



EBSI-VECTOR

Education and work reloaded

D3.3: Conformance and interoperability test method and results for holder wallets (current capabilities). Focus on the 1st implementation phase.

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List of Terms and Abbreviations

Abbreviation	Definition
eIDAS	“electronic identification and trust services” is an European regulation
ARF	Architecture and Reference Framework
Conformant wallet	A conformant wallet is a type of wallet that has successfully passed the Conformance Test. The test verifies that the wallet meets certain standards for performance and functionality, whether it is a holder, issuer, or verifier wallet. The Conformance Test assesses the wallet's ability to handle credentials assigned by a mock issuer and return them to a mock verifier.
DC4EU	Digital credentials for Europe (European Consortium)
DID	Distributed Identity
Digital wallet	A digital wallet in the context of EBSI is a type of online storage that lets you securely keep track of your digital assets and information, like digital certificates and digital identity information. It's like a traditional wallet but storing digital information.
EBP	European Blockchain Partnership
EBSI	European Blockchain Service Infrastructure
ESSIF	European Self Sovereign identity framework
EUDI	European Digital Identity
Holder wallet	A digital wallet that is used by natural persons to store and manage their verifiable credentials. Holder wallet can request issuance of Verifiable Credentials (VCs) and receive them instantly or deferred.
LoA	Level of Assurance
LSP	Large Scale Pilot

OIDC4VC	OpenID for Verifiable Credentials
PDA1	Portable Document type A1. This application form is used for employed persons posted to another EU or EEA member state.
PID	Personal Identifier
Q(EEA)	Qualified (Electronic Attestation of Attributes)
VC	Verifiable Credential

1 Executive Summary

In the trust triangle of the EBSI verifiable credentials framework the holder wallet has a crucial role as the instrument for a citizen to request, store and share credentials with other organisations supported by the EBSI ledger for a privacy by design and user centric ecosystem.

The EBSI-VECTOR project has the ambition to bring the use cases in education and social security to production but this needs to be supported by a stable and powerful set of these holder wallet solutions and their providers. In the WP3 on technical specification we included different wallet solution providers to let them work on the functional and technical capabilities, improve their products, have a better alignment with EBSI and be able to offer citizens a better and more secure wallet.

An essential aspect that is covered in this deliverable is the strategic position of the EBSI conformant wallets in the broader EUDI and eIDAS context. After the initial success of the EBSI verifiable credentials framework and the pilot implementation in the early adopter programme, the work on the EUDI project created some doubts on the role and added value of the EBSI VC framework and its wallets.

We have highlighted in the deliverable that the decentralized identity wallets aka EBSI conformant wallets have a place in this broader eIDAS and EUDI ecosystem. They can provide in a specific segment of the market (low/substantial LoA for qualified and non-qualified attestations) a much-needed productive uptake of verifiable credentials capabilities. And also serve as on-going inspiration for the future EUDI capabilities. The EBSI-VECTOR has defined some guiding principles that also position the project towards the EUDI LSP DC4EU and identified 5 essentials actions for EBSI conformance wallets.

In this deliverable we give an overview of the actions and status on the current and future capabilities conformance testing of the EBSI-VECTOR partners with a holder wallet solution and their feedback on testing procedures and standards.

How these wallets will support the implementation and pilot phase in education and social security is also included, as it is a recommendation on a more stable long term support versioning of the conformance testing.

2 Introduction

To reinforce the EBSI ecosystem and the uptake of the EBSI use cases the necessary tooling needs to be available for end-users and organisations. An essential tool in the verifiable credentials framework of EBSI is the holder wallet which is the focus of this deliverable.

The EBSI-VECTOR has the ambitions to support 20 holder wallets to pass the EBSI conformance testing based on new capabilities and be interoperable with the enterprise wallet for an implementation in education and social security.

In this deliverable we start with a more general/strategic discussion on the position of EBSI conformant holder wallets in the broader eIDAS context and the need to communicate on this strategy. This to give the market a clear indication of how EBSI is a complementary and supporting building block for EUDI.

The status and progress of the conformance testing of the current capabilities is a next chapter, followed by a chapter on the new capabilities testing. As part of the EBSI-VECTOR project we encourage wallet providers to improve their products and an overview of these actions is also included.

As the most important aspect of the EBSI-VECTOR is the productive use of the verifiable credentials use case in social security and education we give an overview of how the different wallet providers will support the organisations and end-users in the pilot and implementation phase.

A recommendation on the long-term support of the EBSI conformant versioning is included in the last chapter before jumping to the next steps and conclusions.

This deliverable will be further elaborated in deliverable D3.4 where more wallet providers need to be EBSI compliant supporting the required business users with crucial technical capabilities.

3 EBSI wallet strategy and position in the eIDAS context and communication actions

The diploma and the decentralised identity use case (aka ESSIF) were the first use cases the EBP members and EC elaborated in the context of European Blockchain Services Infrastructure. This innovative work relied on the emerging standards and concept of Self-sovereign or decentralised identity, verifiable credentials (also beyond education), and supporting ledger capabilities built within EBSI. These capabilities have seen their first implementations via the EBSI early adopter programme and will be scaled up via the EBSI-VECTOR project. A generic verifiable credential framework was available for various use cases and business domains.

The public services agencies participating in EBSI and the Verifiable Credentials Framework made a strategic decision from the outset of the project. They chose not to build a wallet for holders, issuers or verifiers but to let the market drive this essential service. This approach, rooted in the belief that the market's needs should guide and execute development, was further supported by the EBSI team's provision of an EBSI conformance testing service and a showcase for adopting EBSI by end-users and organizations.

The work of EBSI and EBP also inspired the upcoming eIDAS v2 regulation and the Architecture Framework of the new EUDI wallet. This European project on a new digital identity for all Europeans shared the citizen empowerment values and capabilities for a complex trust ecosystem. However, the coexistence of both projects also created some confusion and concerns about how EBSI and eIDAS v2 were positioned and how the EBSI conformant wallet relates to the EUDI wallet in development.

As the interest in EBSI and the broader (decentralized) identity ecosystem continues to grow, so does the number of questions from wallet providers and organizations (issuers and verifiers) about the positioning of EBSI conformant wallets and the EUDI wallets. These questions have started to impact the adoption level of EBSI. The need for a comprehensive position on the EBSI conformant wallet has become increasingly apparent to address this evolving situation and offer more clarity in this complex ecosystem.

This need is most urgent for the organizations that participated in the DEP projects EBSI-VECTOR and DEP EUDI LSP DC4EU, as they focused on the same educational and social security context. Both projects rely on EBSI capabilities but have a different complementary/reinforcing focus that needs to be communicated more explicitly.

EBSI-VECTOR organised a strategic brainstorm at the end of December 2023 with all work packages and task leaders to reflect on the EBSI conformant wallet positioning towards EUDI and the link between EBSI-VECTOR and the EUDI LSP DC4EU/EWC. The outcome of this workshop is the foundation of the new EBSI conformant wallet strategic position and alignment towards eIDAS v2. This strategic positioning will be further discussed with EC and EDIC Europeum before it can be shared with the other ecosystem stakeholders.

3.1 Basic principles of EBSI conformance wallet position

The project's partners propose several fundamental principles to position the supporting actions and components of EBSI (and EBSI-VECTOR). These principles will drive the focus and priorities of the EBSI-VECTOR project and also need to be adopted by the EBSI project, in general, to provide more clarity to our partners and other actors in the broader (decentralized) identity ecosystem in Europe and the world.

