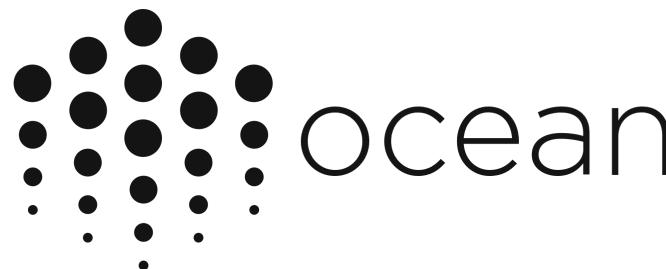


3rd Gaia-X hackathon

Guided Deployment Of Trust Components

Albert Peci, Moritz Kirstein
albert@delta-dao.com
moritz@delta-dao.com



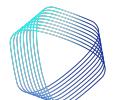
content

- ▶ **Session:** Guidance and deployment of Verifier, Wallet, Issuer components to Kubernetes for issuance and verification of credentials using OIDC4VP/SIOPv2
- ▶ Gaia-X Lab Development
- ▶ SSI Frameworks
- ▶ Onboarding Portal Demonstration
- ▶ Deployment Demonstration

Gaia-X Lab

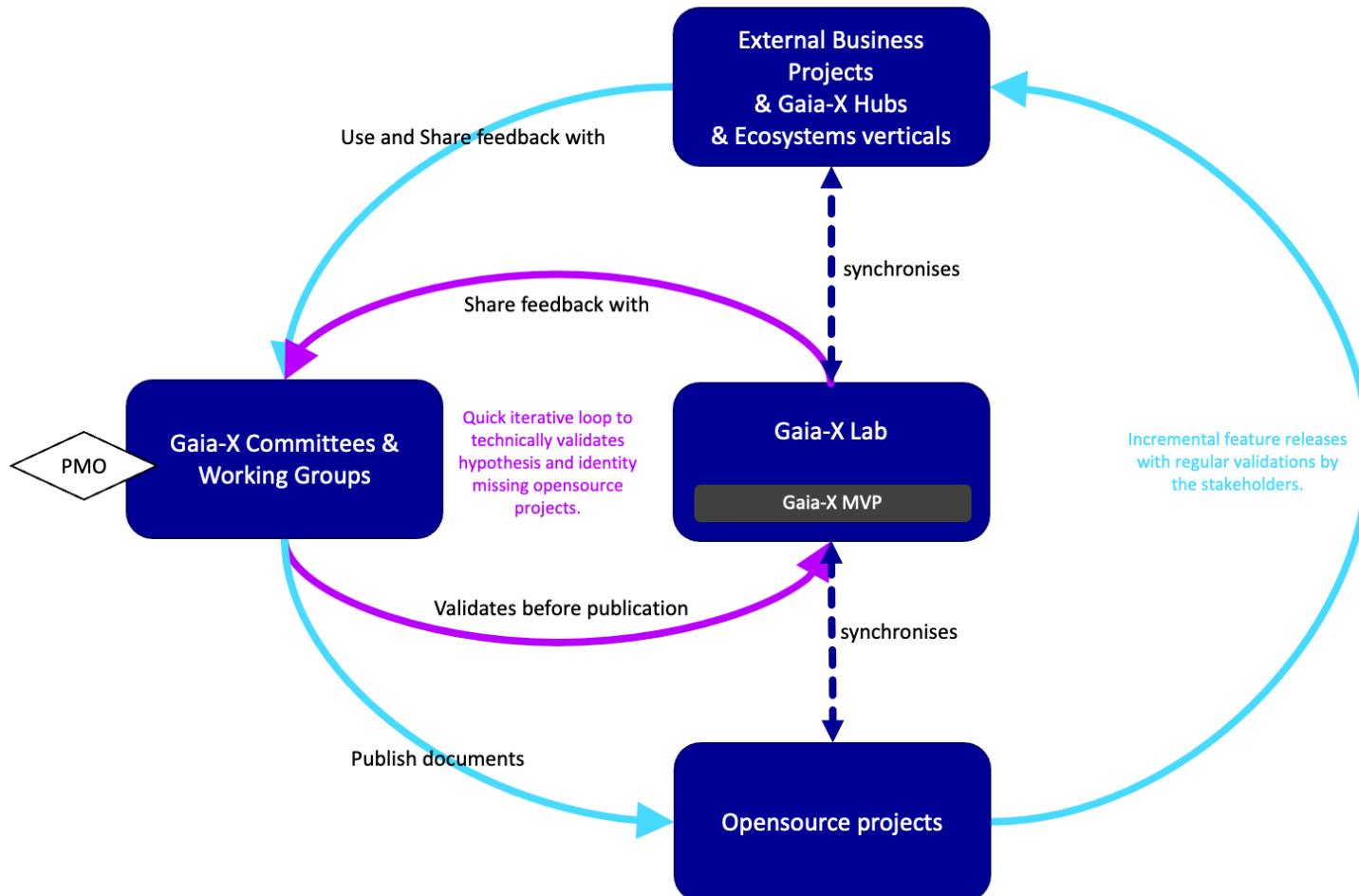


- ▶ The Gaia-X Lab is a **development team** under the Gaia-X CTO office.
- ▶ The Gaia-X Lab team writes prototypes to **technically validate functional and technical hypothesis** made by the Gaia-X Working Groups, when working on the Gaia-X specifications.
- ▶ The team **demonstrates working prototypes**.
- ▶ The Lab **accelerates the development** of external open-source software (OSS) project.
- ▶ The Lab **identifies missing functional components** in the Gaia-X Specifications.



