



D3.3 – European Blockchain Standardisation Roadmap: report and recommendations from the Coordination Board (1)

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GLOSSARY

Acronym	Explanation
CEN-CENELEC	European Committee for Standardisation & European Committee for Electrotechnical Standardisation
DG CONNECT	European Commission Directorate-General for Communications Networks, Content and Technology
DG DIGIT	European Commission Directorate-General for Informatics
DG GROW	European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
DIH	Digital Innovation Hub
DLT	Distributed Ledger Technology
DoA	Description of Action
DSME	European DIGITAL SME Alliance
EBP	European Blockchain Partnership
EBSI	European Blockchain Services Infrastructure
EMB	Executive Management Board
ETSI ISG PDL	European Telecommunications Standards Institute Industry Specification Group on Permissioned Distributed Ledgers
EU	European Union
GDPR	General Data Protection Regulation

ICT	Information and Communication Technology
INATBA	International Association for Trusted Blockchain Applications
ISO	International Organisation for Standardisation
KPI	Key Performance Indicator
PR	Press Release
R&I	Research and Innovation
SBS	Small Business Standards
SDO	Standards Developing Organisation
SME	Small and Medium Enterprise
TC	Technical Committee
TCB	Technical Coordination Board
WP	Working Package

EXECUTIVE SUMMARY

BlockStand is a European Union project funded under the Digital Europe Programme, through Grant Agreement № 101102757. It was officially launched on the 1st of May 2023, and seeks over its 24-month duration to maximise the impact of the European Union's standardisation strategy on blockchain and DLT.

The European Blockchain Standardisation Roadmap: Report and Recommendations from the Coordination Board (1) is a document created under the auspices of the BlockStand project. This initial report provides a thorough overview of the activities, discussions, and conclusions reached by the Technical Coordination Board (TCB) during the first twelve months (M12) of the project. It analyses and delivers an overview on the areas of focus of the experts that compose the TCB.

The TCB held two significant meetings. The first, on 23 February 2024, focused on aligning BlockStand's efforts with the EU's standardisation strategy, gathering feedback on the 2025 Annual Union Work Programme, and assessing deliverables. Discussions included blockchain-based data governance frameworks and sustainability methodologies for consensus mechanisms. The second meeting, on 17 June 2024, reviewed ongoing standardisation activities, identified priorities, and highlighted gaps. Key discussions covered interoperability protocols, use cases, standards for custodian frameworks, and sustainability efforts.

Based on these discussions, the following recommendations were formulated to guide the development of comprehensive blockchain standardisation frameworks. Developing agnostic interoperability standards is critical to eliminating compatibility issues and fostering a unified ecosystem. Establishing comprehensive sustainability standards supports the EU Green Deal objectives by promoting energy-efficient blockchain practices. Strengthening identity management through robust standards that are compliant with EU regulations like eIDAS enhances the security and trust of digital transactions. Creating standards for institutional custodial services ensures security, compliance, and trust in digital financial services, aligning with regulations such as MiCA and DORA. Enhancing coordination, industry feedback, and funding mechanisms for standardisation supports the development of practical blockchain applications that meet EU regulatory requirements in priority sectors like finance, healthcare, and public administration.

This initial report sets the groundwork for a more detailed exploration in the second version, scheduled for publication by Month 24 (M24). The subsequent report will delve deeper into the discussed topics, incorporating further research, feedback, and developments in the blockchain standardisation landscape. Stakeholders are encouraged to engage with these initial findings and contribute to the ongoing dialogue to refine the approach, ensuring that the developed standards are inclusive, forward-thinking, and beneficial for the entire European blockchain community. We invite you to do so through [BlockStand Stakeholder Forum](#)

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1 INTRODUCTION

The European Blockchain Standardisation Roadmap: Report and Recommendations from the Coordination Board (1) aims to provide a comprehensive overview of the activities and deliberations of the Technical Coordination Board (TCB) as part of the BlockStand project. This report encapsulates the key discussions, main points, and final conclusions reached during the meetings held by the TCB until M12 of the project, which are pivotal for shaping the future of blockchain standardisation in Europe. A subsequent report encompassing all the meetings of the TCB will be provided by M24 of the project.

This introductory chapter provides an overview of the BlockStand project, initiated under the European Union's Digital Europe Programme through Grant Agreement N° 101102757. Officially launched on May 1, 2023, BlockStand aims to bolster the EU's blockchain and Distributed Ledger Technology (DLT) standardisation efforts.

