Electronic promissory notes on blockchain

based on the regulation implementing the UNCITRAL Model Law on Electronic Transferable Records

Ministry of Digital Affairs, DLT and Blockchain Working Group

The document expresses the views of experts participating in the work of sub-team for payment instruments, thus is not the official position of the Minister of Digital Affairs.

Executive Summary

The purpose of this document is to present the concept of an electronic promissory notes. Promissory notes are securities that have been used since the 13th century. Several hundred years of use made them one of the best-known and safest instruments of their kind. However, the era of electronic commerce has revealed significant weaknesses in the material form of such documents, which no longer meet the expectations of users regarding the speed and means of remote electronic exchange of data. The continued existence of traditional paper-based promissory notes has also become a potential source of a grave risk in trading, since it is rife for abuse due to the availability of technology that enables forging signatures, which are indistinguishable from signatures made by a human hand. The proposed solution may provide traders with an extremely useful instrument, fulfilling the function of a material promissory note, while minimising the nuisance associated with the need to use a paper document. At the same time, it ensures reliable and permanent identification of the issuer, as well as further buyers and sellers of the promissory notes, as well as integrity and unchangeability of the document (except for undeniable changes made by identifiable persons in accordance with the Bill of Exchange and Promissory Note Law).

Until recently, electronic documents were characterised by a significant defect which made their use as a promissory note difficult – it was impossible to ensure their uniqueness, or in other words, to make sure that a given document is original. Many copies of an electronic document can be made, not only due to human activity, but also due to the specificity of the devices themselves producing, processing, transmitting and storing electronic documents. Sending a document by e-mail creates several copies – one is on the sender's computer, and the other ones are on the sender's server, recipient's server and recipient’s computer.

Another reason to consider the concept of an electronic promissory note is the eIDAS regulation, which equates a qualified electronic signature with a handwritten signature.

The indicated technical problems with the use of electronic form of documents, such as promissory notes, can be solved thanks to the use of the blockchain technology. Blockchain is a combination of several tried and proven technologies, which can be used in conjunction to establish networks that ensure trust between the parties in situations where there is no reason for such trust to exist in a traditional relationship, and its construction requires the use of intermediaries or the application of complex legal safeguards. Blockchain uses cryptography to create a distributed ledger (DLT) where information is stored among a group of users. Records or changes in this ledger are agreed upon using a predefined network protocol.

The combination of these technologies, as well as the availability of high-bandwidth data networks, enables us to avoid the need for formalised trust in the trading, which is usually offered by intermediaries or by procedures, which require paying fees; thus opening up areas for secure and flexible transfer of various values or data directly between stakeholders. Blockchain – a technology, which initially gained popularity thanks to the cryptocurrency markets, currently finds widespread use in the financial sector and capital markets, payment instruments and digital identity systems. Also emerging are new sectoral solutions, for example in health care, transport, agriculture, real estate, energy and supply chain management.

In the case of the electronic form of a promissory note, blockchain technology allows us to simulate the material world in such a way that we can create digital equivalents of handing over a document, making annotations, crossing out its provisions or even destroying it altogether.

A natural consequence of the possibilities offered by blockchain technology and the tradition of trade in promissory notes is the development of the concept of an electronic promissory note ("eNote"). Within the framework of preparatory works for this document, an appropriate smart contract was developed, which enables us to preserve the function of a material form of a promissory note in electronic trade. Additionally, an interpretation of The Bill Of Exchange And Promissory Note Law was developed, in order to enable the introduction of the electronic promissory notes to the market. The smart contract allows for writing a promissory note to the blockchain, as well as to determine its holder at any given time. The promissory note itself is signed with a qualified electronic signature. It can also be additionally encrypted, so that third parties cannot read its contents without authorisation. The smart contract allows for making additions to the promissory note, which can constitute different types of activities. It is also possible to hand out a promissory note through the

digital equivalent of handing the document over on one side and the digital equivalent of reaching out to get the document on the other.

The development of an interpretation of The Bill Of Exchange And Promissory Note Law, which would enable trading such electronic documents, turned out to be a major challenge. Due to the entry of the eIDAS Regulation into force, the departure from the material form of promissory notes seems justified. However, references to the material nature of the document in the law (such as "obverse" and "reverse") prove the necessity of introducing national regulations which will dispel doubts as to the admissibility and effectiveness of issuing electronic promissory notes.

Such a regulation should be made by implementing the UNCITRAL Model Law on Electronic Transferable Records http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf into the Polish legal system.

This document was prepared within the framework of the work of the working group for distributed ledgers and blockchain, operating within the Distributed Ledgers stream, established by the Decision no. 7 of the Chairman of the Committee of the Council of Ministers for Digital Affairs of 10 October 2018, changing the decision on the establishment of the "From Paper to Digital Poland" Task Force. The team used a document developed earlier during the workshops of the Coalition for Polish Innovation.

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The "Electronic promissory notes on blockchain" project team was operating since September 2017 within the Coalition for Polish Innovation. Apart from the report, the team has developed a working prototype of an application supporting electronic promissory notes on the Ethereum blockchain.

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In December 2016, an interministerial Working Group on Development of Financial Technologies (FinTech) was established, coordinated by the Polish Financial Supervision Authority. The Working Group was tasked with identifying and drafting solutions for legal, regulatory and supervisory barriers to the development of innovative financial technologies. One of the barriers reported by the Council of Custodian Banks operating at the Polish Bank Association was the issue of exclusively material form of cheques, promissory notes. The work of the Working Group encompassed a preliminary consultation on the project with the

participation of the Ministry of Justice, and a recommendation for further work in the form of a working group on the introduction of an electronic version of bills of exchange, promissory notes and cheques was adopted. The results of the works in this respect were presented in detail in the report published in November 2017 (Appendix no. 1, item 37). https://www.knf.gov.pl/knf/pl/komponenty/img/Raport_KNF_11_2017_60290.pdf

In line with this recommendation, work on electronic bill of exchange, promissory note and cheque was then continued within the Coalition for Polish Innovations and then within the Working Group established at the Ministry of Digital Affairs.

Table of contents

Introduction

For many years, cheques, promissory notes and bills of exchange have been, and in some countries still are, commonly used types of securities. They have numerous uses and applications in trade and are subject of extensive descriptions in literature, as well as jurisprudence on the basis of national and international regulations. Due to their material form, they cannot be used in innovative solutions based on advanced technologies (such as blockchain or Distributed Ledger Technology, DLT for short.)

