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SEEBLOCKS.eu

Supporting Europe's effort in Blockchain/DLT Standardisation

D3.2 Report of results of the early public consultation

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* R: Document, report (excluding the periodic and final reports)

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patent filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc.

EXECUTIVE SUMMARY

The SEEBLOCKS public consultation process was launched on 15th November .2023. The title of the consultation was “**Future Blockchain and DLT Standardisation Topics**” and the objective was to gather the views of the general public on emerging Blockchain and DLT standardisation in both an anonymous and open fashion. The purpose of the endeavour was to:

- Maintain inclusivity from all stakeholders (especially start-ups & SMEs)
- Guarantee European interests are considered
- Identify future blockchain and standards-related priorities

It is evident that participants have provided a wide-ranging set of responses from across economic activity sections (38% from startups and SMEs), with a multi-technology perspective (20 areas of technology are represented), from across Europe and the world (23 countries), reflecting upon the European current and emerging EU policy and regulatory context with a deep understanding of the process of standards development.

There were **50** individual responses to the SEEBLOCKS public consultation, representing a wide cross-section of technology interests including only 36% of whom identify as primarily active in a blockchain and DLT domain. The five most prevalent technology areas represented by respondents are:

- Blockchain and DLT - 36%
- Cybersecurity/network/information security - 14%
- Fintech/regtech standardisation *and* Internet of Things - 10% each
- Metaverse - 8%

Artificial intelligence, Cloud/Edge/Fog Computing, Data Economy and Digitisation of European Industry are represented with 6% respondents each.

A majority of respondents are **expert contributors** to the development of open standards, almost **75%**. A total of **40 entities** (SDOs and blockchain protocols) have benefitted from contributions from respondents to the public consultation. This implies a high degree of domain expertise amongst a majority of respondents.

- 64% made contributions to SDOs
- 42% made contributions to open blockchain protocols
- 36% made contributions to both SDOs and open blockchain protocols
- 26% did not contribute to either an SDO or open blockchain protocols

In addition to information about the individual respondents and their background, industry and experience in standards development, thematic insights were recorded on the part of respondents. The top four priority areas for emerging blockchain standards are: Identity Management, Data Provenance, Governance and Tokenisation of assets and exchange.

The top four areas of EU policy regulation and law are: Markets in Crypto Assets Regulation (2019), Framework for EU Digital Identity (2021), EU Data Act (2022) and the EU Digital Euro (legislative proposal stage, June 2023).

Responses identifying what is missing from the landscape that would enable wider adoption of blockchain and DLT in the future point to the following:

1. that the potential of blockchain and DLT in business and society is not well understood.
2. Education along with open standards and interoperability are vital.
3. Relevance to the sustainable economy must be addressed.
4. Strong cyber protections, information security, governance and
5. strong legal grounding (e.g. digital copyright and IP laws) are vital for widespread and accelerated adoption.

Reflections upon these findings will inform the direction of the SEEBLOCKS.eu project and will be further developed in a second consultation later this year.

[Fiona Delaney]

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
1. INTRODUCTION	9
2. CONSULTATION PROCESS	10
2.1 PURPOSE	10
2.2 METHODOLOGY	10
2.3 RESPONDENTS	12
2.4 STANDARDISATION PROFILE	15
2.5 THEMATIC RESPONSES	18
6. CONCLUSIONS	26
7. APPENDICES	27
APPENDIX A – TECHNOLOGY TYPE, FULL LIST	27
APPENDIX B – SDOs FULL LIST	29
APPENDIX C – FULL RESPONSES TO THE THIRD THEME, WITHOUT CODIFICATION.....	30

LIST OF FIGURES

FIGURE 1 SEEBLOCKS.EU PLATFORM.....	11
FIGURE 2 RESPONDENTS BY GENDER	12
FIGURE 3 COUNT OF RESPONDENTS BY COUNTRY	12
FIGURE 4 SPREAD OF RESPONSES ACROSS EU	13
FIGURE 5 SPREAD OF RESPONSES ACROSS THE GLOBE.....	13
FIGURE 6 ORGANISATION TYPE.....	14
FIGURE 7 TECHNOLOGY AREAS REPRESENTED BY RESPONDENTS TO SEEBLOCKS.EU PUBLIC CONSULTATION.....	15
FIGURE 8 RESPONDENT CONTRIBUTIONS PER SDO.....	16
FIGURE 9 SDO AFFILIATIONS PER RESPONDENT.....	16
FIGURE 10 % CONTRIBUTOR ENGAGEMENT PER SDO	16
FIGURE 11 NO. OF CONTRIBUTIONS PER BLOCKCHAIN.....	17
FIGURE 12 CONTRIBUTIONS TO SDOS AND OPEN BLOCKCHAIN PROTOCOLS PER CONTRIBUTOR.....	18
FIGURE 13 BLOCKCHAIN FEATURES IN ORDER OF IMPORTANCE	19
FIGURE 14 POLICY, REGULATION AND LAW.....	20
FIGURE 15 CODED CATEGORIES	21

LIST OF TABLES

TABLE 1 BREAKDOWN OF RESPONSES BLOCKCHAIN FEATURES PLACED IN ORDER OF IMPORTANCE 1-7	20
TABLE 2 RESPONSES AND CODED CATEGORIES OF WHAT IS MISSING PREVENTING WIDER ADOPTION	25

ABBREVIATIONS

SBM	Strategy Board Member
SEP	Selection & Engagement Procedures
SDO	Standards Development Organisation
NSAI	National Standards Authority of Ireland
IERC	International Energy Research Centre
INATBA	International Association for Trusted Blockchain Applications
EUBOF	EU Blockchain Observatory & Forum

1. INTRODUCTION

The Public Consultation instrument is a fundamental pillar of EC policy[1]. It constitutes an important component of the Commission's commitment to guaranteeing transparency and inclusiveness for all those citizens and stakeholders affected by its decisions. A Public Consultation invites stakeholders of all types, ranging from organisations to private citizens, to provide feedback on policy-related activities before they are finalised, in order to ensure that a broad range of legitimate needs and requirements are taken into consideration.

More and more, the boundaries between technology-related and policy-related activities are blurring, given the increasing ability of new technologies to affect the lives of citizens. The AI Act [2] has been only the most recent, highly-publicised example of the need to address the capability of a technology to have a profound effect not only on markets, but also on society in general.

Blockchain and Distributed Ledger Technology is another example: the technology forms the basis of some of the most ambitious and forward-looking EC policies to enhance the lives of its citizens, from Identity Management, to sustainable supply chains, to improved interaction with public administrations. For this reason, SEEBLOCKS.eu from the very start planned for two public consultations, directed both at those working in related technological domains and those interested stakeholders from all domains.

In this first, early public consultation, we sought feedback that would help us to either confirm our current work plans or institute course corrections as necessary going forward. As the reader will discover, the results have provided valuable insights on technological aspects of current Blockchain/DLT standardisation activities (the main thrust of SEEBLOCKS.eu). Equally valuable, however, has been the feedback on the needs and perceptions of both market and societal stakeholders concerning the technology itself. This feedback will help us to ensure that our outreach, awareness-raising, and capacity-building activities adequately address the issues raised by our respondents about the role of Blockchain/DLT technology in today's society.

We thank all those who have responded to this first public consultation, and hope that they will find the results as provocative and stimulating as we have. In the meantime, we look forward to the second public consultation at a later date in the project.

[1] <https://www.eumonitor.eu/9353000/1/j9vvik7m1c3gyxp/vh6vd8t76etb#:~:text=The%20European%20Commission%20launches%20electronic,%20or%20consultation%20process>'.