1.1 Description of the BlockStand project

The BlockStand project is an EU-funded initiative designed to enhance European leadership in the global blockchain standardisation landscape. It aims to ensure that blockchain standards used internationally reflect European values and priorities. Launched with the support of the Digital Europe Programme, BlockStand facilitates the participation of European experts in blockchain and Distributed Ledger Technology (DLT) standardisation activities.

BlockStand's primary goals are:

- to support the implementation of the European Commission's Rolling Plan for ICT Standardisation in the blockchain sector,
- strengthen connections with the European Blockchain Services Infrastructure (EBSI) and the European Blockchain Partnership (EBP),
- enhance the participation of European experts in international and European Standards Developing Organisations.

The project is steered by an Executive Management Board composed of high-level representatives from industry, public institutions, and academia. It features a Technical Coordination Board that supports the work of blockchain standardisation experts.

BlockStand's main interface is the Blockchain Standardisation Facility, which is a web-based one-stop shop where stakeholders can access all resources related to blockchain standardisation and interact with one another. It includes:

- information on the Executive Management Board, the Body that steers the project, and the Technical Coordination Board that supports the work of the experts;
- information on the Experts' selection process
- Report on Blockchain inclusion to the Rolling Plan
- European Blockchain Standardisation Roadmap
- Experts' Success Stories Europe's Blockchain Leadership Outlook

- Standardisation Gaps & Recommendations' Atlas
- Repository of standardisation initiatives
- Stakeholder forum

1.1.1 BlockStand Partners

Four partners with extensive experience in blockchain standardisation manage BlockStand's Consortium. They work together to ensure the project's success and support Europe's strategic autonomy in the blockchain domain.

- The **European DIGITAL SME Alliance (Digital SME)** is the largest network of ICT sector SMEs in Europe, connecting over 45,000 businesses and comprising 30 national and regional SME associations. It advocates for digital SMEs in EU policy and participates in key technical committees, achieving significant strategic gains in digitalisation.
- The **International Association for Trusted Blockchain Applications (INATBA)**, established in 2019 with support from the European Commission, champions the widespread adoption of blockchain and Distributed Ledger Technology (DLT) positive and responsible solutions and applications globally.
- **Small Business Standards (SBS)** is a non-profit European association funded by the EU and EFTA states, aimed at representing SMEs in the standardization process at European and international levels. As an active participant in European Commission initiatives like the High-Level Forum on Standardisation, SBS advocates for SME interests in various standard-setting contexts.
- **UNINFO**, an associated body of UNI (the Italian national standardisation body), focuses on Information Technologies, including IoT, IT security, electronic identity, and e-business. It plays a leading role in blockchain standardisation as part of CEN-CENELEC's JTC19, which is dedicated to blockchain and DLT standardisation activities.

1.1.2 BlockStand Stakeholders Map

BlockStand has identified five primary groups and their main stakeholders. The identified stakeholder groups represent a diverse array of organisations, from policy-making bodies and industry associations to standardisation committees and research institutions.

Policy Makers	Blockchain Initiatives	Blockchain Standardisation Bodies & Experts	Industry	R&I Community & Other EU-funded Projects
<p>1. European Commission:</p> <p>1. DG GROW (Internal Market, Industry, Entrepreneurship and SMEs)</p> <p>1. Unit G3 ('Digital Transformation of Industry')</p> <p>2. H3 ('Standards Policy')</p> <p>2. DG CNECT (Communications Networks, Content, and Technology)</p> <p>1. Units D3 ('Policy Outreach & International Affairs')</p> <p>2. C4 ('Emerging and Disruptive Technologies')</p> <p>3. DG DIGIT (Informatics)</p> <p>1. Unit B3 ('Trans-European Services')</p> <p>4. DG RTD (Research & Innovation)</p>	<p>1. European Blockchain Partnership (EBP)</p> <p>1. European Blockchain Services Infrastructure (EBSI)</p> <p>2. EU Blockchain Observatory and Forum</p> <p>3. International Association of Trusted Blockchain Applications (INATBA)</p> <p>1. Governmental Advisory Body</p> <p>2. Academic Advisory Body</p> <p>3. Standards Committee</p>	<p>1. European and International Bodies:</p> <p>1. CEN-CENELEC's JTC19 (Joint Technical Committee 19)</p> <p>2. ISO's TC 307 (Technical Committee 307)</p> <p>3. ETSI's ISG PDL (Industry Specification Group on Permissioned Distributed Ledgers)</p> <p>2. National Standards Bodies</p> <p>1. Example: French body AFNOR and its Blockchain Committee</p> <p>3. Other standardisation bodies:</p> <p>1. IEEE (Institute of Electrical and Electronics Engineers) and its Blockchain Technical Community</p>	<p>1. Associations and Coalitions:</p> <p>1. European Blockchain Association</p> <p>2. Blockchain4Europe</p> <p>3. National-based associations like Beltug Blockchain Task Force (Belgium), Croatian Union for Blockchain & Cryptocurrencies, Bundesblock (Germany), Dutch Blockchain Coalition, ALASTRIA (Spain)</p> <p>2. SMEs:</p> <p>1. Engagement with SMEs through European DIGITAL SME Alliance's Task Force Blockchain and Small Business Standards (SBS)</p> <p>2. SMEunited</p>	<p>1. Research Institutions:</p> <p>1. IT University of Copenhagen</p> <p>2. University of Nicosia</p> <p>2. EU-funded Projects:</p> <p>1. SEEBLOCKS.eu</p> <p>2. StandICT.eu2026</p> <p>3. CHAISE</p> <p>4. HSBooster.eu</p>

