Chapter 1
Introduction: Contract Automation and "Smart Contracts" in Comparative Law

The incessant development and ubiquitous diffusion of information and communication technologies give rise to phenomena of considerable socio-economic and therefore legal significance.

Among these, contractual relationships are strongly affected by technological evolution, which provides new tools for negotiating, concluding, and executing contracts, with specific operating dynamics and unprecedented legal issues.

In this perspective, from a legal point of view, the contract-technology combination represents a topical issue for a comparative analysis, which provides the interpreter with an overall view of different local responses to common developments and problems deriving from the use of technology in contracts.

Technology creates new opportunities for socio-economic relations, commercial exchange and overcoming national borders, allowing to conclude and execute agreements more quickly regardless of the distance between the contracting parties. On the other hand, technology tests the legal institution of contract making it necessary to adapt it to immediate, transnational, automatic uses and to the legal issues deriving from them.

Furthermore, technology emerges as a tool for regulating the interests of the parties, sometimes considered an alternative to the contract and/or judicial intervention. The adage "code is law" proposed in doctrine since the nineties of the last century finds new strength today, with the development of technologies that seem to make possible the realization of that hypothesis.

In consideration of these developments, this book aims to analyze the evolution of the relationship between technology and contract, with particular regard to the profile of contractual automation as the *fil rouge* of the path, starting from the contract concluded automatically until today's "smart contracts" built on distributed ledger—blockchain technologies.

Contracts are essentially social institutions, not produced by a central authority but the results of the free and decentralized exercise of individual autonomy. In this context, the automatic execution of smart contracts, with the relative trend towards a reduced use of the legal system, is in line with the general phenomenon of the

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increase in rules and private institutions which is giving rise to a gradual loss of relevance of state law.

Nowadays in trade practice, in addition to the now widespread standardization of the conditions drafted by one of the contracting parties, with the specific protections dictated in the various legal systems for the weak contracting parties, there is an increasing practice of "modularization" of the contractual texts, which are increasingly based on modules that legal advisors or contracting parties themselves assemble and customize according to their specific needs.

On these phenomena scholars highlight, on the one hand, the tendency towards the reception of the Anglo-Saxon model of the "self-sufficient" contract, also in virtue of the widespread use of the English language; on the other hand, the increasingly central role played by technology, which contributes to the global diffusion of contractual models through technological means.

This diffusion gives rise in practice to "techno-legal transplants", about which the need for a comparative approach aimed at identifying the regulation applicable to increasingly delocalized and automated cases and the coordination of the same is increasingly evident.

As regards the reaction of the legal systems to such phenomena, in the various legal systems today there seem to be forms of reaction to the same and to the relative disruption of the consolidated schemes which oscillate between the conscious acceptance, the unaware one, the adaptation of the practice and domestic law, and the refusal.

In this perspective, the renewed strength of the references to a leading role for the "techno-regulation" with respect to the legal system, together with the growing relevance of the computer scientists as editors of the code from which the techno-legal rules would derive, are screened under the lens of the comparative lawyer, in order to check their effective usefulness and efficacy, which seem existing when considered as an aid *secundum* or *praeter legem*, but not *contra legem* or *sine lege*.

Thus, the elements, pathologies, and classical remedies of contract law are reviewed and adapted with regard to the features and operational profiles of smart contracts. Through a comparative law approach, essentially from a Western perspective but including considerations of law & economics and legal process, the peculiarities of the elements, pathologies, and remedies in the context of smart contracts are examined, to identify the solutions through which the latter can be integrated and protected in the legal framework.

Chapter 2
Contract and Technology from Automatic to Telematic Contracts

2.1 *Liaisons dangereuses* Between Contract and Technology in a Comparative Perspective

The relationship between contract and technology and its implications for contract law are not a recent phenomenon. Bargaining has always been influenced at different levels using new techniques and advanced contracts with the development of modern forms of communication.[1]

Over a century has passed since the German doctrine, primarily with Auwers,[2] and a few years later the Italian doctrine, with Cicu and Scialoja,[3] began the exploration of the then futuristic relationships between automatic devices, private relations, and contractual stipulation.

Such authors traced the first steps of the subsequent long and still articulated path of analysis of the impact of the so-called automatic with respect to the *modus*

[1] See, for example: Monateri (2000), p. 530, who recalls that according to Roman law the *stipulatio* required that formalities be put in place, and they were carried out using technologies: a pair of scales and a piece of copper, a formula to pronounce and certain gestures to perform. Symbols, procedures, and technical objects imitated or replaced consent, then as today. See also: Landels (1978), p. 203, who recalls how almost 2000 years ago a Greek engineer and mathematician described a coin-operated vending machine to be inserted at the entrance of a temple which, in exchange for a piece of five drachmas, dispensed a small amount of water for ritual washing of the face and hands.

[2] See: Auwers (1891); Guenther (1892); Schels (1897); Schiller (1898); Ertel (1898); Neumond (1899).

[3] Cicu (1901); Scialoja (1902), pp. 150 ff. More recently, see among others: Gambino (1997); Delfini (2002); Sica and Stanzione (2002). In recent European doctrine, see: Schulze and Staudenmayer (2016); Grundmann and Hacker (2018).

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operandi, and therefore to the taxonomy and evolution of the institution of the contract, its elements, and related events.[4]

The massive emergence of technology in the field of contracts and contract law has been interpreted primarily in terms of reducing transaction costs, since technology is instrumental in the formation of agreements more quickly, regardless of the distance between the contracting parties.[5]

The development of digital technology and telematics[6] has led to the emergence of new contractual typologies based on economic behaviors that go beyond weighting, to satisfy needs through exchanges characterized by ever greater speed, or often immediacy, and effectiveness.[7]

On the other hand, existing or adopted solutions have often been considered inadequate with respect to the real impact that the latest technologies have on the contract as a pillar of individual autonomy and on consensus as the fundamental core of the same.[8]

