European Economic and Social Committee

INT/885
Blockchain and the single market

OPINION

European Economic and Social Committee

Blockchain and the EU single market: what next?
(own-initiative opinion)

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Plenary Assembly decision	20/02/2019
Legal basis	Rule 32(2) of the Rules of Procedure Own-initiative opinion
Section responsible	Single Market, Production and Consumption
Adopted in section	18/10/2019
Adopted at plenary	30/10/2019
Plenary session No	547
Outcome of vote (for/against/abstentions)	182/1/5

1. Conclusions and recommendations

1.1 This opinion focuses on Blockchain (BC) as a technology. When applied, it can be a positive transformative force across many sectors in society, bringing with it values such as trust and transparency, democracy and security. Ultimately, it can help to reinvent socio-economic models, thus supporting the societal innovation needed to tackle today's societal challenges. However since the issue of cryptocurrencies is highly debated, the EESC should in the near future review these instruments separately relative to the risk for money laundering and/or tax evasion.

1.2 Applying BC already benefits society. BC contributes to achieving the Sustainable Development Goals (SDGs), empowers citizens, boosts entrepreneurship and innovation, improves mobility and cross-border opportunities for businesses while enhancing transparency for consumers. Furthermore, it can reduce tax evasion and corruption and develop both private and public services. However, several challenges still remain to be addressed, in particular the urgent matter of providing legal clarity and certainty and protecting privacy.

1.3 Despite the fact that the EU institutions have reviewed BC to some extent, a common EU approach is still needed. Given its track record to date, the EU has a unique opportunity to sustain its leading global market position but only with immediate EU action.

1.4 The EESC therefore calls on the European Commission (EC) to launch a comprehensive BC initiative setting out a common EU approach and vision with SDGs at its core. This should be complemented by an action plan for Europe to become the reference point for BC worldwide. The existing European BC Partnership and the BC Observatory and Forum should be reinforced with the creation of an EU BC stakeholder platform bringing together representatives from the EU institutions, including the EESC and the CoR, industry, consumers, Member States, academics etc. to provide a space for joint learning and capacity-building, a network of networks and sharing good practices.

1.5 The EESC can take an active part in hosting such a "platform" ensuring transparency, inclusiveness, collaboration and the involvement of organised civil society.

2. Introduction

2.1 Blockchain (hereafter BC) and distributed ledger technology (DLT) has the potential to transform society. BC is a mathematical structure for storing data in a way that limits corruption and fake data. The technology provides a new way to create trust to securely exchange something of value. BC is regarded as a new more transformative phase of the internet era, but it should be noted that it is one of many new technological opportunities.

2.2 This opinion focuses on BC as a technology, which can be applied to a whole host of areas and industries such as energy, finance, food and agriculture, medicine and healthcare, elections and governance. This is the focus of this opinion and in particular BC in relation to the EU single market. BC can, if properly applied, transform concepts such competition and governance and thereby tackle societal challenges and transitions. However since the issue of cryptocurrencies is

highly debated, the EESC should in the near future review these instruments separately relative to the risk for money laundering and/or tax evasion.

2.3 The recent EESC opinion *Blockchain and distributed ledger technology as an ideal infrastructure for social economy*[1] defines BC as "both a code, i.e. a communication protocol, and a public register, in which all transactions between network participants are recorded one after the other, with a high degree of transparency and in a way that cannot be altered". This definition is complemented by the EC's view that "BC is a technology for promoting user trust. It makes it possible to share on-line information, agree on and record transactions in a verifiable, secure and permanent way"[2].

2.4 The EU institutions have already taken some steps to support BC development. In 2017 the European Parliamentary Research Service (EPRS) published the report *How blockchain technology could change our lives*[3] and in 2018 the EC launched the BC Observatory and Forum[4]. This is to accelerate BC innovation and development to retain Europe's global leadership position in this transformative new technology.

2.5 One milestone was April 2018, when the EC together with 21 Member States and Norway signed a declaration to create the European Blockchain Partnership (EBP) and cooperate to establish the European Blockchain Services Infrastructure (EBSI)[5]. The aim is to support cross-border digital public services with the highest standards of security and privacy. Since then 27 Member States have joined the partnership.

2.6 In 2018 the European Parliament (EP) adopted a non-legislative resolution[6] on BC and DLT emphasising the opportunity for the EU to become "the global leader" and a "credible actor" in shaping market development globally and across sectors, noting that the EU is currently at the forefront in BC development and application, compared to the US and China[7].