1. eIDAS is the regulatory framework and context for the EBSI-compliant holder wallet actions and components.
2. EUDI wallets will/can rely on centralized and decentralized components like EBSI ledgers/registries and its Verifiable Credentials Framework. EBSI will ensure good complementarity and alignment. EBSI wants to be a building block for the adoption and implementation of EUDI wallets.
3. The EUDI wallet, as part of eIDAS v2, focuses on a high level of Assurance and qualified attestations with an EC member state-driven implementation. However, next to this other context, another type of wallet has business and technical value for users and organizations. EBSI-VECTOR will concentrate on the substantial and low LoA context for qualified and non-qualified social security and education attestations.
4. The EUDI wallet is still in the pilot phase, but today's market demands solutions that can be implemented and used in production.

5. Wallet providers focusing on decentralized identity want to improve their solutions to conform to EBSI and prepare for the upcoming EUDI wallet requirements, certification, and implementation.
6. EBSI and EBSI-VECTOR will continue their innovative work to test and introduce new capabilities and components needed by the different business actors in the decentralized context to inspire the next generations of the EUDI wallet.

The principles ensure the EBSI components' sustainable strategic position in the broader EUDI and eIDAS v2 context, as visualized in the figure below.

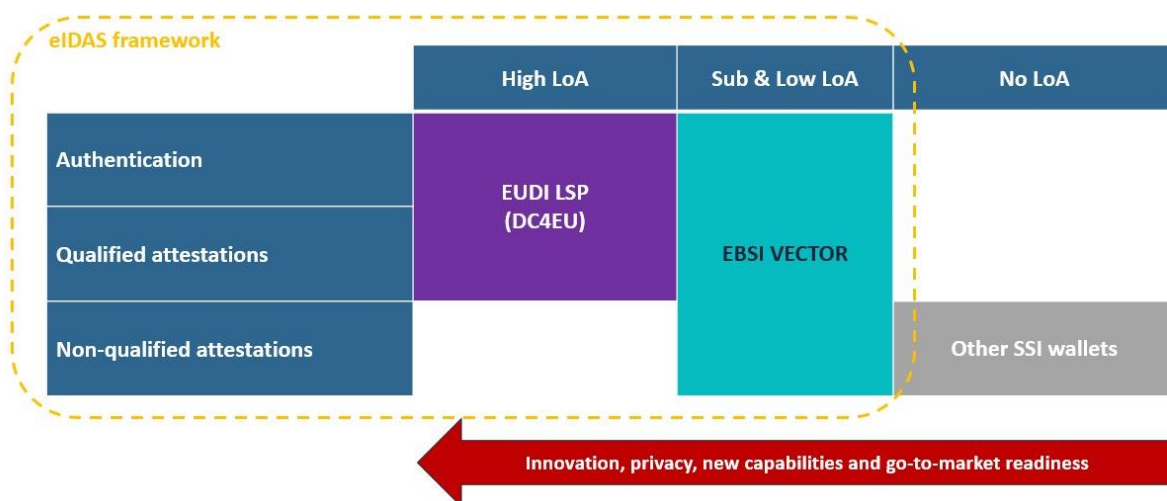


Figure 1 - EBSI-VECTOR position

These principles can be applied to explain the difference in focus and ensure good alignment between the DEP EBSI-VECTOR project and the DEP EUDI LSP DC4EU in the same educational and social security context. This is visualized in Figure 2 below.

- **DC4EU** will use the current version of the EUDI reference wallet implementation supported by the verifiable credentials framework's current capabilities and decentralized EBSI registries in a high-level assurance context (the DID method that EBSI registry will accept needs to be determined).
 - The DEP EUDI LSP **EWC** is also exploring decentralized solutions and capabilities but is also looking at other alternatives next to EBSI.

- **EBSI-VECTOR** will act in the same eIDAS regulatory context but with a wallet for a low/substantial level of Assurance, also relying on the Verifiable Credentials framework and decentralized registries of EBSI but with the usage of more innovative capabilities and concepts that are elaborated in the decentralized identity context.
- Depending on the market evolution and possibilities of integration and interoperability, **holders and issuers verifiers** must use one or more solutions to interact and share trust via verifiable credentials.

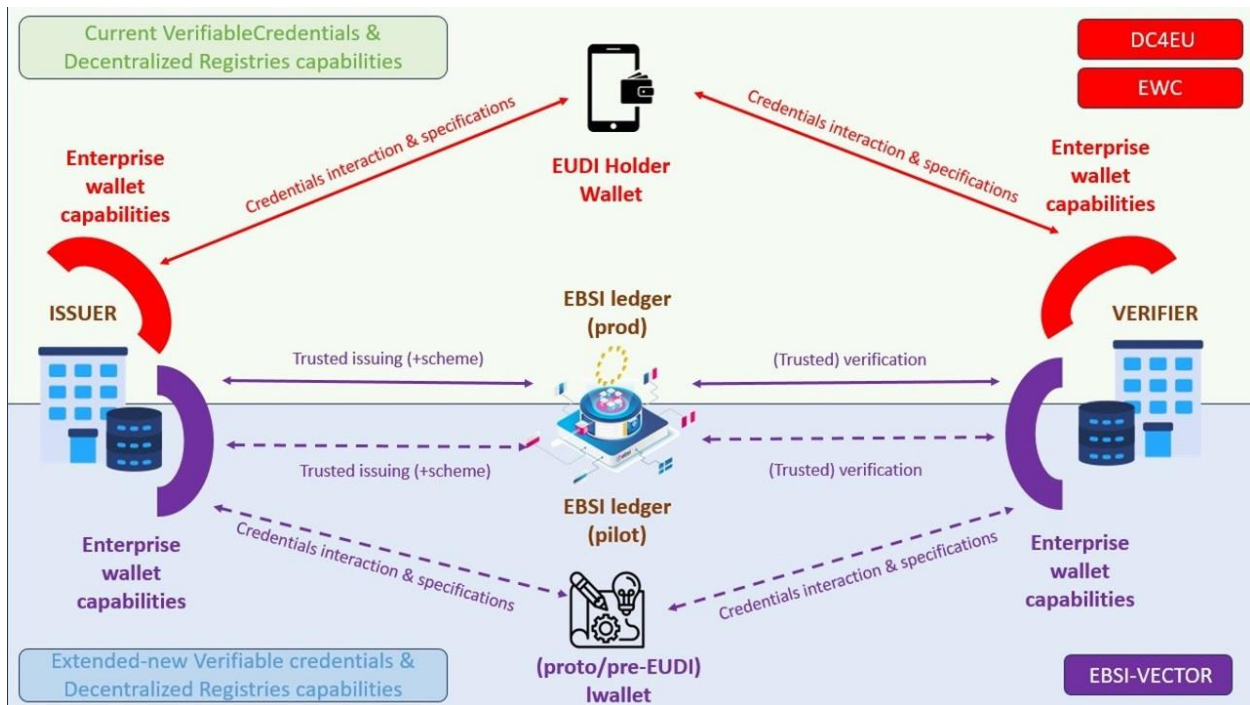


Figure 2 - Proposal DC4EU and EBSI-VECTOR position

Based on these principles, the EBSI-VECTOR partners propose to focus on several objectives and actions that need support from the EBSI team on strategic and technical levels. But first we look at the position of the individual holder wallet solution providers on eIDAS/EUDI.

3.2 Overview position holder wallet solution providers on eIDAS/EUDI

In the EBSI-VECTOR project we reached out the different holder wallet solution providers and asked for their opinion and current position (these answers are not official company engagements, just first indications).