[4] With reference to the regulation of cyberspace and the so-called *lex informatica* proposed in the US doctrine as an extension of *lex mercatoria* to cyberspace, see among others: Marrella and Yoo (2007); Lessig (1999a); Reidenberg (1998); Johnson and Post (1996); Reed (2000). *Lex informatica* is seen as a natural extension of the *lex mercatoria* to cyberspace, a set of complementary tools for the regulation of online transactions through the establishment of technical standards, in addition to contractual rules. Like *lex mercatoria*, *lex informatica* is ultimately based on self-regulation. It is a system of customary rules or standards and technical standards developed by online users for internal use by members of the community. The system operates on a transnational level, regardless of national borders and laws; in this regard, see especially: Reidenberg (1996). Specifically about contracts, see: Easterbrook (1996), who said that approving special legislation for electronic bargaining would be like adopting an improbable "horse law"; Moringiello and Reynolds (2013), who found that the courts recognized that the legal problems posed by new technologies were no different from those presented in the previous century and, therefore, rejected attempts to change the traditional contract law. *Contra*: Lessig (1999b); Matwyshyn (2013); and in part, with a law & economics approach: Katz (2004), arguing that changes in the level of application of the law would be justified by the different way in which transaction costs emerge in electronic contexts compared to traditional ones. For the resilience of contract law, see e.g.: Kidd and Daugthrey Jr (2000); Sommer (2000).

[5] In this regard, see among others: Granieri (2017); Kalemi and Ndreka (2012); Want (2010).

[6] The term telematics derives from the Greek adverb "tele-" which means distant and from the suffix "-ema" which means functional element that gives shape to something. Thélème was also the imaginary abbey with which Gargantua, a character conceived by Francois Rabelais, French humanist of the sixteenth century, foreshadowed a world of complete freedom. Unlike all the others, it was an abbey without walls and external barriers: everyone could enter it, well received, someone could be lost. The concept of telematics, therefore, indicates a set of IT services offered and used, in real time, through a telecommunication network, which may act as communication tools between the parties. On the subject, one may also see: Gambino et al. (2019), pp. 2 ff.

[7] In this regard, see, *ex multis*: Kryczka (2005); Sammarco (2006), p. 73.

[8] See, among others: Granieri (2017), p. 2; Farnsworth (2006), pp. 900–901, who underlines that "the eminent position of contracts is also due to their central role for the ordering of market relations, especially in the heyday of liberalism, and to the symbolic importance of private agreements for the ideology of individual autonomy."

Contracts are primarily social institutions. As such, they are generally not a product of authority at the central level, but the result of the free exercise of individual autonomy at a decentralized level, which is accompanied by the liability provided for by the legal system.[9]

With this in mind, the consent of the parties is the mechanism that establishes their binding commitment and contract law has developed mainly by focusing on it, both as a meeting of wills at a given time and in space and as a promise based on a consideration.[10]

On a broader level, it is worth remembering that technology is a means that allows humanity to achieve certain goals.[11] In this light, technology is in principle the result of decentralized individual choices to solve problems, a feature that makes technology very close to contracts.

On the other hand, both contracts and technology are subject and exposed to the risk of centralization, since as decentralized private orders they can be controlled by a more restricted set of individuals and institutions, or become instruments of exercising substantially unilateral bargaining power of a part on the other.[12]

Thus, because of the use of IT and telematics for the conclusion of contracts, the parties bear an unprecedented risk factor—no longer, as in the past, dependent on the nature of the business or the reliability of the contracting parties—- but rather intimately connected to the means of concluding the contract.

The relation between technology and contract then requires a regulation, beyond the technical rules, capable of governing the relation between the appearance generated by the symbolic language of telematics and the substance of the economic relationship that is intended to be managed through the contract.[13]

In the broad debate on the matter, a point of reference can be identified in the fact that both the philosophers of science[14] and the legal scholars[15] agree in considering the notions of self-responsibility and protection of entrustment as guiding principles in the construction of the rules applicable to online relationships.

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[9] See, e.g.: Sacco and De Nova (2016), pp. 15 ff. and 701, who emphasized that: "the law regulates the autonomy of the subject, and regulates it by using tools of autonomy and responsibility for its use." Regarding the authoritarian theory of the contract, see: Monateri (2017a).

[10] See again: Sacco and De Nova (2016), p. 335, who specify that the bilateral declaration of consent is not always necessary for the conclusion of the contract, in general the consent of the only party that undertakes is requested, and as for the party that buys, it is sufficient that it does not refuse; Granieri (2017), pp. 3–4.

[11] Thus, see: Arthur (2009), p. 27.

[12] Consider, for example, the unilateral arrangement of terms and conditions in standardized contracts and the systems for managing digital rights. See again: Granieri (2017), p. 4.

[13] See: Gemma (2007).

[14] See among others: Jonas (1979).

[15] See, e.g.: Sacco and De Nova (2016), p. 127, according to whom as a general rule the responsibility of who appears to be the sender, combined with the legitimate expectation of the recipient, guarantee the integrity of the contractual case.

The process of depersonalization of relationships, and the consequent objectification of the contract, already matured with mass bargaining, have their fulfillment in telematic negotiation, even more when it operates through electronic agents, that is, automatic programs which conclude contracts between machines based on preventive instructions but without individual control.[16]

This book analyzes those forms of bargaining, gradually from automatic to telematics, up to today's smart contracts, which have increasingly been responsible for the evolution of the model of a progressive formation of contractual consent.

In such a model, the perplexities due to a lesser reflection on the purchase have been overcome through a reduction in transaction costs and a greater possibility of information regarding the subject of the exchange.[17]

The ambition of nation states to regulate trade has long clashed with its extraterritorial vocation. In this sense, technology has been instrumental in facilitating transnational communication, and online bargaining is one of the most significant challenges for the authority of the states.

Digital technologies, in fact, allow exchanges without geographical limits and can be used to relocate negotiating activities, also in relation to applicable law and jurisdiction. Furthermore, national laws may even be harmful to electronic bargaining, as regulatory fragmentation can increase transaction costs and limit the benefits of technology to commerce.[18]

In this perspective, it is possible to understand the regulatory efforts of the states and, first, the initiatives of model laws that the United Nations Commission for International Commercial Law has undertaken in the last decades. Among them, the controversial issue of the place of conclusion of the contract is of particular importance.