[2] <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>

2. CONSULTATION PROCESS

The first of two SEEBLOCKS public consultations was launched on 15.11.2023 and the participation remained open until 19.01.2024. The title of the consultation was “Future Blockchain and DLT Standardisation Topics” and the purpose was to gather the views of the general public on emerging blockchain and DLT standardisation topics at a high level, and in an open fashion to understand better the expectations of the general public about blockchain and DLT.

2.1 Purpose

SEEBLOCKS.eu Work package WP3 – Pan-European and international synergies lays out the role of public consultations in identifying future blockchain-related topics that support European interests and values.

T3.2 explicitly states that two online Public Consultations (an “early” one, M06, and a “second-iteration” one, M15) on Blockchain/DLT standardisation will ensure the inclusion of insights from all stakeholders. These open public consultations were to be carried out online, in agreement with the SSIs, as a further engagement lever towards all SGs (especially start-ups & SMEs) and to quantify input from them, defining future needs related to blockchain/DLT standardisation, incl. input to the 2nd SSP (WP2) and the standards visualisation tool (WP4).

Each consultation was to be followed by reflections on relevant stakeholders’ positions including the following:

- Identify future blockchain and standards-related priorities
- Maintain inclusivity from all stakeholders (especially start-ups & SMEs)
- Guarantee European interests are considered

It was furthermore stated that a sub-committee of SB members would supervise the consultation process and that the results would be published.

2.2 Methodology

The public consultation was conducted anonymously online and included a single questionnaire with 10 questions, which was hosted on the [SEEBLOCKS.eu](https://seeblocks.eu) website.

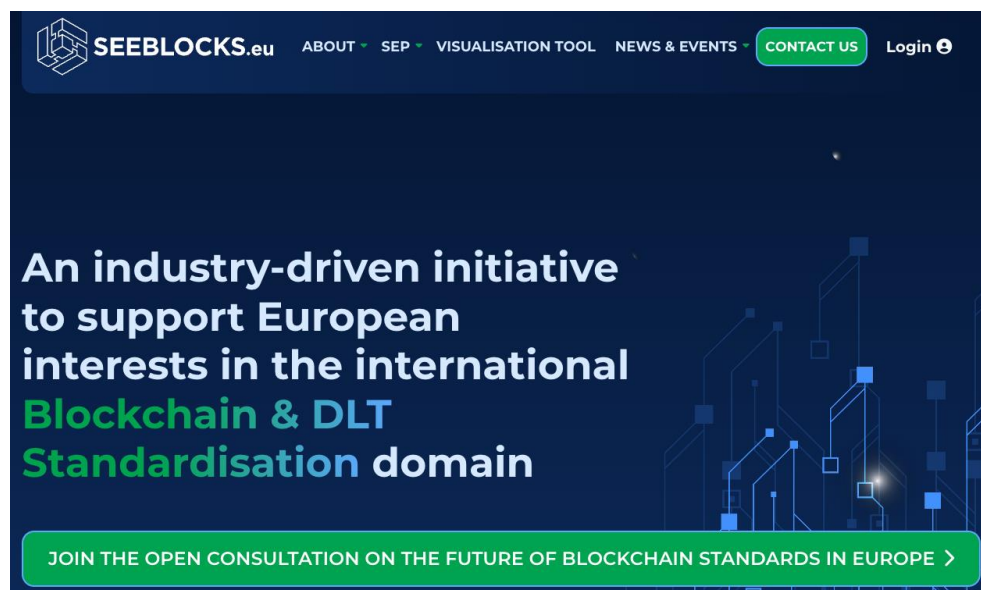


FIGURE 1 SEEBLOCKS.EU PLATFORM

In addition to gender and geographic location, respondents were asked to answer key questions framing their relative perspectives, validating multiple stakeholder engagement from a range of perspectives from economic activity sections, technology domains and standardisation contributions:

1. Organisational Type
2. Technology Area
3. Contribution to SDOs
4. Contribution to public blockchain protocols
5. Registration status with StandICT.eu and EU Standards Observatory (EUOS)

Respondents were also asked their opinions on the following issues:

6. To prioritise key features of blockchain and DLT
7. To identify the most relevant EC policy, regulations, and laws to blockchain and DLT
8. To state what they believe may be missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future.

This succinct set of questions was proposed by the project consortium to capture a snapshot of the current state of standardisation in blockchain and DLT from a European perspective.

The first five questions give insight into the degree of familiarity of the respondent with standardisation in blockchain and DLT. The final three questions capture insights into the current context and gaps for the successful adoption of blockchain and DLT adoption in Europe and beyond.

2.3 Respondents

There were 50+ respondents to the public consultation survey. The information provided by respondents includes gender, geolocation, organisation type, technology type, SDO contributions, public blockchain protocol contributions, and registration status with StandICT and EUOS.

Gender

Three-quarters of respondents indicated that they were male. 18% indicated they were female and 6% preferred not to say.

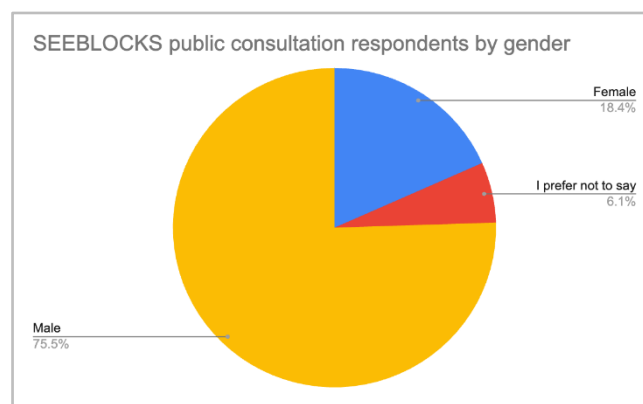


FIGURE 2 RESPONDENTS BY GENDER

Geolocation

Responses were received from 23 different countries worldwide, 20 from within Europe and three outside of Europe: Bahamas, USA and Brazil.