Table 1 - Wallet providers position on eIDAS/EUDI

Wallet	Status and progress
Gataca	Gataca is trying to be updated in all the discussions. Our goal is also to be compliant with ARF mechanisms. We are aligned with EBSI, that I think is going in the same direction. Until ARF is not stable we are not planning different roads. When this is stable we'll see how to manage it. Divergences into the way of thinking is the main challenge in this topic. EBSI was born as SSI framework but the ARF is taken a slightly different view. There is no DIDs, they use CAs, ... the roads are going into the same directions but the goal is not the same. We'll see how they evolve.
Walt.ID	Walt.ID is currently exploring the EUDI Wallet ARF for its solutions within the EBSI-VECTOR project. No issues/challenges identified.
Izertis	Izertis is considering what is proposed in the EUDI wallet and will align ourselves with its statement. But see this as a different track and not part the EBSI-VECTOR project. Aspects in EUDI wallet are still not specified in terms of how EBSI will support them or if there are going to be different systems. Is the usage of EBSI mandatory?
CERTH	CERTH is considering whether there are elements in the EUDI wallet ARF that are beneficial for inclusion in our solution's technical architecture. This work is related to our efforts related to our EBSI-VECTOR project. As it currently stands, we are not in the position of providing feedback.
iGrant	Currently explored in a separate track but connected via Bolagsverket, Sweden. Biggest challenge is the funding model of the EUDI wallet.
Goldman	Not yet actively exploring this topic, but planning to get more involved, to be discussed in the EBSI-VECTOR consortium. We are intending to study the

	final/latest ARF with the first opportunity in order to shape our thoughts on the expected challenges.
GUNET	<p>GUnet is up to date with the latest discussions. The primary target is to have a wallet ecosystem implementation which complies with the EUDI wallet as described on the ARF and at the same time be conformant with the latest EBSI profile.</p> <p>As time progresses, these two frameworks tend to diverge, especially in the communication protocols such as the OpenID4VCI and OpenID4VP, which makes the cross-framework interoperability a major challenge.</p>
ValidatedID	Yes, eIDAS 2 and the ARF will pave the digital identity way in Europe therefore we have to be aligned with the regulation as well as the ARF.
NASK	EUDI wallet ARF is an important topic for NASK. Challenges are identified and discussed. EUDI wallet is for NASK a separate track but with many links to the work in EBSI-VECTOR.
Protokol	<p>We did explore the recent EUDI wallet reference implementation and it gave us some inspiration and clarifications. At this point we are focusing on EBSI capabilities. But we do believe that at some point wallets should support both EBSI and eIDAS. Will be elaborated in a separate track.</p> <p>Currently, the biggest challenge is, when aiming to be aligned with the ARF referred standards, that these standards such as OIDC4VCs are in a draft state and change frequently.</p>
Certsign	We are exploring the possibility to develop an EBSI conformant holder wallet starting from the EUDI reference wallet (separate track). The biggest challenge is harmonizing our strategy with the rapid changes in the area.
SIS/SKS	<p>We're actively exploring various wallet options, including the EUDI wallet ARF. However, its lack of implementation guidelines poses challenges compared to the more advanced EBSI framework.</p> <p>This exploration work is related to EBSI-VECTOR and since we treat EBSI-VECTOR and other EBSI projects as a single direction, we combine these efforts so our solutions would be suitable for multiple applications and use-cases.</p>

	As biggest challenge we see that there are currently multiple wallet initiatives and while EBSI is the most advanced in technical way, it has little legal power to operate. On the other hand, ARF has a stronger legal background, but lacks technical implementation for establishing trust chains. Therefore, the primary challenge lies in achieving alignment across different frameworks and wallet initiatives. This would ensure consistent guidelines and proper support for most, if not all, common specifications and trust chains.
INAIL	INAIL is actively exploring the EUDI ARF and link with EBSI capabilities.
CIMEA	ARF provides valuable information but is not fully in line with the new eIDAS2 regulation. We are following eIDAS2 specifications (available in some MS) to implement a wallet as much as possible compliant with eIDAS2 and EBSI. Both issues are related to EBSI-VECTOR and in a parallel track. Main challenge is the onboarding in EBSI vs eIDAS2 PID issuance
UniMaribor	We are investigating the ARF, but only on the conceptual level - how Masca can support all building blocks of ARF. We see multiple challenges, but the most important is the challenge related to digital identities and identifiers, i.e., how to support a qualified eID within a digital wallet, like Masca (which is more oriented towards decentralised identity).

3.3 Action 1: Support the EBSI conformant wallets in the eIDAS certification for low/substantial LoA and using qualified and non-qualified attestation.

The EBSI-VECTOR project will support EBSI conformant wallets implementing LoA low/substantial. To this end, it is needed to define the wallet LoA low/substantial requirements and Q(EEA) profiles and rulebooks for EBSI wallets LoA low and LoA substantial. Adopting LoA low/substantial instead of LoA high implies less cryptographic requirements, especially proof of association with the wallet, but it does not allow the implementation of some capabilities.

The use cases will determine based on their requirements and legal context the LoA and need for using qualified and non-qualified attestations.

- **Output:**
 - EBSI wallet requirements and governance rules for LoA low and for LoA substantial.
 - EUDI wallet solution additional certification requirements for EBSI.
 - Q(EEA) profiles and rulebooks for EBSI wallets LoA low and LoA substantial, including (Q)EEAs for identification purposes.
- **Timing:**
 - 2024: TBD.
 - 2025: TBD.
- **Actors:**
 - Msg, Logalty.

3.4 Action 2: First production implementation of the verifiable credentials framework in education and social security.

The EBSI-VECTOR project will support scaling up the implementation of the EBSI verifiable credentials framework in first education and later social security. WP4 and WP5 have determined the business scenarios to be deployed in productions, and the actors will execute this with the help of their technical partners.

For this first production implementation, the end-users can use an EBSI-compliant wallet conforming to eIDAS regulations. This can address the most urgent business needs, giving the EUDI wallet more time to develop or extend its functional and technical capabilities.

- **Output:**
 - Education and social security implementation based on EBSI conformant wallets.
- **Timing:**
 - 2024: implementation in education
 - 2025: implementation in social security
- **Actors:**
 - Collaboration between WP4-WP5 and WP3 partners.

3.5 Action 3: Improve capabilities and standards for the verifiable credentials framework, which will be used for piloting, production, and inspiration for the EUDI project.

New capabilities for the verifiable credentials framework will be elaborated based on the business need for education (input from WP4) and social security (input from WP5). The WP3 will translate these requirements into technical specifications that the EBSI EC team will develop. Within task 3.4, the different holder wallet solution providers will test the new capabilities to create a better user experience and data interaction. **See chapter 5.**

The new capabilities of revocation, selective disclosure, multi-language support, and interoperability will be further elaborated, and additional capabilities will follow, inspired by new technical evolutions for business needs.

- **Output:**
 - Business and technical requirements for new capabilities.
 - Testing and implementing new EBSI capabilities in holder wallets.
- **Timing:**
 - Current till the end of the project.
- **Actors:**
 - Collaboration between WP4-WP5 and WP3 partners.

3.6 Action 4: interoperability and transition of EBSI conformant to EUDI wallets for use cases

Organisations and holders that already want to use the capabilities of the EBSI verifiable credentials framework in production will be able to use holder wallets that are not only EBSI compliant but also operate in the eIDAS regulatory context (see action 1).

With the EUDI wallet further elaborating in the next years, the EBSI-VECTOR project will actively support wallet solution providers, organisations, and users in transitioning to an EUDI-certified wallet solution or interoperating with these solutions.

The EBSI capabilities and conformance testing will keep the EUDI ARF in focus, supporting an easy transition or integration into future EUDI wallets. The lessons learned and expectations from the EUDI LSPs like DC4EU will also drive this transition process.

- **Output:**
 - Transition scenario from EBSI-compliant solutions to EUDI-certified wallets.
- **Timing:**
 - Q1-Q2 2025 (with active exploration during 2024)
- **Actors:**
 - WP3 partners and holder wallets solution providers + EBSI EC team
 - WP4 and WP5 partners that have implemented holder wallet in production.