Therefore, Art. 15 of the UNCITRAL Model Law on electronic commerce,[19] and the so-called EC Regulation Rome I on the law applicable to contractual obligations,[20] identify the solution in the address of the proposer. In the case of contracts concluded between consumers and professionals, on the other hand, the Rome I

[16] The use of an electronic agent, which, through complex processing mechanisms, leads to the determination of an artificial, predetermined negotiating will, even if, with the technological evolution, potentially increasingly differentiated from that of the user—introduces a path alternative beyond the control of the party in the traditional production process and manifestation of the will to negotiate. In this case, the results of the bargaining are not always predictable upstream, and it cannot be excluded that the electronic agent will complete the contracts at least in part unwanted or beyond the expectations of the user of the program.

[17] See, e.g.: Gambino (1997); Id. (1999).

[18] Granieri (2017), p. 5.

[19] UNCITRAL Model Law of Electronic Commerce, adopted on 12 June 1996, available at: http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/1996Model.html, Art. 15, according to which "unless otherwise agreed between the originator and the addressee, a data message is deemed to be sent to the place where the originator has its place of business, and is deemed to be received at the place where the addressee has its place of business."

[20] Regulation (EC) no. 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations (Rome I) (OJ 4.7.2008 L 177/1).

Regulation provides for the application of the law of the place of residence or activity of the consumer "by any means," so including electronic means.[21]

Moreover, the issue relating to the place of conclusion of the contract is not a decisive factor in the choice of the law applicable to the relationship between parties from different countries.

Pursuant to the 1980 Rome International Convention on the law applicable to contractual obligations,[22] and today to the Rome I Regulation,[23] the alternative resides or in the preventive agreement of the contracting parties on the applicable national law, or, in the absence of choice, the criterion of the "closest connection" has been provided, to be determined based on the characteristic performance and the usual location.[24]

Another consequence, sometimes overlooked, of these first considerations is that the interaction between technology and contract and its implications for contract law are necessarily influenced by the approaches adopted by legislators, jurisprudence, doctrine, etc. of the different legal systems.

Therefore, with respect to the analysis of the many unceasingly emerging issues in the relation between technological evolution and the institution of the contract, by virtue of three main considerations, it is necessary to adopt an approach inspired by the comparative method.

First, the Internet and therefore the contracts that are put in place through it are—at least potentially—transnational in nature, and so they require a vision that goes beyond the state borders. As already mentioned, the instruments of international private law aimed at resolving the conflict between specific rules and national legal

[21] Jurisdictional issues are dealt with in Regulation (EC) no. 44/2001 of the Council of 22 December 2000 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters (OJ 16.1.2001 L 12/1), replaced by Regulation (EU) 1215/2012 of European Parliament and of the Council of 12 December 2012 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters (OJ 21.12.2012 L 351/1). Also, Art. 17, par. 1, lett. a), of Regulation 1215/2012, corresponding to Article 15 (1) (c) of regulation 44/2001, refers to "any means." On the other hand, the relocation of contracts through digital technologies can also be a way to escape bans and trade in illicit objects. This is the case of counterfeit goods, or the black market of illegal drugs, etc. which uses the so-called deep web, such as the Silk Road platform closed by the FBI in 2013.

[22] Rome Convention of 19 June 1980 on contractual obligations, which entered into force on 1 April 1991.

[23] Regulation (EC) no. 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations (Rome I), OJ L 177, 4.7.2008. The Rome I Regulation has been transposed into the European Union the Rome Convention, an international convention adopted by the Member States of the then European Community. See: Ferrari and Leible (2009); Garcimartìn Alférez (2017).

[24] Rome I Regulation, Art. 4, par. 1–4 (Rome Convention, Articles 3–4), according to which the contract is governed by the law chosen by the parties. The choice must be expressed or be reasonably certain by the provisions of the contract or by the circumstances, and in the absence of a choice, the country is presumed to be the country in which the party providing the characteristic performance usually resides or, if it is a company, a legal person or an association, the place where the headquarters or organization is located. See: Volker (2011); Tang (2008).

systems can in any case be used to identify the applicable law.[25] In this way, incidentally,[26] the recurrent hypotheses of the existence of a peculiar "cybernetic law" in which "code is law" can also be set aside.[27]

On the other hand, this makes clear at the same time the need, also in substantial terms, for a common regulation[28] and/or national rules that are clearly identifiable and accepted. They should be based on the specifically applicable principles,[29] with a view to preserve the function of protection of the law that only the options of the *lex mercatoria* or the computer code obviously cannot guarantee.

In addition, the comparative method allows, on the one hand, a broader reflection on the scope of the individual rules that affect the subject on several sides; on the other, to fully consider the relevance on further disciplines in addition to the law: computer science, sociology, linguistics, economics, etc.[30]

Finally, the rules of electronic commerce have traditionally developed in a series of institutes which derive their legal nature more from the spontaneous, or necessary, adhesion of the users of the telematic network, than from their own legal constraint, although over time increasing options for co-regulation or direct regulation are being developed in different legal systems.[31]

Technology and contract, therefore, represent a binomial that requires a comparative analysis, which provides a view of the different answers to the questions posed by the use of technology in negotiation.

In contract law, the civil law and common law systems still appear to be the most relevant ones in terms of principles, rules, and cases. A comparative study on the subject, then, must start from the lines drawn by these systems.[32]

2.2 Taxonomy from Automatic to Telematic Contracts

The classification of contracts represents the hermeneutic operation which, beyond the terminological formalisms, is aimed at offering the interpreter as much as possible the detailed systematic nature of the broad contractual phenomenology.

[25] See also the Uniform Commercial Code of the United States, which allows the parties to choose the applicable law within the limits of its relationship with the contract.

[26] Referring wider to the next chapters.

[27] In this sense, see e.g.: Burnstein (1996); Rubin et al. (1995).

[28] See e.g.: Bonell (2006); Lambert (1900).

[29] Consider the case of the principles applicable in contracts with consumers, expressly protected by the Rome Convention with regard to the choice of applicable law.

[30] In this regard, see *ex multis*: Michaels (2016); Spamann (2015); Reitz (1998); one may also see: Stazi (2015), pp. 258 ff.

[31] See, among others: Winn (2010).

[32] In the same perspective, see: Granieri (2017), pp. 1 ff.

