Building identity-enabled data infrastructures & dApps.

How deltaDAO and walt.id used Self-Sovereign Identity (SSI) to enable the trust and identity layer of Gaia-X - the European data infrastructure

About deltaDAO

deltaDAO AG is the first [Ocean Protocol](#) engineering, integration and consulting company founded by Ocean Protocol community members. Their mission is to kickstart the European Data Economy. Active in several Gaia-X working groups and initiatives, *deltaDAO* is a co-organiser of the Gaia-X Hackathons and responsible for the "Compute-to-Data and Distributed Ledger Technology" tracks. As Web 3.0 specialists and integrators, they build towards a Minimal Viable Gaia-X.

The Challenge

deltaDAO is building solutions for the new European data economy by combining new technologies like Compute-to-Data, Distributed Ledger Technology (DLT), smart contracts and decentralised applications with evolving standards for the European data infrastructure that is Gaia-X.

As one of the leading integrators of Ocean Protocol and contributor to the Gaia-X community, *deltaDAO's* goal was to build the first demonstrator for a European data infrastructure that utilises both new paradigms: Compute-to-Data and decentralization. The underlying idea was to build a platform that enables businesses, especially small and medium enterprises (SMEs) across Europe to collaborate and facilitate data-driven business and research by allowing them to find, publish, combine and consume data service offerings in a secure and privacy-preserving manner (via the Gaia-X test network).

One of the biggest challenges was to bring identity and trust services, compliant with [eIDAS](#) and [ESSIF](#) (see [Gaia-X Federation Services](#)) to the network, as well as to enable so-called Gaia-X Labels (see [Gaia-X Labelling Framework](#)). This is relevant for a number of use cases and core services of Gaia-X, such as:

- Identity and Trust Services: To bridge today's trust gap, participants use Gaia-X federation services to build up tailored services that authenticate and authorise participants in a federation, e.g. via credential validation and the use of SSI.

- Identity and Trust based on Self-Sovereign Identity (SSI) enables Gaia-X Participants to keep control over their digital identities. Individuals and

organisations can use their digital identities to securely and seamlessly sign up for services (onboarding, identity proofing), access services (authentication, access) and provide any other relevant information about themselves in a privacy-respecting fashion (risk and compliance assessments).
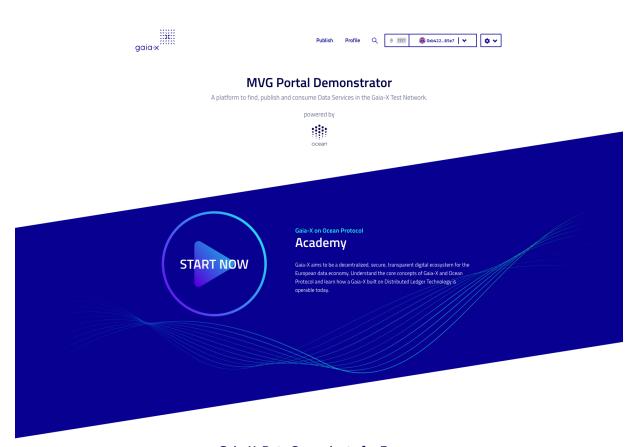
In addition, legacy platforms with centralised architectures should not be used to prevent known issues (e.g. lock-in, dependency, complexity, privacy, bad user experience, …). "Self-Sovereign Identity" ("SSI") is at the very core of Gaia-X and as it quickly became clear that this new technology is the perfect identity infrastructure for a new European data economy and well in line with the vision and strategy of Gaia-X and Ocean Protocol. (see Gaia-X Vision and Strategy)

The Solution

Considering the complexity of Self-Sovereign Identity (SSI), *deltaDAO* screened the market for vendors that could help them to get started. The following criteria where central for vendor and technology selection:

- open-source, Apache 2.0 License, no lock-in effects
- eIDAS, ESSIF and GDPR-compliance
- full-stack solution for issuance, verification and storage
- access to an experienced developer team and high quality documentation
- strong understanding of decentralised infrastructures and privacy

These requirements have been met by *walt.id* and *deltaDAO* chose to work with *walt.id* and their open source product portfolio, which should serve as identity infrastructure for *deltaDAO's* (decentralised) Minimal Viable Gaia-X (see Minimal Viable Gaia-X).

MVG Portal Demonstrator

A platform to find, publish and consume Data Services in the Gaia-X Test Network.

powered by

ocean

Gaia-X on Ocean Protocol
Academy

Gaia-X aims to be a decentralized, secure, transparent digital ecosystem for the European data economy. Understand the core concepts of Gaia-X and Ocean Protocol and learn how a Gaia-X built on Distributed Ledger Technology is operable today.