3.7 Action 5: Inform the market stakeholders and actors of the new EBSI wallet strategy and position in the eIDAS context

The holder wallet strategy described in this deliverable will be discussed and consolidated with the DC4EU team and the EBSI EC team to create a shared vision. To inform the market of wallet providers but also policymakers and stakeholders in social security and education, a webinar will be organised within WP6 of EBSI VECTOR and a new information page on the EBSI-website and EBSI-VECTOR website.

- **output:**
 - Webinar EBSI wallet strategy and position in the eIDAS context
 - Webpage on wallet strategy on EBSI-website and EBSI-VECTOR website.
- **Timing:**
 - may-june 2024
- **Actors:**
 - DDSSSI, GRNET, Docaposte + EBSI EC team

4 EBSI wallet conformant with current capabilities iteration 1

As a first action in the EBSI-VECTOR project we worked with the partners that are holder wallet solution provider to achieve the EBSI wallet conformance v3. In the overview below we highlight the status of the different holder wallet and their progress in the conformance with the current capabilities. This first iteration will make it possible to have the necessary end user tooling during the implementation phase for education and piloting phase for social security.

Table 2 - Holder wallets status and progress

Wallet	V3 conformant	Status and progress
Gataca	X	<p>V3 conformant – december 2023. On the conformance testing Gataca would require:</p> <ul style="list-style-type: none"> - More flexibility in some optional aspects (e.g. format of the Verification methods - Thumbprints) - A LTS version. This is something quite important. It's very hard to change each 6 months the protocols and the way to interact with EBSI (see chapter 8) <p>Gataca passed the last EBSI conformance testing modifying the user wallet but also the platform to interact with EBSI and the backend. Also, we help the EBSI team to fix some bugs included into the WCT.</p>
Walt.ID	X	V3 conformant – November 2023
Izertis	X	<p>Identify by Izertis: v3 conformant since 2023, updated in April 2024.</p> <ul style="list-style-type: none"> • Open Source • Non-custodial

CERTH	X	<p>V3 conformant – September 2023. The conformance testing environment was well made and the interaction with the EC team was smooth.</p> <p>In EBSI-VECTOR we are working for the adoption of the wallet to assist issuers and verifiers to interact with EBSI and stimulate solution providers to adopt EBSI by actively supporting them to transform their products and offering. We plan to be aligned with the new version of EBSI (if possible) and identify the adoption of the solution to a pilot with any interested stakeholder.</p>
iGrant	X	V3 conformant – July 2023
Goldman	X	<p>GOLDMAN eKibisis wallet is a V3-compliant standalone holder wallet as well as an organisational/enterprise server wallet (since June 2023).</p> <p>EBSI team should invest in the standardisation of the user authentication</p>
GUNET	X	<p>V3 conformant - January 2024</p> <p>On the next conformance testing suite, GUnet suggests the following:</p> <ul style="list-style-type: none"> • Avoid the usage of a custom EBSI-OpenID4VCI protocol version: The current EBSI OpenID4VCI profile incorporates some additional parameters on some endpoints which are out of the scope of OpenID4VCI and make it difficult for interoperability the plain OpenID4VCI. • More flexibility: Ex.: <ul style="list-style-type: none"> ○ Have only one grant type as mandatory on the OpenID4VCI protocol ○ Make the 'Deffered' issuance flow optional. <p>GUnet has contributed by writing improvement proposals to EBSI regarding the communication profiles and will</p>

		continue to do so in order to head towards a more standardized communication profile
ValidatedID		<p>Validated ID's holder wallet, VIDwallet, is conformant with EBSI's WCT v2 and currently the development team is working on implementing the last missing OIDC flows in order to become WCT v3 conformant. The aim is that VIDwallet will be conformant with v3 within the next weeks (may 2024).</p> <p>Within the scope of EBSI-VECTOR, we were working on VIDwallet to become WCT v3 conformant. In particular, this actions included the OIDC4VCI implementation including all the different flows such as authorized/pre-authorized, in-time and deferred, and cross-device and same device. Right now we finished most of the flows and we are at the stage were we finalize the last flows and correct bugs in our implementation</p>
NASK	X	Recently passed the conformance testing, not added yet on the EBSI-website.
Protokol		<p>Currently working on a holder wallet and the approach we are taking is “conformance first” so it will be EBSI conformant for current capabilities. We are aiming for V3.</p> <p>Before starting the actual development our team looked at the conformance requirements and went through the conformance testing API calls. This gave us an in-depth understanding of the conformance requirements.</p> <p>Development on track no issues with the v3 conformance test.</p>
Certsign		Certsign is exploring the possibility to develop an EBSI conformant wallet starting from the EUDI reference wallet. Transforming the current Certsign solution into an EBSI conformant wallet is a too big change.

SIS/SKS	X	<p>SIS/SKS is trying to keep their solutions aligned with the latest EBSI specifications. Currently, we are fully conformant with the 3.0 specifications since July/September 2023. Recently, we've successfully passed the latest conformance testing, achieving compliance with V3.2 for our CorpoSign DID Holder Wallet and submitted the compliance report to the EBSI Help Desk. Additionally, we've also passed V3.2 conformance testing for the issuer and are in the process of achieving the same for the verifier</p> <p>Lots of improvements came to the holder wallet app for phones: we implemented numerous bug fixes and improvements to align with conformance, also enhanced how the app handles different flows: both expected outcomes and not.</p> <p>Additionally, we've closely collaborated with PDA1, conducting interoperability testing with their services and issuers.</p> <p>Furthermore, lots of efforts has been put into Issuer Wallet with dedicated API endpoints</p> <p>The current EBSI conformance testing appears to be somewhat superficial, focusing primarily on the bare minimum conformance to OpenID specifications, and testing only the "right" way rather than testing for failures.</p> <p>Also, some places are outdated compared to the latest available OpenID specifications. For example: EBSI conformance is testing OpenID Credential issuance specification draft 11/12, while the latest version is 13, meaning that EBSI team is half a year behind. Additionally, EBSI conformance is mainly focused on testing of credentials issuance and requesting, with little emphasis on verifier flow, which is related to authentication and not directly to issuer</p>
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		By reporting the feedback of EBSI EC, it is correct that at the time of writing this document (June 2024) EBSI is referencing "OpenID Credential Issuance specification draft 11/12", while the latest draft is "draft 13". EBSI will follow new drafts closely, and implement them on a regular basis. The EBSI team shared a calendar highlighting at a high level when the latest standard drafts will be implemented. (https://hub.ebsi.eu/conformance/standards-versions).
UnMaribor	x	V3 conformant. Since our wallet Masca is not a mobile/desktop wallet, we had to make some adjustments towards the conformance tests, because deep links are not supported by browser extensions.
INAIL		Wallet strategy elaboration in progress
CIMEA		Currently v2 conformant, evaluating to move to version 3. Testing the interoperability with other wallets within EBSI-VECTOR project.

5 EBSI wallet conformant with new capabilities – iteration 1

To bring use cases to production the EBSI-VECTOR team in collaboration with the EC team worked on providing new capabilities to EBSI. These capabilities were included in this first iteration from a more technical drive but in the next iteration they need to be more business driven. Without a clear business context, it is difficult to test or implement the new capabilities as stated in the feedback of the different holder wallet providers.

This chapter will highlight the work on four capabilities: revocation, interoperability, selective disclosure and multi-language support and the feedback of the test group. A limited group of wallet providers tested these capabilities before they would become part of the EBSI conformance testing and other providers need to implement it.