This can be done by grouping together existing and recurring models in practice in legal categories that may contain common principles and elements, and identify the regulation applicable to the chosen model.[33]

According to scholars who pointed out the relevance of economic analysis of contract law, the contract, due to the numerous interests that flow into it, can no longer be traced back to a mere legal framework, rather having to be related to an economic operation, understood as the set of both the interests pursued and the negotiation activities carried out by the parties.[34]

The economic operation allows, in such a dynamic vision of the act of private autonomy, to reveal the intertwining of the underlying interests, which regulation provides at the same time a hermeneutic tool useful both for identifying the prevailing contractual type and for assessing the merit of the protection of the agreements adopted between the parties.[35]

This reconstruction led, therefore, to the definition of contractual categories—always of a legal nature but with the "qualifying contribution" of the economic operation criterion—such as those of the banking, financial, insurance, IT contracts, or, subjectively, of business contracts, consumer contracts, etc.[36]

As far as it is relevant here, contracts concluded using automatic devices first emerged. In them, a professional contracting party prepares equipment that allows the customer to insert payment means into the machine, or to make a payment through it. This operation makes it possible to appropriate goods or a legitimizing title, or to enjoy a service.[37]

The evolution of information technology and the digitalization of socio-economic relations,[38] then, have contributed to the development of increasingly articulated and complex contractual relationships, which have forced interpreters to deepen the issue of the relation between automation and contract and of the legal classification of electronic contracts.[39]

[33] See, among others: Mouzas and Furmston (2013); Monateri (2017b).

[34] See for example: Shavell (2003); Brousseau and Glachant (2002); Mattei and Pardolesi (1991); Kronman and Posner (1979).

[35] See, specifically: Lambertiere (1983).

[36] See, e.g.: Hermalin et al. (2007).

[37] The tenderer prepares the appliance, the execution of the services and the implementation of her and the client's rights, and the client performs her performance and implements her right. There are no declarations, but other facts: implementations and preparations of the same. The exclusion of individual negotiation and bargaining, the fixing of the price and the unchangeability of the proposal, however, do not contradict the essential characteristics of the contract and agreement. see: Sacco and De Nova (2016), p. 333; Cicu (1901); Auwers (1891).

[38] With regard to which one may see: Stazi (2019b); Gambino and Stazi (2020), pp. XI ff.

[39] See among others: Brownsword (2020); Mik (2020); Kirillova et al. (2020); Wilkinson (2020); Gambino and Stazi (2021).

Thus, in recent years, new categories have been suggested, such as telematic, digital, or cybernetic contracts.[40] Such categories actually do not identify a unitary type of negotiation, but a heterogeneous range of models, held together by specific common denominators—subjective qualification of the contracting parties, methods of conclusion of the contract, provision of services, or enjoyment of the assets—but they do not come to outline a specific regulatory framework for those new contracts.

Telematic contracts, which are characterized by the use of the electronic means to put distant parts in contact, in particular, are an interesting category with concrete regulatory impact. With reference to them, therefore, the analysis focused on their different characteristics and operational profiles, and identified specific subcategories.

A first general distinction is between telematic contracts in a broad sense, characterized by the provision of a service electronically, and those in the strict sense, in which the bargain is formed thanks to the electronic impulses exchanged between the terminals connected to distance.[41]

A key classification of telematic contracts is based on the subjective profile, distinguishing the business-to-business contracts relating to the negotiations between professional operators, the business to consumer for relationships between professional operators and consumers, and consumer-to-consumer relationships between private entities outside their professional activities.[42]

However, this classification was linked to statutory schemes that the new commercial techniques have overcome. The provisions aimed at protecting the "weak part" in the regulation of electronic commercial relations are, in fact, not anchored merely to the subjective condition of the part itself, consumer or professional, but they are based on the objective conditions in which the parties place themselves in such relationships.[43]

Another reconstruction, of French origin, proposes a subdivision of the telematic contracts into three heterogeneous classes. The first one is characterized by the conclusion of the agreement outside the system and the execution of the contract through the terminals. In the second, the conclusion of an agreement through the IT medium and its execution happens outside the telematic network. In the third case, both the conclusion and the execution take place online, e.g., for the circulation of rights relating to intangible assets and IT services.[44]

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[40] That is, concluded and possibly modified through electronic agents. Regarding these categories, see e.g.: Kirillova et al. (2020); Stazi (2019a, b), pp. 11 ff.; Finocchiaro (2003).

[41] French doctrine lists electronic contracts and "*conclus et exécutés par la télématique (par exemple, procédures de réservation électronique); – conclus para la télématique mais exécutés en dehors de cette technique (par exemple procédures de commande par terminal); – conclus en dehors de la télématique mais exécutés par elle (par exemple contrats d'accès aux banques de données)*": Linant De Bellefonds and Hollande (1988), p. 141.

[42] In a comparative perspective, see e.g.: Pappas (2020); Tang (2015); Wang (2014).

[43] One may see also: Stazi (2012); Stazi and Mula (2012).

[44] In this perspective, see: Le Tourneau (2006).

On the procedures for concluding electronic contracts functional to electronic commerce, two main options for expressing consent are identified: (a) contracts where consent is expressed with a "click", the so-called point and click on an offer contained in a website or more recently in an app on mobile devices;[45] (b) contracts in which consent is expressed by email.[46]

In the context of contracts concluded via access to a website or app, according to a part of the doctrine, the completion of the agreement and therefore the *Idealtypus* of the electronic contract, consists in completing a form including the typing of the card numbers, the buyer's credit, the receipt of which by the offeror is communicated to the oblate by an acknowledgment of receipt.[47]

In the contract concluded by email, on the other hand, by virtue of the completion of the agreement through an effective dialogue with mutual communication, the principle of receptivity is followed, tempered by the principle of effective knowledge.[48]

2.3 Legal Issues and Regulation of Online Exchanges

The characteristic common to all forms of regulatory intervention in the field of electronic negotiation at national and international level was the idea that there were legal obstacles at national level that would have prevented the full exploitation of the opportunities offered by electronic bargaining, especially in transactions involving foreign subjects.

The need to occasionally solve some aspects and to facilitate the use of technology for bargaining explains why in most cases the legal systems have adopted

[45] The term "app" is an abbreviated form of "application", which in practice is used especially with regard to mobile apps for mobile phones, tablets, etc. Most of the applications are found in real virtual stores called app stores. The contracts concluded through the app appear similar to the hypothesis of the contract concluded through access to the website, since also in this case it is a form of communication one to many and not one to one as in the contracts via email.