The barriers to the safe use of the material form of promissory notes, bills of exchange and cheques may lead to a decline in the importance of these instruments in favour of IT solutions that perform similar functions but allow for remote trading, without the physical presence of the parties. These functions include securing receivables (in the case of promissory notes and bills of exchange), as well as fulfilling payment obligations and payment functions in the case of cheques, which still enjoy significant popularity in some countries. The indicated uses of these instruments are still of economic importance and their possible electronic form may enhance their usefulness. It therefore seems appropriate to allow these assets to be used in the current technological reality, in which electronic form and full automation are necessary elements, which condition their economic efficacy. These instruments may become attractive again thanks to the use of smart contracts, computer programs based on distributed ledger technology. The use of this technology will allow us to get rid of various obstacles related to getting rid of the material form of promissory notes – namely, digitally reflecting the institution of holding a given security and alleviating the risk associated with the creation of several indistinguishable copies (multiplication) of promissory notes by copying the data to another medium. The possibility of ensuring the uniqueness of an electronic copy of promissory note and the ability to establish its holder's name is guaranteed by a smart contract, whose code and data are stored in a secure and transparent way.

The current Law On Cheques, as well as Law On Promissory Notes And Bills Of Exchange (both of 28 April 1936) constitute the Polish implementation of the Geneva Convention of the early 1930s. The Convention served as a source of model regulations for the exchange of cheques, promissory notes and bills of exchange in a number of countries, thus providing a unique model for cross-border interoperability in commercial clearing and settlement. Bills of

exchange, promissory notes and cheques have been taken into account in detail in a number of subsequent regulations concerning accounting, tax, and payment regulations.

An alternative solution is to institutionalise various solutions appearing as part of economic innovations other than promissory notes, but fulfilling similar functions. Such solutions seem suboptimal, since they may constitute a source of significant systemic risk due to the unpredictability of innovations in trade and business, for example insufficient trading security. Appropriate safeguards are usually developed only after the judicature and regulators have noticed systematic abnormalities. Thus, it may seem that electronic promissory notes, which combine the security of trading with the possibilities offered by its electronic form, is an optimal solution. Additionally, one needs to note that this is not a matter of "dematerialisation" of the document, but merely extending its possible material medium – apart from paper, it may also be an electronic record.

In spite of earlier attempts to create electronic trading, they were mostly based on a centralised database (central ledger) of promissory notes, which resulted from the lack of technological possibilities to ensure the uniqueness of electronic records. One noteworthy attempts includes the Payper24 solution which was based on the model described in the publication *Koncepcja elektronicznego weksla własnego w obrocie gospodarczym* (The concept of electronic promissory note in business transactions) (Grzegorz Wierzbicki, Sylwia Kotecka, *Biuletyn CBKE 2009*). From the international perspective, the Japanese have introduced a relevant regulation – the Electronically Recorded Monetary Claims Act of 2007, which regulates the electronic promissory note solution functioning in the Japanese market. This solution also encompasses an extensive technological and institutional infrastructure, entrusting the Electronic Monetary Claim Recording Institution function to an entity designated by the regulator, which performs activities related to the handling of electronic and promissory notes on commercial terms.

The aforementioned examples of solutions were created at a time when distributed ledger technology was not yet available. The solution proposed in this document is characterised by a technological advantage resulting from the possibility of moving from a central ledger of promissory notes to a more secure distributed ledger. The reflection of the possession and issue of a document in a distributed ledger is supposed to enable the state of electronic records to be brought into conformity with the applicable law and, in consequence, to enable the enforcement of rights attached to electronic promissory notes before a common court of law. This solution also enables reducing costs, shortening processing times (from the technological, as well as formal and legal standpoint), and providing a higher level of security without referring to the decisions of a trusted third party. It is also a secure alternative to increasingly counterfeit paper promissory notes. With the widely available technology enabling forging signatures using electronic devices, which reproduce a scanned signature with a ballpoint pen or a fountain pen in a manner practically indistinguishable from a

signature made by a human hand, the paper form of a promissory note is no longer secure, and creates the risk of very serious abuses in trade, resulting in trials spanning many years, as well as virtually unpredictable court decisions concerning this matter.

Legal aspects

In this section, the legal aspects of the introduction of electronic promissory notes will be discussed. The authors present legal provisions taken into account in the course of the works and the most important components of this tool, described in the light of the findings.

The basic legal act considered in this respect was the Act of 28 April 1936 – The Law On Bills Of Exchange And Promissory Notes (Dz. U. [Journal of Laws] of 2016, item 160), hereinafter referred to as the Bill of Exchange and Promissory Note Law. However, there are serious doubts as to whether the Bill of Exchange and Promissory Note Law may constitute a legal basis for issuing electronic promissory notes.

In general, there are both arguments for and against the effectiveness of issuing electronic promissory notes, based on the Bill of Exchange and Promissory Note Law. The former encompass the addition to the Act of 23 April 1964 – Civil Code (Dz. U. [Journal of Laws] of 2017, item 459, as amended) (hereinafter referred to as the Civil Code) of a new definition of a document, which also includes electronic documents (Article 773 of the Civil Code). The application of this definition under the Bill of Exchange and Promissory Note Law, which uses the notion of a document to constitute the formal requirements of a promissory notes (Article 1, item 1, as well as Article 101, item 1 of the Bill of Exchange and Promissory Note Law), may justify the stance according to which the electronic form of the promissory note is also legitimate.

Another argument for the legitimacy of issuing and using electronic promissory notes may be the provisions of the Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC (OJ L of 2014 No. 257, page 73) (hereinafter referred to as "the eIDAS Regulation.") The eIDAS Regulation sets out the rules for issuing electronic signatures and the legal consequences of their use. Article 25(2) of the Regulation sets out a general rule according to which a qualified electronic signature (one of the types of electronic signatures) has a legal effect equivalent to a handwritten signature. This type of electronic signature is thought to be an equivalent of a handwritten signature, which is justified by the fact that the technological solutions required for a qualified signature provide a high degree of certainty as to the identity of the person signing a given document (this is discussed in more details in the "Technical assumptions"

section). Article 781 of the Civil Code confirms this principle. According to this provision, declarations of intent bearing a qualified electronic signature meet the requirements of an electronic form (§ 1), which is considered equivalent to an ordinary written form (§ 2). Therefore, if the Bill of Exchange and Promissory Note Law requires that the issuer or the endorser sign the promissory note or the endorsement with a handwritten signature (cf. Article 1, item 8; Article 13, item 1; and Article 101, item 8), then – in accordance with the aforementioned provision of the eIDAS Regulation – the use of a qualified electronic signature should also be allowed.