3. Blockchain - opportunities for the single market and the EU

3.1 Even if BC technology is a relatively new phenomenon, significant opportunities are already emerging from a single market context.

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1 OJ C 353, 18.10.2019, p. 01.

2 https://ec.europa.eu/digital-single-market/en/blockchain-technologies.

3 http://www.europarl.europa.eu/RegData/etudes/IDAN/2017/581948/EPRS_IDA(2017)581948_EN.pdf.

4 https://www.eublockchainforum.eu/.

5 https://ec.europa.eu/digital-single-market/en/news/european-countries-join-blockchain-partnership.

6 http://www.europarl.europa.eu/doceo/document/TA-8-2018-0373_EN.html?redirect.

7 One measure is that in 2018 alone, ICO (initial coin offering) fundraising in Europe was approximately USD 4.1 billion, nearly double the USD 2.3 billion raised in Asia so far, and significantly more than the USD 2.6 billion raised in the US. https://www.newsbtc.com/2018/10/16/europe-surpasses-us-and-asia-in-cryptocurrency-token-sales.

3.2 BC contributes to **achieving SDGs.** BC has trust, openness and transparency built into its design and value proposition[8] which is highlighted in the context of achieving the UN's Sustainable Development Goals (SDGs)[9].

3.3 Some examples are[10]:

- goal 1 "No poverty" and the use of cryptocurrencies for the "unbanked" population;
- goal 3 "Good health and wellbeing" and the opportunity in sharing patient healthcare records more securely and efficiently, and
- goals 12, 14, 15 for "Responsible production and consumption" where BC can ensure provenance throughout supply chains.

BC also contributes to several other SDGs such as equal opportunities, human rights relating to personal data, decent work and economic growth; and democratic participation, etc.

3.4 **Empowering citizens.** BC can potentially bring the power of information back to the people who own it. By sharing data in a transparent way and reducing the need for intermediaries, BC can empower actors that were previously in vulnerable positions in relation to centralised entities.

3.5 **Boosting entrepreneurship and innovation.** With its collaborative and consensual mode of operation, innovative solutions and new businesses are emerging based on economic, environmental and social sustainability. Inclusiveness, enabled through BC, offers a base for the platform economy and other new business models – and, as the EESC has already explored, the social economy.

3.6 **Improving mobility and cross-border opportunities for businesses, while protecting consumers:** by minimising barriers to trade in the EU and globally, while ensuring safety and security regarding payments and transactions in the process of exchange. This will improve market conditions and access to goods and services in the EU, while protecting consumer privacy, confidentiality and information sharing[11].

3.7 **Supporting the single digital gateway.** The single digital gateway introduces the "once only" principle which means that any data can be entered into the platform only once. The development of the EBSI which is conditioned by the implementation of the "once only" principle, can thereby serve as a tool and enabler for an efficient, resilient and sustainable single market.

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8 The BC social value proposition refers to self-sovereign identity (authentication, authorisation), trust and transparency, democracy, immutability and the non-intermediary concept.

9 https://blockchain4sdg.com/how-blockchains-can-tackle-the-un-sustainable-development-goals/.

10 UN/CEFACT, ECE/TRADE/C/CEFACT/2019/INF.3: Blockchain in trade facilitation: sectoral challenges and examples, http://www.unece.org/fileadmin/DAM/cefact/cf_plenary/2019_plenary/CEFACT_2019_INF03.pdf.

11 Confidentiality refers to the protection of data shared between an entity (i.e. individual or organisation) and an authorised party from unauthorised third parties. Privacy refers to protection from intrusion into one's personal identity and personal transactions.

3.8 **Developing public and private services** on BC enables huge positive effects from the digital transformation of the EU economy and society as a whole. Four use cases[12] are now being developed in the framework of European Blockchain Services Infrastructure (EBSI). These are: notarisation and authentication, diplomas, European self-sovereign identity, taxation and trusted data sharing. At Member State level, economic benefits are gained through direct access to markets, with zero or minimum intermediary costs, transferring true value to consumers. This can be upgraded with high levels of safety and security for consumers through traceability on BC and participatory co-creation of goods and services. Furthermore, BC-based voting systems can make voter registration and identification secure, and provide a robust and verifiable voting system.