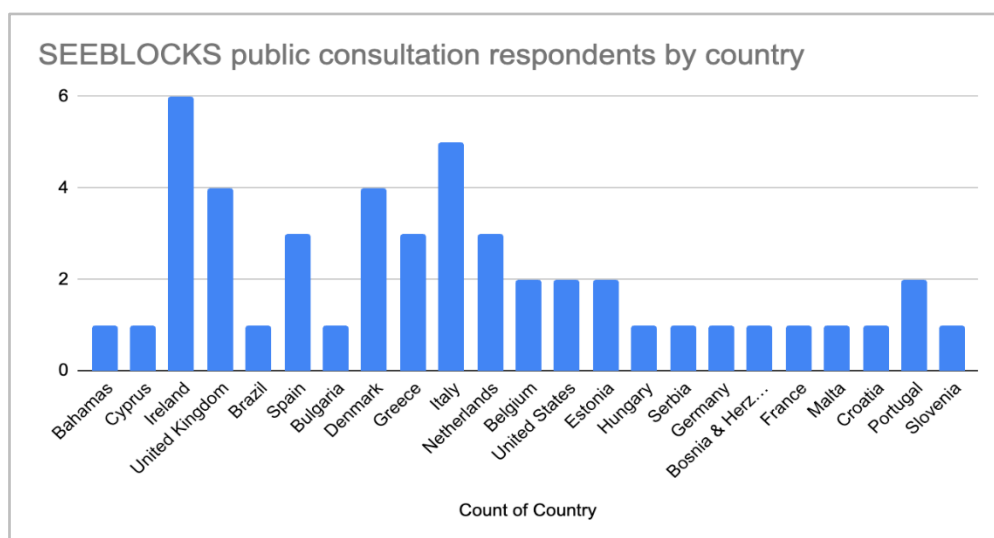


FIGURE 3 COUNT OF RESPONDENTS BY COUNTRY

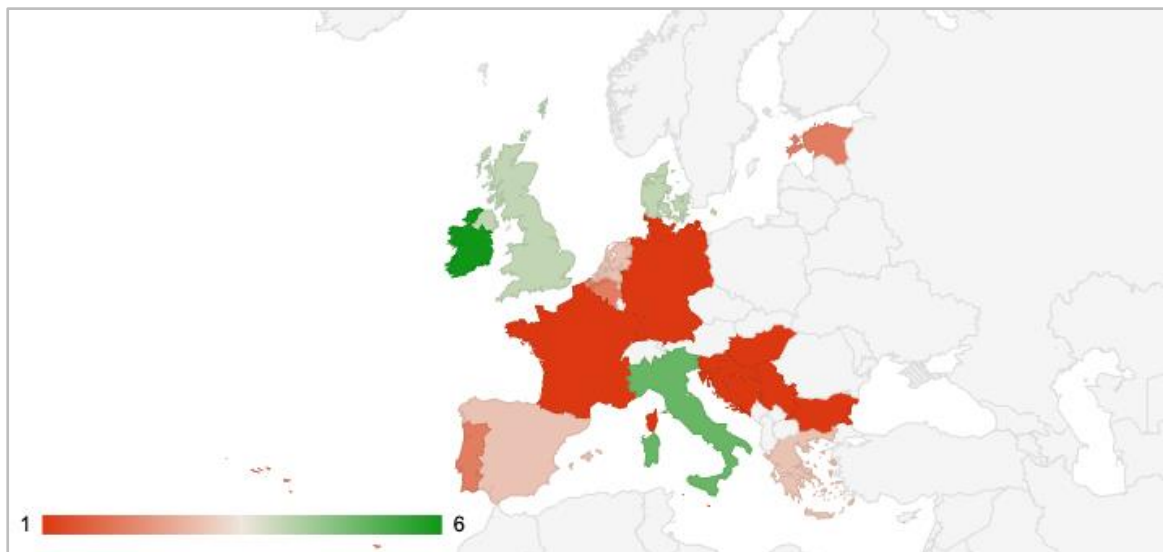


FIGURE 4 SPREAD OF RESPONSES ACROSS EU

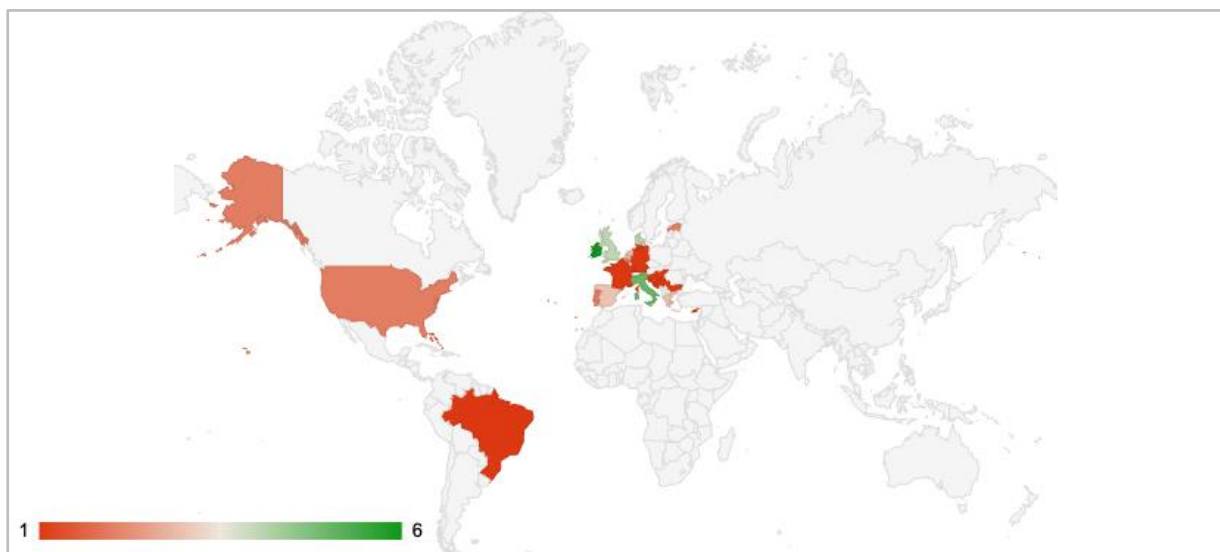


FIGURE 5 SPREAD OF RESPONDED ACROSS THE GLOBE

Organisation Type

Respondents selected one of the following nine organisation types: Academia, Association & Non-Profit Organisation, Citizen Scientist & General Public, Horizon 2020 & Horizon Europe project/initiative, Large Enterprise, Policy Maker, Start-Ups and Small Medium Enterprise, Vertical enterprises, Representative or other.

Of the nine organisation types presented to respondents to choose from, Startups and SMEs are most well represented, followed by Academia and Associations & Non-profit orgs.

1. Startups and SMEs - 38.5%
2. Academia - 20.5%
3. Associations & Non-profit orgs. - 17.9%
4. Other (no specifics given) - 10.3 %

Fig. 6 shows the information in a pie chart format.

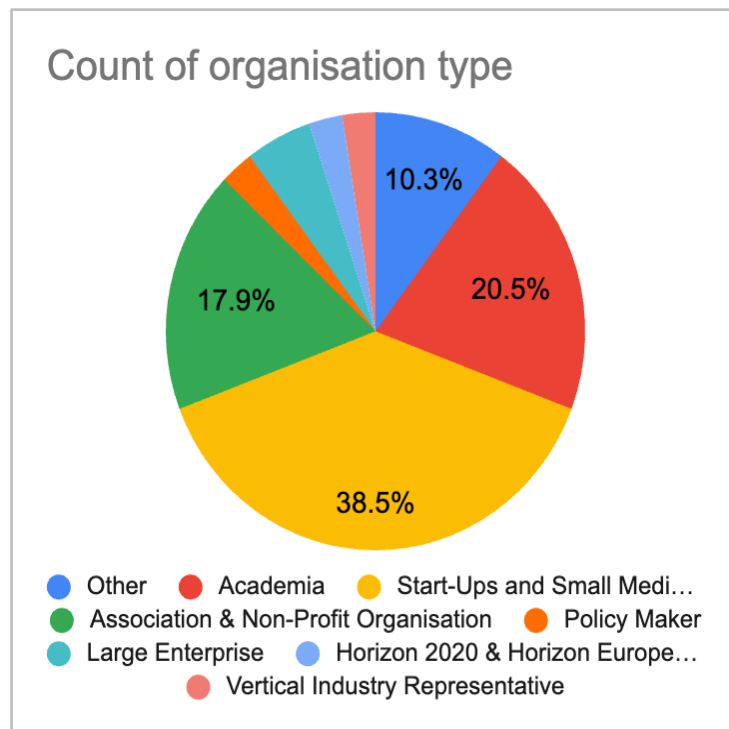


FIGURE 6 ORGANISATION TYPE

Technology Area

The categories here are derived from the [Rolling Plan for ICT standardisation](#). Respondents were limited to a maximum of three items from a list of technology areas. See Appendix A for the full list. The 50+ respondents represent a cross-section of technology interests, only 36% of whom identify as primarily active in a blockchain and DLT domain.

The five most prevalent technology areas are:

- Blockchain and DLT - 36%
- Cybersecurity/network/information security - 14%
- Fintech/regtech standardisation *and* Internet of Things - 10% each
- Metaverse - 8%
- Artificial intelligence, Cloud/Edge/Fog Computing, Data Economy and Digitisation of European Industry are represented with 6% respondents each

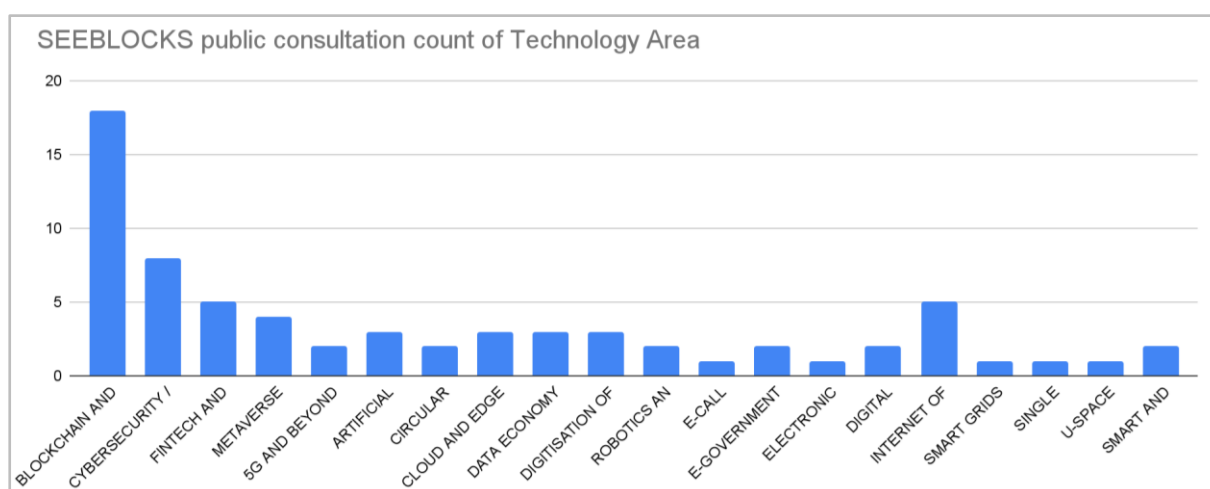


FIGURE 7 TECHNOLOGY AREAS REPRESENTED BY RESPONDENTS TO SEEBLOCKS.EU PUBLIC CONSULTATION

2.4 Standardisation profile

Respondents were asked a set of questions that give context to their understanding and engagement in European and international standards development processes. They were first asked their history of engagement with Standards Development Organisations (SDOs) and their degree of engagement and/ or contribution with open blockchain protocols.

SDO contributions

Q: Have you contributed to the work of any SDOs listed below?

The list of SDOs respondents were asked to select from was derived from the consortium's understanding of the most important actors in international standardisation. See Appendix B for the full list of SDOs. 36% respondents indicated they had not contributed to any SDO.

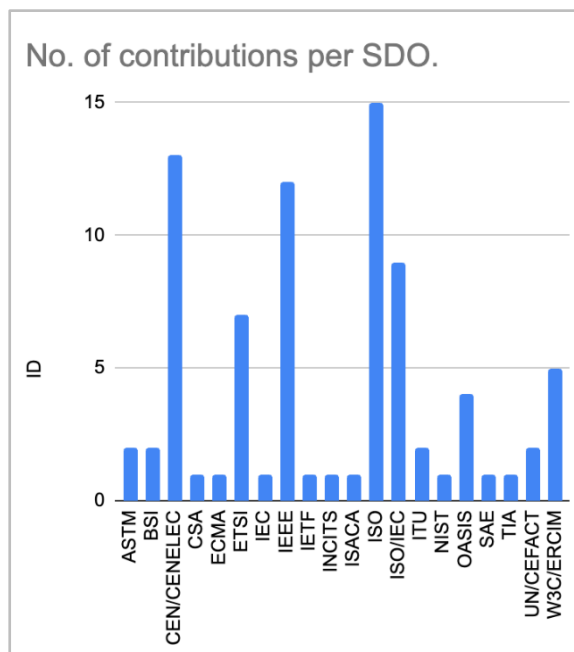


FIGURE 8 RESPONDENT CONTRIBUTIONS PER SDO

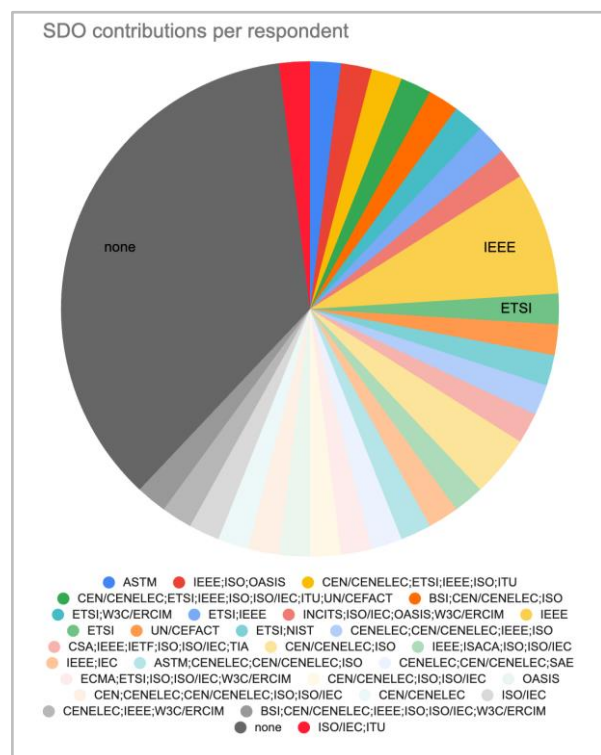


FIGURE 9 SDO AFFILIATIONS PER RESPONDENT.

The top six SDOs represented amongst respondents are:

- ISO - 15
- CEN/CENELEC - 13
- IEEE - 12
- ISO/IEC - 8
- ETSI - 7
- W3C/ERCIM - 5

Furthermore, of the 32 respondents who indicated they had contributed to standards development at all, 23 had done so at more than one SDO, with almost 65% indicate contributions at between 2 and 4 SDOs.

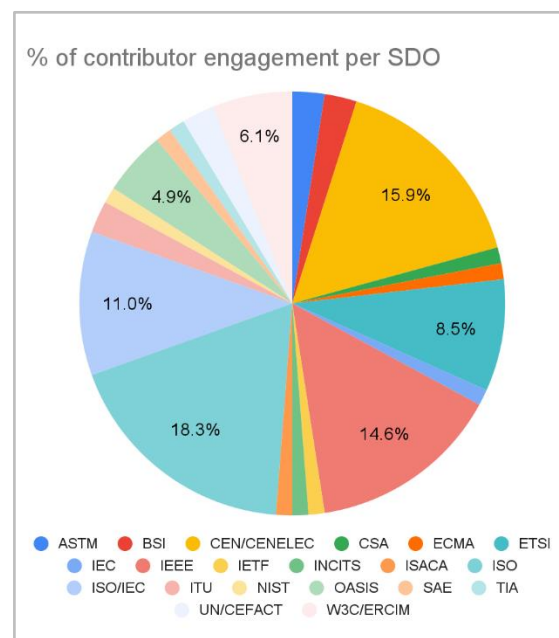


FIGURE 10 % CONTRIBUTOR ENGAGEMENT PER SDO

Public blockchain protocol contribution

Q: Have you contributed to protocol development on any blockchains listed below? Eg through public Request for Comments (RFCs) consensus process?

21 respondents indicated they had made contributions to one or more blockchain protocols.

1. Ethereum - 11/50
2. Other (please specify) - 11/50
3. Bitcoin - 6/ 50
4. Polkadot - 3/50
5. Cardano - 2/50
6. Binance - 1/50
7. Chainlink - 1/50
8. Cosmos - 1/50
9. Algorand - 1/50
10. Hive - 0/50
11. Tron - 0/50

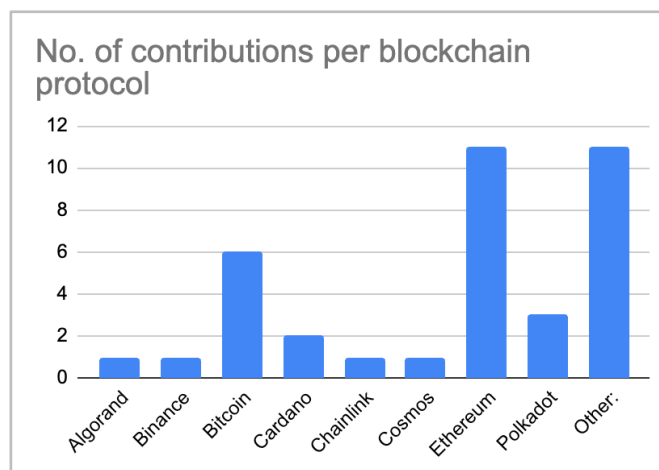


FIGURE 11 NO. OF CONTRIBUTIONS PER BLOCKCHAIN

Other blockchain protocols named include one instance each of the following:

multichain fork of Bitcoin; Cudos; LACNet; Hyperledger Fabric; own SLCML¹; Solana, Polygon, EBSI; NEAR; ONTOCHAIN, DLT-agnostic 'ISO/IEC 21000-23 Smart Contracts for Media' uses Ethereum, Algorand and Tezos for its conformance; Quant.

Complementary contributions to SDOs and blockchain protocols:

Public consultation respondents are approximately **75% expert** in open standards development, either at an SDO or a blockchain protocol. A total of **40 entities** (SDOs and blockchain protocols) have benefitted from contributions from respondents to the public consultation. This implies a high degree of awareness about the role of standards in industry amongst a majority of respondents.

- 64% made contributions to SDOs
- 42% made contributions to open blockchain protocols
- 36% made contributions to both SDOs and open blockchain protocols
- 26% did not contribute to either an SDO or open blockchain protocols

¹ A Legally Relevant Socio-Technical Language Development for Smart Contracts. (2022) ISBN 978-9949-83-816-5 (PDF) <https://doi.org/10.23658/taltech>.

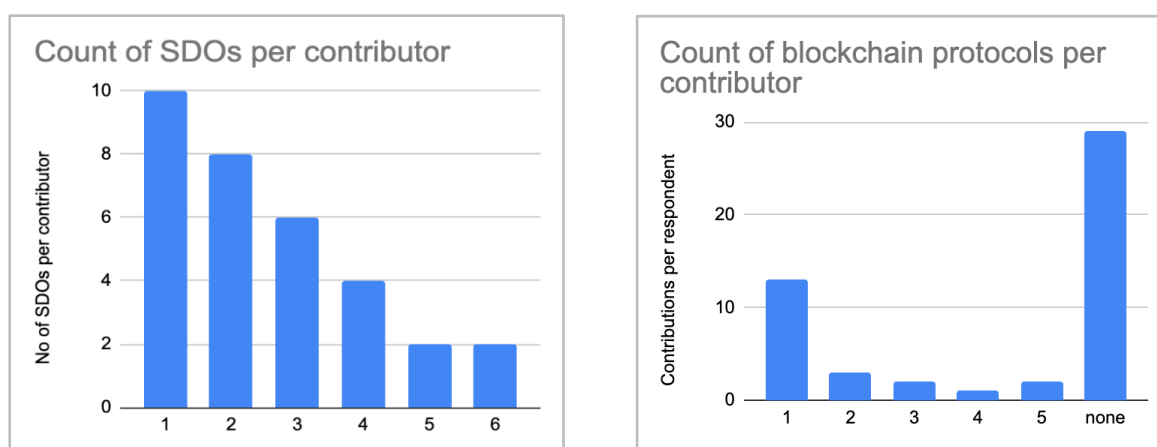


FIGURE 12 CONTRIBUTIONS TO SDOS AND OPEN BLOCKCHAIN PROTOCOLS PER CONTRIBUTOR.

Registration at StandICT and EUOS.

Q: If you are registered with the StandICT.eu EU Standards Observatory (EUOS) which TWG groups are you working with?

9/50 (18%) respondents indicated an affiliation with StandICT and/or EUOS. Seven are members of the Blockchain and DLT TWG or have received a StandICT fellowship for Blockchain and DLT standards work. Two other topics were indicated: AI and Citiverse.

2.5 Thematic responses

Respondents were asked three key thematic questions. The first was a required question to prioritise seven key features of blockchain in order of importance for industry, sector or research.

The seven key features reference those presented in ISO 23259:2022 Blockchain and DLT Reference Architecture and are relied upon in SEEBLOCKS.eu research, analysis and reporting as the set of anchoring values of blockchain and DLT in technology, business and in digital society. These seven features capture the breadth and relevance of the technology itself and its value in the global digital marketplace as digital foundations for secure communications, trade and value exchange amongst other benefits. The second was to speculate on which aspects of EC policy, regulation and law would have the greatest relevance to the implementation of blockchain and DLT technologies, and the third was to describe what is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?

Seven key blockchain features by your industry, sector or research area importance.

Q: SEEBLOCKS identifies the following features as foundational to the value and impact of blockchain and DLT technologies. Place in order of importance for your industry, sector or research area:

- **Identity management** (e.g., self-sovereignty; privacy; anonymity; account abstraction; secure wallet management).
- **Data provenance** (e.g., on/off-chain data flows; data trustworthiness; verifiable oracle services/registries).
- **Governance** (e.g., stakeholder reputation including roles, rights and responsibilities; online voting; DAOs; peer-to-peer virtual communities).
- **Tokenisation, digital asset creation and exchange** (e.g., cryptocurrency; virtual assets; fungible and non-fungible tokens; exchange protocols).
- **Process optimisation** (e.g., process transparency; multi-party, interoperable, cloud-based resource-sharing; 5G and mobile edge computing; energy-efficiency).
- **Automation** (e.g., smart contracts; intelligent agency; robotics).
- **Cybersecurity** (e.g., open source, distributed and decentralised system architectures; end-point security; encryption; consensus mechanisms and applied game theory).

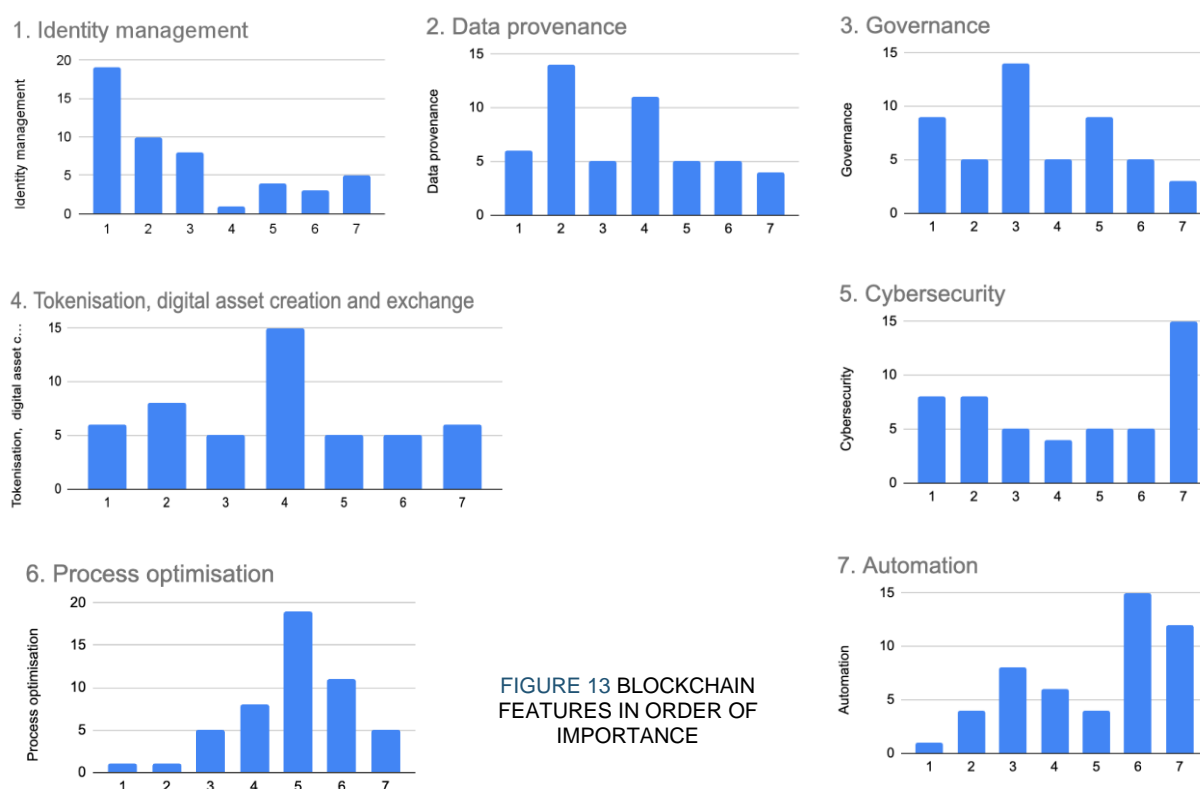


FIGURE 13 BLOCKCHAIN FEATURES IN ORDER OF IMPORTANCE

1st	2nd	3rd	4th	5th	6th	7th
1. Identity management	2.Data provenance	3.Governance	4.Tokenisation, digital asset creation and exchange	5.Cybersecurity	6.Process optimisation	7.Automation

TABLE 1 BREAKDOWN OF RESPONSES BLOCKCHAIN FEATURES PLACED IN ORDER OF IMPORTANCE 1-7

Policy, regulation and law

The second thematic question was optional and invited respondents to choose from a set of recent EC policies, regulations and laws. This question had an 80% response rate. Relevant aspects of policy, regulation and law presented included the following six references with an optional 'other' category to choose from.

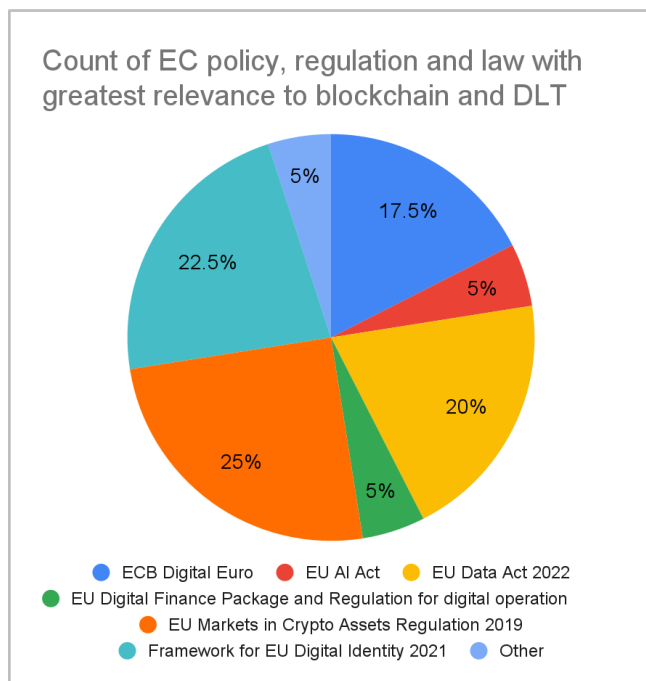
- EU Data Act 2022
- EU Digital Finance Package and Regulation for digital operation resilience for the financial sector 2020
- EU Markets in Crypto Assets Regulation 2019
- ECB Digital Euro (preliminary framework)
- EU AI Act
- Framework for EU Digital Identity 2021

Q: Which aspects of EC policy, regulation and law will have the greatest relevance to the implementation of blockchain and DLT technologies in your opinion?

The top four most relevant policies, regulations or laws selected were:

1. Markets in Crypto Assets Regulation 2019 - 25%
2. Framework for EU Digital Identity 2021 - 22.5%
3. EU Data Act 2022 - 20%
4. EU Digital Euro - 17.5%

FIGURE 14 POLICY, REGULATION AND LAW WITH THE GREATEST RELEVANCE TO BLOCKCHAIN AND DLT



Enabling wider adoption of Blockchain / DLT in the future

The final question was optional and sought diverse perspectives in response. It asked an open question with a free text response.

Q: What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?

74% responded and a summary set of the responses is described, clustered around the blockchain feature that the respondent selected as their top priority. A complete set of responses can be found in Appendix C.

Upon analysis of these responses we have grouped the responses loosely around six codes or categories:

1. Potential in business/society not well understood - 35.5%
2. Open standards + interoperability - 35.5%
3. Sustainable Economy - 9.7%
4. Cyber/InfoSec - 9.7%
5. Industry 4.0 - 6.5%
6. Digital copyright and IP law - 3.2%

Together the top two items reflect the early stage of emergence for this technology with 71% of respondents determining a lack of general understanding of the technology's potential and a significant gap in open standards and interoperability.

Coded categories: what's preventing wider adoption of blockchain and DLT?

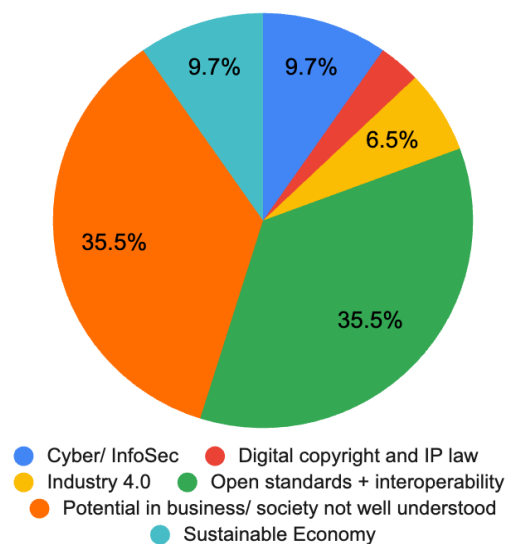


FIGURE 15 CODED CATEGORIES

Education (from early years to 3rd level and professional development courses) and up-to-date technical and business standards are desirable.

Three answers provided greater insights, where cross-categorisation was possible.

3. Open standards + interoperability & Potential not well-understood & Cyber/InfoSec
4. Open standards + interoperability & Sustainable Economy
5. Open standards + interoperability & Potential not well-understood

Each one is given a distinct count in the % chart at Figure 15 above.