Some doubts as to the admissibility of basing electronic promissory notes on the Bill of Exchange and Promissory Note Law may stem from its provisions referring to the material form of a promissory note, which result from the historical circumstances of its creation. In particular, this concerns the provisions pertaining to the obverse and the reverse side of the document, which attribute different legal effects to signatures on a promissory note, depending on the place they were made (cf. Article 13, section 2; Article 25, section 1, Article 31, section 3; Article 88, section 2 of the Bill of Exchange and Promissory Note Law). However, the distinction between the obverse and the reverse may also be provided in various ways on an electronic document, for example by distinguishing the appropriately named parts of the promissory note in an electronic form, constituting a coherent whole.

A similar conclusion can be drawn from the requirement to issue a promissory note in order to effectively transfer the rights, given that issuing essentially implies the act of physically transferring the possession of the document (or at least postulates proper application of the rules on ownership to it). It is worth noting, however, that by placing greater emphasis on the transfer of actual control over a document (understood as its use excluding other persons, or in other words, as having control over the document), this criterion can also be successfully applied in electronic trade. The existing technical solutions provide tools to ensure control over the electronic document (record) and the ability to use it by making specific changes and transferring it on to others. It is also possible to refer to the language of the Article 348 of the Civil Code, emphasising the importance of transferring the means enabling the use of a document, rather than the document itself. Finally, the last barrier preventing basing electronic promissory notes on the existing law is the fact that the provisions of the Act implement the Geneva Convention (Convention Providing a Uniform Law for Bills of Exchange and Promissory Notes, Dz. U. [Journal of Laws] of 1937, No. 26, item 175) and their interpretation on the basis of specific provisions of Polish or EU law should not depart from its original content to such an extent.

In conclusion, there are doubts as to whether electronic promissory notes constitute their proper equivalents within the meaning of Articles 1 and 101 of the Bill of Exchange and Promissory Note Law. It seems that the use of blockchain technology faithfully reproduces the material form of a promissory note and its trade to such an extent that the proposed

solution is the closest to the requirements of the Bill of Exchange and Promissory Note Law, in relation to other solutions replacing paper documents with electronic media. However, in order for a given instrument to be considered a promissory note, or a functional equivalent thereof, it should have certain features and functions resulting from the provisions of the Bill of Exchange and Promissory Note Law, as well as the legal doctrine and jurisprudence in this area. Hence, the sources mentioned above constituted the basis for the Working Group to develop the concept of an electronic and promissory note, with the aim to replicate, as far as technically possible, selected institutions of the Bill of Exchange and Promissory Note Law.

Basic characteristics of electronic promissory notes

The presented project aims to establish regulations ensuring that all kinds of electronic promissory notes can be issued legally; however, due to the limited scope of the project, the goal was to create a technological *proof of concept* for an electronic promissory note. The main reason for this was the simpler structure of such a document, which proved to be easier to implement due to technical reasons. The needs of trading, which is currently dominated by promissory notes, were also taken into account.

With respect to the document structure, it should be pointed out that, in accordance with the Bill of Exchange and Promissory Note Law, the promissory note, at the moment of its issue, generally creates one bilateral relationship between the issuer (promissory note debtor) and the taker (promissory note creditor). In the case of the second type of this document – a bill of exchange – the party to the arising legal relations is also the drawee. The drawee may accept the bill of exchange, thus undertaking to pay it, but is not obliged to do so. Drafting a bill of exchange would entail the need to develop additional technical solutions taking into account the role of the next holder, including the possibility to accept the bill of exchange and reflecting the consequences of a possible refusal.

Further limitations to the scope of the proof of concept are closely tied to the rules concerning trading in electronic promissory notes and the means of redress. It was assumed that the basic way of transferring rights resulting from a promissory note will be its disposal by restrictive endorsement or bearer endorsement (in blanco endorsement) combined with its issue. However, claims resulting from a promissory note are to be asserted directly from the issuer.

As a result of the implementation of the above assumptions, the developed technical solution does not provide for any special operational possibilities facilitating redress against promissory note debtors other than the issuer within the framework of a claim recourse. This does not mean that it is not possible; however, a model method of disposal of a promissory note used in the presented proof of concept is an endorsement without an obligation, thus

without incurring a liability by the endorser (person disposing of the promissory note). The value of an electronic promissory note is therefore based on the ease to dispose of (discount) the document due to the lack of necessity of issuing a physical document, which is replaced with an IT solution; this does not necessarily mean an improvement of the position of the creditor by broadening the circle of debtors.

It is worth noting that despite the above limitations of the proof of concept, works on it may constitute a starting point for the future extension of the electronic promissory note with further functionalities, development of an electronic bill of exchange, enabling issue of electronic promissory notes in blanco, as well as development of an electronic cheque used for the fulfilment of obligations resulting from electronic promissory notes, with the return of the promissory note to the debtor (in accordance with the Delivery Versus Payment (DVP) principle) using a smart contract ensuring the return of the electronic promissory note to its issuer in exchange for the payment made by the issuer using an eCheque. A promissory note debtor may issue an electronic cheque (confirmed by the bank) on the blockchain earlier, which will then be transferred to the promissory note creditor with the simultaneous transfer of the promissory note to the debtor. Alternatively, the DVP rule could be fulfilled using a cryptocurrency, the transfer of which between the parties would take place in the same electronic transaction as the issue of a promissory note. With this possibility, the circulation of a promissory note from its issue to payment could – for the most part, even in its entirety – take place exclusively in an electronic environment. These possibilities stem from the fact that these securities have many common features, such as the rules of issue, certain elements or transferability by endorsement, which can be reproduced using very similar, if not identical, technological solutions. The next part presents a situation where there is no voluntary payment for the electronic promissory note.