3.9 **Creating and verifying digital identities for individuals and organisations.** By combining decentralised BC principles with identity verification and cryptography, a digital identity can be created and attributed to every online transaction of an asset. This has several potential benefits for consumers, businesses and regulators alike. Digital identity on BC provides the possibility of mutual recognition and execution of operations using smart contract code which also simplifies the establishment of businesses. These digital identities and electronic signatures must follow the path set out by eIDAS; they should also ensure interoperability and compatibility.

3.10 **Mitigating breaches of personal data.** Data breach risks can be mitigated or avoided through the responsible deployment of BC data structures. This will help protect sensitive data, while ensuring safe transmission of data to safeguard the right of individuals to confidentiality and privacy. One way this can be achieved is to avoid openly storing private data on the BC. Instead, private data could be stored off-chain and only exchanged as needed and in peer-to-peer communications.

3.11 **Standardisation processes** are a condition for crossborder interoperability and the implementation of BC. Some have now been tested and examined by regulators, but as with any innovation, standardisation initiatives must be balanced with creating an enabling environment to fully explore the opportunities with this technology.

3.12 Efforts should also be made to **harmonise** cryptographic standards among BC and other eIDAS-related technologies[13], to create new levels of **interoperability** between current and future technological models. This would address the risk of BC "silos" developing. In fact, a standardisation roadmap has been put forward by the International Organization for Standardization (ISO) covering the period to 2020, including consideration of standardisation of areas such as terminology, taxonomy, identity verification, interoperability, governance, security and privacy, use cases and smart contracts.

12 https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/EBSI.

13 Like electronic signatures and timestamps, using the current cross-compatible cryptographic algorithms.

3.13 **Improving transparency through smart contracts.** BC-based solutions provide transparency through decentralisation, allowing participating parties to see and verify data. "Smart contracts"[14], are an example of this.

3.14 **Limiting tax evasion and avoidance.** The EU single market has the potential to strengthen e-commerce, while ensuring minimisation of the negative externalities accompanying today's international trade. BC tax-processing systems can ensure higher transparency for both the payer and the government. BC can limit tax evasion and money laundering by increasing accountability of transactions and liability of operations, and therefore increase the competitiveness of the EU single market. The EC could launch a study on how BC can assist in this area.

3.15 **Generating new funding models** such as crowdfunding, initial coin or token offerings are concepts of universal fundraising (geographically and demographically) through the issuance of a project-specific currency with a special appreciation mechanism. This is the culmination of the trend of crowdfunding.

3.16 **Reinventing socio-economic models.** The regaining of power by individuals can reinvent society. If BC's main asset is to solve the problem of trust between individuals without going through a third party, it also allows new types of governance and relationships to be created based on the transparency of interactions. As with any societal change, care must be taken to protect against the emergence of structures leading to abuse while giving leeway for experimentation that could have major benefits for humanity. Moreover, BC technologies and networks should avoid creating a breach between those who control or can afford it and those who can only access it through models controlled by large corporations. Supporting and boosting organisations such as cooperatives, with open and democratic governance models, to develop BC businesses is key for BC success among SMEs and smaller organisations.

4. Blockchain – some challenges to tackle

4.1 To unleash the potential of BC on the EU single market and for European societies, several issues must be addressed, where the **current legal uncertainty** is a priority. Some regulatory solutions for cryptocurrencies and ICOs exist; however, the legislative framework remains unclear regarding system design and in areas where BC technology is applied, resulting in a fragmented approach at Member State level. Without a joint EU initiative for legal certainty and clarity across the EU, cross-border opportunities will be limited. Use cases and regulatory sandboxes for certain types of services and usage could be an initial stage to grasp the future legal requirements. The EU experience of developing complex, cross-border regulation and policy may be an advantage with regard to future regulation of blockchain.

14 https://www.blockchaintechnologies.com/smart-contracts/. These are self-executing contractual states stored on the blockchain which nobody controls and therefore everyone can trust. Examples are trade clearing and settlement, gift/loyalty coupons, electronic health records, royalty distribution, product provenance, peer-to-peer transactions, lending, insurance, energy credits, and voting.

4.2 **Protecting privacy** is key. The General Data Protection Regulation (GDPR)[15] was introduced to tackle the most urgent data issues. However, when the GDPR was prepared BC technology was mostly unknown, and thus the potential tensions between the GDPR and BC need to be reviewed. The EESC calls on the EC to examine the GDPR, and propose revisions and further guidance on the relationship between the GDPR and BC.