Feature 7-1	Policy, regulation and law	What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?	Category code (colour key in Fig x)
Automation /7			
Automation /7	EU AI Act	Applications in industrial settings	Industry 4.0
Process optimisation /6			
Process optimisation /6	EU Markets in Crypto Assets Regulation 2019	Ease of use, it is still quite complex and hard to understand for many.	Potential in business/ society not well understood
Cybersecurity /5			
Cybersecurity /5	Framework for EU Digital Identity 2021	The storage of certificates and certificate data by the filing of certificates and certificate data by the examinee or the issuing institution via trust service providers in accordance with eIDAS 2.0, ledger technology	Cyber/ InfoSec
Cybersecurity /5	EU Digital Finance Package and Regulation for digital operation resilience for the financial sector 2020	Correspondence of physical with digital assets: digital twins	Industry 4.0
Cybersecurity /5	EU AI Act	Blockchain / DLT is not widely understood by user communities, especially public users. it needs to be demystified, make clear the benefits	Potential in business/ society not well understood
Cybersecurity /5	Framework for EU Digital Identity 2021	A truly standardised blockchain	Open standards + interoperability
Cybersecurity /5	EU Markets in Crypto Assets Regulation 2019	Standardisation is a good idea. It is sometimes not optimal at the very early stage of the technology development life-cycle. It is critical to identify which elements should be standardised now and which should be left for further innovation.	Open standards + interoperability
Tokenisation / 4			
Tokenisation / 4	EU Markets in Crypto Assets Regulation 2019	Regulation about the implementation of Smart Contracts, e.g. Quality requirements of the code, consumer protection, etc.; Create safer (and simplify) user experience in the world of Decentralised Finance through education on risks and complexities of the technology.	Open standards + interoperability Potential in business not well understood

Feature 7-1	Policy, regulation and law	What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?	Category code (colour key in Fig x)
Tokenisation / 4	None	Better appreciation of the role of interoperable, cooperative multi-party infrastructure for the future of digitally enabled society.	Potential in business/ society not well understood
Governance / 3			
Governance / 3	ECB Digital Euro	Digital education from childhood to understand the concepts and applications of DLT/BLOCKCHAIN. Hackathons in schools and universities to stimulate the development of projects with these technologies. Encouragement for the digital transformation of countries, starting with their use in digital identity, passports, interconnection of databases, registration of agricultural products...	Potential in business/ society not well understood
Governance / 3	EU Markets in Crypto Assets Regulation 2019	Sustainability and Governance considerations	Sustainable Economy
Governance / 3	Framework for EU Digital Identity 2021	Interoperability: There is a lack of seamless interoperability among different blockchain networks. This limits the ability to share data and conduct transactions across various blockchain platforms. Scalability: One of the primary challenges facing blockchain technology is scalability. Energy Consumption and Environmental Concerns and development of more energy efficient consensus protocols.	Open standards + interoperability Sustainable Economy
Governance / 3	EU Digital Finance Package and Regulation for digital operation resilience for the financial sector 2020	Overview between Blockchain/DTL and EU Green deal (Sustainability)	Sustainable Economy
Governance / 3	EU Data Act 2022	Governance models to enable interoperability across the tech stack. This in turn enables faster adoption of DLT/blockchain by enabling an open and inclusive framework that enables participation across policymakers/ regulators/ entrepreneurs/ businesses and developers. The goal is to facilitate inclusive adoption of emerging technologies, supported by guidelines for security, privacy and access.	Cyber / InfoSec Open standards + interoperability Potential in business/ society not well understood
Governance / 3	EU Markets in Crypto Assets	Standards for Data Format & Interoperability.	Open standards + interoperability

Feature 7-1	Policy, regulation and law	What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?	Category code (colour key in Fig x)
	Regulation 2019		
Governance / 3	EU Data Act 2022	Digital media and associated Intellectual Property Rights (EU Digital Single Market Copyright Directive) needs more attention: interoperability, identity and smart contracts. MPEG-enabled global digital media market accounts for €1.5 trillion per annum. However, European participation in MPEG is limited to approx. 7%.	Digital copyright and IP law
Data provenance /2			
Data provenance /2	EU Data Act 2022	Some details about transactions, in addition to digital identity and data provenance issues.	Open standards + interoperability
Identity management /1			
Identity management / 1	Other	European Parliament to take again into account blockchain infrastructure in eIDAS2 (or even eIDAS3) in relation with EBSI use case for Identity Management.	Potential in business/ society not well understood
Identity management / 1	Framework for EU Digital Identity 2021	Supply chain standards & regulation being led by international SDOs and government, not left to the private sector	Open standards + interoperability
Identity management / 1	Framework for EU Digital Identity 2021	Decriminalise blockchain/ DLT and stop promoting central planning and central control to give room for decentralised solutions.	Potential in business/ society not well understood
Identity management / 1	Framework for EU Digital Identity 2021	Documentation	Open standards + interoperability
Identity management / 1	EU Data Act 2022	Enhance scalability, regulatory clarity, security, user-friendliness, interoperability, energy efficiency, and focus on education, standardisation, cost-effectiveness, and practical applications.	Open standards + interoperability
Identity management / 1	ECB Digital Euro	Lack of perceived knowledge and perceived technological volatility.	Potential in business/ society not well understood
Identity management / 1	EU Markets in Crypto Assets Regulation 2019	The frameworks leave smart contract code correctness as an afterthought. Unlike traditional systems that allow for code updates, a smart contract once deployed cannot be changed. Risk-proportionate assurances should be put in place to provide consumer protection and market integrity?	Open standards + interoperability
Identity management / 1	EU Markets	Greater clarity in regulatory impact, governmental	Potential in business/ society

Feature 7-1	Policy, regulation and law	What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?	Category code (colour key in Fig x)
1	in Crypto Assets Regulation 2019	policy, and market guidance from authorities. There is too much uncertainty in how the financial and commercial aspects of these technologies can work in the real world, leading to hesitancy and lost opportunities for both services and business.	not well understood
Identity management / 1	EU Markets in Crypto Assets Regulation 2019	Education Better understanding of the technology by regulators and policy makers Focus on the positive side of the technology	Potential in business/ society not well understood
Identity management / 1	EU Markets in Crypto Assets Regulation 2019	The missing link is the secure identification option of the blockchain user as it today is based solely on device authentication. Person-based authentication needs to be implemented, to make sure that culprits can be identified and the abuse of blockchain and use of digital currency ransomware can be made impossible to hide.	Cyber/ InfoSec

TABLE 2 RESPONSES AND CODED CATEGORIES OF WHAT IS MISSING PREVENTING WIDER ADOPTION

6. CONCLUSIONS

This section reflects upon the outcomes of the first public consultation. The purpose of the endeavour was to

- Maintain inclusivity from all stakeholders (especially start-ups & SMEs)
- Guarantee European interests are considered
- Identify future blockchain and standards-related priorities

In addition the outcomes of the public consultation would provide input into other work packages and provide guidance on standardisation topics to include in the Visualisation Tool.

It is evident that participants have provided a wide-ranging set of responses from across economic activity sections (38% from startups and SMEs), with a multi-technology perspective (20 areas of technology are represented), from across Europe and the world (23 countries), reflecting upon the European current and emerging EU policy and regulatory context with a deep understanding of the process of standards development.

The top four priority areas for emerging blockchain standards are: Identity Management, Data Provenance, Governance and Tokenisation of assets and exchange.

The top four areas of EU policy regulation and law are: Markets in Crypto Assets Regulation (2019), Framework for EU Digital Identity (2021), EU Data Act (2022) and the EU Digital Euro.