One of the special cases of using an electronic promissory note may be the securing of a trade credit with a promissory note. Such notes are usually issued with the intention of being presented to a commercial bank for discounting, with the possibility of further discounting with the central bank. In such a case, the form of the promissory note, as well as detailed rules of trading in such documents should comply with the requirements specified in the applicable regulations (Resolution No. 9/2010 of the Management Board of the National Bank of Poland of 4 March 2010 on the types of bills of exchange and promissory notes accepted by the National Bank of Poland for discounting and the rules and procedures for their discounting). The necessity and scope of updating these provisions needs to be analysed further. Other required work encompasses the development of operational processes related to the specificity of the electronic form of the promissory note (including, in particular, the regulations and contract templates used by individual banks and the central bank).

Issue of an electronic promissory note

The necessary elements of the content of the promissory note are specified in Article 101 of the Bill of Exchange and Promissory Note Law, according to which it must contain:

– the name "promissory note" in the text of the document itself, in the language in which it is drawn up;

– an unconditional promise to pay the indicated sum of money;

– indication of the deadline for payment;

– indication of the place of payment;

– the name of the person to whom or on whose behalf the payment is to be made;

– the signature of the issuer.

All the elements required above are reflected in the electronic promissory note. It takes the form of a.xml text file with tags distinguishing the places for entering individual elements of the content of the promissory note. As a precaution, the entire statement is contained within the tags to remove any possible doubts as to whether XML tags constitute a part of the statement, although it seems that a regulation based on the UNCITRAL Model Law on Electronic Transferable Records would not require such a precaution. It should be noted that Article 102 of the Bill of Exchange and Promissory Note Law provides for certain possibilities of supplementing deficiencies in some of the above-mentioned elements, which may also apply to electronic promissory notes. All elements of the content of the promissory note are contained within one file constituting an inseparable whole. This serves the purpose of fulfilling the assumption that the content of the obligation should be possible to determine only on the basis of the content of a promissory note constituting a uniform document.

This file should be readable for humans; however, due to the use of tags it is also machine readable – the technical advantages of this solution are presented in a later section of this report. At this point it is worth noting that this file also enables users to generate a graphical representation of a promissory note, which is easier to read for humans. However, the.xml file remains a legally relevant document and the aim of the graphical representation is only to facilitate its use. From the legal standpoint, it is crucial that the issuer of the promissory note and subsequent participants in the circulation are able to familiarise themselves with the contents of the note and make conscious declarations of intent. Therefore, it is recommended that the application for signing a promissory note should always display at least the contents of the.xml file. Otherwise, attempts by the issuer (or other persons) to invoke the invalidity of the obligation resulting from a promissory note due to a defect in the declaration of intent cannot be ruled out.

Turning to the discussion of individual elements of the content of a promissory note, we need to preface by indicating that the presented solution assumes issuing promissory notes in the Polish language. The.xml file contains the phrase "I undertake to pay for this promissory note", which mentions the words "promissory note" and serves as a promise of unconditional payment of a sum of money.

The amount of the sum of money and currency is to be determined by the issuer. Provided that the Bill of Exchange and Promissory Note Law is applicable to this document, it would not be possible to issue a promissory note for cryptocurrencies. The provision of Article 101, item 2 requires the indication of a sum of money which, apart from the number of pecuniary units, also requires the indication of their type – currency. Cryptocurrencies are not currencies in the legal sense, at least according to the Polish law. Therefore, a promissory note indicating the amount in a cryptocurrency would be invalid, since it does not have an indication of a sum of money. This situation may change, given the rapid development of regulation in this area, as well as the possibility for some country to accept certain cryptocurrencies as currencies.

There is little doubt about the necessity to indicate the date of payment, the name of the taker or the date of issue of the promissory note; however, the requirement to indicate the place of payment and the place of issue may appear to be somewhat inadequate in the context of electronic trade. The proposed solution is to indicate the place where the issuer is actually located at the time of issue. It is worth noting that such (actual) place of issue and place of payment are of certain importance from the point of view of certain provisions concerning conflict of laws (Articles 77-84 of the Bill of Exchange and Promissory Note Law).

The necessity to present the promissory note at the place of payment is the obligation of the holder of the promissory note, which must be taken into account when entering into such a relation and indicating such a place. The possible way of fulfilling the obligation to present a promissory note in an electronic form is discussed in more detail in the part concerning payment. When indicating the place of payment, it should be borne in mind that it affects the local jurisdiction of the court. Pursuant to Article 371 of the Act of 17 November 1964 – The Code of Civil Procedure (Dz. U. [Journal of Laws] of 2018, item 155, as amended) (hereinafter referred to as the Code of Civil Procedure), a suit against the party liable resulting from the promissory note may also be brought before the court in the place of payment.

The electronic promissory note is to be signed by the issuer with a qualified electronic signature within the meaning of Article 3(12) of the eIDAS Regulation. This issue has already been discussed earlier, which is why we refer to the comments made above. We can only emphasise once again that the use of this kind of an electronic signature provides a high degree of certainty as to the identity of the signatory resulting from the requirements for qualified trust service providers offering such signatures. It is also worth taking into

consideration the work carried out by the working group at the Ministry of Digital Affairs on the extension of the implementation of the eIDAS Regulation by enabling legal transactions to be carried out on the basis of declarations of intent submitted on behalf of a legal entity under electronic seal. A promissory note signed with a qualified electronic seal (as well as other financial documents) would constitute a completely new quality in business transactions, providing certainty as to the correct representation of the legal entity signing (sealing) the document. An additional benefit resulting from using a seal would be the reduction or elimination of personal data, which in some situations would simplify the fulfilment of the data protection requirements (GDPR)

Another risk, often cited in the context of electronic promissory notes, is the danger of many identical copies appearing in circulation. An electronic file can be easily reproduced, and every single "copy" has all the characteristics of an original file, being virtually indistinguishable from it. In some situations, the taker could make a number of copies of a file containing a promissory note bearing the qualified signature of the issuer and then endorses each of them with different people. The act of copying a file should not result in a simultaneous reproduction of the obligations of the promissory note debtor. It seems, however, that it is difficult to completely exclude the possibility of effective redress by endorsees, if they have acquired the promissory note in good faith (in particular by invoking the institution of acquisition from an ineligible person under Article 16, item 2 of the Bill of Exchange and Promissory Note Law).