4.3 The legal distinction between anonymised and pseudonymised data concerns the categorisation of personal data. Pseudonymous data still allows for some form of re-identification (even indirect and remote), while anonymous data cannot be re-identified. While in permissioned BC, pseudonymisation is considered as a solution for the relations facilitated by BC technology, **anonymisation is still a regulatory barrier** for wider use of permissionless BC, which can be resolved through digital identity solutions embedded into the regulatory restrictions.

4.4 The proof-of-work consensus mechanism is **highly energy consuming**. With the development of the alternative proof-of-stake consensus mechanism, this important environmental sustainability issue can be resolved. Solutions already exist which must be shared and fully applied[16].

4.5 Another technical challenge is the **interoperability with different BC platforms**. Different BC may not be compatible due to the risk for parties that need to exchange data. Another concern is the compatibility between BC platforms and existing government systems, hindering governments switching from their existing platforms to a BC-based interoperability. Ensuring interoperability should be a priority in the near future for BC developers to enable mass adoption.

4.6 The BC take-up rate relies on adoption by the diverse forms of enterprises, with SMEs being the majority in the EU. Today, **transaction costs are in many cases prohibitive**, making technical and consultative services out of reach for SMEs. Supporting the creation of new BC networks such as cooperatives is crucial to ensure fair access for SMEs and other smaller entities, allowing for improved democratic governance.

4.7 As with every disruptive technology, social challenges must be addressed. There is a critical need to correctly **inform the general public about** disruptive technologies. They have a real impact on people's daily life and this must be addressed carefully, making civil and social dialogue crucial. The EESC will continue to build knowledge and provide the perspectives of organised civil society on the next steps in BC development.

4.8 It is critical to fully understand and review how BC technology **impacts consumer protection and rights**. Clarity is needed on the relationships between, for example, confidentiality and privacy enforced by legislation (e.g. EU data protection legislation), regulation (client confidentiality) or contract (commercial confidentiality).

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15 https://gdpr-info.eu/.

16 www.tolar.io as a case of low energy consumption blockchain.

4.9 As with any new technology and all technology-based business models, it would be appropriate and relevant to **analyse the effects and potential impacts on jobs,** working conditions, workers' rights and protection, and social dialogue. The analysis should also assess the effects on intermediary organisations. STEM skills are likely to become increasingly important for industries using BC. Given the lack of widespread understanding about the functioning and potential limitations of BC, the EESC calls for **lifelong learning** that enables people to acquire skills and to reskill and upskill in order to better exploit the opportunities and challenges of BC.

5. The way forward

5.1 Despite the fact that the EU institutions have reviewed BC to some extent, there is still a lack of a comprehensive and shared EU approach. Given its track record to date, the EU has a unique opportunity to **sustain the leading global market position** but only if the EU takes action.

5.2 BC development is still very fragmented throughout the Member States. The EESC therefore urges the EU institutions to provide clarity and a common ground to unleash the full potential of BC for Europe. A first step is for the EC to launch a **communication on EU BC and DLT development** based on the principles of BC[17], to express political will, ownership and set out a vision and an action plan to create an enabling environment. This initiative should be complemented by the re-establishment of the EP intergroup on digitalisation, which should address the issue of BC and DLT.

5.3 The EU common vision could aim at **Europe becoming a BC-based world pilot continent**, thus ensuring that the EU stays competitive while developing its own approach to digitalisation with SDGs at the core, backed by public pilot initiatives and programmes at Member State and EU levels.

5.4 With the existing European BC Partnership, and the BC Observatory and Forum, the time is now to augment this initiative by creating an **EU BC stakeholder platform** gathering representatives from the EU institutions, including the EESC and the CoR, industry, consumers, civil society, Member States, academics, etc. Moreover, this platform should be open to all EU citizens to cooperate and be part of the BC project.

17 The BC principles are: self-sovereign identity - authentication, authorisation, traceability, trust, immutability, democracy, no-intermediation.

5.5 This platform would provide a space for **joint learning and capacity building**, but also bring together stakeholders, acting as a **network of networks**, providing meeting places and sharing good practices. The EESC is well placed and has the necessary experience to take an active part in hosting such a "platform" ensuring transparency, inclusiveness, collaboration and the involvement of organised civil society, building on similar existing initiatives[18].

Brussels, 30 October 2019

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The president of the European Economic and Social Committee

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18 The European Circular Economy Platform, for instance, is a joint initiative with the Commission, and the Committee is also active in the AI HLEG and the GECES.