5.1 Revocation

- **Tested by: Gataca, Danubetech, Izertis, Walt.ID, SIS/SKS, Goldman, CERTH**
- Feedback and test results on <https://code.europa.eu/ebsi/ecosystem/-/issues/21>

5.2 Interoperability framework

- **Tested by: walt.ID & grant.io**
 - Actions:
 - Series of interop sessions with Walt.id.
 - Making the wallets instantiated as issuers and verifiers (Inspecting Organisation),
 - Discussions with Bolagsverket and Norwegian company registries
 - Setting up PDA1 publicly available demo environments
 - Demo of the video: <https://youtu.be/-a7wwzd5anU?si=EfMy4cIJPQVtixdq>
 - Feedback:
 - The interop to work, every wallet has to strictly adhere to the standard. The standards are still work-in-progress but EBSI has taken a good role in making it more prescriptive. DRV has specific deviations from the current specs that need to be addressed.

- **Tested by Gataca-izertis**
 - Work in progress.
- **Tested by SIS/SKS:**
 - Interoperability testing was conducted with the PDA1 team and their services outside the EBSI framework. This provided valuable insights into the complexities of software development. Regarding interoperability testing, most of it was in collaboration with PDA1 services, as a two-way testing: we tested our wallet with their services, and vice versa, this gave a lot of insights into enhancing holder wallets.

Comments and feedback will be added to https://code.europa.eu/ebsi/technical-office/dev/wallet-p2p-testing/-/tree/feat/templates?ref_type=heads

5.3 Selective Disclosure

- Tested by: GUNET, Danubetech, Gataca, Izertis (Work in progress), Walt.ID, SIS-SKS (work in progress)
- Feedback, discussion and test results on:
 - <https://code.europa.eu/ebsi/ecosystem/-/issues/18>
 - <https://code.europa.eu/ebsi/ecosystem/-/issues/19>
 - <https://code.europa.eu/ebsi/ecosystem/-/issues/20>
 - <https://code.europa.eu/ebsi/ecosystem/-/issues/25>

5.4 Multilanguage Support

The importance of multilanguage support for an EBSI conformant wallet cannot be overstated. It is crucial to ensure wider adoption of holder wallets and create opportunities for digital solutions in the European single market. In the EBSI-VECTOR project, GovPart explored this capability first in collaboration with the EBSI EC team. Gataca is also working on this topic.

This capability has been identified in the educational use case where credentials are used for under-aged students who need an interface and interaction in their language. But also in cross-border interactions where verifiers need to understand/interpret credentials issued by issuers from other countries (ex Bulgarian diploma verified in Italy)

The multilanguage support for EBSI conformant wallets has multiple dimensions that need to be tackled by different actors:

- **Multilanguage User Interface of the Wallet:**
 - How can a wallet UX be presented in different languages for the best user experience? Can we use i18n standards and capabilities to help the different wallet providers achieve this?
 - By implementing internationalisation practices, developers ensure their applications can be localised or tailored to suit users' linguistic and cultural preferences worldwide.
 - i18n is a widely adopted internationalisation framework that should be used to express claim names in different languages.
- **Multilanguage Verifiable credentials scheme:**
 - The credentials must also support multiple languages to be interpreted across borders by verifiers and users/holders.
 - In a first reflection, the best option is to work with i18n configuration files, which are annexes of the verifiable credentials schemas.
 - Next to a default scheme language, this configuration file can provide the VC labels in several other languages.
 - These configuration files can be made available via the EBSI decentralised registries so holder wallets can use them in the interaction between the holder and verifier.
- **Official translation of verifiable credentials content:**
 - A trusted issuer needs to provide a translation of the actual content of the verifiable credentials (for example, in Flanders/Belgium, a diploma database with an official Dutch diploma name + name university and an English version).
 - Another option is to have trusted translation services provide/re-issue a VC in another language.
 - This is an out-of-scope of the EBSI-VECTOR T3.4 holder wallet activities.

Next steps and actions:

- Govpart will collaborate with one or more EBSI-VECTOR T3.4 partners (holder wallet solution providers) to implement an i18n capability in the holder wallet (German translation for UX).
- Govpart will elaborate with the EBSI VECTOR T3.4 partners an i18n configuration file for educational credentials that can be made available via the EBSI decentralised registries next to the verifiable credentials scheme (new EBIP will be created for this capability).

5.5 General feedback on new capabilities testing

The EBSI-VECTOR team also reached out some of the holder wallet solution providers to learn more on their view on the new capabilities testing and development. Also missing capabilities and expectations are highlighted.

Table 3 - Holder wallet providers feedback on new capabilities

Holder wallet	View on new capabilities
Izertis	<p>New capabilities are necessary to implement, we will actively work to implement it in the future.</p> <p>The new features target important aspects for a solid digital identity solution for end users. However, more research is needed to define a solid proposal, akin to establishing common implementation guidelines.</p>
Validated.ID	<p>The EBSI revocation was implemented due to a business need, but the rest of the new capabilities, such as selective disclosure, do not reflect an urgent business needs.</p> <p>We mentioned that we are going to participate for the testing of the new revocation method, since we already have it implemented. Furthermore, we also agreed to do the interoperability testing as soon as we are WCT v3 conformant.</p>
Gataca	<p>We implemented Status list 2020 and 2021 for revocation mechanism. But also BitString is quite advanced because as you know is very similar to Status list 2021.</p>

	<p>We started with some works in the interoperability field. I contacted some other vendors to look for interoperability but I was rejected by most of them. We are currently working with Izertis and I wish to also work with Walt.ID in the near future.</p> <p>About selective disclosure, we have an implementation ready to be tested, but I stopped the work on that due to the instability in this field. As you know, I tried few weeks ago align with EBSI team about the what specification should be chosen, but there is no alignment. I think the first step should be define the specification (avoiding the implementation of many specifications not aligned with the ARF - it takes much time)</p> <p>Depending on the capability the effort is quite high due to the uncertainty, and the complexity of the capability. Also, when we are delivering the new capabilities, in some cases we need to update the clients also, to avoid technical issues. In other cases, (as interoperability) the process is more complex, because we need to look for other interested organization (so difficult), sign NDAs, look for time, ...</p> <p>The new capabilities are absolutely necessary, however due to the uncertainty in some of the capabilities we need to establish a specific specifications into the trust framework to work everything in the same way. If not, I think it would be very problematic and long.</p> <p>As next steps we see the following actions:</p> <ul style="list-style-type: none"> • Status list: Done. Aligned with EBSI. Status list 2021 • Selective disclosure: I would say, we should follow the ARF, and in the ARF there is an uncertainty. It seems SD-JWT VC DM will win the competition but there is no a complete specification. • Interoperability: currently working on this. <p>General comment: selective disclosure needs to be addressed as uncertain specification.</p>
iGrant	<p>The current funding model in EBSI VECTOR for SMEs are poorly designed and favoring large companies, and public organisations who can outsource part of their work to subcontractors / large integrators at 100% funding. This is not sustainable for participating SMEs who are asked to open up their code, make demonstrations etc deployed at their own costs. Going forward, there is a</p>

