TRACE4EU D1.5
Interim Report

This project has received funding from the European Union's DIGITAL programme
under grant agreement No 101102743

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1. Project Overview

1.1. Introduction

The current project is realized within Digital Europe Programme, aiming to address the modern challenges of the industry and society by employing blockchain technology. Backing the project is a robust consortium at the European level, representing multiple member states and pooling their expertise and resources. Members of the consortium contribute not only through technological innovation but also through practical use cases, ensuring the project's real market relevance and practical applicability.

The choice of EBSI is not random. Its decentralized, secure, and transparent operation allows for the preservation of data integrity and authenticity, which is of critical importance in addressing industrial and societal challenges. Furthermore, the opportunities offered by blockchain enable the development of numerous new innovative solutions, further enhancing collaboration and trust among EU stakeholders.

The consortium, along with the use cases it provides, guarantees the project's practical relevance and facilitates the testing and adaptation of blockchain technology in a real-world environment. Practical examples brought by individual members, combined with collectively crafted technological solutions, lay a strong foundation for a successful, long-term European Union project.

Through domain knowledge, technological expertise, and commitment to decentralization of its consortium members, TRACE4EU project aims to contribute significantly to the broader adoption of EBSI in various sectors. This will be achieved by strategically leveraging EBSI features to demonstrate its adaptability and effectiveness in addressing contemporary high-value digital challenges in the following application areas:

- Product- and Material Traceability
    - Digital Product Passport
    - Supply Chain and Material traceability on Seafood, Agrifood and Haloumi Cheese
- Document- and Data Traceability
    - Resume Credentials
    - Open Digital Rights Management
    - Academic publishing
    - Secure document and messaging delivery
    - customer identity verification.

1.2. Project Governance

TRACE4EU follows a clearly defined project governance as described below. The organisational structure of the Consortium contains the following consortium bodies

- **General Assembly (GenA**) is the decision-making body of the consortium for strategic decisions.
- The **Coordinator** and Co-Coordinator lead the Project Management Board (PMB). The Coordinator and Co-Coordinator are acting as the intermediary between the Parties and the Granting Authority. The Coordinator and Co-Coordinator shall, in addition to their responsibilities as a Party, perform the tasks assigned to it as described in the Grant Agreement and this Consortium Agreement.
- **Project management Board (PMB)** is the executive body of the project, in charge of the overall coordination, progress monitoring, and security/ethics issues. The PMB has also the responsibility to monitor security and ethical compliancy.
- **The Technical Management Committee (TMC)** is in charge of technical and content coordination of Work Packages (leaders and co-leaders of Work Packages). It is the responsible body for progress of the project and quality of the results.. The TMC reports to the PMB. TMC is led by Technical coordinator (TC)
- **Steering Committee (SC)** is in charge of governance strategy and shall consist of PMB, TC, representatives of the Member States within consortium, other representatives of Member states and European Commission can be observers (without voting rights) in the Steering Committee.

For each body the Consortium Agreements clearly defines the structure, procedures and voting rights. The Consortium Agreement is mandatory for beneficiaries and associated partners.

For External Relying Parties and Members of the Advisory Board TRACE4EU have special agreement.

- External Relying Parties are external projects, initiatives or other public/private organization which contributes on certain application areas or use cases with TRACE4EU to ensure broad adoption across Europe
- The Advisory Board contains key stakeholders identifies in the stakeholder analysis who are needed to ensure exploitation, dissemination of TRACE4EU results.

1.3. Deliverables and achievement

During the first year of TRACE4EU project the following deliverables were provided and milestones reached:

ID	Deliverable
D1.1	Project Management Handbook
D1.2	Quality Assurance Plan
D1.3	Risk Matrix
D1.7	Ethics Check
D2.1	Architectural Requirements
D2.2	Initial Architecture

ID	Deliverable
D2.6	Exploitation and Dissemination Plan
D3.1	Overview on Stakeholders
D3.2	Assessed EBSI Results
D3.3	Strategy for further distribution of the use cases among other EU countries
D4.1	Product & Material traceability scenarios
D5.1	Document traceability scenarios

Table 1: Achieved Deliverables

Nr.	Milestone
1	Basic project documentation is set up
2	Mid-project review
3	Demonstrating a middle maturity of the technical architecture, clear vision of the project and clear technical specifications
4	List of external stakeholders
5	EBSI results assessed
6	Distribution strategy and Rollout Plan
7	WP4: Definition of scenarios completed
8	WP5: Definition of scenarios completed

Table 2: Achieved Milestones

2. Challenges

2.1. Legal Challenges

2.1.1. General Legal Challenges

General legal challenges for TRACE4EU are eIDAS 2.0 and GDPR.