Therefore, in order to take this issue into account while preparing the technical solution for an electronic promissory note, it was resolved by including a mention about the original position and recording each note holder in the smart contract on the blockchain in every copy of the promissory note. In practice, this may take the form of an addition of the following clause to the text of the promissory note: "The original of this promissory note remains solely with the person designated as the current holder in the smart contract named X on the Ethereum blockchain. The effectiveness of the clause described above or a similar provision would require further in-depth legal analysis. It seems that such a clause can be considered as excluding the good faith of a person using the document without the possibility of demonstrating control over it in the manner provided for in a smart contract. The provisions of Article 16, section 2 of the Bill of Exchange and Promissory Note Law, which order forfeiture or a promissory note acquired in bad faith or through gross negligence, may apply in this case. It should be noted, however, that such additions are required by the electronic form of the document and are unnecessary in the case of a paper document, hence why they have not yet been regulated by law. UNCITRAL Model Law on Electronic Transferable Records explicitly states that they do not affect the validity and effectiveness of the promissory note (transferable security). Such a regulation would eliminate the legal uncertainty associated with the legal interpretation of such provisions.

From the technical point of view, the procedure for issuing an electronic promissory note itself consists of several stages and reflects the contractual theory of issuing such a document, according to which, in addition to the issuer making a declaration (signing the document), a declaration of the taker is also required, made implicitly by the acceptance of the promissory note.

Further circulation of an electronic promissory note

From the point of view of the Bill of Exchange and Promissory Note Law, further circulation of a promissory note may take place in one of two ways - by means of an endorsement or by a transfer. The methods of disposal differ in terms of the conditions that must be met in order for the rights resulting from the promissory note to be transferred.

In the case of an endorsement, the promissory note in question needs to be signed by the endorser, who then transfers the document to the endorsee. By signing the document, the endorser becomes a debtor – if the issuer fails to pay for the promissory note, the endorsers are entitled to claim payment from the endorsee. However, the endorser may exclude their liability by way of a "no obligation" or "no liability" clause. By principle, the issuer of a promissory note cannot take advantage of their claims towards the person disposing of said document to protect themselves from the person who obtained said document by means of an endorsement.

However, in the case of a transfer, the transfer of the promissory note requires the conclusion of an appropriate agreement between the assignor and the assignee, as well as transfer of the ownership of the promissory note to the assignee. The assignor does not incur a liability resulting from the document, and their liability towards the assignee is specified in the agreement – in the case of an absence of any other arrangements, they are responsible for the existence of the debt. At the same time, the issuer of a promissory note generally retains their claims against the seller and may use them to avoid claims from the buyer.

As already indicated above, the model method of disposing of an electronic promissory note is its endorsement, with the possibility of excluding the liability of the endorser. The endorsement is made by adding an appropriate language to the document, chosen by the endorser. The technical solution allows them complete freedom to specify this language. This is followed by the endorser singing the added text with their qualified electronic signature. In reality, the mechanism used in this case is based on the possibility of adding a statement to the content of the document and signing said statement, which means that it can be used not only for endorsement, but also, for example, to confirm the receipt of payment of a part of the sum provided for in the document.

Taking into account the fact that from the technical point of view the endorser signs a file covering the entire text of the promissory note together with the endorsement, it is advised to note the nature of the signature as an endorsement by using the appropriate functionality of the qualified signature (see technical remarks below). In the case of an electronic promissory note, it is not possible to rely on the place where the signature is placed to interpret the will of the person who signed the document, thus, in certain cases there may be a risk of interpreting such a signature as a surety or incurring a new liability by issuing a promissory note.

In contrast to a paper promissory note, which enables endorsement with a signature on the reverse side of the promissory note itself (Article 13, section 2 of the Bill of Exchange and Promissory Note Law), in the case of an electronic promissory note such an endorsement will not be possible, because due to its nature, it is not possible to indicate either the obverse or the reverse (unless two integrated parts of the promissory note defined as "obverse" and "reverse" are created as part of the technical solution; which, however, was not envisioned in this proof of concept). However, the developed solution enables to make an in blanco or bearer endorsement, without indicating the identity of the buyer by making an appropriate statement. Such a promissory note may then be traded by simple transfer. It is worth noting that the possibility of specifying any content of the endorsement enables the users to take advantage of the presented technological solution not only for making ownership endorsement, but also for endorsement for collection and endorsement for pledge.

At the same time, the manner of operation of the technological solution does not generate additional difficulties (in relation to the paper promissory note) for the parties seeking to dispose of the document by means of a transfer. In such a case, however, the relevant agreement must be concluded outside the blockchain, because the solution does not provide for the functionality enabling the conclusion of transfer agreements.

Payment for an electronic promissory note

A creditor seeking payment for a promissory note is legally obliged to present it for payment to the issuer (in the case of a promissory note) at the place of payment. This enables the debtor to verify the creditor's rights and to immediately collect the original document if it is paid. This can be done by means of a smart contract, which exchanges the electronic promissory note for another value stored on blockchain, for example blockchain-based eMoney – stablecoin such as USDC or DAI, as well as an eCheque.

To reflect the above, the developed technical solution makes it possible to present an electronic promissory note for payment by transferring its full content (with all the endorsements) to the debtor by providing the key with which the document is encrypted. The

mechanism of its operation is described in more detail in the part devoted to technical assumptions.

The smart contract for promissory notes does not include providing the parties with tools to make payments. Using an electronic promissory note, the creditor may only state the receipt of a partial payment using the smart contract functionality by adding an appropriate statement and signing it with a qualified signature. Like in the case of paper-based promissory notes, the choice of a specific payment method and the method of ensuring that the original promissory note is handed over to the depends on the agreement between both parties. Undoubtedly, the most attractive solution would be to transfer the process of payment settlement and transfer of the original promissory note in its entirety to the blockchain, for example by using the electronic cheque or a cryptocurrency, as described above, which is why we should strive to introduce such a solution in the future.

Judicial enforcement

One of the most crucial advantages of promissory notes is the facilitation of the enforcement of claims before the court within the framework of payment-order proceedings. An order for payment issued by the court in a closed session on the basis of a promissory note becomes immediately enforceable after the lapse of the time limit for satisfying the claim. If the debtor fails to make an effective request suspending the enforcement of the payment order, the creditor can obtain satisfaction much faster than in the case of an "ordinary" litigation. Even if enforcement is suspended, the payment order may still constitute a legal security. Finally, the claimant applying for a payment order needs to pay only a quarter of the court fee.

At the same time, one should keep in mind that the claimant is obliged to file the original of the promissory note under the pain of dismissal of the claim (Article 485 § 4 of the Code of Civil Procedure. In reality, this is also necessary in the case of pursuing claims outside of the payment-order proceedings.