	<p>huge risk that SMEs who has been pioneering may drop out and go for fully funded initiatives such as via a PCP models or similar.</p>
NASK	<p>Currently we are waiting with the proper implementation into our solution until the legitimate mechanisms would be figured out. We have performed some actions to be involved in the discussions about revocation.</p>
SIS/SKI	<p>One of the primary findings is that while wallet-related services can implement different version of EBSI specification, there is little to no backwards compatibility. For example, DID and TIR registries. And as newer versions are being released, it is hard to find which version should be used and what are the guidelines for migrating between versions.</p> <p>Revocation list implementation using the StatusList2021 credential is a relatively complex concept.</p> <p><i>We expect the EBSI team to catch up with the latest OpenID version and align more closely with ARF.</i></p> <p><i>Our next steps involve integrating these capabilities into KYC/KYB processes and further exploring login solutions using VPs, introducing these features into our other products will be a primary emphasis.</i></p>
Goldman	<p>we are waiting for EBSI to provide a standard-specification so that we can test selective disclosure. We are also open to invitations from other V.3 compliant wallet developing organisations, to cooperate in defining the environment /test scenarios towards testing Interoperability.</p> <p><i>Missing functionalities: Conformance Specification for user authentication</i></p>
CIMEA	<p>Expectations and missing capabilities:</p> <ul style="list-style-type: none"> • Revocation through Status Attestation, Selective Disclosure. • EBSI onboarding process is cumbersome and not in line with expected requirements for identification both at Legal Entity and Natural Person level • EBSI needs to be in production with well-defined processes that guarantee continuity in service • Capabilities are lacking governance model in provisioning and lifecycle

Un Maribor	<p>We are looking into the new capabilities and features, but we are currently only in the research/analysis phase at least until the final pre-production state of the functionalities is defined. Apart from the EBSI ecosystem, we are testing the similar capabilities from other SSI protocols/frameworks (Polygon ID).</p> <p>Since we think revocation is service provider or business oriented, we as a wallet provider are not in the urgent need to support it straightaway, while selective disclosures are more technically oriented towards the support of digital wallets, which is why we are already testing it with other SSI protocols.</p>
INAIL	<p>working on business requirements to guide the technical specifications and developments.</p>
CERTH	<p>We have performed preliminary testing in regards to revocation (status list 2021) and interoperability with other open source solutions. In regards to selective disclosure, a preliminary implementation is in place, however due to the instability of the respective specifications we have not engaged in interoperability testing with selective disclosure JWTs.</p> <p>To validate the implementation of these capabilities, we have developed an elaborate unit testing and integration testing infrastructure that involves, on the one hand in-house built components and, on the other hand, readily available open source implementations.</p> <p>We have experienced a lot of ambiguity in the EBSI specifications as they deviate substantially from the cited specifications of the OID4VC working groups. This has led to divergent implementations and hampers, as it currently stands, interoperability. Ensuring that stable versions of the specifications are published is vital towards ensuring future interoperability.</p> <p>For the EBSI EC team, in a few words, properly cite and implement the referenced specifications for the OID4VC working group. Ideally, for the next version of the conformance test, stable specification should be in place, at least from an implementation point of view (e.g. implementer’s drafts).</p> <p>In our view, the current versions of the specifications are sufficient solely for pilot scenarios. For production use cases and deployments more effort needs to be invested in regards to interoperability, internationalisation, and proper</p>

	encoding of the EBSI environment and trust framework in the decentralised identifiers and verifiable credentials that are used.
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6 EBSI holder wallet technical and functional improvements as part of the EBSI-VECTOR project

The EBSI-compliant wallet solution provider in EBSI-VECTOR also focuses on improving functional and technical capabilities to enhance uptake in social security and education use cases. This section gives an overview of these improvements and their added value for the implementation and pilot activities in WP4 and WP5.

Table 4 - Holder wallet improvements

Holder wallet	Improvement and added value for the objectives of the project (special focus on education and social security)
Gataca	<p>Gataca worked on the OIDC protocols and data structures. Most of the new core functionalities has been implemented during EBSI-VECTOR project. Worked on the following improvements:</p> <ul style="list-style-type: none"> • Alignment with OIDC protocols • Alignment with new data structures VCDM 2.0 • New schemas (ELM 3.2). Also discussions to try to improve the schema delivered by Europass • Status list 2020 and status list 2021 • New interaction with new EBSI APIs (DIDs, Schemas, TIR, ...) • Bugfixing of the WCTs. We found some bugs into the WCTs. • Creation of different DID methods into the user wallet. <p>By reporting the feedback received by EBSI EC, the VCDM 2.0 is not envisioned to be supported by the EBSI Conformance Testing (CT) in 2024. Support of VCDM 2.0 is envisioned to take place in 2025 and will need to be planned accordingly with the wallet providers. e.g. Gataca</p> <p>Please note that introducing the support of VCDM 2.0 will introduce a new CT major version and subsequent breaking changes (v4.0) requiring all currently conformant wallets to go through the wallet conformance process again.</p>

Walt.ID	<p>Walt.ID worked on the functional and technical requirements of WP5-social security to improve the walt.ID wallet. Other improvements listed up on https://walt-id.notion.site/Feature-List-walt-id-95f6741fe34747b5a1d3a3d68b07a6f1</p> <p>Improvements do not have an impact on EBSI-level.</p>
Izertis	<p>Izertis worked on the biometric identification, electronic signature, wallet and credentials recovery. They are still on a development phase, not implemented yet. These improvements will not require a change on the EBSI platform.</p>
CERTH	<p>We have shared with project partners both functional capabilities that are supported by our holder wallet implementation, as well as, elements regarding the technical architecture.</p> <p>Apart from supporting all authentication flows as was detailed previously, we have added revocation checks as well as suspension checks in the issuance and verification flows.</p> <p>In regards to suspension, the EBSI team needs to update its verifiable credential schemas</p>
iGrant	<p>Adjusted user experiences based on feedback from the community.</p>
Goldman	<p>Worked on Biometrics identification and credentials recovery, as well as a browser/web wallet for users without Android/iOS phones (or those using old generation mobile phones). No changes needed on EBSI-level.</p>
GUNET	<ul style="list-style-type: none"> • Alignment with a newer OpenID4VC communication protocols • Authored an improvement proposal for the wallet conformance tests. • SD-JWT support • Adjusted user experience based on user feedback
ValidatedID	<p>Worked on the implementation of the new EBSI revocation method. This means that our holder wallet (and actually also our issuing and verification service) supports the latest EBSI revocation method. Validated.ID also volunteered in performing the pre-testing of this EBSI feature.</p>
NASK	<p>We were trying to bind credentials with the identity, still under development. No changes required on EBSI-level</p>

Protokol	Protokol did not implement improvements to an existing wallet, instead we are building a holder wallet based on the functional and technical specifications outlined throughout the EBSI VECTOR project
Certsign	We are exploring the possibility to develop an EBSI conformant holder wallet starting from the EUDI reference wallet.
SIS/SKS	<p>Our holder wallet app features multi-wallet functionality, allowing users to respond to various credential initiations and logins with credentials stored in separate wallets. The wallet is conformant with the latest EBSI specifications and is ready for use.</p> <p>Also, Holder wallet can respond to OpenID requests to give VP to asked services. This feature is used inside our other products to login into services of issuer.</p> <p>Most of improvements align with EBSI specifications changes, but we are actively pursuing KYC/KYB use-cases for both Holder wallet and Issuer wallet to login and setup user accounts using credentials. As was mentioned before, in our signing platform, users can bind CorpoSign DID or other EBSI conformant wallets to issue NaturalPersonVerifiableID or EmploymentAttestation credentials. Furthermore, the credentials can be revoked/suspended and later check accordingly to the Strategy B suggested by EBSI: Overview of EBSI's Revocation Methods EBSI hub. Additionally, we already have implemented functionality which allows users to login into our system using wallet signed did:key (ID token).</p> <p>Although our issuer wallet includes a revocation list check, the holder wallet will integrate this feature once industry standards are established.</p> <p>Currently, none of the implemented improvements require changes at the EBSI level. However, we suggest EBSI to look into login using ID token or VP. Also, issuer-initiated authorization within OpenID specifications is another suggestion.</p>
INAIL	Working on the business requirements to guide the technical developments
CIMEA	Cimea elaborated on the side of qualification business case
UnMaribor	After the V3 conformance testing, working on the improvements.