[46] These typologies can be framed in the inter-absent relationships. However, they have at least an unusual aspect with respect to them, in that the parties do not follow the normal logical-chronological sequence between the moment of processing the communication and that of sending the reply, or at least this sequence is strongly compressed. So, while in the contact *de visu* the assignment that follows an announcement can be easily corrected, according to canons of reasonableness, in telematics the screen of the program does not allow to easily identify neither the professional quality of the offeror nor the legal binding nature of the commitment undertaken; see: Sasso (2016).

[47] In this perspective, the spending of the credit card manifests the willingness to legally bind the purchaser, and has real efficacy involving the conclusion of the contract for the beginning of execution, according to a unilateral contract scheme; see: Gambino (1997), pp. 138 ff.

[48] Provided, e.g., in the civil law systems at Art. 1335 of the Italian Civil Code and in the common law systems in the so-called mailbox rule; in this regard, see *Amplius*, below in the following paragraph.

fragmented solutions rather than holistic approaches. The existing rules were changed, or new rules were introduced, only to the extent that it was necessary to facilitate trading online.[49]

At the same time, the telematic sphere has been widely considered by private and public actors as naturally predisposed to essentially self-regulation or co-regulation interventions, inspired by a previous scheme renamed "the new *lex mercatoria*".[50]

On the regulations applicable to online exchanges, first, the mechanisms of international private law, aimed at resolving the conflict between rules of different legal systems, such as the Rome Convention, are also to be considered operating in this context.[51]

Furthermore, the opportunity to pursue the greatest possible uniformity to facilitate the dissemination and transnational management of these relations, in identifying the applicable law, leads to a reflection on the scope of the different rules that affect the matter, with particular regard to that common core that from Western contractual systems turns to international rules on telematic contracts.[52]

On cases governed by rules of international conventions, it is possible to trace principles already rooted in the rules of individual states. So, for example, the Vienna Convention on international contracts between businesses[53] provides the obligation to repay the undue payment,[54] the right of retention by the purchaser,[55] the prohibition to act against *factum proprium*,[56] and the duty to limit the damage.[57]

In the case of *vacatio* with respect to a conventional rule, a reference to national laws is made through the options to: (a) deduce the general principles converging on

[49] See: Granieri (2017), p. 5; Savirimuthu (2005), p. 116.

[50] Starting from the standards for electronic communications, from the domain names of the Internet, etc. See, among others: Reidenberg (1998), pp. 553 ff. The different opinions on the intensity of deregulation in cyberspace go as far as anarchy, as argued by one of the leading Internet experts; see: Barlow (1996). Of particular interest are the so-called open-source communities, as a new private order but interdependent with public legislation; see: Marrella and Yoo (2007). See also, regarding online contracts between consumers: Guadamuz Gonzàlez (2003).

[51] See among others: Ruhl (2020).

[52] As an alternative to the *lex mercatoria*, Rubino Sammartano (1987) considers the application of the common core of the laws relating to the two parts.

[53] United Nations Convention on Contracts for the International Sale of Goods, Vienna, 11 April 1980.

[54] As an obligation to pay for goods received in excess in the absence of "refuse to take delivery of the excess quantity" (Art. 52.2 CISG).

[55] Specifically "to retain them (the goods) until he has been reimbursed his reasonable expenses by the seller" (Art. 86.1 CISG).

[56] See the references to the "observance of good faith" in the interpretation of the Convention (Art. 7.1) and to the "reliance" pursuant to Art. 16.2 and 29.2 of the Convention itself. In doctrine, also for application uncertainties, see: Bonell (1987).

[57] On this point, see Articles 74–77 CISG.

the matter in question from the relevant national laws; (b) integrate the content of the *lex mercatoria* with uniform material laws.[58]

Then, there is the hypothesis of the general principles of private international law, or of the so-called uses accepted in the practice of exchanges, as a rule deduced from the elaborations of legal operators, to which relevance has been given in arbitration decisions in cases of regulatory gap of the international legal system.[59]

Moreover, the widespread choice of the parts of the *lex contractus* shows the tendency not to recall non-exclusive principles, which operate rather in an integrative function, where the decision-making body itself assesses their application to the present case more equitably.[60]

Although in recent years there has been growing worldwide interest in the regulation and facilitation of online contractual relationships, the main actors remain the common law and civil law systems, primarily the United States and the European Union, which have followed different approaches in the regulation but with solutions to specific problems that sometimes coincide (for example regarding the formation of contracts or the validity of digital signatures).

The different systems, however, have been influenced to some extent by the action of international organizations and agencies.[61]

Internationally, one of the first signs of regulatory activism came from the United Nation Commission on International Trade Law—UNCITRAL, which in 1996 adopted a Model Law on electronic commerce.[62] The Model Law of 1996, with the subsequent amendment of 1998, was the first case in which a legislative text adopted the principles of non-discrimination, technological neutrality, and functional equivalence, which subsequently inspired many countries.[63]

A further Model Law on electronic signatures was adopted in 2001 to allow and facilitate the use of the electronic signature by introducing equivalence criteria between it and the manual one.[64]

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[58] Regarding the first see: Lando (1985). *Contra*: Mustill (1987). For the second, see: Gaillard (1995). *Contra*: Goldman (1987), believing that only non-state rules should be part of the *lex mercatoria*.

[59] See, among others: Bonell (2009).

[60] See e.g.: Gambino (1997), pp. 94 ff.

[61] In this regard, see: Granieri (2017), pp. 6–7.

[62] UNCITRAL Model Law on Electronic Commerce, cit. In this regard, see e.g.: Hermann (1999).

[63] A complete list of the countries that have implemented the Model Law and the subsequent Convention can be found in: UNCITRAL, Promoting confidence in electronic commerce: legal issues on international use of electronic authentication and signature methods, Wien, 2009, p. 38. In particular, the work of UNCITRAL formed the basis for United States legislation; see: Poggi (2000) p. 238; Winn and Haubold (2002), p. 578.

[64] UNCITRAL Model Law on Electronic Signatures, adopted on 5 July 2001, available at: http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/2001Model_signatures.html.

Subsequently, the Model Law of 1996 and its principles represented the reference point for the Convention on the use of electronic communications in international contracts, adopted by the United Nations General Assembly in 2005.[65]

The strategy of the editors of the UNCITRAL legislation was that of an approach based on technological neutrality, providing only legislative criteria to establish a generic functional equivalence between traditional manual and electronic signatures.

In this way, a change in the technological paradigm would not have made the regulation obsolete. These first legal sources at international level represented a guide for states to adapt their internal laws, with a view to achieving a certain level of uniformity regarding cross-border transactions.[66]

2.4 The Regulatory Framework in the European Union

The European Union and the United States have followed original, and only partially convergent, approaches which have also been influenced by the institutional peculiarities of each legal system. The most obvious difference in the regulatory approaches of the European Union and the United States lies in the aims of the regulation, which in the EU is inspired by the goal of creating an internal market.[67]

The European institutions believed that the transactional opportunities offered by the use of technology in cross-border exchanges could be instrumental to this objective, but to this end, at the same time, it was necessary to support private autonomy.[68]

Furthermore, since the internal market is an area where consumers are expected to receive a high level of protection in commercial transactions,[69] the European

[65] United Nations Convention on the Use of Electronic Communications in International Contracts, adopted on 23 November 2005 and entered into force on 1 March 2013, available at: https://www.uncitral.org/pdf/english/texts/electcom/06-57452_Ebook.pdf. In this regard, see: Boss and Kilian (2008); Martin (2008). The Convention was deemed necessary to overcome a gap in the Convention on the international sale of goods, so that it could also be applied to electronic transactions; its Article 13 referred to "writing" including telegram and telex, but not other more advanced tools. See: Hill (2003); Smith (2007).

[66] In this sense, see again: Granieri (2017), p. 7.

[67] See, among others: Poggi (2000) p. 248.

[68] See: Winn and Bix (2006); Kierkegaard (2007). According to Winn and Haubold (2002), pp. 568 f., the legislative or self-regulatory approach inspired by *laissez faire* in the United States and the more rigorous regulatory approach of the European Union are also partly due to the different approach to innovation, enthusiastic in the United States and more ambivalent in the European Union.

[69] See Art. 114, point 3, of the Treaty on the Functioning of the European Union. This provision is also considered the legal basis for the adoption of the Common European Sales Law, although some Member States have raised concerns about its adequacy.

regulation about online contracts is largely focused, although not exhausted, on consumer protection.[70]

Consumer transactions are separate from those between businesses, while in both cases there must be consistency with the goal of market integration and with fundamental rights, such as the protection of personal data, etc.

In such a context—even institutional with various Directorates General of the European Commission and other institutions competent on the various aspects—the regulatory approach remains fragmented, with the absence of a general framework in national legislation and with a multiplication of sources at the expense of the unitary category of the contract.[71]

In the United States, common law has shown flexibility in addressing issues arising from digital technologies, including those caused by consumer inexperience and vulnerability.[72]

The solutions adopted according to this approach, on the other hand, in some cases—such as on the protection of privacy—have not been considered sufficient by the European Union for the services and/or relationships involving European consumers.[73]

European e-contract legislation is made up of five specific directives and a set of rules contained in other directives or regulations. The first is the so-called E-commerce Directive.[74] The second is the Electronic signature Directive.[75] There are also two other recent Directives on contracts for the supply of digital content or services and on certain aspects of contracts for the sale of goods.[76]

[70] European contract law is partial in many aspects and has led to the fact that national laws have lost their unitary character in contract matters. In this regard, see: Kotz (2017); Rutgers and Sirena (2015).

[71] See: Winn and Bix (2006); p. 181; Martin (2008), p. 500. Regarding the relevance of the process of formation and application of the rules in comparative law, see: Hart Jr. and Sacks (1994); Hart Jr. and Wechsler (2009); Rubin (1996); one may also refer to: Stazi (2015), pp. 263 ff.

[72] In this sense, see: Moringiello and Reynolds (2013), pp. 455–456.

[73] Leading to the reform of the US-EU Safe Harbor Privacy Principles in favor of the new EU-US Privacy Shield; regarding which see e.g.: Castets-Renard (2018); Schwartz and Peifer (2017).

[74] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 relating to certain legal aspects of information society services, in particular electronic commerce, in the internal market (the 'Electronic Commerce Directive'), OJ 17.7.2000 L 178/1. The Directive is currently under review through the Proposal for a Regulation of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act) and amending Directive 2000/31/EC, COM/2020/825 final.

[75] Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 concerning a Community framework for electronic signatures, OJ 19.1.2000 L 13/12.

[76] Respectively: Directive (EU) 2019/770 of the European Parliament and of the Council of 20 May 2019 on certain aspects of contracts for the supply of digital content and digital services, and Directive (EU) 2019/771 of the European Parliament and of the Council, of 20 May 2019, relating to certain aspects of contracts for the sale of goods, which amends regulation (EU) 2017/2394 and directive 2009/22/EC, and which repeals directive 1999/44/EC, both in OJ 22.5.2019 L 136.

The rest of the framework includes existing regulations applicable also to electronic trading, including in particular the Directive on contracts negotiated away from business[77] premises, the Unfair Contract Terms Directive,[78] and the Directive on distance contracts.[79]

To consolidate the acquis least referred to, then, Directive 2011/83/EU on consumer rights[80], first, aimed at the objective of high consumer protection and the functioning of the internal market, but it also introduced an extension of the deadline for withdrawal, the possibility of exercising the withdrawal through a standard form, and the applicability of the withdrawal to online auctions.[81]

Lastly, Directive 2019/2161, so-called Omnibus, pursued the objective to strengthen consumer protection through increased transparency measures, extension of consumer rights and increased powers of enforcement (also updating among others the Unfair Contract Terms Directive and Directive 2011/83/EU). The E-commerce Directive 2000/31/EC had a wider scope than the regulation of telematic contracts. It aimed to remove obstacles and created the internal market for information society services. This formula included, but does not exhausted, electronic bargaining.[82]

[77] Council Directive 85/577/EEC of 20 December 1985 for the protection of consumers in the event of contracts negotiated away from business premises, OJ 31.12.1985, L 372/31.

[78] Council Directive 93/13/EEC of 5 April 1993 concerning unfair terms in contracts concluded with consumers, OJ 21.4.1993, L 95/29. For an overview and on the impact of the directive on the harmonization of the regulation of consumer contracts and on online contracts, see among others: Maxeiner (2003), p. 131; Winn and Bix (2006), pp. 184 ff.

[79] Directive 97/7/EC of the European Parliament and of the Council of 20 May 1997 concerning the protection of consumers in respect of distance contracts, OJ 4.6.1999, L 144/19. In distance contracts, the seller surprises the consumer with a commercial proposal that the latter does not have the time to carefully evaluate and compare with others on the market. To this situation of information imbalance and insufficient attention to the negotiating object, the legislator intended to set a limit by recognizing the consumer's right to be informed with more details, preventive and contextual to the stipulation, as well as a right to repentance, or *ius poenitendi*, consisting of the right to unilaterally withdraw from the contract entered into. In the cases of e-commerce, in addition to the surprise factor mentioned above, there are also the difficulties arising from the lack of familiarity of the user with the use of technological tools. For this reason, other specific and peculiar electronic commerce are added to the information burdens of distance contracts, in this case to protect the user—weaker party.

[80] Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and which repeals Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council, OJ 22.11.2011 L 304/64.

[81] In this regard, see: Finocchiaro (2003).

[82] Directive cited, Art. 1. An information society service is any service normally provided for remuneration, remotely, electronically, by electronic equipment for processing and storing data, and at the individual request of a recipient of a service. See: directive 2000/31/EC, art. 2, lett. a) and recital 17; EU Directive 2015/1535 of the European Parliament and of the Council of 9 September 2015, which provides for an information procedure in the field of technical regulations and rules relating to information society services, Art. 1, par. 1, lett. b).

Contract law in Europe remains a sectoral discipline, which is based on national contract laws.[83] Articles 9–11 of the Directive refer to the conclusion of the contract, providing for the general requirement that Member States must ensure that their systems allow for the conclusion of contracts by electronic means.[84]

Since the Internet makes it particularly easy to conceal one's identity, and to guarantee the awareness of the contractual negotiation, the EU legislator has introduced multiple information obligations for the providers of information society services, to be fulfilled in a clear, complete, and unambiguous way, regardless of whether the recipient acts for professional or non-professional purposes.[85]

The information must be provided before the order is sent by the recipient,[86] and the provisions do not apply when contracts are concluded exclusively through the exchange of emails or equivalent individual communications.[87]

On the clauses and general conditions of the contract unilaterally prepared and proposed to the recipient, Art. 10, paragraph 3 of the Directive is limited to providing that they must be made available in a way that allows them to be memorized and reproduced.

The requirement can be considered fulfilled with the activation of a hypertext link that introduces a screen where the conditions are represented, or with the insertion of the same in a screen prior to the provision of consent.[88] The European Court of Justice has deemed it sufficient, so that electronic communication can offer the same guarantees, even evidentiary, that it is possible to save and print the information before the conclusion of the contract, regardless of whether the contracting party actually takes care of the conservation of the contract.[89]

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[83] And, in this sense, it adopts an approach similar to that of the United States with the UETA and the E-Sign, on which reference is made below in the following paragraph.

[84] See among others: Winn and Haubold (2002), p. 574.

[85] In this regard, see: Finocchiaro (2003); Riefa (2009), pp. 35 ff.; Melison (2009).

[86] The European legislator uses the term "order", technical with respect to contract law. Its possible meaning is both the offer and the invitation to negotiate, and the final choice has been left to national legislation. Regarding the possible confusion caused by the use of terminology, justified by the need to reconcile civil law and common law, in the absence of a sort of common vocabulary, see: Riefa (2009), p. 30.

[87] See Articles 10.4 and 11.3. Since the Directive does not provide for a specific sanction for violation of the information duties pursuant to Art. 10, it is left to the contract law of the Member States to assess whether an agreement has been formed on the basis of the information actually made available by the service provider; see: Hillman (2006), p. 854, argued that a possible side effect of mandatory disclosure is not the increase in the cost to sellers, which is marginal and would be passed on to consumers, but the application of terms that would otherwise have been deemed unreasonable under the doctrine of the procedural unconscionability, because they are made accessible to consumers *ex ante* and cannot be considered surprising.

[88] This does not apply to bargaining via email, where specific individual communication will be required.

[89] EU Court of Justice, Jaouad El Majdoub c. CarsOnTheWeb.Deutschland GmbH, 21 May 2015, case no. C-322/14.

The "point and click" can also be considered suitable in approving the unfair clauses, where the contracting party proceeds in advance with her own identification that allows the unequivocal attribution of the negotiating behavior to the same. On abusive clauses towards consumers, then, the online offer actually acts according to predetermined algorithms upstream, so the notion of negotiation, as an activity aimed at defining the content of a clause, must be reduced to a selection operation among the options provided.[90]

Regarding the subsequent obligation of the provider to send the recipient of the service a receipt of the order provided for in Art. 11 of the Directive, it is not an element of the process of formation of the electronic contract, which on the contrary must be understood, at that time, already completed. Rather, it fulfills the function of summarizing the content in a synthetic way to the user, regardless of the subjective quality of consumer or professional,[91] the terms of the deal.[92]

The compliance with the disclosure obligations set out in the Directive is not only a tool to increase the certainty of online exchanges, but it also produces effects on the proceduralization of the agreement.

Thus, for the agreement to be considered valid, it will be necessary that the information burdens required by the directive have been fulfilled. This, in accordance with the principle of accountability, which provides the duty to account for the actions taken by the subject and her ability to certify compliance with the regulatory provisions.[93]

To identify the most adequate rules for correct information of users by service providers, according to the different product areas of activity, as well as with a view to increasing users' confidence in electronic commerce, Art. 16 of the Directive formulates the invitation to business, professional, and consumer associations or organizations to promote the adoption of codes of conduct.

With this invitation, in a space that tends to be free and governed mainly by technical and self-regulatory rules, the so-called *netiquette*, the EU legislator seems to acknowledge the limited usefulness of state regulatory interventions, structurally linked to the territory, and therefore ineffective towards a phenomenon by nature "a-territorial" and, consequently, "a-jurisdictional".