START NOW

Gaia-X: Data Sovereignty for Europe

```
139    // TODO: Load and replace data wherever required
140    // val idData = DeltaDaoDatabase.get(proofConfig.dataProviderIdentifier!!) ?: throw Exception("No ID data found for the given data-povider identifie
141
142    template.apply {
143        id = "identity#verifiableID#${UUID.randomUUID()}"
144        issuer = proofConfig.issuerDid
145        credentialSubject.apply {
146            if (proofConfig.subjectDid != null) id = proofConfig.subjectDid
147            legallyBindingName = "deltaDAO AG"
148            brandName = "deltaDAO"
149            legallyBindingAddress = GaiaxCredential.CustomCredentialSubject.LegallyBindingAddress(
150                streetAddress = "Geibelstr. 46B",
151                postalCode = "22303",
152                locality = "Hamburg",
153                countryName = "Germany"
154            )
155            webAddress = GaiaxCredential.CustomCredentialSubject.WebAddress(
156                url = "https://www.delta-dao.com/"
157            )
158            corporateEmailAddress = "contact@delta-dao.com"
159            individualContactLegal = "legal@delta-dao.com"
160            individualContactTechnical = "support@delta-dao.com"
161            legalForm = "Stock Company"
162            jurisdiction = "Germany"
163            commercialRegister = GaiaxCredential.CustomCredentialSubject.CommercialRegister(
164                organizationName = "Amtsgericht Hamburg (-Mittel",
165                organizationUnit = "Registergericht",
166                streetAddress = "Caffamacherreihe 20",
167                postalCode = "20355",
168                locality = "Hamburg",
169                countryName = "Germany"
170            )
171            legalRegistrationNumber = "HRB 170364"
172            ethereumAddress = GaiaxCredential.CustomCredentialSubject.EthereumAddress(
173                id = "0x4C84a36fCDb78cf50294A77385ad5CA0F74C4A52"
174            )
175            trustState = "trusted"
176        )
177    }
178    return template
179    } else {
180        throw IllegalArgumentException("Only VerifiableId is supported by this data provider")
181    }
```

0.00	0.00	87
Liquidity in Own Assets	Total Liquidity	Sales

4
Published

✔ Verified Publisher

Profile data from 3Box Hub

The [Minimal Viable Gaia-X (MVG) Demonstrator](#) using the walt.id SSI Kit to verify onboarded publishers as members of Gaia-X.

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The Results

Supported by the [OceanDAO](#), *walt.id* set up a managed cloud service dedicated specifically for *deltaDAO*. This way *deltaDAO* did not need to deploy or maintain their own instance of *walt.id's* products, but could simply use them via high-level interfaces (APIs). In addition, *walt.id* extended their products with new features aligned with *deltaDAO's* individual requirements.

All of this allowed *deltaDAO* to focus their resources on the development of the Minimal Viable Gaia-X as the identity layer was almost completely abstracted by *walt.id*.

As a result, *deltaDAO* was able to integrate the first iteration of the Gaia-X Trust & Identity Service within the Minimal Viable Gaia-X infrastructure within just a few weeks and to onboard members of the Gaia-X community to these services, which has not been possible before. During the second Gaia-X Hackathon the SSI Kit, provided by *walt.id* has been used by several participants and the first Gaia-X credentials have been issued, anchored in a decentralised trust anchor, and verified. On top of that, *walt.id's* experts coached *deltaDAO's* team along the way and helped them understand SSI, its underlying technologies and its impact on decentralised applications.

Finally, the project turned into a long-term partnership in which *deltaDAO* is contributing to *walt.id's* open source libraries with their extensive knowledge about the Ocean Protocol and Gaia-X while *walt.id* contributes to the realisation of Gaia-X compliant Trust & Identity services with the SSI Kit.

"A great product and a great team. We use walt.id's SSI Kit and it has been a great stride forward to enabling the Trust & Identity layer of Gaia-X, the European Data Infrastructure. We very much look forward to continuing the development towards European identity standards in the data economy."

Kai Meinke
Member of the Board
deltaDAO AG

Ready to get started?

[Contact us](#)

… or **_get in touch_** with deltaDAO's experts for a Minimal Viable Gaia-X implementation.

walt.id develops Self-Sovereign Identity (SSI) solutions for businesses and governments across industries.

Developers and organisations rely on our open source products as an easy and fast way to use Self-Sovereign Identity - including Europe's new digital identity ecosystem based on the EU Blockchain and the EU SSI Framework (ESSIF).

To ensure client's success, our industry-leading experts provide holistic services including from conception over the implementation of pilots and production system to enterprise support and managed cloud services.

For more information visit **www.walt.id** or get in touch via **mail**.

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deltaDAO – data economy solutions. GDPR compliant.

Visit us at https://www.delta-dao.com/ or contact us via contact@delta-dao.com