7 EBSI holder wallet support strategy and model for EBSI-VECTOR use case pilot and implementation actions

Holders need to rely on an EBSI-conformant wallet to interact with issuers and verifiers in the defined scenarios to implement the educational use case and the pilot phase of the social security use case. The table below highlights an overview of the support models that are possible in the scope of the EBSI-VECTOR.

The solutions' matching with issuers/verifiers and holders will be coordinated in WP4 and WP5 but also determined by existing partnerships and engagement between these organisations and the wallet solution providers. We encourage the use of multiple solutions in the ecosystem to encourage and showcase interoperability.

Table 5 - Holder wallet types of support and engagement

Holder wallet solution	Support model and engaged organisations
Gataca	<p>Gataca could support organizations to be onboarded into EBSI using our own infrastructure. It's in SaaS platform so it's very easy and fast for them to be onboarded into the project.</p> <p>As we are doing with all our clients, we also support them with any doubts they have about the technology or the framework, and we help them to achieve the goal for the use case. In all the cases the client has an awesome use case to be showed.</p> <p>For the WP4 we are now working with the Higher Education Program that provides the platform for free for educational use cases.</p> <p>https://hs.gataca.io/higher-education-program</p>
Walt.ID	<p>Walt.ID can offer operational support for teams that will use the walt.i solutions. Currently supporting DRV-Sozialversicherung.</p>

Izertis	Izertis will supply organizations with holder and enterprise wallet that provides them with the capabilities of issuing and verifying credentials. In WP4 agreements with Universidad de Extremadura and SEK for education and we are open to new users. Support to users will be free as part of the EBSI-VECTOR project
CERTH	CERTH will support other organisations by action as a solution provider. CERTH will talk with the partners in the project or other potential stakeholders for analysing the solution adoption.
Igrant	Open for suggestions. In WP5 for trials only. A funding model that is sustainable is needed.
Goldman	We are developing a customisable issuer's module (uses EBSI APIs to issue VCs) which can be easily installed by any issuer wishing to participate in the pilots. This is easily integrated with the Issuers' existing systems. We are also developing an EBSI Gateway verification portal for 3rd Parties/entities not integrated within the EBSI ecosystem who wish to view and verify a specific VC when authorised by a Holder. Third party entities (Verifiers) have to create a user account in order to be able to use the EBSI Verification Portal, (i.e. receive email notifications, login securely to view/verify authorised to themselves VCs). We are currently working with organisations (universities and national authorities) within the scope of the Cyprus government's (Cyprus) eDiploma project. We are also open to new users. We are planning to have our wallets published during Q'3 2024.
GUNET	The wwwallet and wwwallet enterprise solutions are implemented and ready to be used by any organisation to support their Verifiable Credential use-case.
ValidatedID	ValidatedID are open to new users but do not have yet an agreement with organizations in WP4 and WP5.
NASK	NASK is in close collaboration with diploma issuer, that acts as a "supervisor" of all Polish universities, so it covers almost all needs of educational domain. In social security domain we are in touch with National Health Fund and Social Insurance Institution, which are responsible for EHIC and PDA1 issuance. Many of our efforts are focused on supporting institutions to serve them as good as it is possible to fulfill their requirements as this is main Vector objective.

Protokol	<p>We are working on the Enterprise wallet and intend to support the “full circle” with entities that choose our solution. Currently we do not have enough resources to offer support to individuals.</p> <p>In the context of the Education use case in WP4, we will be piloting our solution with the Danish universities below, we’re open to support more users as well:</p> <ul style="list-style-type: none"> • Danish Technical University • VIA University College • University College South Denmark • UCL University College • University College Copenhagen • Danish School of Media and Journalism • University College Absalon • University College of Northern Denmark • University of Copenhagen
Certsign	Certsign could support organization in the development, implementation or testing of other wallets,
SIS/SKS	We can create support plans for individually for each client offering consultation and technical assistance, as well as integration into their services using on-premises or available SaaS models. Currently we do not have organizations using our solutions in WP4/WP5 context.
INAIL	In progress in WP5 social security
CIMEA	Any organization or individual is open to join existing pilots or implement defined business workflows as defined in WP4-4.1 Interoperability and EBSI compliance is a must-have in this case. We have already a blockchain-based solution ready to migrate in EBSI when will be officially in production. We are open to any entity willingly to join
UnMaribor	Our university will already play the role of the piloting educational institution, where our students will use our holder wallet. For this purpose, we prepared an enterprise wallet for our institution, which enables the issuance of the VCs. The same could be provided for other issuers and verifiers. We are open to new users.

8 Lifecycle management conformance testing

The current lifecycle management for conformance testing has seen in the past years a frequent change and update to different/new versions. See overview below. Wallet providers were expected to modify their solution based on these new versions.

By reporting the feedback of EBSI EC, since its initial version, each major version of the Conformance Testing took 9 months on average to roll out, with a 6-month warranty period to support progressive adoption by wallet providers.

Once we reach Production, further development of the CT will aim at fostering stability by releasing less frequently (e.g. yearly), however since EBSI doesn't control breaking changes introduced by new standards (VCDM, OIDC,...) breaking changes are to be expected. EBSI will share a thorough release calendar reflecting standard draft updates regularly.

EBSI LTS - Software Lifecycle - CT

Gemaakt door Kevin AMBROGIJ, laatste wijziging op apr. 19, 2024

Context:

We have commented on this topic several times recently but we have not communicated something in concrete to WPs. The purpose of this page is to document a lifecycle policy of the EBSI CT. My main focus should be around OIDC4VP/VCI, which is a machine of drafts, making interoperability more complex. The document below should contain the current versions of OIDC, even VCDM, the support to them (a long period), and the schedule of the next CT and subsequent standard versions.

	Software Status	Release Date	Supported until *	Supported Standard Versions	Standards (and versions)	Status/Timeline
CT V3.1	Legacy	1 jun. 2023	2 feb. 2024	EBSI APIs: Auth API https://hub.ebsi.eu/apis/conformance/authorisation/v3 Conformance API https://hub.ebsi.eu/apis/conformance/conformance/v3 DID Registry API https://hub.ebsi.eu/apis/conformance/did-registry/v4 Ledger API https://hub.ebsi.eu/apis/conformance/ledger/v3 Timestamp API https://hub.ebsi.eu/apis/conformance/timestamp/v3 Trusted Issuers Registry https://hub.ebsi.eu/apis/conformance/trusted-issuers-registry/v4 Trusted Policies Registry https://hub.ebsi.eu/apis/conformance/trusted-policies-registry/v2 Trusted Schemas Registry https://hub.ebsi.eu/apis/conformance/trusted-schemas-registry/v2	VCDM v1.1 https://www.w3.org/TR/2022/REC-vc-data-model-20220303/ OIDCV4VP https://openid.net/specs/openid-4-verifiable-presentations-1_0-14.html OIDCV4CI https://openid.net/specs/openid-4-verifiable-credential-issuance-1_0-11.html Verifiable Credentials Status List v2021 https://www.w3.org/TR/2023/WD-vc-status-list-20230427/ Presentation Exchange 2.0.0 https://identity.foundation/presentation-exchange/spec/v2.0.0/	Deployed/Stable
CT V3.2	Current/Stable	2 feb. 2024	1 jul. 2025 TBC	EBSI APIs: Auth API https://hub.ebsi.eu/apis/conformance/authorisation/v3 Conformance API https://hub.ebsi.eu/apis/conformance/conformance/v3 DID Registry API https://hub.ebsi.eu/apis/conformance/did-registry/v5 Ledger API https://hub.ebsi.eu/apis/conformance/ledger/v4 Timestamp API https://hub.ebsi.eu/apis/conformance/timestamp/v4 Trusted Issuers Registry https://hub.ebsi.eu/apis/conformance/trusted-issuers-registry/v5 Trusted Policies Registry https://hub.ebsi.eu/apis/conformance/trusted-policies-registry/v3 Trusted Schemas Registry https://hub.ebsi.eu/apis/conformance/trusted-schemas-registry/v3	VCDM v1.1 https://www.w3.org/TR/2022/REC-vc-data-model-20220303/ OIDCV4VP https://openid.net/specs/openid-4-verifiable-presentations-1_0-14.html OIDCV4CI https://openid.net/specs/openid-4-verifiable-credential-issuance-1_0-11.html Verifiable Credentials Status List v2021 https://www.w3.org/TR/2023/WD-vc-status-list-20230427/ Presentation Exchange 2.0.0 https://identity.foundation/presentation-exchange/spec/v2.0.0/	Deployed/Upcoming (pending test)
CT V4.0	Upcoming	31 dec. 2024 TBC	N/A	EBSI APIs: Auth API Conformance API DID Registry API Ledger API Timestamp API Trusted Issuers Registry Trusted Policies Registry Trusted Schemas Registry	VCDM v2.0: https://www.w3.org/TR/2024/WD-vc-data-model-2.0/ OIDCV4VP https://openid.net/specs/openid-4-verifiable-presentations-1_0-20.html ** OIDCV4CI https://openid.net/specs/openid-4-verifiable-credential-issuance-1_0-13.html ** Bitstring Status List v1.0 https://www.w3.org/TR/2024/WD-vc-bitstring-status-list-20240204/ Presentation Exchange 2.0.0 https://identity.foundation/presentation-exchange/spec/v2.0.0/ **	Pending/ETC Q3 2024