Undoubtedly, the possibility of using the procedural solutions described above increases the attractiveness of an electronic promissory note.

At the same time, we assume that the technical infrastructure of the courts will not be changed so as to enable the original version of the electronic promissory note to be sent to the court's wallet in order to block the document (exclude it from circulation until the ruling is made) and to enable the court to read its contents. The inclusion of courts in the operation of the system as a participant with special rights would be the most desirable solution. Thus, a creditor pursuing a claim before the court could satisfy the requirement of submitting the original version of the document by sending the electronic promissory note to the court's address on the blockchain. However, due to the slow pace of introduction of technological

innovations to the justice system, this seems to be currently unattainable and would block the introduction of electronic promissory notes in the near future.

The 2017 UNCITRAL Model Law on Electronic Transferable Records, the introduction of which to the Polish legal system we propose in this document, enables the change of the medium carrying a given security during its lifetime, from an electronic document to a paper document and vice versa, of course after making appropriate mentions on the existing medium. Therefore, the electronic promissory note could be transformed at any time into a paper promissory note – which would then constitute the original version of the document, which could be presented to the court in this form for the purpose of obtaining a payment order. It can be expected that the change of the form (medium) of a promissory note may give rise to disputes pertaining to the validity of this action. In order to reduce the risk of disputes in this area, the creditor could optionally – they should not be obliged to do so by Polish regulations, as this would be an excessive departure from the content of the model law – use the services of a trusted entity, for example a notary or a bank, who are not a party to the promissory note relationship. It would not be appropriate to limit the circle of trusted parties to notaries only, since it seems that the notary community does not yet use blockchain technology and apparently does not express any interest in doing so, while banks are very active in this area, and they have already gathered knowledge and experience concerning the technology.

The issue of blockchain type for implementing the solution

The execution of a promissory note in an electronic form requires that the document (or at least the digital signature of its current version) needs to be reflected on a durable medium, which will ensure the unchangeability and durability of the information recorded in the document. Keeping the document on a durable medium is aimed at ensuring the uniqueness of its digital version, since despite the possibility of copying the file containing the value of the document, the current state of the document is only a parafile, recorded in a durable medium.

Such a durable medium can be implemented using blockchain technology. However, one should remember that there is no such thing as a single, unified blockchain system and there are many ways of implementing such a system. The most popular models considered are briefly discussed below.

Execution of a promissory note in a private blockchain

A private blockchain is a blockchain, whose nodes are managed by one or more organisations, who bear responsibility for maintaining the network infrastructure and its proper functioning (including the correctness of stored data).

Access to data in such a blockchain – whether for reading and writing, or just for writing – can only be restricted to trusted entities. Because of that property, these solutions are readily chosen by companies and institutions. The existence of a specific entity responsible for data processing also makes it possible to facilitate organisational issues, such as those regulated by law (for example GDPR).

On the other hand, the creation of such a private blockchain is associated with significant costs (both establishment and maintenance of infrastructure). What is more, it is a complex organisational undertaking (especially if it means the need to create a special consortium to operate the blockchain). In addition, limited access to data also limits the use of such a blockchain – creating a specific solution based on this blockchain usually requires the consent of the organisation maintaining the given blockchain, which significantly curbs the possibility of using third party solutions.

One should also keep in mind that although using a private blockchain increases organisational certainty, as all the parties know who is responsible for the blockchain, it does not eliminate the risk associated with the durability and reliability of the data stored therein. After all, an organisation maintaining a blockchain infrastructure may stop offering the service in future, or may even cease to exist.

Execution of a promissory note in a private blockchain within the state infrastructure

The concept of state blockchain pops up in national debates, as well as on the EU level. What makes this vision considerably attractive is the fact that the maintenance and operation of the infrastructure is ensured not by a single organisation (which, as mentioned above, may abandon such a service or cease to exist), but by state institutions, which gives hope for a much greater sustainability of such an infrastructure and greater transparency of its operations. Such a service could be provided in Poland within the framework of the Common State IT Infrastructure (WIIP).

At the same time, unfortunately, due to organisational reasons, from a practical point of view, this vision may not be regarded as a viable alternative at the time.

Execution of a promissory note in a public blockchain

Public blockchain is a blockchain whose nodes are maintained by any entity interested in maintaining blockchain infrastructure, which makes it impossible to verify which people or organisations are processing data in such a blockchain, and there is no certainty that they will continue to do so in the future (of course, everybody can maintain a node of a given network). The way it works is somewhat reminiscent of the Internet – all users take advantage of a distributed infrastructure of servers, and they are not usually aware of their existence.

Theoretically, using such a network is risky and uncertain, but in practice, the existing networks (such as Bitcoin or Ethereum) are among the most robust and reliable services available on the Internet. This is due to the significant decentralisation of infrastructure and appropriate incentives to maintain the infrastructure inherent in the model of operation of these networks (remuneration for the proper operation of nodes). Choosing a public blockchain entails additional organisational and regulatory risks, which stem for example from the fact that there is nobody, who could sign appropriate data processing agreements. Moreover, it is a new service and technology and – as such – it is constantly undergoing dynamic changes.

On the other hand, public blockchains, in particular Bitcoin and Ethereum, are already being used in many services – including financial services, among others for issuing bonds, granting loans and developing investment products. A shared infrastructure facilitates the introduction of dependent services and speeds up their uptake by users. What is particularly important is that this infrastructure is available now, available in a pay-as-you-go model, and it does not require incurring any significant financial and organisational expenditures for the creation of new infrastructure.

Description of the principles of operation of the solution

This concept of an electronic promissory note is based on the public Ethereum blockchain. The choice of this technology was dictated by its universality and availability, which enabled us to minimise the barriers of entry associated with the trading of the promissory notes.

Some technical aspects related to the use of the developed solution, including blockchain transactions, are discussed below. This document uses the term "transaction" within the meaning of "any change of the content of the blockchain". The code of the developed smart contract is available in the repository at:
https://github.com/kpiblockchain/smartnotesandchecks.

Disclosure of the content of a promissory note

All information stored in blockchain is publicly available. The Bill of Exchange and Promissory Note Law does not impose an obligation to restrict access to promissory notes (which GDPR does for promissory notes issued by natural persons); however, the public availability of information on issued electronic promissory notes could discourage users of this solution from using it. In the case of a promissory note drafted on paper, access to data contained in such a document is limited by nature due to its form – only the person holding the promissory note and other people with whom they decide to share the document have access to it.