Against the background that each European citizen and legal entity will get an EUDIW, ensuring high scalability and exploitation of the TRACE4EU use cases, the acceptance and integration of EUDIW can be defined as mandatory. As TRACE4EU focus on Business-to-Business use cases especially an EUDIW including PID for legal entities is a critical challenge as it`s currently not finally defined how such en Enterprise Wallets as EBSI Wallet or a PID for legal entities may look like

As identified during definition of functional requirements burden proof of the digital product pass, the supply chain use cases in WP and document traceability may need the legal trust of (Q)EAA, the same as QES, QSeal and especially Qualified Timestamps. A special importance gains still the QTSP for Electronic Ledger. The utilization of infrastructure with proven security and trust will foreseeably enable traceability use cases, especially in regulated industries and security-sensitive countries that currently avoid utilization of DLT due to a lack of standards for proven security and trust. The issue seems to be solved with Section 11 of eIDAS 2.0 but the role of EBSI remains open including the role of EDIC/Europeum as operating company. Also the future of EBSI governance within eIDAS 2.0 is currently not finalized so that this uncertainty seems to limit the planned rollout of TRACE4EU traceability use cases among other European countries.

As the European Blockchain Services Infrastructure (EBSI) is a Distributed Ledger Technology (DLT) network, it presents the typical challenges of DLT regarding GDPR. This includes:

- issue of immutability
  - no deletion of on-chain records is possible
  - no correction of on-chain records is possible without keeping the original record
- issue of transferability
  - currently, there are no standardized formats to export on-chain records from the ledger.

The EU Blockchain Observatory published a study on this subject with DIN SPEC 4997 first standard on GDPR and DLT exists but currently no concrete solution or European standard to be referenced by foreseeable Implementing Acts on Electronic Ledger or other trust services resp. EU Digital Wallet.

As TRACE4EU is working on DLT, it`s needed to develop a solution for fulfilling the rights of affected persons and information obligation etc., from GDPR within the use cases of TRACE4EU. This also includes possible deletion, correction, and transferability solutions in close collaboration with EBSI Core Team and other key stakeholders as well as related projects.

2.1.2. Use Cases related Legal Challenges

2.1.2.1. Product Traceability

Work package 4 of Trace4EU focuses on the traceability of materials and products in four different pilots. The following sections describe the regulatory context for each product traceability use case.

Seafood

NGOs, purchasers, and food chains are increasingly concerned about transparency and traceability for fish and seafood products to document that the fish comes from legal, sustainable fisheries. For example, in October 2018, Marks & Spencer launched an interactive map that customers and others can log into to get information about where the fish being sold is caught. Another example is the collaboration between the British NGO Environmental Justice Foundation and supermarket chains such as Tesco, Sainsbury's, Co-op, and Marks & Spencer on a "Charter for Transparency." This is intended to ensure that the value and supply chain are free from illegal fishing and human rights violations. Several NGOs, think tanks, and industry actors are also working to implement digital solutions that facilitate fish tracking.

These initiatives occur in the context of local regulations such as:

- Norges offentlige utredninger 2019: 21 (Framtidens fiskerikontroll) Future fishery control
- Regulation No. 1836 of 2014 on the prohibition to fish for snow crab. https://leap.unep.org/en/countries/no/national-legislation/regulation-no-1836-2014-prohibition-fish-snow-crab
- Regulation No. 940 on the regulation of king crab fishing in 2013-2014 in the quota-regulated area east of 26° https://www.fao.org/faolex/results/details/en/c/LEX-FAOC127312/

Agrifood

The Hungarian National Food Chain Safety Office (NFCSO) is the supervisory authority of the Hungarian food supply chain. The NFCSO has been operating successfully under the auspices of the Ministry of Agriculture of Hungary since March 2012. The Office is responsible for ensuring that everyone involved in the production, processing, distribution and preparation of food acts in compliance with legal regulations so that consumers can be provided with high quality, healthy and safe food. As a trustworthy and competent authority, the NFCSO is responsible for coordinating the official controls on both national and local levels.

The agricultural producer keeps the farming diary electronically or on paper as specified in the law or in the call for tenders. The paper-based Farming Diary for the year 2023 must be recorded on the NFCSO electronic Farming Diary (eGN) interface by January 31, 2024 at the latest.

- 2008. évi XLVI. Act on the food chain and official controls https://net.jogtar.hu/jogszabaly?docid=A0800046.TV
- 22/2012. (II. 29.) Government Decree on the National Food Chain Safety Office https://net.jogtar.hu/jogszabaly?docid=a1200022.kor

- 676/2020. (XII. 28.) Government Decree on the specific rules applicable to public procurement procedures in the field of public catering https://net.jogtar.hu/jogszabaly?docid=a2000676.kor
- 1519/2017. (VIII. 14.) Government Decision on measures to improve food quality, consumer awareness and the effectiveness of public authorities https://net.jogtar.hu/jogszabaly?docid=A17H1519.KOR&timeshift=fffffff4&txtreferer=00000001.TXT)
- 74/2012. (VII. 25.) Ministry of Rural Development Decree on the use of certain voluntary distinctive signs on foodstuffs https://net.jogtar.hu/jogszabaly?docid=a1200074.vm)

Battery Materials

The 2019 European Green Deal has initiated various legislative actions to promote sustainability and circularity in supply chains for products entering the European market. Key regulations that are currently at different stages of the legislative process include:

- German Supply Chain Act
- Green Claims Directive
- EU Directive on Corporate Sustainability Due Diligence
- EU Critical Raw Materials Act
- New EU Battery Regulation
- Ecodesign for Sustainable Products Regulation (ESPR)

In particular, the New Battery Regulation and the ESPR are wide-reaching regulations that will impact traceability processes and data-sharing practices between supply chain stakeholders and therefore merit a closer look.

The New EU Battery regulation has entered into force on 17 August 2023. It is expected to take full effect in early 2026. It is a key initiative to improve the sustainability and circularity of the battery supply chain and make Europe more resource independent. It applies to all batteries entering the European market with a capacity greater than 2 kWh. Besides setting a list of requirements with regard to ESG aspects and minimum quantities of recycled content, this regulation is the first to require a Digital Product Passport (DPP) (Article 65). The battery passport shall contain information relating to the battery model and information specific to the individual battery covering its whole value chain. It will serve as a compliance tool for the battery regulation and be able to register and provide access battery data along the entire battery lifecycle.

The regulation has already triggered several initiatives for further specification of the DPP, reflected in the work of the Global Battery Alliance and publicly funded projects like Battery Pass and CIRPASS. In addition, it has also caused the emergence of industry-driven data-sharing ecosystems like Catena-X.

It is to be expected that the learnings and experiences with the regulation will greatly influence the implementation of traceability and product information disclosure in other product categories.

The Ecodesign for Sustainable Products Regulation (ESPR) is an ambitious EU initiative to make sustainable products the norm in the EU. It covers almost all products placed on the markets, with few expectations (e.g. food, feed, pharmaceutical products). It will address a broad range of aspects to make products more durable, reliable, and circular, and minimize their environmental impact throughout the life cycle. It sets requirements on durability, minimum quantities of recycled content, reusability, upgradability, reparability, presence of substances that inhibit circularity, energy and resource efficiency, recycled content, remanufacturing, recycling, and carbon footprint. It will also focus on the social sustainability of products and due diligence aspects and key certifications along the supply chain.

Specific requirements for each product category will be set out in dedicated acts which will follow the ratification of the framework regulation. The first delegated acts to be issued are likely to concern textiles.

In order to enable the auditing, disclosure, and exchange of this information between supply chain stakeholders, the ESPR mandates a Digital Product Passport for all products. The DPP is foreseen as a decentralized tool to electronically register, process and share product-related information among supply chain stakeholders, authorities, and consumers.

The product passport should be easily accessible by scanning a data carrier and help consumers and businesses make informed choices when purchasing products, facilitate repairs and recycling, and improve transparency about a product's life cycle impacts on the environment. It will also be an important audit tool for public authorities.

A few projects are preparing the ground for the gradual roll-out of DPPs from 2023 onwards. The EU-funded CIRPASS project for instance develops basic cross-sectoral technical requirements for the DPP. It is paramount to the success and efficiency of the DPP deployment to develop standards that are open and do not create artificial barriers to entry for value chain stakeholders as well as DPP technology providers. All DPP systems must be interoperable at the protocol level. That is, they must be able to create secure connections and exchange data with another DPP system, even from a different vendor.

As such, the work done under Trace4EU will contribute to achieving these goals by developing a reference architecture and reference implementation for product traceability, data exchange, and the DPP that complies with CIRPASS requirements.

Halloumi

The Halloumi traceability use case focuses on the geographical indication Protected Designation of Origin (PDO). PDO protects the names of products that originate from specific regions. Products with the PDO label must ensure that every part of the production, processing, and preparation process occurs in the specific region. The Trade4EU project aims to establish a suitable architecture for ensuring full traceability of a PDO product and enable proof of compliance with PDO requirements.

- General Guidelines regarding the usage of the Protected Designation of Origin (PDO) Χαλλούμι/Halloumi/Hellim - Department of Agriculture, Ministry of Agriculture, Rural Development, and the Environment of the Republic of Cyprus.
- Cypriot Standards and Quality Control (Defined Standards – 10th Series) Regulation of 1985 (C.D.P. 195/85) - the Cyprus Standards, CYS 94: Part I:1985 - Specification for fresh halloumi and CYS 94:Part 2: 1985 - Specification for halloumi.
- Control & Certification Plan For her use Protected Designation of Origin "Halloumi" (Halloumi)/'Hellim' (PDO) - BUREAU VERITAS HELLAS MAE (BV)

- Regulation (EU) 2021/591 of 12 April 2021 entering a name in the register of protected designations of origin and protected geographical indications ('Χαλλούμι' (Halloumi)/'Hellim' (PDO))
- Regulation (EU) No 1151/2012) 'Χαλλούμι / Halloumi / Hellim' EU No: PDO-CY-01243-AM01 – 1.8.2022
- Regulation (EU) No 1151/2012) 'Χαλλούμι' (Halloumi) / 'Hellim' EU No: PDO-CY-01243-AM02 – 17.11.2022
- Regulation (EU) No 1151/2012) 'Χαλλούμι / Halloumi / Hellim' EU No: PDO-CY-01243-AM03 - 14.3.2023
- Electronic Product Code Information Services (EPCIS) Standard GS1®

2.1.2.2. Document Traceability

Work Package 5 of TRACE4EU focuses on document traceability through five pilots demonstrating five different scenarios. In this chapter, we will discuss the laws, regulations, and standards that are relevant to each scenario.

Open Rights Data Exchange

The application scenario T5.1 must comply with the *acquis communautaire* on copyright, in particular, but not limited to the **European directives EC/2001-29** on the harmonization of copyright in the information society, **EU/2014-26** on the multi-territorial licensing of rights in musical works, and **EU/2019-790** on copyright and related rights in the Digital Single Market, as well as with their transpositions in the 27 Member States.

It must also comply with the **Data Governance Act EU/2022/868** and the upcoming Data Act on harmonized rules on fair access to and use of data. Finally, the application scenario must comply with a series of more generic regulations, such as the General Data Protection Regulation (**GDPR**) and the laws around Know Your Customer (**KYC**) and Anti Money Laundry (**AML**).

The Open Rights Data Exchange relies on open standards such as the upcoming International Standard Content Code (ISCC) and a series of international or industry standards such as the (DOI), International Standard Audiovisual Number (ISAN), International Standard Book System (ISBN), International Standard Serial Number (ISSN), International Standard Recording Code (ISRC), and International Musical Work Code (ISWC) to identify content, Interested Party Information Number (IPI), International Performer Number (IPN), International Standard Name Identifier (ISNI), and Open Research and Contributor ID (ORCID) to identify parties, or standardized metadata sets such as the Dublin Core and the sets managed by the International Confederation of Societies of Authors and Composers (CISAC), Digital Data Exchange (DDEX), or the ONIX standards for sharing bibliographic data.

Resume Credentials application

The application scenario T5.2 is about the implementation and piloting of Resume Credentials. Since the scenario involves processing personal data, such as education and work experience, it must comply with the GDPR's requirements for data protection, including obtaining consent from individuals, providing transparency about how data is used, and ensuring the security of personal data. Another relevant regulation is the European Qualifications Framework [EQF], which provides a common reference framework for

comparing qualifications across Europe. The EQF can help ensure that resume credentials are recognized and understood by employers and education institutions across the EU.

Certain relevant standards can also be used to inspire the development of the Resume Credentials scenario. For example, the Europass framework provides a standardized format for presenting skills and qualifications, which can help ensure that resume credentials are presented in a clear and consistent manner. The Europass is a set of tools and services that help people with their education, training, and careers. It is not a legal document, but it is based on a number of European laws and regulations. One of the most important laws that applies to Europass is the Directive on the Recognition of Professional Qualifications. This directive sets out the principles for the mutual recognition of professional qualifications between EU Member States. Europass can be used to help people demonstrate their qualifications to employers and other organizations in other EU Member States. Another important law that applies to Europass is the Directive on the Lifelong Learning Framework. This directive sets out the principles for lifelong learning in the EU. Europass can be used to help people document their learning experiences, such as courses, training, and work experience. In addition to European laws and regulations, the Europass is also aligned with a number of international standards, such as the International Standard on Education Qualifications [ISCED] and the International Labour Organization's (ILO) Convention on the Recognition of Prior Learning.

EBSI also provides a set of standards and services for building blockchain-based solutions, which can help ensure interoperability and trust in the resume credentials verification solution.

The European learning Model [ELM] is a semantic standard used to describe metadata about learning. It is openly licensed and intended to be used by any stakeholder in any education, training, and employment context that needs to describe learning data. The ELM can be adopted for the Resume Credential scenario because it provides a standardized format for describing learning data, such as education and work experience. Using the ELM, the scenario can ensure that resume credentials are presented clearly and consistently, which can help improve transparency and trust in the job market. Additionally, the ELM is aligned with other EU initiatives, such as the EQF and the Europass framework, which can further support the recognition of qualifications and skills across Europe.

Democratization of Academic Publishing

Academic publishing is a very wide and diversified field of disciplinarity, multidisciplinary and interdisciplinarity, as it encompasses all sciences, abstract, natural, humanistic, and social. Therefore, a lot of different standards and usances are applicable. However, it is important to note that DAP primarily has to take into account general, well established, and widely used labeling standards, the most important in Librarianship being (still) the Universal Decimal Classification (UDC), as a very well-developed system of short, but very informative labeling of the fields and subfields of the thematic. ONIX will also be taken under consideration. In addition to UDC, modern day individual identification standards, like the Digital Object Identifier (DOI), as well as the very important nascent Findable, Accessible, Interoperable and Reusable Digital Object Framework (FDOF) will have to be incorporated in the fully functional DAP system.

Additional standards important for published work are International Standard Name Identifier (ISNI), and Open Research and Contributor ID (ORCID), and other existing and future identifiers, if the user of the DAP system has them and wishes to use them.

Furthermore, DAP will have to support publication identifier standards such as the International Standard Book Number (ISBN), International Standard Serial Number (ISSN), as

well as International Standard Audiovisual Number (ISAN), International Standard Recording Code (ISRC), and International Musical Work Code (ISWC) in the case an author supplies additional data or examples as supplements to the published work (as e.g., in musicology, filmology, or as e.g., an audiovisual supplement to laboratory work…), or the academic work itself is audiovisual, musical etc.

It has to be noted that not all mentioned standards and principles are necessary for a functional democratic academic publishing platform, and some of them may get implemented only in later development and lifecycle phases of DAP.

An essential element of democratic publishing is the necessity for pseudonymity. That means that any person (author, reviewer, editor, copywriter, translator, registered reader etc.) may choose whatever name (i.e. pseudonym) she or he wishes for any particular process in DAP, including, naturally, also his or her legal name (which is generally most common). As the DAP Scientific Wallet (their user-wallet) enables multiple public keys, the physical persons have always all their work, under all their names and pseudonyms, under direct user-wallet control. Homonyms, i.e. different persons having or choosing the same name, are automatically distinguished in the DAP system by public keys. The General Data Protection Regulation (GDPR) is individually applicable for each chosen name, as it would be for multiple persons (actually, names/pseudonyms may be regarded as multiple personalities).

As an integrated democratic publishing system, DAP assigns credentiality to all work imputed into the system by users based on the adequate quality of the work, as long as it is deemed adequate by all interested users. In other words, for example, positive reviews from several reviewers guarantee the article's credentials. However, later negative reviews and readers' criticism may revoke some work's credentials, e.g., in the case of academic fraud, later found plagiarism etc. Therefore in DAP, there is no need for trusted issuers or any other external credentials. A named individual's credibility (author, reviewer, editor…) is based on the number of accredited work.

DAP is a democratic publishing platform with open-access to all material, consequently the published material will be copyrighted under the Creative Commons license CC BY-NC-SA 4.0 (Attribution-NonCommercial-ShareAlike 4.0 International) , or equivalent newer version.

As DAP uses Fully Fungible Tokens (FFTs), named "Ergions" (from gr. ἔργον – work), for remuneration of individual's work put into the system, those tokens follow the ERC20 standard. New Ergions are generated ("minted") on the basis of a credential given to a work, and are then transferred to the public address of the (pseudo-)name of the individual who submitted the work. Ergions, representing work done, are financial means in the internal DAP economy, as well as in the future external DAP economy. However, as Ergions actually represent credentials of academic work done, Anti Money Laundry (AML) laws are (generally) not applicable.

All non-FT transactions are kept as Non-Fungible tokens (NFTs) and comply to the ERC721 standard.

Additionally, all standards regarding World Wide Web (WWW) publishing, and all currently commonly used data format standards are essential for DAP.

Electronic registered delivery application

The application scenario 5,4 is specifically related to a trust service as regulated by eIDAS **Regulation 910/2014 (eIDAS)**. The current version, as well as the text for the new proposed Regulation, state that (Art. 3, (36)):

electronic registered delivery service means a service that makes it possible to transmit data between third parties by electronic means and provides evidence relating to the handling of the transmitted data, including proof of sending and receiving the data, and that protects transmitted data against the risk of loss, theft, damage or any unauthorised alterations;

Art. 43 of the same regulation define the legal effects of such a service, while art. 44 specifies additional requirement for "qualified electronic registered delivery services".

Note that no specific technical requirements are imposed on such services, nor any implementing act are currently in effect (this is going to change with eIDAS 2.0), which gives trust service providers large autonomy on the actual implementation. It is however worth noticing that it is an accepted practice to refer to the **European Standard EN 319 521** for the validation of policy and security requirements of (qualified) electronic registered delivery services.

Additionally, some EU Member States (like Italy) are actively moving toward the adoption of the **European Standards EN 319 522** and **EN 319 532** in order to foster interoperability (which is not an eIDAS requirement for electronic registered delivery services). **EN 319 522** provides the general framework and a specific binding to eBMS/AS4 technology, while **EN 319 532** concentrates on the binding to SMTP – which, for historical reasons, is better known as Registered Electronic Mail (REM).

Electronic registered delivery services are also subject to **Regulation 2022/2065 (Digital Service Act)**, to **Regulation 2016/679 (GDPR)**, to **Regulation 2022/868 (Data Governance Act)** and to **Directive 2022/2555 (NIS 2)**. Some EU Member States also have national laws on these services and technical regulations that add further requirements on a national base.

Detailed mapping of the implications of eIDAS 2.0 on the standardization for electronic registered delivery services is ongoing within European Telecommunication Standards Institute (ETSI) Special Task F|orce 645 (https://portal.etsi.org/XTFs/#/xTF/645). The document "**New Framework of ERDS/REM standards as a result of the new components brought by eIDAS2.0** " (https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=66852) is expected to be made public in the first quarter of 2024.

Know Your Customer Application

The KYC Tool application scenario covers EU citizens submitting their KYC (Know Your Customer) documents to banks and other institutions. The scenario considers any EU country that requires identifying customers.

The Know your Customer (KYC) blockchain use case aims to enable a seamless exchange of customer information among financial institutions for near real time compliance processing, enabling digital customer onboarding, while empowering customers with digital identity and document management in a secure manner.

Currently there is a manual process to gather customer information and collect all the KYC documents. The sharing of this information with 3rd party validation agencies is also cumbersome. Each of the divisions perform KYC in a siloed manner and hence there is

duplication of effort. With the implementation of a blockchain, EBSI-based application, customers will be able to share necessary documents in a secure manner.

The KYC Tool scenario will simplify the KYC process and reduce customer time-consuming and cost-intensive identification. New services supporting the KYC use case will extend EBSI's current capabilities.

The proposed scenario aligns with GDPR requirements. Personal data will be kept encrypted in off-chain storage and the owner of the encryption key will share the key to an institution via the on-chain EBSI network encrypted with the institution's public key.

AML - Legal obligations:

The banking/financial sector is obliged to implement compliance processes to address concerning security, know-your-customer, strong authentication of parties and interoperability, e.g. as provided under the Directive (EU) 2015/849 (4th Anti-Money Laundering Directive, denoted as '**4AMLD**') which is the main instrument, along with its subsequent amendments, the 5th Directive (EU) 2018/843 ('**5AMLD'**) and the 6th Anti-Money Laundering Directive (EU)2018/1673 ('**6AMLD**').

With a strict application as of January 10, 2020, 5AMLD establishes the reference framework for electronic KYC (Know Your Customer) processes in Europe and enables financial companies to provide services in a digital single market with 508 million consumers. Barriers to doing business in multiple industries and markets were removed.

Another important obligation relevant to any KYC process, is compliance with the Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC.

2.2. Technical Challenges

The ARF will ensure the interoperability of EUDIW wallets as well as issuers and relying parties within the eIDAS 2.0 ecosystem . The requirements for Enterprise Wallets as well as Organizational digital identities strongly relevant for TRACE4EU still open so that the basement for Europe-wide traceability use cases that need the interaction of several parties in cross-border and cross-national legislation still remains a bit open. Regarding EBSI, the correlation between the EBSI technology stack and ARF is an essential success factor. Beside the close collaboration with VECTOR having similar issues and EBSI Core Team seems the future of EBSI specification within or in relationship to the eIDAS 2.0 ecosystem remains open.

Due to the fact that not all use cases in TRACE4EU may require eIDAS 2.0 compliance the focus on EBSI specifications as existing technical basement might be an option for TRACE4EU.

The following table gives and overview of the relationship between TRACE4EU and eIDAS 2.0.

eIDAS 2.0	TRACE4EU
EU Digital Wallet	To be used for the use cases EUDI Wallet for natural entities EUDI Wallet for legal entities (mainly) interoperability on ARF als well as EBSI needed
Qualified Attestation of Attributes	To be use for all attestations in the use cases used in combination with EUDI Wallet in the use cases interoperability on ARF als well as EBSI needed issuance and verification to be tested
Qualified electronic Signature/Seal/Timestamps (incl. Validation)	To be used in the use cases interoperability and/or issuance with EBSI needed issuance in EUDI Wallet and utilization with EBSI
Electronic Ledger	Definition of concrete requirements on possible Trust service for Electronic Ledger which might provide the infrastructure for traceability use cases in future subjects e.g.: Security, Operations, Business Model, Governance alignment with EBSI needed
Preservation	To be used for Resume credentials and solving cryptostability in EBSI interaction with EBSI needed
Other QTSP	To be analysed for the use cases

Table 3: Relationship eIDAS 2.0-TRACE4EU

Other technical challenges are e.g.:

Subject	Technical Challenge
General	- Complexity of EBSI interfaces - Onboarding of partners on EBSI - Integration of (qualified) trust services
Product-/Material Traceability	- Design and implementation Digital Product Passports and supply chain use alongside European and national regulations
Document-/Data Traceability	- Design and implementation alongside European and national regulations - Revocation measures on attestions of attributes - Blockchain native timestamps acc. eIDAS

Table 4: Technical Challenges

3. Recommendations on EBSI Ecosystem

3.1. Governance

As eIDAS 2.0 was published and will establish a comprehensive ecosystem on decentralized identities it directly influences the EBSI Ecosystem. It seems meaningful to assess and possibly adjust the EBSI Governance according eIDAS 2.0. Also, the founding of EDIC/Europeum should be taken into account accordingly.

This includes a possible mapping of the different roles within the eIDAS Trust Model and EBSI-Governance as well as the related services and components (Trust Services and EUDI Wallet). As eIDAS contains its own standardization and conformity assessment framework it would be meaningful to align the EBSI Governance, specifications and services.

In this context also the onboarding procedures of EBSI could be optimized as the current process seems to be very complex and time intensive.

3.2. Technical Recommendations and Standardization needs

Technical recommendations on EBSI will be identified during implementation of umbrella architecture and use cases of TRACE4EU which started in July 2024. Taking into account the legal challenges the need for sustainable and comprehensive standards on QTSP for Ledger as well EUDI Wallets or (Qualified) trust services which may use EBSI as infrastructure can be mentioned as key success factor for the EBSI ecosystem in general and TRACE4EU use cases in particular. Further standardization needs will be identified during implementation and rollout of umbrella architecture and traceability use cases.

4. Stakeholder management and synergies with other projects

4.1. Stakeholder involvement

TRACE4EU established an advisory board to address and involve key stakeholders on traceability subject in general as well as the product-/material traceability and document-/ data traceability in particular. The aims of the advisory are:

- Alignment on strategic, legal and technical subjects related to EBSI as well as application areas of TRACE4EU
- Clarification of fundamental open technical subjects
- Ensure collaboration and utilization of synergies with related projects
- Correlation on exploitation measures and business cases on EBSI in general and traceability in particular
- Support rollout of traceability use cases among other European countries or industries.

The advisory board will start working by August 2024.

Beside founding of the advisory board TRACE4EU established close collaboration with European Commission on technical improvement of and sustainable exploitation measures and business cases for EBSI. Another subjects of the collaboration was achievement of compliance on eIDAS 2.0 so especially the integration of (qualified) trust service providers and exchange on further development of EBSI regarding eIDAS 2.0 as well as in context of EDIC/Europeum. As TRACE4EU works in high-regulated environment also subjects on digital product passport and EU Supply Chain Directive were part of collaboration with stakeholders.

A comprehensive list of stakeholders were submitted as deliverable and will be further developed during TRACE4EU project.

4.2. Synergies

First synergies were identified with e.g. following projects and initiatives:

- Dutch Blockchain Coalition:
  - Traceability use cases
  - Interoperability
- EBSI-VECTOR
  - Enterprise Wallets and Organizational Identities
  - Interoperability
  - Building up comprehensive use cases on education and resume credentials
- EBSI-NE
  - Provision of new EBSI-Nodes
- Large Scale Pilots on EUDI Wallet
  - eIDAS 2.0
- several governments
  - EDIC
  - Traceability use cases

As TRACE4EU starts implementation of umbrella architecture and use cases possible synergies with other related projects will foreseeably increase and established during project time. The mentioned advisory board will play a key role on this subject.

Details on concrete approach and planned measures contains TRACE4EU D2.6 – Exploitation and dissemination.

5. Updates KPI

The Key Performance Indicators from Grant Agreement will be changed as given below

Deliverables	Description	KPI	Justification
Nodes supporting the project	-	0	New nodes provided by project EBSI-NE
EBSI trainings	4 Partners do 2 trainings per year	16	Due to change of coordinator delays in design and implementation
Project presentations	-	15	
Project-related publications	6 HEIs do 3-5 publications per year	10	
Participating Member states in traceability use case	-	15	
Application Scenarios	-	9	
Estimated new EBSI-Nodes	-	-	New nodes provided by project EBSI-NE

Table 5: Updated KPI Part I

Application Scenario	KPI: Organizations (End Users)
Seafood	4
Agri-food	6
Halloumi	20 (plus customer)
Batteries	6 (plus customer)
Open Rights Data Exchange	10
Resumé Credentials	10 (plus citizens)
Decentralized Academic Publishing	6 (plus further HEIs)
Electronic Registered Delivery	10
Know Your Customer	5 (plus customer)

Table 6: Updated KPI Part II

The adjustments will improve the effectiveness of the project.

6. Exploitation and dissemination

6.1. Exploitation

TRACE4EU D2.6 – Exploitation and dissemination describes the planned actions over the project time in detail.

Following measures were done in the first year of TRACE4EU.

Subject	**Measures**
Communication	TRACE4EU Website
External conferences	Participation in: - EBSI workshop on organization digital identities - eIDAS Summit, Berlin - EBSI Ecosystem Day, Brussels - Identity Week Amsterdam - OpenIdentity Summit Oporto - DICE Zurich - EBSI Workshop on Traceability, Brussels
Other measures	Standardization - ISO: Digital Product Passport - ISO Tc 307: Blockchain Piloting - Digital Product Passport - Open Rights Data Exchange

Table 7: Exploitation measures in Year 1

6.2. Dissemination

TRACE4EU D2.6 – Exploitation and dissemination describes the planned actions over the project time in detail.

Following measures were done in the first year of TRACE4EU. Awell-grounded analysis of market and client needs was done in order to achieve comprehensive overview and basement for detailed exploitation actions. This contained especially analysis on

- Key industries and stakeholder needs
  - Whole TRACE4EU
  - Product Traceability
  - Document and Data Traceability
- Client needs.
  - Possible solutiosn according to applicsation scenarios
  - feasible business cases
- legal and technical developments within eIDAS 2.0 as well as application scenario specific subjects

- vendors and partners including their portfolio and technical capabilities,

Based on this possible adjustments on umbrella architecture, application scenarios as well as rollout planning and exploitation plans were evaluated and the implementation started.

7. Conclusion

The document describes the interim results and current status of TRACE4EU project

The eIDAS 2.0 framework involves the issuance of implementing acts and delegated acts by the European Commission. Standardization and further development of regulative framework set out technical specifications for certification and aim to change the EBSI Governance, technical framework and so the EBSI Ecoystem within the project duration of TRACE4EU.

A well-grounded ongoing evaluation as well as close collaboration with key stakeholders and related projects aims to identify possibly necessary adjustment among the architecture and common technical ground of TRACE4EU and/or requirements on application scenarios. Also the contribution to and evaluation of EBSI governance and specification supports the success of TRACE4EU. The results of those tasks as well as the solving of key challenges of TRACE4EU may support the final rollout of application scenarios among other countries or industries to achieve sustainable solutions for legally compliant and cost efficient material-/ product-/data- and document traceability in Europe using EBSI.