Responses identifying what is missing from the landscape that would enable wider adoption of blockchain and DLT in the future point to the following: that the potential of blockchain and DLT in business and society is not well understood. Education along with open standards and interoperability are vital. Relevance to the sustainable economy must be addressed. Strong cyber protections, information security, governance and strong legal grounding (e.g. digital copyright and IP laws) are vital for widespread and accelerated adoption.

7. APPENDICES

Appendix A – Technology Type, full list

List of important Technology Areas itemised in the [Rolling Plan for ICT standardisation](#)

FOUNDATIONAL DRIVERS

DATA ECONOMY

CYBERSECURITY / NETWORK AND INFORMATION SECURITY

E-PRIVACY

KEY ENABLERS

5G AND BEYOND

CLOUD AND EDGE COMPUTING

BIG DATA, OPEN DATA PUBLIC SECTOR INFORMATION

INTERNET OF THINGS

ELECTRONIC IDENTIFICATION AND TRUST SERVICES INCLUDING E-SIGNATURES

E-INFRASTRUCTURES FOR DATA AND COMPUTING INTENSIVE SCIENCE

BROADBAND INFRASTRUCTURE MAPPING

ACCESSIBILITY OF ICT PRODUCTS AND SERVICES

ARTIFICIAL INTELLIGENCE

EUROPEAN GLOBAL NAVIGATION SATELLITE SYSTEM (EGNSS)

QUANTUM TECHNOLOGIES

SOCIETAL CHALLENGES

E-HEALTH, HEALTHY LIVING AND AGEING

DIGITAL SKILLS

DIGITAL LEARNING

E-GOVERNMENT

E-CALL

PANDEMIC PREPAREDNESS

SAFETY, TRANSPARENCY AND DUE PROCESS ONLINE

EMERGENCY COMMUNICATION AND PUBLIC WARNING SYSTEMS

INNOVATION FOR THE DIGITAL SINGLE MARKET

E-PROCUREMENT – PRE- AND POST AWARD

E-INVOICING

RETAIL PAYMENTS

PRESERVATION OF DIGITAL CINEMA

FINTECH AND REGTECH STANDARDISATION

BLOCKCHAIN AND DISTRIBUTED LEDGER TECHNOLOGIES

METaverse

SUSTAINABLE GROWTH

SMART GRIDS AND SMART METERING

SMART AND SUSTAINABLE CITIES AND COMMUNITIES

ICT ENVIRONMENTAL IMPACT

EUROPEAN ELECTRONIC TOLL SERVICE (EETS)

INTELLIGENT TRANSPORT SYSTEMS

DIGITISATION OF EUROPEAN INDUSTRY

ROBOTICS AND AUTONOMOUS SYSTEMS

CONSTRUCTION-BUILDING INFORMATION MODELLING

COMMON INFORMATION SHARING ENVIRONMENT FOR EU MARITIME DOMAIN

WATER MANAGEMENT DIGITALISATION

SINGLE EUROPEAN SKY

U-SPACE

CIRCULAR ECONOMY

Appendix B – SDOs full list

3GPP	HL7	ON
APTA	IEEE	oneM2M
ARIB	IEC	OPC
ASTM	IETF	O-RAN
ATIS	IHE	SAE
BSI	iRDS	SIS
CEN	INCITS	SMPTE
CENELEC	ISACA	SNIA
CEN/CENELEC	ISO	SPC
CSA	ISO/IEC	TIA
CWL	ITU	TSDSI
DIN	NEMA	TTA
DMTF	NIST	TTC
DOD	OAGi	UL
DS	OASIS	UN/CEFACT
ECMA	ODCA	UNI
ETSI	OGF	W3C/ERCIM
GICTF	OMG	

Appendix C – Full responses to the third theme, without codification

Full response to the final question “What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?”

	What is missing from the landscape that would enable wider adoption of Blockchain / DLT in the near future?
1	Overview between Blockchain/DTL and EU Green deal (Sustainability)
2	<ul style="list-style-type: none"> - Education - Better understanding of the technology by regulators and policy makers - Focus on the positive side of the technology
3	<ul style="list-style-type: none"> - Regulation about the implementation of Smart Contracts, like quality requirements of the code, consumer protection etc.. - No regulation, but: create safer (and simplify) user experience in the world of Decentralised Finance by proper education regarding the risks and complexities of the technology.
4	<ul style="list-style-type: none"> *Digital education since childhood to understand the concepts and applications of DLT/BLOCKCHAIN. *Hackathons in schools and universities to stimulate the development of projects with these technologies. *Encouragement for the digital transformation of countries, starting with their use in digital identity, passports, interconnection of databases, registration of agricultural products...
5	A truly standardized blockchain
6	Applications in industrial settings
7	Better appreciation of the role of interoperable, cooperative multi-party infrastructure for the future of digitally enabled society.
8	Correspondence of physical with digital assets: digital twins
9	Decriminalise blockchain/DLT and stop promoting central planning and central control to give room for decentralized solutions.
10	Digital media and associated Intellectual Property Rights (EU Digital Single Market Copyright Directive) needs more attention: interoperability, identity and smart contracts. MPEG-enabled global digital media market accounts for €1.5 trillion per annum. However, European participation in MPEG is limited to approx. 7%.
11	Documentation
12	ease of use of the technology, it is still quite complex and hard to understand for many.
13	Enhance scalability, regulatory clarity, security, user-friendliness, interoperability, energy efficiency, and focus on education, standardisation, cost-effectiveness, and practical applications.
14	European Parliament to take again into account blockchain infrastructure in eIDAS2 (or even eIDAS3) in relation with EBSI use case for Identity Management.

15	Governance models to enable interoperability across the tech stack. This in turn enables faster adoption of DLT/blockchain by enabling an open and inclusive framework that enables participation across policymakers/regulators/entrepreneurs/businesses and developers. The goal is to facilitate inclusive adoption of emerging technologies, supported by guidelines for security, privacy and access.
16	Greater clarity in regulatory impact, governmental policy, and market guidance from authorities. There is too much uncertainty in how the financial and commercial aspects of these technologies can work in the real world, leading to hesitancy and lost opportunities for both services and business.
17	Interoperability: There is a lack of seamless interoperability among different blockchain networks. This limits the ability to share data and conduct transactions across various blockchain platforms. Scalability: One of the primary challenges facing blockchain technology is scalability. Energy Consumption and Environmental Concerns and development more energy efficient consensus protocols.
18	It appears to me that there is a perception that Blockchain / DLT is not widely understood by the user communities, especially the public users. Perhaps it needs to be demystified so that it is made clear to the public the benefits of its usage.
19	Lack of perceived knowledge and perceived technological volatility.
20	So, generally standardization is a good idea. It is sometimes not optimal if we are at the very early stage of the technology development and life-cycle. Take for instance the ISO / ISO network model, which is regarded as a theoretical framework. So, it is critical to identify which elements should be standardized now and which should be left for further innovation.
21	Some details about transactions, in addition to digital identity and data provenance issues.
22	Standards for Data Format & Interoperability.
23	Supply chain standards & regulation being led by international SDOs and government, not left to the private sector
24	Sustainability and Governance considerations
25	The frameworks leave smart contract code correctness as an afterthought. Unlike traditional systems that allow for code updates, a smart contract once deployed cannot be changed. Risk-proportionate assurances should be put in place to provide consumer protection and market integrity?
26	The missing link is the secure identification option of the blockchain user as it today is based solely on device authentication. Person based authentication needs to be implemented, which is what we are implementing, to make sure that culprits can be identified and the abuse of blockchain and use of digital currency ransomware can be made impossible to hide.
27	The storage of certificates and certificate data by the filing of certificates and certificate data by the examinee or the issuing institution via trust service providers in accordance with eIDAS 2.0, ledger technology