In the case of an electronic document, the same effect can be achieved by encrypting its content. It was assumed that any change in the content of the promissory note would result in a change of the key used to encrypt the document. Thanks to this, each person who received the key to decrypt the document can only read the version which corresponds to the key. This reflects the way a paper document is used – the person who has seen a promissory note knows its contents from the time they read the document, and they are unable to see any later changes in its content.

No regulation of Bill of Exchange and Promissory Note Law or transferable electronic records makes them exempt from application of the rules of GDPR. The protection of personal data of natural persons, as required by GDPR, should – in the cases specified therein – be ensured with the use of appropriate technological solutions.

Copying a promissory note

Due to the fact that it is virtually impossible to distinguish the original electronic document from its copy, an assumption was made that the original document stored in blockchain in a smart contract with a specific address should be treated as the original document. The right to modify this document and its transfer to third parties is vested in the person holding the key to a given Ethereum wallet.

Issue and transfer of a promissory note

The transaction entailing changing the owner of a given document on the blockchain takes place only when both parties express such a will (accept the transaction). This also applies to the issue of a promissory note – the related transaction is initiated by the issuer, but –in order for the promissory note to be issued effectively –it must be accepted by the taker. By doing

so, the person accepting a promissory note confirms that they have the key to decipher it and that they accept the transaction. The transaction does not involve consideration.

Changes in the content of a promissory note

The promissory note is an XML document signed with a qualified electronic signature. Any modification of this document requires adding an annotation to the signed document and signing the whole document with a qualified signature.

Designation of blockchain and forks

The development of blockchain technology is often associated with changes in the underlying algorithms. The biggest changes are introduced by means of the so-called forks. In an optimistic case, all participants of the public blockchain accept the new solution, the previous chain expires, which means that it is no longer accepted, and people can continue using it without any changes. It may happen, however, that the community will not reach an agreement about its further development and both branches of the transactions will be continued – this was the case with the Ethereum fork into Ethereum and Ethereum Classic after the attack on The Dao, or the fork into Bitcoin and Bitcoin Cash in August 2017.

In the case of promissory notes, this would mean that, from a certain point in time, there would be two parallel networks on which the same document could be traded. However, in reality this does not differ from a situation in which somebody makes a copy of a paper document and tries to dispose of it. The important difference, however, is that in the case of a blockchain-based promissory note or, both such transactions are public and it can be easily demonstrated not only that the document was used twice, but also when exactly it was used and that it was a conscious act.

What is more, forks in blockchain networks happen publicly, which means that a person acquiring such a document may easily check whether a copy of the document is not active in another branch of the network (which is practically impossible in the case of paper promissory notes).

It is also worth noting that forks in private blockchains, as well as in the most popular public blockchains (such as Bitcoin or Ethereum) are currently very unlikely, because the network which is a copy of the main branch will have a much lower value (especially in the case of the fork of the Ethereum network, nearly all services such as MakerDAO or Compound will operate only on one branch, which will make the second branch less valuable).

Finally, it is worth noting that it is technically possible to equip smart contracts responsible for storing promissory notes with functions allowing for blocking or notification of these documents on a given branch by the issuer and/or the holder of the document.

Taking into account all the above facts, we conclude that although the electronic solution does not provide a surefire protection against the existence of a copy of a promissory note or, it does provide much greater opportunities for fraud control and facilitates the collection of possible evidence in the event of an attempt to sell a copy of a promissory note.

It should be noted that the Working Group wanted to avoid creating a central register of promissory notes kept in a smart contract by a trusted institution, because it significantly limits the use of the full technological potential of blockchain.

Technical assumptions

The issuer of a promissory note signs an XML document constituting an electronic promissory note using a qualified signature. The advantage of using an XML document is the ease of machine processing it offers, which enables the development of additional tools to further facilitate the circulation of promissory notes and their cataloguing. The selected document format also preserves the identity of the content on different hardware and system platforms.

Below is a sample content of a promissory note XML document after its issue.

```
<?xml version="1.0" encoding="UTF-8"?>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
<SignedInfo>
<CanonicalizationMethod Algorithm="http://www.w3.org/TR/2008/REC-xml-c14n11-
20080502/" />
 <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
 <Reference URI="#object">
        <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
        <DigestValue>XXX</DigestValue>
 </Reference>
</SignedInfo>
<SignatureValue>XXX</SignatureValue>
<KeyInfo>
 <KeyValue>
        <RSAKeyValue>
        <Modulus>XXX</Modulus>
        <Exponent>XXX</Exponent>
        </RSAKeyValue>
```

```
 </KeyValue>
</KeyInfo>
<Weksel Id="object">
 <miejsceWystawienia>Warsaw</miejsceWystawienia>
 <dataWystawienia>2018-01-01 21:12:32</dataWystawienia>
 <przyrzeczenieZaplaty>I, the undersigned issuer, of this promissory note, undertake to pay
for this promisory note without a protest</przyrzeczenieZaplaty>
 <remitent>
 <oznaczenie>Jan Kowalski</oznaczenie>
 <adres> Nowa, 02-123 Warsaw</adres>
 <email>jan@kowalski.pl</email>
 </remitent>
 <miejsceZaplaty>in Warsaw</miejsceZaplaty>
 <terminZaplaty>on 10 July 2018.</terminZaplaty>
 <kwota>ten thousand</kwota>
 <waluta>PLN</waluta>
 <wystawca>
 <oznaczenie>Adam Malinowski</oznaczenie>
 <adres> Nowa, 02-123 Warsaw</adres>
 <email>adam@malinowski.com</email>
 </wystawca>
 <oryginal>The original document is located on Blockchain XXX, Smart Contract with an
address of 0xdeadf00dbaadf00ddeadf00dbaadf00dcafebaad</oryginal>
</Weksel>
</Signature>
```

Below, an example of an endorsment is shown:

```
<?xml version="1.0" encoding="UTF-8"?>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
[...]
<Klauzule id="klauzulaindos1">
 <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
 [...]
 <Weksel Id="object">
 [...]
 </Weksel>
 </Signature>
 <klauzula>
 <dataKlauzuli>2018-01-03 21:12:32</dataKlauzuli>
```

<trescKlauzuli>I, the endorser specified below, endorse this promissory note for the benefit of the endorsee<trescKlauzuli>
<indosant>
<oznaczenie>Jan Kowalski</oznaczenie>
<adres> Nowa, 02-123 Warsaw</adres>
<email>jan@kowalski.pl</email>
</indosant>
<indosatariusz>
<oznaczenie>Niebieska Sp. z o.o.</oznaczenie>
<adres> Chmurki, 05-125 Warszawa</adres>
<email>biuro@niebieska.pl</email>
</indosatariusz>
</klauzula>
</Klauzule>

In the case of a paper-based promissory note, signatures are placed in various places on the sheet of paper, which makes it possible to determine their purpose and meaning. In the case of an electronic document, the issuer or endorser signs the entire electronic document at each time, which means that the signatures cover its content as it changes over time. However, it is possible to establish the intent behind each signature from the structure of the solution adopted. The structure of the document, referred to as the "box" structure, guarantees the inseparability of statements and the possibility of reproducing the order in which they were made.