[90] See e.g.: Gemma (2007), pp. 276 ff.

[91] Except, only in contracts between professionals, that they have expressly waived it.

[92] This provision in fact makes sense only for the so-called indirect e-commerce, in which the execution of the contract is deferred. On the contrary, in the direct e-commerce the order confirmation is simultaneous with the execution of the provider's obligation.

[93] As regards negotiation fairness, then, the recent adoption of Regulation (EU) 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services, is also relevant. The Regulation, in fact, places operators who provide them with specific transparency obligations on distribution channels and related affiliate programs, as well as on ownership, control of intellectual property rights and the parameters that determine positioning (see below for further details).

The result is a model based on a duplication of regulatory sources, in which state legislation offers the general framework and the network operators insert detailed rules according to a self-regulation or co-regulation procedure.[94]

Directive 1999/93 on electronic signatures, then, is aimed at allowing contracting parties to use e-signature for the conclusion of contracts. On the effects side, a distinction is introduced between electronic signature and advanced electronic signature.[95]

The Directive does not concern aspects relating to the conclusion and validity of contracts or other legal obligations in cases where formal requirements exist, nor does it affect rules and limits relating to the use of documents prescribed by national or EU legislation.[96]

With reference to the subjective sphere of professional-consumer relationships, Directive 2019/770 on contracts for the supply of digital content or services, and Directive 2019/771 on certain aspects of the sale of goods, were recently adopted.[97]

Directive 2019/770 is aimed at harmonizing, in particular, the rules relating to the conformity of the digital content or digital service[98] to the contract,[99] to the possible modification of the same in the duration contracts,[100] and to the remedies that can be found in the event of a lack of conformity or failure to supply with the relative operating methods.

Directive 2019/771 establishes common provisions on sales contracts concluded between sellers and consumers. The rules concern, on the one hand, the compliance

[94] On the role of self-regulation and related issues relating to the need to obtain the adhesion of the interested parties, to the powers reserved to the self-regulatory bodies, as well as to the nature of the same, see: Winn (2010); Gambino et al. (2019), pp. 151 ff.

[95] Regarding that distinction, unknown to United States legislation, see: Winn and Haubold (2002), p. 587; Kierkegaard (2007), pp. 45–46; Troiano (2005).

[96] Art. 1.2. On the regulation of electronic signatures, see below at Sect. 2.2.

[97] Cited, which must be implemented by 2021 and applied from 1 January 2022. For a first comment, see: Morais Carvalho (2019); see also, on the initial proposal: Sein (2017).

[98] Defined respectively, the digital content as the data produced and supplied in digital format, and the digital service as: (a) a service that allows the consumer to create, transform, store data, or access it in digital format; or (b) a service that allows the sharing of data in digital format uploaded or created by the consumer and other users of this service or any other interaction with such data (Directive 2019/770, Art. 2, n. 2).

[99] The Directive applies to any contract in which the economic operator provides or undertakes to provide a digital content or service to the consumer and the consumer pays a price or undertakes to pay a price. Furthermore, it also applies in the event that the economic operator provides or undertakes to provide digital content or service to the consumer and the latter provides or undertakes to provide personal data to the economic operator. This, except in the case where the personal data provided by the consumer are processed exclusively by the economic operator for the purpose of providing the digital content or digital service or to allow the fulfillment of legal obligations (Directive 2019/770, Art. 3, par. 1). Regarding the transfer of personal data, see among others: Drexl et al. (2016); Drexl (2016); one may also see: Stazi (2019a, b).

[100] Option provided for in cases where the contract provides that the digital content or service is provided or made accessible to the consumer for a certain period, with the right of withdrawal of the consumer if this entails significant negligible consequences (Directive 2019/770, Art. 19).

with the contract of movable property, including those which incorporate or are interconnected with digital content or services;[101] on the other, remedies in the event of lack of conformity, methods of exercising these remedies, and commercial guarantees.

The rationale of these Directives is to make it easier for businesses to supply digital content or services or to offer mobile goods also linked to them in the various EU Member States, and at the same time to make consumers benefit from a high level of protection also with respect to contractual relationships that concern digital content or services, or goods connected to them.[102]

Directive 2019/2161, so-called Omnibus, also aimed at strengthening consumer rights through: (1) increased transparency measures on online marketplaces regard in ranking, reviews and personalized prices, (2) extension of consumer rights to free digital services such as social media or cloud, and (3) enhanced enforcement measures, with compensation and other individual remedies for consumers and more effective penalties for cross-border infringement. Another legislation recently adopted at European level is the EU Regulation 2019/1150[103] aimed at promoting fairness and transparency for business users of online intermediation services.[104] In this perspective, the Regulation dictates a set of provisions intended to ensure that commercial users of such services and users of company websites that are related to search engines have adequate transparency, fairness, and effective appeal options.[105]

For these purposes, in particular, information obligations are dictated concerning, among other things, the terms and conditions of the service, the hypotheses of different treatment reserved for the products or services offered, the parameters that determine their positioning, limitation, suspension or termination of the supply,

[101] Specifically, any tangible movable property even if it incorporates or is interconnected with a digital content or service in such a way that the lack of said content or service would prevent the performance of the functions of the asset ("goods with digital elements"; Directive 2019/771, Art. 2, no. 5). Therefore, the Directive also applies to digital content or services incorporated or interconnected with goods and which are supplied with the good pursuant to the sales contract, regardless of whether said digital content or services are provided by the seller or by third parties (Art. 3, par. 3).

[102] See e.g.: Morais Carvalho (2019); Gambino et al. (2019), pp. 168–169.

[103] Regulation (EU) 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services, OJ 11.7.2019 L 186.

[104] Defined as those services which simultaneously satisfy the following requirements: (a) are information society services; (b) allow commercial users to offer goods or services to consumers, with the aim of facilitating the initiation of direct transactions between these commercial users and consumers regardless of where they are concluded; (c) they are provided to commercial users who offer goods and services to consumers on the basis of contractual relationships between the provider of these services and the commercial users themselves (Regulation 2019/1150, Art. 2, n. 2).

[105] For a first comment on the proposal, see: Twigg-Flesner (2018).