Figure 3 - Current lifecycle management conformance testing



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The solution providers for holder wallets (but also for issuers and verifiers) have clearly stated that the lifecycle management for the conformance testing should have a different approach in the production phase of EBSI. Wallet solution providers and their clients/issuers-verifiers do not have the possibilities of the business need to change every year or half year to a new version of standards.

In production a Long Term Support version is needed with only changes when cybersecurity risks or important regulatory framework enforce these changes. In a production environment stability is needed to ensure market adoption and also restrict unnecessary financial costs. This was already foreseen in the initial EBSI governance model but should be followed more strictly.

Choosing certain standards and version do also require a more strategic and market based approach.

To illustrate this statement and requirement from the market we give an overview of the questions and feedback of the different wallet providers of the EBSI-VECTOR project.

Table 6 -Questions and feedback from holder wallet providers on a market based approach

Holder wallet	Improvement and added value for the objectives of the project (special focus on education and social security)
Izertis	It would be ideal to adopt the following versions of OID4VP and OID4VCI, as well as a clear stance on issues addressed in the EUDI wallet (selective disclosure).
Validated.ID	We are aware of the fact, that OI DC drafts change often as well as the business requirements towards EBSI and that for this reason new WCT versions will have to be released. Nevertheless, for organizations it also means that there will be additional efforts and also costs related to that. Organisations will have to consider their return on investment especially when there is no direct business need for adopting to a newer WCT version. Additionally, the EBSI WCT lifecycle should be more clearly communicated related to the timeline of new WCT releases as well as what will be included in the upcoming versions.
Gataca	A LTS version. This is something quite important. It's very hard to change each 6 months the protocols and the way to interact with EBSI

	The expectations are high. We have a great relationship with the EBSI team, so we are trying to make easier everything. We are discussing ways of doing, and this is a win-win. The evolution from v2 to v3, has been hard. Many changes, added new conformant tests ... but this is what it is. I suggest the creation of a LTS, and 1 year at least between releases.
iGrant	A viable support structure for SMEs is needed
NASK	We would like to see an LTS version, but in future. Now, during pilot, it is normal to change concepts frequently, it can be frustrating, but is completely understandable.
Walt.ID	Have stable releases and standards that don't frequently change
SKS/SIS	We would appreciate a more structured approach to the lifecycle management of EBSI conformance testing, and guidelines to the evolution from one version to another. It would be beneficial for developers if there were a comprehensive architecture of the ecosystem, providing a picture of how everything is supposed to work. Additionally, having transparent links to specifications used by EBSI as a reference would enhance clarity. This would allow to understand the implementation and whether EBSI is aligning to industry standards or developing its own solutions.
Goldman	We are expecting that this will be defined by EBSI, e.g. conformance validity period, backwards compatibility, transition from V.x to new V.y etc.
Cimea	The actual lifecycle management is creating extra costs and complexities for early adopters. Once in production this lifecycle will be in contrast with appropriate production processes
Uni Maribor	It would be very helpful to get life/status expectancy of each version of tests/APIs (versioning support) and more detailed upgrade procedure from previous version.
CERTH	At minimum, we expect improved communication from the EBSI EC team towards the release of future conformance test versions.

EBSI issue "EBSI Release Lifecycle" <https://code.europa.eu/ebsi/ecosystem/-/issues/34> was created for this topic and will be elaborated further in the next steps of the project.

9 Recommendation and next steps

This deliverable will be discussed with the EBSI-EC team and the EUDI LSP DC4EU team to determine the next steps and actions

Proposed next steps and actions:

- Action 1: support the EBSI conformant wallets in the eIDAS certification for low/substantial LoA and using qualified and non-qualified attestation
- Action 2: First production implementation of the verifiable credentials framework in education and social security
- Action 3: Improve capabilities and standards for the verifiable credentials framework, which will be used for piloting, production, and inspiration for the EUDI project
- Action 4: Interoperability and transition of EBSI conformant to EUDI wallets for use cases
- Action 5: Inform the market stakeholders and actors of the new EBSI wallet strategy and position in the eIDAS context

Recommendations:

- Provide a Long Term Support version for the EBSI conformance testing for a better and stable market adoption.
- Business requirements need to drive the technical capabilities.
- Provide more elaborated technical specification for production use and interoperability.
- Elaborate a business model that also benefits SME solution providers in Europe

10 Conclusions

To ensure a strong uptake in production of the verifiable credentials capabilities of EBSI in the educational and social security sector a clear vision and alignment towards the EUDI wallet project is crucial. Any doubt on alignment, complementarity and interoperability with eIDAS and EUDI will have serious impact on the adoption of EBSI in these or any other business sector.

The EBSI-VECTOR project has tried to elaborate a strategic position of the verifiable credentials capabilities of EBSI in general and more specific the EBSI conformant wallet via this deliverable. This strategic position will need to be discussed further with the EBSI EC team, the EUDI LSP projects like DC4EU and the future EDIC Europeum as governance body of EBSI. A broad communication campaign is needed to inform and reassure the market.

The strategic position gives EBSI and EBSI conformant wallets a clear place in the broader eIDAS ecosystem. We see on the short term the current decentralized identity solutions supporting the first implementations in the low/substantial level of assurance cases with qualified and non-qualified attestations. On the longer term these wallets will continue to inspire the EUDI projects with more citizen-centric and privacy by design solutions from the decentralized/SSI/web3 world.

To achieve this objective more wallet providers it needs to be motivated to adopt the EBSI standards, and the EBSI ecosystem needs to continue the work on the capabilities and their production readiness. A stable long term support versioning of the conformance testing is also a crucial factor needed to make sure that enough parties adopt the EBSI conformant solutions.

References

- [1] Qualified Ledgers: Bridging the Gap between Blockchain Technology and Legal Compliance (<https://medium.com/@schwalm.steffen/qualified-ledgers-bridging-the-gap-between-blockchain-technology-and-legal-compliance-c08d24a68db9>)