Principle of functioning of promissory note trading

The working principles of the promissory note described in this document is based on the assumptions described above and is consistent with the smart contract developed within the framework of the workshops of the Coalition for Polish Innovation, which is available at: https://github.com/kpiblockchain/smartnotesandchecks/blob/master/contracts/SmartPromissoryNote.sol).

The following constitutes an example of functioning, deliberately omitting some technical aspects. The final solution would probably be slightly more complex, in particular it would be equipped with additional safeguards for the correctness of the operations carried out, but in principle it could be based on the existing version. If a private blockchain was used, the principles of functioning would remain the same.

A promissory note issuer creates a smart contract to service said promissory note. Smart contract stores a signed and encrypted content of a promissory note in an XML file. They create an XML file with the content of the promissory note, sign it with an electronic signature and additionally encrypts it (with another pair of keys so that the content of the document is not openly available on the network). The issuer uploads (using the setData() function) the content of the promissory note to the previously created smart contract, then calls the initOwnershipChange() function with the address of the taker to transfer the promissory note and transfers (outside the blockchain) the key allowing to decrypt the content of the promissory note to the taker. The taker downloads the content of the promissory note (using the getData() function), decrypts its content and after reading it, if they accept it – they call the acceptOwnership() function of the smart contract, which sets the owner of the smart contract to the taker.

From now on, the taker may change the content of the promissory note attached to the smart contract, in particular by adding new content, such as additional clauses.

Should the endorser want to dispose of the promissory note, they expand the current (signed) content by adding an appropriate clause, then sign the resulting comprehensive document (containing the previously signed content together with any possible clauses added earlier), then place the resulting document (after previously encrypting it) in the content of the smart contract (using the setData() function), call the initOwnershipChange() function and pass the key used to decrypt the document content to the endorsee. The endorsee downloads the content of the promissory note (using the getData() function), decrypts its content and after reading it, if they accept it – they call the acceptOwnership() function of the smart contract, which sets the owner of the smart contract to the endorsee.

Conclusions

The presented concept of an electronic promissory note may be applied in business transactions; however, the implementation of such a document based on a public blockchain poses some technological and economic challenges. Judging by the standards of existing blockchains, promissory notes are very large, which at the current cryptocurrency prices may discourage users due to the cost of such solutions. It seems, however, that over time this cost barrier will be alleviated. The alternative is to build this solution with the use of corporate blockchain.

The relationship of regulations based on the UNCITRAL Model Law to the law based on the Geneva Convention

In the explanation to Article 1 of the above-mentioned UNCITRAL Model Law on Transferable Electronic Records, the conflicting views on the effectiveness of national regulations creating electronic promissory notes in the context of the Geneva Convention (which is an international agreement), which were presented during the debate, were clearly indicated. UNCITRAL does not make any attempts as to dispelling these doubts, leaving it to the individual states to decide whether to include electronic and promissory notes in the regulation on transferable electronic records. It is therefore uncertain whether electronic promissory notes will be treated as their paper-based counterparts within legal systems of countries that do not adopt appropriate regulations, corresponding to the Model Law. Therefore, in order to facilitate the global trade in electronic securities, efforts to amend the Geneva Convention on Bills of Exchange, Promissory notes and Cheques can be seen as justified as an alternative way of ensuring the legal effectiveness of electronic promissory notes. It should be stressed, however, that this should not prevent the national legislator from implementing a regulation based on the UNCITRAL Model Law on Electronic Transferable Records into Polish law. Such a law would apply to all securities (including cheques, bills of lading, warehouse certificates, waybills, guarantees, letters of credit, sureties) which are based on paper documents these days, which would allow for the introduction of electronic media to these areas.

Regulatory expectations and further development

The deployment of the described concept of electronic promissory note hinges upon the recognition of the validity of the promissory note on a unique electronic medium and the effectiveness of its circulation in the digital environment by the courts. The courts are responsible for recognising cases concerning payment of promissory notes, which are not paid off in due time. To this end, it is necessary to introduce provisions in the form of a law, corresponding to the UNCITRAL Model Law of 2017 on transferable electronic records, into Polish law.

The introduction of the above regulation into Polish law would also enable:

– simultaneous exchange of electronic promissory notes for payment (Delivery Versus Payment – DVP) in a smart contract, ensuring the simultaneous transfer and payment for the document. This functionality could be carried out using the services resulting from the implementation of the PSD2 directive;

– exchange of an electronic promissory note for another electronic document, for example an eCheque or another eSecurity (Delivery versus Delivery - DVD) – this functionality could be carried out using an electronic cheque issued on the same terms as an electronic promissory note;

– Integration of the function of issuing an electronic promissory note with qualified electronic signature services to be offered by electronic banking systems.

It should be stressed that the UNCITRAL Model Law on Electronic Transferable Records is technologically neutral, since it does not define a specific technology to be used and is not limited to its use only. Given the pace of technological development, it would be pointless to limit any regulations to a single technology, because it would most likely have already evolved by the time the regulation was adopted. If the Model Law was introduced into the Polish law, it would enable the creation of electronic securities (financial instruments remaining outside the regulation of the legal regime) not only on the basis of blockchain technology, but also other technologies such as DLT, as well as future technologies, which have not been developed yet, provided that they would be able to provide specific functions and features of electronic media necessary for the creation of electronic securities. These features concern the uniqueness of an electronic medium, its portability and the possibility of exercising exclusive control over it. The broader justification for the Model Law has been worked out by UNCITRAL and it can be read here:

http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf