumstances, external support may also be viable).

Here we are talking about a model of conflict management and resolution based on mediation and collaborative law.

### **3. Building peace through technology**

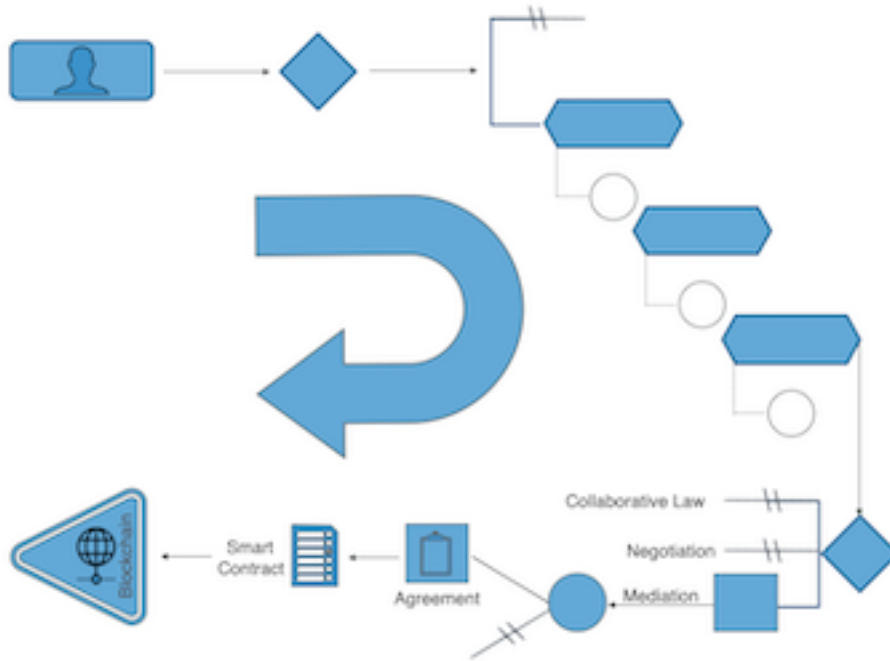
The Peacebuilder platform addresses the digital divide, avoiding the digital arrogance and exclusion that many people feel today, i.e., it comes to the rescue of the person in their conflict.

We propose an innovative solution that greatly simplifies, intelligently streamlines, and IT-secures the resolution of your disputes from the efficiency and traceability granted by the use of artificial intelligence, smart contracts, and blockchain.

Peacebuilder is a bet on the present for a better future. An online dispute resolution (ODR) platform that saves emotional wear and tears, time and money, facilitating access to justice.



Fig. 1 Peacebuilder platform flowchart.



Own elaboration.

The disruptive effect of technology is altering governments and even setting the agenda in international affairs. The speed of innovation has left many states struggling to keep pace.

Throughout history, technology was centralized and only within the reach of the States.

Today, technology allows people to have a say in conflict management (and in many other areas).

*Peer-to-peer* (P2P) networks emerged as an alternative to the centralized *Trusted Third Party* (TTP) concept. These networks allowed content to be stored and distributed in a non-centralized manner. Among the best known are *eMule* and *BitTorrent*.

This technological innovation has democratized conflict management and peacebuilding.

The technology represents enormous progress but has had decidedly mixed results.

On the one hand, technology provides tools and platforms with the ability to instantly reach people around the world; while, on the other hand, examples abound of individuals, groups, and even states fueling conflict through technology (e.g., bullying, terrorist activities such as those of the Islamic State, and even authoritarian governments imposing draconian restrictions on what citizens can do on the Internet).

Just as the solution to hate speech is more speech, the solution to these negative aspects of technology use is more technology. Technological infrastructure that promotes cooperation, conflict resolution, understanding, freedom, and peacebuilding.

Innovation is not a panacea. However, for those working with conflict and peacebuilding, there are many reasons to be optimistic.

People are increasingly concerned with resolving their conflicts themselves. They are looking for quick and effective solutions that respond to their needs, more and more people are taking a more active role, and this is where we see an opportunity. It's not about a particular market approach. It's about the social transformation where we can help make a difference, from this technological peace-building perspective.

The construction of sustainable peace requires a multi-faceted, endogenous approach that fits perfectly with the indisputable fact that, with today's technologies, people play a more central role than ever before.

It could be argued that the *white paper Bitcoin: A Peer-to-Peer Electronic Cash System*<sup>3</sup> published under the pseudonym Satoshi Nakamoto created the *blockchain*<sup>4</sup>. We don't know if this means "*a new internet*"<sup>5</sup> (or not), but there is no doubt that in this global scenario of unprecedented technological innovation, people are organizing themselves by bypassing governments and creating their own rules<sup>6</sup> and even formal and informal institutions such as cryptocurrencies<sup>7</sup>.

In our research on peace theory, we have discovered that recent studies at the University of Edinburgh have coined the term *Peacetech*<sup>8</sup> (which translates as technological peace) to encompass a range of products and services that help foster relationships between individuals, groups, and states. Its purpose is to address the root causes of conflict. It does this by using tools that promote positive outcomes such as improved social welfare, sustainable economies, stable governance, rule of law, and safe and secure environments.

Technological innovation is developing at a dizzying pace. This frenetic pace of globalization and digitization goes hand in hand with the exponential growth of conflicts arising not only from face-to-face interactions but also from internet transactions between people from different countries, cultures, legal systems, and diversity of jurisdictions.

Information and communications technologies have proven to be reliable, are building trust, and facilitating their integration into our lives. Their impact on the way conflicts develop is undeniable, and the way peacebuilders respond to this new reality is also undeniable.

In this sense, and the conviction that there is no faster, cheaper, more transparent, reliable, and decentralized dispute resolution mechanism than the agreement between the parties to a dispute, we have scientifically investigated the broad utility of artificial intelligence, smart contracts, and *blockchain* in ODR. The questions we have asked ourselves are: How to apply such a cryptographic layer to ODR agreements to improve their security? Can the agreements be drafted in the form of smart contracts to which they can be traced through the *blockchain*?

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<sup>3</sup> *Blockchain* technology is: decentralized, immutable, and pseudonymous. *Blockchain* is disruptive because it creates trust by guaranteeing immutability and transparency. This technology is based, in part, on the *hash* function. That is a cryptographic operation that generates a unique and unrepeatable identifier from a given piece of information. *Hashes* are a key part of *blockchain* technology as they ensure data authenticity, securely store passwords, and electronically sign documents. The cryptographic layer of *blockchain* uses *hashes* and digital signatures to agree on the writing of transactions, thus eliminating intermediaries.

<sup>4</sup> Fenwick, Mark and Kaal, Wulf A. and Vermeulen, Erik P.M., Legal Education in the Blockchain Revolution (March 22, 2017). U of St. Thomas (Minnesota) Legal Studies Research Paper No. 17-05, Available at SSRN: <https://ssrn.com/abstract=2939127> or <http://dx.doi.org/10.2139/ssrn.2939127>; Rich Daly, Blockchain: Wall Street's Most Game Changing Technology Advance Since the Internet, FORBES (July 11, 2016), available at <https://www.forbes.com/sites/richdaly/2016/07/11/blockchain-wall-streets-most-game-changing-technology-advance-since-the-internet/?sh=612375064d87> (visited 12/27/2020).

<sup>5</sup> See the GameStop case <https://www.infobae.com/economia/2021/01/28/sigue-el-escandalo-gamestop-el-fondo-de-wall-street-al-que-apuntaron-los-trolls-desmintio-la-bancarrota-pero-perdio-millones/>

<sup>6</sup> See Luis José Rangel Gutiérrez. 2019. Legal approaches to the regulatory framework of cryptocurrencies.

<sup>7</sup> See <https://www.edinburghpeacetech.law.ed.ac.uk>

<sup>8</sup> GUI or graphical-user interface is a computer program that performs the function of a user interface. Its purpose is to create a user-friendly visual environment for communication to flow with the operating system (e.g. Windows desktop environments, GNU/Linux's X-Windows, or Mac OS X's Aqua).

### **3.1 Conflict analysis**

From the conflict theory, it can be stated that to help resolve conflicts, the operator must analyze and evaluate the situations presented to him by his clients and design suitable interventions to manage and resolve them.

It is perfectly possible that the conflict operator may have to negotiate, conciliate, intervene, guide, facilitate, mediate, etc., and may even have to alternate between one form of work and another, or even more than once.

One of the initial drawbacks is that the conflict situations that clients will bring to your office will rarely (if ever) be well structured, complete, with all their elements in front of the operator, in such a way as to allow him to know, *ab initio*, how to respond appropriately to the case.

To understand the case, the conflict operator, starting from a univocal definition of conflict that is all-encompassing of all types of conflicts, must review how the case fits into the different conflict theories and thus determine towards which conflict resolution methodology it could be oriented.

This initial assessment is only a first impression. In general, the causes of the conflict, the claims of the parties, etc., are often hidden beneath the surface of the relational dynamics, but there is more: it is possible that at the heart of the conflict lie a series of problems linked to recognition, legitimization, emotions, etc., which will have to be uncovered to work on them. The operator will need to draw up a representation of the reality of the conflict situation, i.e. a map of the conflict, detailing the various elements of which it is composed.

Initially interviewing the parties separately, the operator will explore the conflict to establish each of its constituent elements. To do so, he/she will need to analyze the conflict in its two dimensions, i.e. dynamic and static, and verify the existence of its constituent elements. This will enable him to draw up various intervention hypotheses that are more refined, accurate, and efficient.

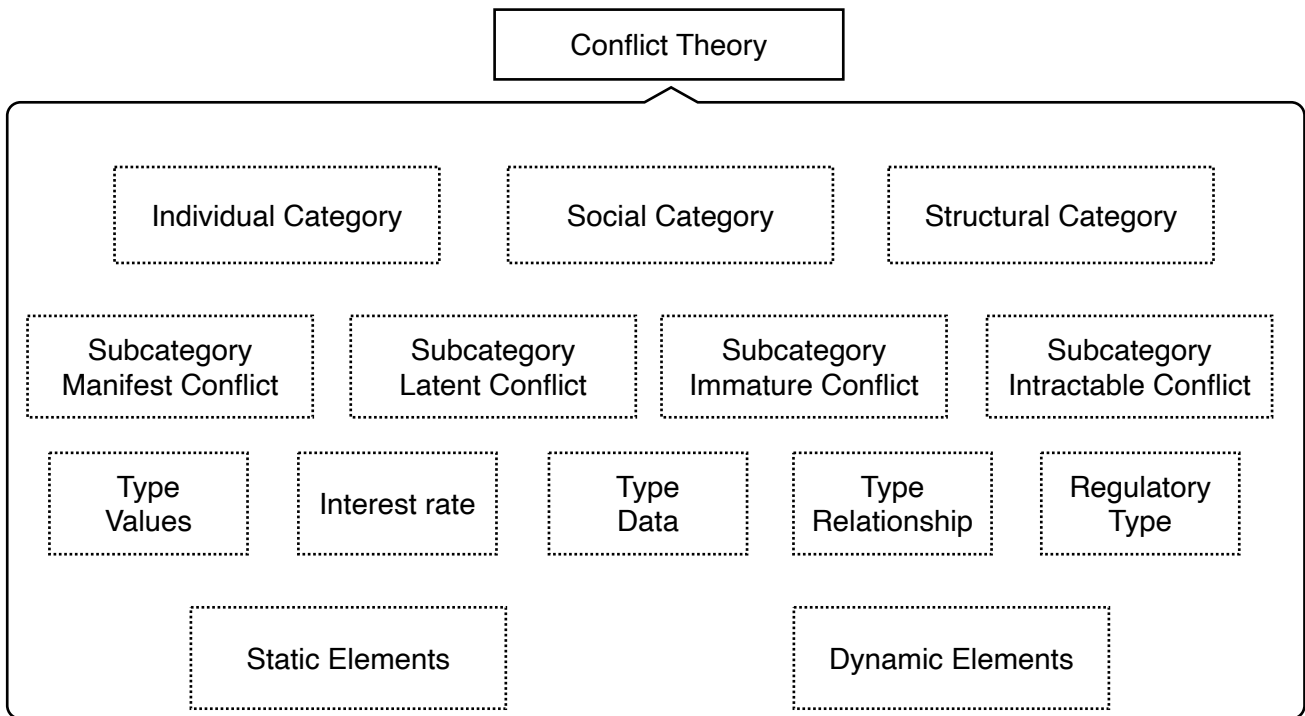
Thus begins the last of the steps before the intervention itself, i.e. the design of the intervention hypothesis (or hypotheses) based on a specific work methodology.

However, the design stage has at least two distinct levels: a) macro design, i.e., the design of an intervention protocol in a specific area, and b) micro design, i.e., when we are talking about a specific conflict. In the first case, the will of the State must be clear, the public policies to be followed must be defined without admitting any cavil in this respect; in the second case, the will of the parties involved in the conflict must also be clear, although here they are only required, at least initially, to be clear only about wanting to work to solve the conflict.

Outlining one or more working hypotheses then entails testing them. The operator must at all times pay close attention to whether the assumptions of the various theories, to which he has decided to adhere, are being fulfilled or not. Each of his specific interventions must be aimed at testing the theory of the hypothesis he is working with; it is clear that if his interventions do not effect, the operator can move on to explore another hypothesis and start testing again with this trial-and-error formula.

But it must also be very clear that the operator cannot play the lottery with his hypotheses, his erratic intervention will possibly be perceived by the parties and thus destroy the legitimacy and trust that they have placed in him, and the parties may even come to think that the alternative dispute resolution methods are not valid or suitable.

Fig. 2 Conflict Theory.



Own elaboration.

### 3.2 Signing, content, and interpretation of agreements

Overcoming the problem about interpretations of agreements comes hand in hand with smart legal contracts, but before it comes to this, the parties can introduce *hashing* of the various documents that are exchanged to solve the problem of content alterability.

A *hash* is a mathematical algorithm that transforms any document (or data) into a new series of alphanumeric characters with a fixed length.

Regardless of the length of the input data, the output *hash* value will always have the same length.

When the file is renamed by the *hash* code, the date and time of its modification are stamped on the file. This *hash-based* proof-of-work forms a record that cannot be modified without re-doing a proof-of-work, which would involve modifying the previous *hash*.

The cryptographic *hash* function not only serves as a witness of the proof of work but also proves the immutability of the document.

The solution we propose is the cryptographic hash function in agreements that can be implemented both in private (law firms, solicitors, etc.) and public (public administration in general) networks.

- (i) Implementation of the cryptographic function in documents in a private network. There are multiple free universal *hash* generation tools available. *Hash Maker* and *Hash Generator* are GUI<sup>9</sup> applications that come with a simple and easy-to-use interface even for beginners. They automate the generation of several different types of *hashes* including the SHA family (the most popular for its high level of security), which can generate *hashes* for files as well as text. The user can directly enter or paste any text from the clipboard and generate the *hash*. It also supports a drag-and-drop interface, which allows to generate a *hash*

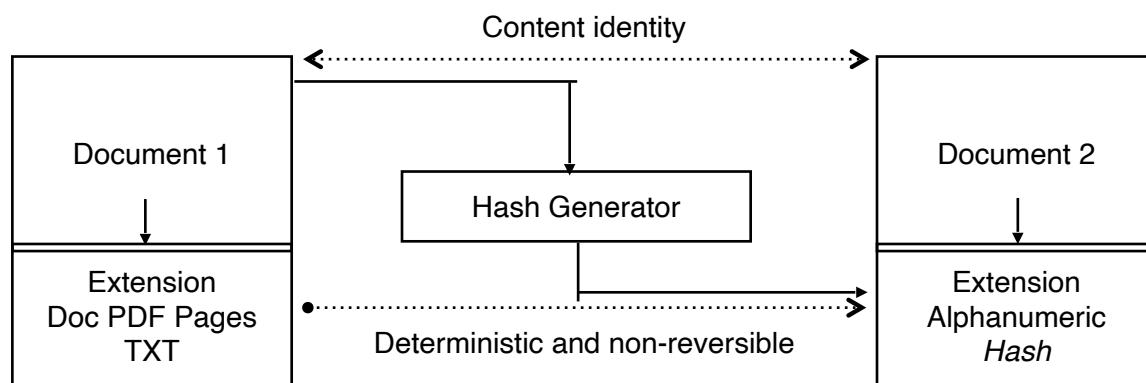
<sup>9</sup> On this subject, see A. Back, 2002. '*Hashcash - a denial of service counter-measure.*' <http://www.hashcash.org/papers/hashcash.pdf>, 2002.

quickly. *Hash Maker* brings a *hash* comparison function which is very handy to check if a *hash* has changed (or not).

Once the above process is applied, the documents will be stored in a shared cloud.

- (ii) To implement the cryptographic function in documents on a public network we will need a distributed timestamp server on a *peer-to-peer* basis, we will employ a proof-of-work system similar to Adam Back's<sup>10</sup> *hashcash* in which the *hash* (SHA-256) starts with a number of zero bits.

Fig. 3 Cryptographic function in document exchange.



Own elaboration.

### 3.3 Privacy and data protection for antagonists

As for privacy, it should be pointed out that by its very nature, the structure of the *blockchain* is not ideal for protecting privacy.

In a private *blockchain* network, only those who have been invited to participate and have accepted a series of general and specific conditions regarding the processing of their data will participate.

In public *blockchain* networks, however, things are very different. These public networks are characterized by pseudo-anonymity. They do not allow individuals to be identified, although they can be traced. It is this very traceability that has helped the authorities to imprison many criminals who believed that the network was completely anonymous and that they would not be identified<sup>11</sup>.

The problem lies in the protection of personal data containing sensitive and confidential information.

The concept of data protection refers to the privacy of personal data (in particular the right to honor and personal and family privacy).

The solution lies in anonymization and, under certain special conditions, in pseudonymization.

The anonymization process consists of irreversibly dissociating the identifying data associated with a person.

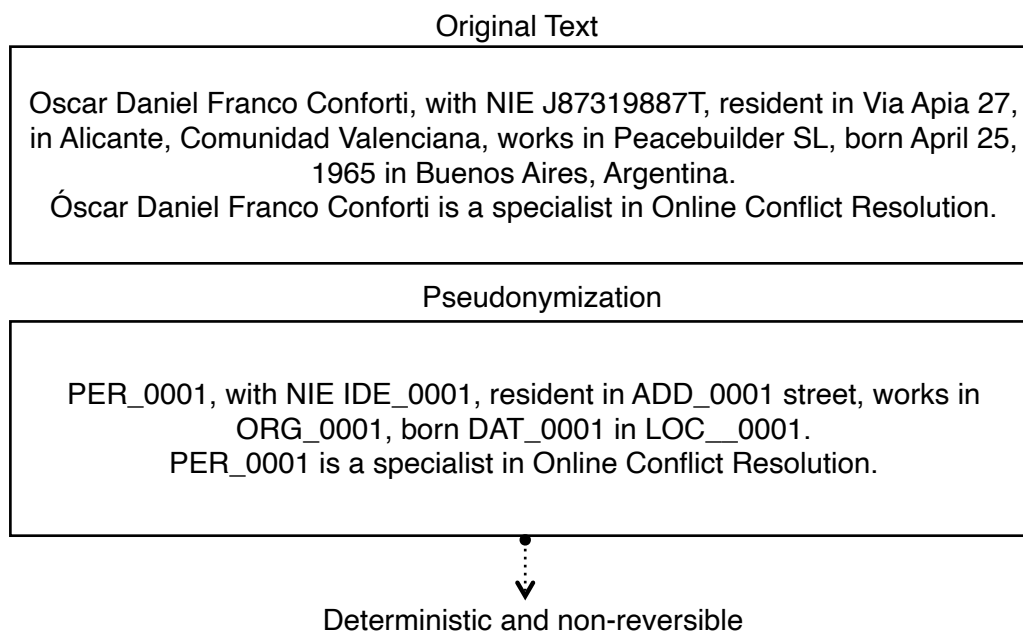
<sup>10</sup> See Saifedean Ammous. 2018. *The Bitcoin standard. The decentralized alternative to central banks*. Trad. Mercedes Vaquero Granados. Deusto.

<sup>11</sup> EU Regulation 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons about the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation).

Pseudonymization, on the other hand, involves changing a piece of information to an alias or pseudonym, a reversible process that allows the person to be re-identified. Art. 4.5 of the General<sup>12</sup>Data Protection Regulation (hereinafter GDPR) states *"pseudonymization": the processing of personal data in such a way that they can no longer be attributed to a data subject without the use of additional information, provided that such additional information is separately identified and subject to technical and organizational measures intended to ensure that the personal data are not attributed to an identified or identifiable natural person.* <sup>13</sup>

In other words, pseudonymization will be valid as long as the conversion key is destroyed to revert to the original data.

Fig. 4 Document pseudonymization process.



Own elaboration.

### 3.4 Compliance with agreements

To overcome the problem of agreement enforcement, Peacebuilder proposes a solution<sup>14</sup> through *blockchain* technology.

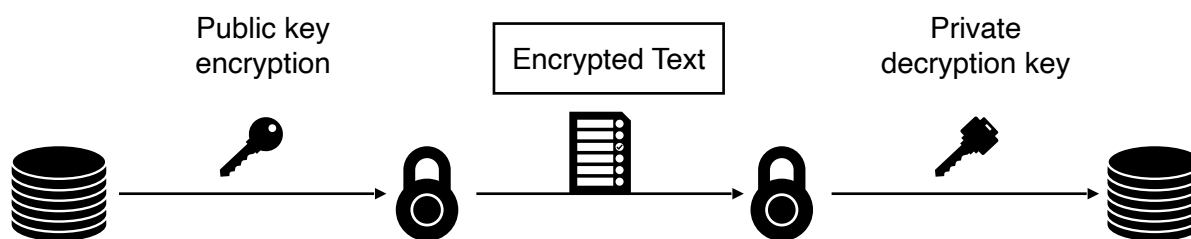
The *blockchain* is a technology that facilitates the mechanism of registration, encryption, and digital distribution of transactions that occurs from the agreement of the participants.

<sup>12</sup> In Spain, you can consult the technical note published by the Spanish Data Protection Agency, *K-Anonymity as a measure of privacy*. Available at: <https://www.aepd.es/media/notas-tecnicas/nota-tecnica-kanonimidad.pdf>

<sup>13</sup> As Colin Rule suggests 'When a system designer is primarily concerned with procedural fairness or is scrupulous about doing everything with maximum transparency, the dispute resolution process can slow to a crawl.' Ob. cit. p. 277.

<sup>14</sup> Smart contracts protect all contracting parties equally. They are useful enough to execute automatically as programmed.

Fig. 5 How blockchain technology works.



Own elaboration.

When it comes to ensuring the identity of the participants, *blockchain* technology allows us to use it through sovereign digital identity or also called self-managed. *Blockchain* modernizes the provision of services, generates development potential with registration solutions and <sup>15</sup>*smart contracts*.

*Smart contracts* (they are neither contracts nor smart, although the term is used) are a tool for automating the execution of contractual clauses that respond to objectifiable parameters using Boolean logic<sup>16</sup>. They make agreements binding, unstoppable and automatic. They are decentralized pieces of code that move according to a condition. They make it possible to guarantee the execution of a contract on the principle of neutrality. They allow delivering digital goods in addition to giving efficiency to the delivery of real goods and services. They can function as an independent and verifiable intermediary<sup>17</sup>.

In short, a *smart contract* increases the speed of operations, streamlines the multi-signature process (or with different operators), and maintains confidentiality<sup>18</sup>. At the same time, it offers additional confidence to the antagonists, guaranteeing the security and compliance of the agreement by depositing a *token (security)*<sup>19</sup> for the estimated value of the obligation, as agreed by the parties and established both in the agreement and in the compliance rules. Once the agreement is fulfilled, the parties will recover their *tokens* and the profits (the *stake* prevents the *tokens* from devaluing over time) that they have generated during the time they have been deposited or delegated.

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<sup>15</sup> Boolean algebra, also called Boolean algebra, in digital electronics, computer science, and mathematics is an algebraic structure that schematizes logical operations. See <http://www.ehu.eus/aarrieta/apunteak/Boole.pdf>

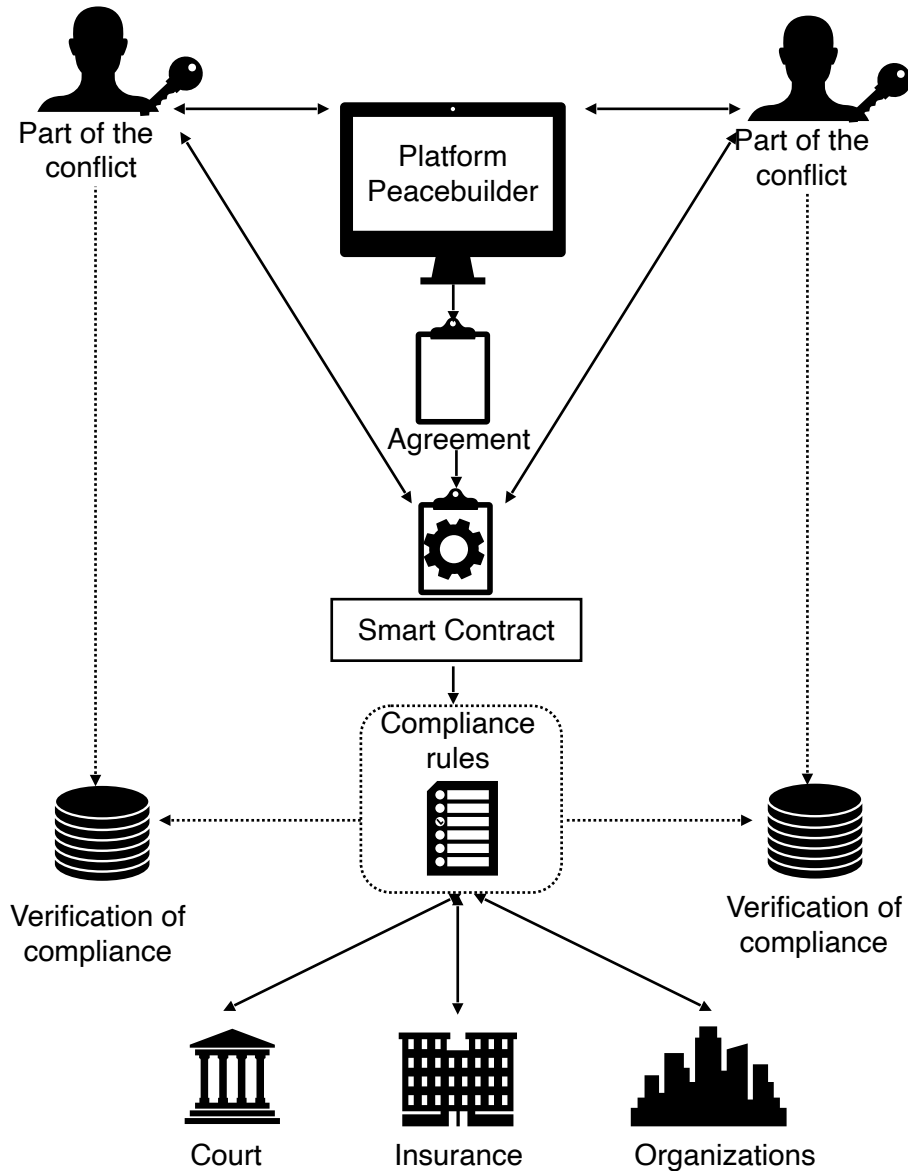
<sup>16</sup> See Smart Contracts: 12 Use Cases for Business & Beyond. Chamber of Digital Commerce. Where it is noted that through smart contracts individuals own and control personal data (e.g., can securely disclose personal data to various counterparties), counterparties will not need to have sensitive data to verify transactions (which will reduce liability), facilitates greater compliance, resilience, and interoperability. It could foster the acceptance of digital certificates in a legal framework and establish trust in the security of smart contracts, help achieve technical integration with certificate providers, and assist in the formation of protocols and standards to provide interoperability for the parties involved.

<sup>17</sup> See Smart Contracts: 12 Use Cases for Business & Beyond A Technology, Legal & Regulatory Introduction. Foreword by Nick Szabo. Prepared by: Smart Contracts Alliance, in collaboration with Deloitte An industry initiative of the Chamber of Digital Commerce. <http://digitalchamber.org/assets/smart-contracts-12-use-cases-for-business-and-beyond.pdf>

<sup>18</sup> The tokens may be deposited in *staking mode*, which consists of acquiring cryptocurrencies and keeping them locked in a wallet in order to receive profits or rewards,

<sup>19</sup> In the same vein Ethan Katsh & Janet Rifkin, Online Dispute Resolution: Resolving conflicts in Cyberspace (2001).

Fig. 6 Application of the smart contract in the blockchain.



Own elaboration.

#### 4. Team



The team is led by Óscar Daniel Franco Conforti. (CEO) Professor of Negotiation at the Universidad Oberta de Cataluña. Master in Conflict Resolution. Doctor in Law, accredited by ANECA.



Ana Sarabia. Responsible for the legal and financial department.



Horacio Benedicto. (CTO) Development Manager.



Pablo Marrone. (CMO) Marketing Manager.



Andrés Vázquez López. (UX). Responsible for user experience



## 5. Our roadmap

### 4.1 First stage: basic safety elements in ODRs

ODRs have been successful when their design meets the basic elements of legal, information, intellectual and ethical security, as well as the appropriate levels of trust, experience, convenience and efficiency. It is sufficient that one of these elements is not present for the system not to be used by users<sup>20</sup>.

In the first stage, we have focused on creating a platform<sup>21</sup> with all the essential elements to an ODR process:

- (i) Electronic file.
- (ii) Secure the identity of the participants with a double security factor.
- (iii) Electronic signature using video-recording certification, written with time stamp and biometric certified by a notary public.
- (iv) Metrics
- (v) Parallel and real-time online support for conflict operators.

### 4.2 Second step: differentiating elements of ODR in the *blockchain*

In Peacebuilder we have understood that it is about bringing the benefits of *blockchain* to ODR.

In this sense, in the second stage we incorporated:

- (i) Artificial intelligence algorithm in conflict analysis<sup>22</sup>, so that using a decision tree based on a proprietary and published methodology on conflict theory<sup>23</sup>, peacebuilding<sup>24</sup> theory and<sup>25</sup>online conflict resolution, the user can receive certain information about the best ODR methodology to use to resolve their conflict.
- (ii) Smart contracts and *blockchain* technologies, bringing the agreements reached into a smart contract, where possible. We explore the possibilities of *tokenizing* obligations and rights (using for example the Cardano<sup>26</sup> *blockchain* with its Glow language and ADA token), and tracking them to check compliance through so-called

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<sup>20</sup> See [acuerdojusto.online](http://acuerdojusto.online)

<sup>21</sup> Emulating Ernie Thiessen we have developed our methodology. '[...] Ernie Thiessen... had developed a way to help parties find a resolution to their dispute that maximized benefits for both participants.' Colin Rule, *Online Dispute Resolution For Business*. Jossey-Bass 2002, p. 23.

<sup>22</sup> Óscar Daniel Franco Conforti. *Tutela judicial efectiva y mediación de conflictos en España*. Tecnos. 2016.

<sup>23</sup> See Óscar Daniel Franco Conforti. *Construction of Peace. Design of intervention in conflicts*. Dykinson, 3rd Ed. Dykinson. 2018 and *Integrity the contribution of organizations and companies to peacebuilding*. Dykinson. 2018.

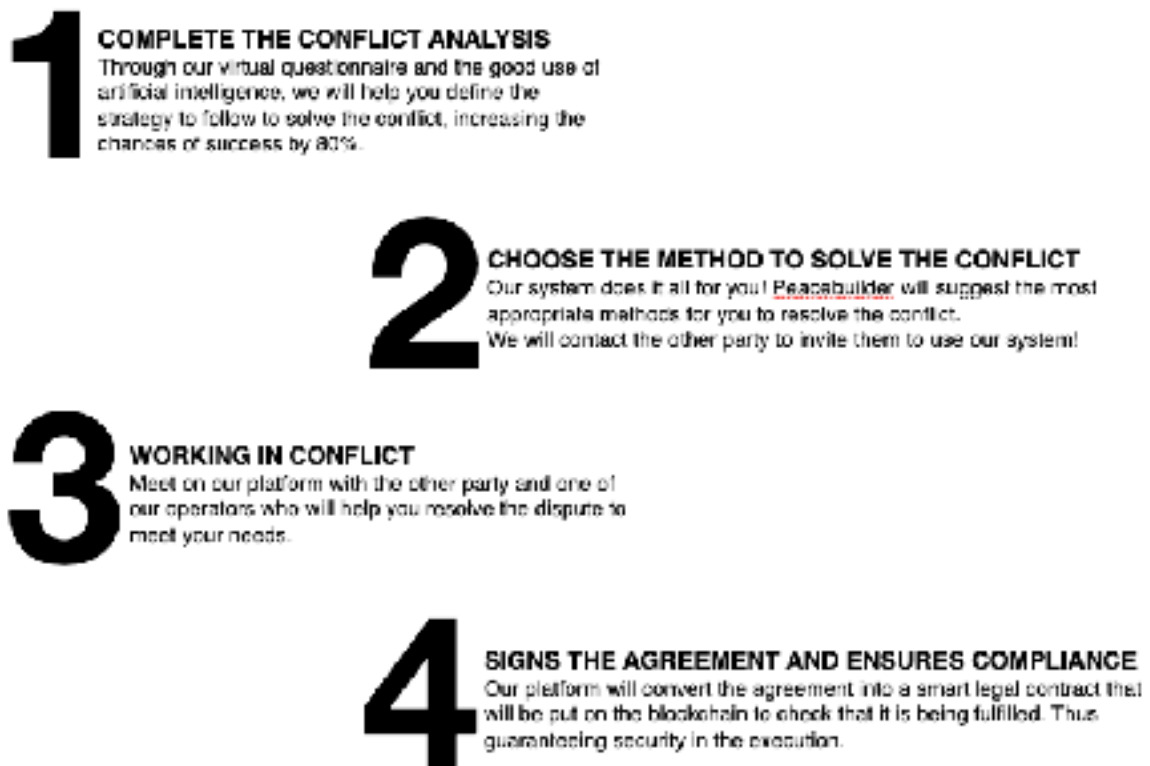
<sup>24</sup> See Óscar Daniel Franco Conforti. *Small manual of electronic mediation*. Peacebuilder. 2013 and *Online conflict resolution*. Ediciones Lorca. 2020.

<sup>25</sup> See <https://cardano.org>

<sup>26</sup> Wolfram Alpha is a natural language processing tool that powers Apple's Siri and Amazon's Alexa intelligent assistants.

oracles (e.g. Wolfram Alpha<sup>27</sup>, IOTA<sup>28</sup>, etc.), creating a secure dispute resolution ecosystem.

Fig. 7 Presentation of the process to the user.



Own elaboration.

## 6. Conclusion

Being self-critical, it must be said that today, the learning curve is very slow. To some extent, the fact of employing terms such as *hash*, proof of work, *Dapps*, smart contracts, cryptocurrencies, tokens, altcoins, oracles, etc. acts as a real scare people away.

The first challenge we face is to learn how to communicate properly so that people can understand and comprehend the benefits to them of *blockchain* technology in ODR.

Undoubtedly, the challenges faced by ODR on the *blockchain* are solvable and lead to improvements in, among other things, security.

People now have an online dispute resolution (ODR) infrastructure that leverages *blockchain* technology:

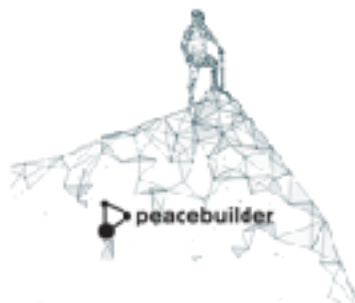
- (i) It creates an electronic file by securing the identity of the participants through a double security factor.
- (ii) It uses electronic signature -through videotaped and text certification with time stamp and notary-certified biometrics-.

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<sup>27</sup> IOTA is an open-source distributed accounting technology, the purpose of which is to securely enable the exchange of information and value on the Internet of Things.

- (iii) It analyzes the conflict scientifically based on an evidence-based methodology, providing the person with reliable information on the best ODR methodology to use to resolve their conflict.
- (iv) Guarantees the immutability of the contents of the agreements through the cryptographic *hash* function.
- (v) It makes it possible to *tokenize* obligations and rights and at the same time to follow up, through the oracles, the fulfillment of the agreements.

By using this platform people eliminate dependence on a trusted third party, with no loss of parallel online support for the conflict operator. The metrics ensure full transparency, creating an ecosystem for peacebuilding.



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