Figure 1: BlockStand Stakeholders Map

This detailed stakeholder mapping allows BlockStand to steer its activity, engagement and communication efforts strategically. Understanding the unique characteristics and needs of each group ensures that the project's interactions are both effective and meaningful, enhancing the overall impact of the European blockchain standardisation efforts.

2 The Technical Coordination Board

The Technical Coordination Board (TCB) of the BlockStand project plays a pivotal role in guiding the technical aspects of blockchain standardisation within Europe. Comprising experts in blockchain standardisation funded by BlockStand, the TCB is tasked with identifying standardisation priorities, shaping the roadmap, selecting relevant policies, and providing comprehensive advice on blockchain-related matters. This chapter explores the structure, objectives, and key activities of the TCB, highlighting its importance in the European blockchain ecosystem.

2.1 Structure and Composition

The TCB currently comprises 17 selected standardisation experts funded by the BlockStand project, with 13 already onboarded. In terms of gender balance, 18% of these experts are women. The experts are selected through an open, continuous, and inclusive process designed to incorporate diverse expertise. The TCB is coordinated by INATBA (International Association for Trusted Blockchain Applications) and supported by DIGITAL SME (the project coordinator). The TCB aims to expand its membership to 30-40 experts by the final cut-off date of 15th February 2025.

The current experts that compose the TCB are:

Expert Name	Cutt-off	TCB Onboarding date	Area of Application	Potentially contributing to the following SDOs	Country
Belen Suarez	First	13/12/2023	Sustainability	CEN/CENELEC	Spain
Julien Bringer	First	15/12/2023	Privacy; Identity; Security	ISO	France
Luisa Marsal	First	13/12/2023	Privacy; Sustainability	CEN-CENELEC	Spain
Mikael Gaborit	First	13/12/2023	Identity	CEN-CENELEC, ISO	France
Jed Grant	Second	12/02/2024	Interoperability	ISO	Luxembourg
Steffen Schwalm	Second	12/02/2024	Governance; Security; Privacy	ETSI, ESI, ISO, CEN-CENELEC	Germany
Robin Renwick	Second	12/02/2024	Privacy; Identity	CEN-CENELEC	Ireland
Markus Sabadello	Third	08/03/2024	Identity	Decentralized Identity Foundation (DIF)	Austria
Paolo Campegiani	Third	08/03/2024	Identity	ISO, CEN CENELEC, ETSI	Italy
Soumya Kanti Datta	Third	08/03/2024	Smartcontracts	IEEE	France
Limara Haque	Third	08/03/2024	Governance; DAO	UNE, ISO, CEN CENELEC	Spain
Giampiero Zito	Third	08/03/2024	Sustainability	ISO, IEEE	Italy
George Brameshuber	Fourth	12/06/2024	Web3 Finance	IEEE	Austria
Petko Karamotchev	Fourth	12/06/2024	Web3 Finance; Data	CEN-CLC	Bulgaria
Jerome Pons	Fourth	12/06/2024	Sustainability	ISO, CEN-CENELEC,	France
Michal Kit	Fourth	12/06/2024	Blockchain Infrastructure	ISO, CEN-CLC, ITU, ETSI	Estonia
Olvis Enrique Gil Rios	Fourth	12/06/2024	Web3 Finance; Regulatory Compliance	ISO, CEN-CENELEC,	Austria

Table 1: TCB Composition

2.2 Objectives

The Technical Coordination Board is tasked with several key objectives to ensure effective blockchain standardisation within Europe. These objectives are aligned with the broader strategic goals of the European Union and involve collaboration with various stakeholders, including the Executive Management Board (EMB), the European Blockchain Services Infrastructure (EBSI), SMEs, and R&I communities. The primary objectives of the TCB are as follows:

- Identifying Priorities
 - Pinpoint key areas for blockchain standardisation that align with European strategic goals.
 - Define the main priorities for blockchain standardisation, building on the needs and gap analysis of stakeholders such as EBSI, SMEs, and R&I communities.
- Shaping the Roadmap
 - Develop a comprehensive roadmap for blockchain standardisation in Europe.
 - Ensure the roadmap supports effective and cohesive standardisation efforts across different sectors.

- Policy Selection
 - Evaluate and select policies that support effective blockchain standardisation.
 - Provide recommendations on policies that align with EU values and initiatives.
- Advisory Role
 - Provide expert advice on various blockchain-related topics to ensure informed decision-making.
 - Offer technical standards expertise to the Executive Management Board regarding key outputs and approaches to the project's deliverables, such as the Blockchain Standardisation Strategy.
- Monitoring and Alignment
 - Monitor the progress and alignment of standardisation activities with the defined priorities.
 - Discuss the alignment of experts' work in Standards Developing Organisations (SDOs) with EU values and initiatives on blockchain.

2.3 Activities

The TCB engages in the following key activities to fulfil its objectives:

- Regular Online Meetings: The TCB convenes regular online meetings, aligning these meetings with i) the applications cut-offs and experts' contractualisation; ii) those of the Executive Management Board to ensure coordinated efforts. Initial onboarding sessions were held in months 8 and 11. The first meeting, focused on addressing standardisation contributions to the 2025 Union Work Programme, was held in month 10. The second meeting in month 14 focused on ongoing blockchain standardisation developments on different SDOs and gaps identification and assessment.

Additionally, one-on-one meetings with the experts were held to preliminarily assess their deliverables and leverage discussion topics for the TCB work.

- Collaboration and Synchronisation: The TCB aims to have bi-monthly meetings synchronised with the timing for sharing inputs for the Rolling Plan for ICT standardisation, ensuring their efforts align with broader EU initiatives.

2.4 Impact and Importance

The contributions of the Technical Coordination Board are pivotal to several key deliverables within the BlockStand project, ensuring the advancement and coherence of blockchain standardisation efforts in Europe. The TCB's impact is reflected through its involvement in the following deliverables:

- Repository of Blockchain Standardisation (D2.2, D2.3, D2.4)

- This repository collects and organises information on blockchain standardisation activities, providing a comprehensive overview of ongoing efforts and initiatives in the field.
 - The TCB experts' deliverables will be uploaded to the Blockchain Standardisation Facility, specifically in the Blockstand experts section. Additionally, experts are encouraged to contribute continuously to the Repository. They can do this on a rolling basis by proposing new additions items or iterating elements such as information classification and categorisation.
- Standardisation Gaps & Recommendations' Atlas (D2.5)
 - This comprehensive report identifies and analyses gaps in blockchain standardisation, particularly focusing on three key stakeholders: EBSI, the R&I community, and SMEs. It provides recommendations for addressing these gaps, ensuring a more robust and effective standardisation framework. TCB experts are expected to contribute by identifying gaps and providing relevant recommendations on how they can be addressed.
 - Report on Blockchain Inclusion to the Rolling Plan (2) (D3.2)
 - This updated report offers additional information and updates on the inclusion of blockchain in the Rolling Plan for ICT Standardisation, reflecting any new developments or changes. The TCB's contributions ensure that the report remains current and relevant.
 - European Blockchain Standardisation Roadmap: Report and Recommendations from the Coordination Board (1) (D3.3, D4.4)
 - The current report presents the European Blockchain Standardisation Roadmap, including recommendations and guidance from the TCB on standardisation activities related to blockchain in Europe. An updated version will be provided at the end of the BlockStand project. The TCB's input is crucial for shaping these recommendations and ensuring they are aligned with ongoing standardisation efforts.
 - Europe's Blockchain Leadership Outlook: Contributions and Successes (D4.4, D4.5)
 - This deliverable is a report that highlights the contributions and successes of European experts in blockchain standardisation, showcasing their leadership and impact in the field. The TCB's role is to provide insights and evidence of these successes, demonstrating Europe's leadership in blockchain standardisation.

Through these contributions, the TCB plays a crucial role in ensuring that blockchain standardisation efforts are comprehensive, effective, and aligned with the strategic goals of the European Union and the BlockStand project.

3 TCB Meetings Overview

This meeting overview chapter provides a concise summary of the discussions and decisions made during the TCB meeting. It highlights the key contributions of the experts. Until M12, one meeting was held on 23 February 2024. A second meeting was held in June 2024. The TCB is set to increase cadence as selected experts are recruited to integrate the project.

3.1 Meeting 1: 2025 Annual Union Work Programme Contributions

The first meeting of the Technical Coordination Board (TCB) was held on 23 February 2024. This initial session marked a significant step in aligning the BlockStand project's efforts with the European Union's standardisation strategy. The primary objectives of this meeting were to solicit feedback and ideas from the experts on standardisation actions for the 2025 Annual Union Work Programme, assess the progress of the experts' deliverables, and address any other relevant business.

3.1.1 Agenda & Attendance

On 23 February 2024, the BlockStand Technical Coordination Board (TCB) convened online. The meeting was attended by the TCB coordinator INATBA, BlockStand coordinator Digital SME and five experts.

The agenda focused on three primary items: soliciting feedback and ideas from the experts on standardisation actions for the 2025 Annual Union Work Programme, assessing the progress of the experts' deliverables, and addressing any other business (AOB).

A note on the Annual Union Work Programme

The Annual Union Work Programme outlines the standards and deliverables requested from European Standardisation Organisations (ESOs) for the upcoming year. The 2025 Annual Union Work Programme for European Standardisation is currently in the preparation phase, following a consultation through the multi-stakeholder High-Level Forum on Standardisation, which concluded at the end of February this year. While the programme has not yet been published, we can anticipate several key focus areas and priorities based on insights from the 2024 programme and ongoing discussions.

Expected priorities include the EU Trusted Data Framework, the European Digital Identity Framework, and cybersecurity requirements for products with digital elements. Similar digital priorities around emerging technologies such as quantum computing, data governance, cybersecurity, and digital identity are likely to be emphasised in 2025, aligning with the EU's digital policy objectives. These focus areas will support the EU's strategic goals of fostering a green, digital, and resilient single market.

3.1.2 Key topics and discussions

Lluïsa Marsal presented a detailed proposal for developing a data governance framework leveraging blockchain incentivisation capabilities. Her proposal included:

- Action Title: Blockchain-Based Data Governance Framework

- **Policy/Legal Reference:** The proposal aligns with the European Data Governance Act (DGA) introduced in May 2022, in force since August 2023. The DGA aims to establish mechanisms for reusing certain categories of protected data within the public sector, based on principles of transparency and confidence.
- **Description:** Incentive mechanisms using blockchain could significantly enhance the delivery and performance of data governance solutions in both public and private sectors.
- **Objectives & Expected Impact:**
 - Analyse existing data governance solutions and identify pain points.
 - Correlate blockchain incentive models to identified pain points.
 - Map current data governance tools to appropriate blockchain incentives.
 - Develop technical guidance for implementing blockchain-based data governance solutions.
- **Impact:** This framework would improve DGA implementation by addressing current challenges related to incentive structures in data governance.

Belen Suarez's Update: Belen Suarez provided an update on preparations for an upcoming workshop in April. This workshop aimed to collect industry feedback on methodologies for assessing the sustainability of consensus mechanisms. The TCB will address the conclusions of the Workshop in future meetings.

3.2 Meeting 2: Standardisation Priorities and Gaps

On 17 June 2024, the BlockStand Technical Coordination Board convened online for its second meeting. TCB coordinator INATBA, BlockStand coordinator Digital SME, and 14 experts from the TCB attended the session. The primary focus of the meeting was to review and discuss the ongoing standardisation activities, identify priorities for blockchain/DLT standardisation, and highlight gaps in the current standardisation efforts.

3.2.1 Agenda

The agenda for the meeting included:

1. Opening Remarks
2. Debrief of Standardisation Activities in SDOs
3. Identification of Blockchain/DLT Standardisation Priorities
4. Identification of Gaps
5. Any Other Business and Scheduling of the Next Meeting

3.2.2 Key Topics and Discussions

During the meeting, experts provided updates on their standardisation activities within various Standards Developing Organisations (SDOs) and an overview of their deliverables under BlockStand. Key areas of focus included:

- The development of protocols for P2P decentralised exchange interoperability.
- The addition of new use cases in areas such as microcredentials, human creativity rewarding, and digital twins.
- Standardisation efforts for custodian frameworks of cryptocurrency, highlighting the lack of institutional custodian service standards.
- Frameworks for blockchain interoperability covering requirements, protocols, APIs, legal aspects, and architectural models.
- Progress on abstract accounts for Ethereum, aiming to link real-world identity solutions with Verifiable Credentials and abstract accounts.
- A decision tree diagram to help choose specific DLTs.
- Proposals for blockchain sustainability, focusing on the environmental impact of consensus mechanisms.
- Sustainable architecture in blockchain, applied to UN SDGs.
- Privacy aspects and the interface of blockchain to smart contracts, including creating smart contract templates and reference architectures.
- Decentralised identifiers and identity and wallet issues.
- Decentralised privacy by design and linking interoperability frameworks to data flow and NFTs.

Identification of Blockchain/DLT Standardisation Priorities

As a result of the experts' individual contributions, the key themes identified were interoperability, sustainability, digital identity, wallets, and support for use case building.

Identification of Gaps

The discussion focused on identifying gaps in current blockchain/DLT standardisation efforts. Several gaps were noted:

- **Interoperability:** Need for agnostic frameworks and protocols.
- **Sustainability:** Lack of standards for methodologies around sustainable blockchain practices.
- **Identity & Wallets:** Need for standards linking digital identities to real-world applications.
- **Use Case Building:** Need for coordination, industry feedback, and funding for standardisation to support practical blockchain applications and adoption.
- **Custodial Activities:** Lack of standards for custodial activities by institutions, with a need for comprehensive frameworks to ensure security and compliance.

It was also noted that the current Rolling Plan focuses predominantly on technological aspects, lacking emphasis on the standardisation of business practices and market development for Blockchain and DLT applications. Concerns were raised regarding the EUDI wallet, which has not yet been confirmed for use on DLT rails.

3.3 TCB Meetings Calendar

The TCB will hold six additional regular meetings throughout the project's period, following the schedule below.

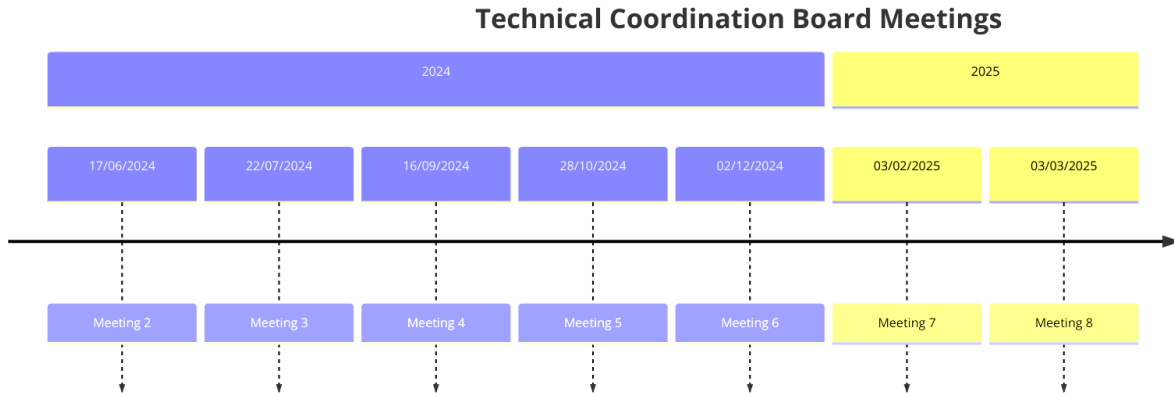


Figure 2: TCB regular meetings calendar

The TCB can schedule additional meetings or adjust regular ones as needed to provide dedicated contributions to the Rolling Plan, Annual Union Work Programme, or other relevant and time-sensitive contributions.

4 Experts' Areas of Application and Focus

The Technical Coordination Board focuses on various areas of application of DLT to align with the strategic goals of European blockchain standardisation. This chapter explores key areas of application and priorities identified by the experts, based on their interests and expected deliverables.

The main areas of focus, considering experts applications and proposed contributions include digital identity, privacy, sustainability, digital finance, blockchain infrastructure and interoperability, security, and governance. These priorities are crucial to assess gaps and needs for robust and comprehensive standards development that address the current and future needs of the blockchain ecosystem.



Figure 3: Experts applications focus wordcloud

4.1 Key Areas of Focus of the Experts

4.1.1 Digital Identity

Digital identity emerges as a primary area of focus for the TCB experts. This encompasses the development of standards for digital identity, certificates, e-signature, and the broader implementation of decentralised identity solutions. The aim is to enhance security and trust in digital transactions by providing reliable and interoperable digital identity frameworks. This also aligns with EU priorities, such as the European Digital Identity Framework (eIDAS2).

4.1.2 Privacy

Privacy is another critical area, with a significant emphasis on developing standards for privacy capabilities and decentralised identity. Experts are working on ensuring that privacy is maintained across various blockchain applications, particularly in managing and protecting sensitive data. This also relates to GDPR requirements and compliance, and an eventual review of some principles of the regulation in the near future to respond to new challenges.

4.1.3 Sustainability

Sustainability is a key focus, reflecting the need for blockchain technologies to support environmental goals and the EU Green Deal objectives. This includes developing

standards for environmental and sustainability classification in blockchain, promoting energy-efficient practices, and contributing to circular economy, climate action, and biodiversity preservation.

4.1.4 Digital Finance

Digital finance involves assessing standards for digital financial services, including smart contracts, electronic certificates, and custodian services. This area aims to enhance the efficiency, security, and regulatory compliance of financial transactions conducted via blockchain and DLT. Several EU initiatives are relevant in this area like MiCA, Digital Euro, Market infrastructures regimes, DORA, AMLR, AMLD5, and Payments regulation package.

4.1.5 Blockchain Infrastructure and Interoperability

Fostering interoperability between different blockchain platforms is essential for the technology's scalability and widespread adoption. Experts are focusing on cross-blockchain information exchange and the classification and management of on-ledger and off-ledger data to ensure seamless interaction between various systems.

4.1.6 Security

Security remains a paramount concern, with efforts directed towards developing comprehensive security, privacy, and identity standards. This also involves ensuring the long-term preservation of cryptographic protection and the stability of blockchain systems.

4.1.7 Governance

Expert focus also attends to Decentralised Autonomous Organisations (DAOs). DAOs ensure transparent and accountable decision-making through smart contracts and community voting, thereby enhancing compliance and regulatory alignment. By automating governance processes, DAOs provide clear, auditable records, ensuring blockchain implementations meet both internal and external regulations. The European Commission, particularly DG Grow, has been working on a report to expand understanding of DAOs and their implications for governance.

4.2 Expected Deliverables

4.2.1 Environmental and Sustainability Classification in Blockchain

Experts are focusing on creating a classification system for assessing the environmental impact of blockchain technologies. This includes standards for energy efficiency and sustainability practices within the blockchain ecosystem.

4.2.2 Security, Privacy, and Identity Standards

Developing robust standards for security, privacy, and identity management is a top priority. These standards aim to protect user data, ensure secure transactions, and maintain the integrity of digital identities.

4.2.3 Web3 and Real ID-Based Abstract Accounts

Standards for web3 technologies and real ID-based abstract accounts are being developed to support the transition to a low-carbon society and enhance the energy efficiency of blockchain systems.

4.2.4 Cross-Blockchain Information Exchange

Creating standards for the efficient and secure exchange of information across different blockchain platforms is essential for interoperability and scalability.

4.2.5 Governance, Compliance, and Crypto Stability

Standards for governance, compliance, and crypto stability are crucial for ensuring the long-term viability and trustworthiness of blockchain systems. This includes mechanisms for cryptographic protection and proof of existence.

4.2.6 Decentralised Identity and Smart Contracts

The focus is on developing decentralised identity solutions and smart contract standards to enhance the functionality and security of digital transactions.

4.2.7 Circular Economy and Climate Action

Standards supporting the circular economy and climate action aim to leverage blockchain technology to achieve environmental sustainability and biodiversity preservation.

4.2.8 Efficiency, Security, and Regulatory Compliance of Cross-Border Payments

Enhancing the efficiency, security, and regulatory compliance of cross-border payments is a critical deliverable, ensuring that international transactions are seamless and secure.

5 RECOMMENDATIONS

This chapter outlines initial recommendations derived from the BlockStand project's two Technical Coordination Board (TCB) meetings. These recommendations highlight preliminary findings that will contribute to the final proposal of a Blockchain Standardisation Roadmap, a critical element of the European Blockchain Standardisation Strategy. The insights and gaps identified by TCB experts have been instrumental in shaping these recommendations, which are

designed to align with the ongoing needs of EU-wide projects and prioritise standards that will have the most significant impact.

A separate output, the Standardisation Atlas, is being prepared to shed light on gaps and provide tailored recommendations for three key stakeholders: the European Blockchain Services Infrastructure (EBSI), Small and Medium Enterprises (SMEs), and the Research and Innovation (R&I) community.

Recommendations:

5.1 Develop Interoperability Standards

Objective: Prioritize the creation of agnostic frameworks and protocols.

Rationale: Ensuring seamless interoperability between various blockchain platforms, permissioned and permissionless, is critical to eliminating compatibility issues and fostering a seamless digital distributed infrastructure.

Alignment: This aligns with the EU's goal of creating a cohesive digital infrastructure and supports cross-border information sharing and pan-European services within the Digital Single Market, potentially through EBSI/Europeum.

5.2 Enhance Sustainability Efforts

Objective: Establish comprehensive methodology standards for sustainable blockchain practices.

Rationale: Developing methodologies for assessing the environmental impact of consensus mechanisms and promoting energy-efficient practices is essential for supporting the EU Green Deal objectives and enabling the use of Blockchain technology for transparent and verifiable ESG reporting under the Sustainable Finance Disclosure Regulation (SFDR).

Alignment: This will ensure that blockchain technologies contribute to environmental sustainability and circular economy initiatives, like Digital Product Passport (DPP).

5.3 Strengthen Identity Management

Objective: Develop robust standards for digital identity solutions to connect Real IDs, Verifiable Credentials and abstract accounts.

Rationale: Compliance with EU regulations such as eIDAS is crucial for ensuring secure and reliable identity management across blockchain applications.

Alignment: These standards will enhance the trust and security of digital transactions and support the European Digital Identity Framework.

5.4 Support Custodial Standards

Objective: Create standards for institutional custodial services.

Rationale: Ensuring security, compliance, and trust in digital financial services is necessary to align with regulations like the Markets in Crypto-Assets Regulation (MiCA) and the Digital Operational Resilience Act (DORA).

Alignment: These standards will facilitate the safe and regulated custody of digital assets, addressing a significant gap in regulatory certainty identified in current frameworks.

5.5 Foster Use Case Development

Objective: Enhance coordination, industry feedback, and funding mechanisms for standardisation.

Rationale: Supporting the development and standardisation of practical blockchain applications ensures that these applications meet EU regulatory requirements and address priority sectors.

Alignment: This recommendation supports the identification and standardisation of blockchain applications relevant to EU regulatory requirements, fostering innovation and adoption in critical areas such as finance, healthcare, and public administration.

6 CONCLUSION

This first version of the European Blockchain Standardisation Roadmap: Report and Recommendations from the Technical Coordination Board represents a milestone in our ongoing efforts to establish comprehensive blockchain standards within Europe. Through meticulous analysis and expert contributions, we have identified focus areas requiring standardisation, proposed detailed recommendations, and outlined strategies to address existing gaps.

BlockStand work highlights the importance of aligning standardisation efforts with significant EU projects such as the European Blockchain Services Infrastructure (EBSI). By focusing on areas like digital identity, privacy, sustainability, digital finance, and blockchain interoperability, we aim to create a robust and secure blockchain ecosystem that supports innovation and economic growth.

As this is the inaugural version of the report, it provides a foundational understanding and sets the stage for more in-depth exploration in the forthcoming second version, scheduled for publication by Month 24 (M24). The subsequent report will delve deeper into the topics discussed, incorporating further research, feedback, and developments in the blockchain standardisation landscape.

We invite all stakeholders to engage with these initial findings and contribute to the ongoing dialogue: [BlockStand Stakeholder Forum](#). Your input is invaluable in refining our approach and ensuring that the standards developed are inclusive, forward-thinking, and beneficial for the entire European blockchain community.

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