Guided Deployment of Trust Components

Gaia-X Lab



<https://gitlab.com/gaia-x/lab>

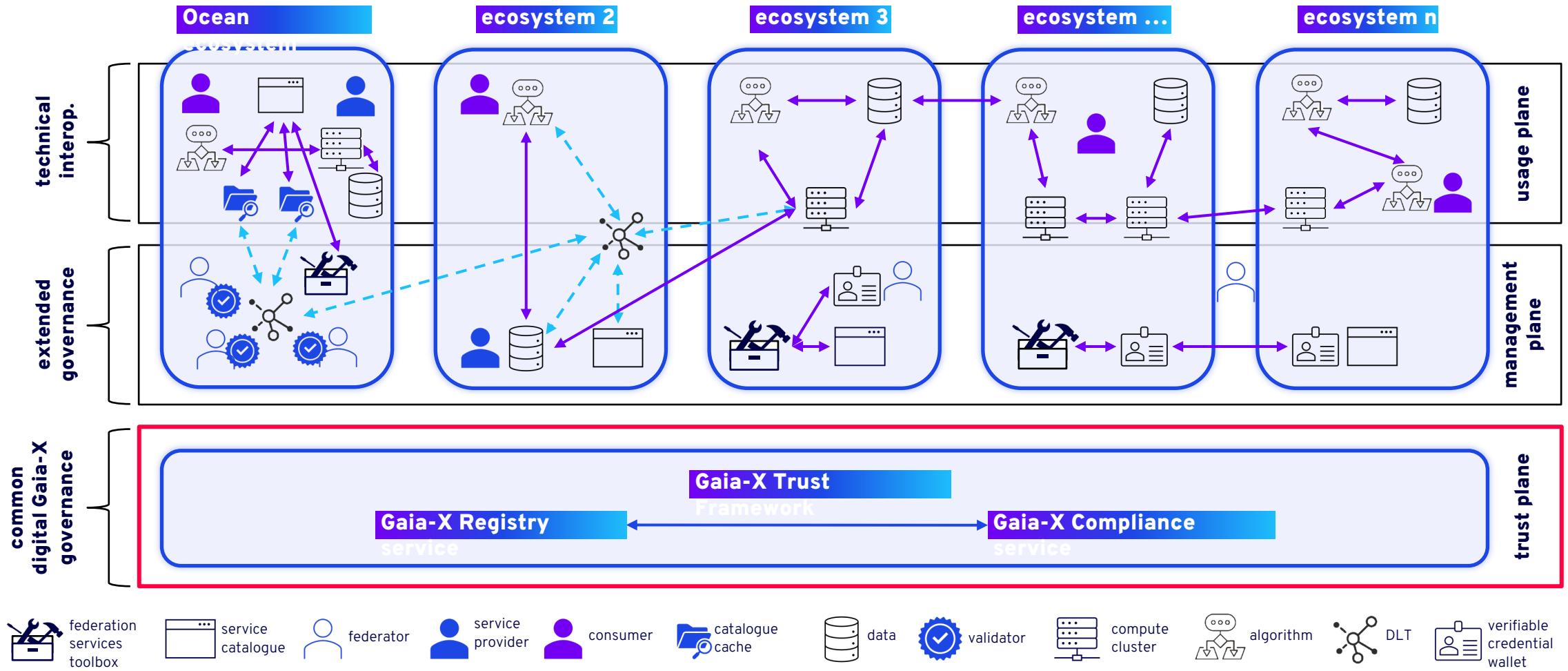
The screenshot shows the [Gaia-X Lab](https://gitlab.com/gaia-x/lab) group on GitLab. Key statistics are displayed:

- Recent activity: Last 90 days
- Merge Requests created: 75
- Issues created: 87
- Members added: 6

The interface includes a sidebar for Subgroups and projects, a shared projects section, and an Archived projects section. The main area shows a backlog of issues categorized under LAB Sprint 5, LAB Backlog, and LAB Compliance V1.0. Each issue has a detailed description and a list of assignees.

<https://gaia-x.atlassian.net/jira/>

Gaia-X Governance



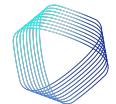
Guided Deployment of Trust Components

SSI Frameworks

Name	Website	Repository	Open License	Type / Components	TRL Estimate	DID Methods	OPEN SOURCE	Languages	Cypher support	OIDC/SIOPv2 , DIDCOMM	Layer 1	Comments
walt.id	walt.id	github.com/walt-id/walt-id	APL2	SSI Kit (+)	4-5	Web, Key, EBSI	✓	Kotlin (-), Vue.js (+), Typescript (+)	RSA, ED25519, X25519, SECP256K1	OIDC/SIOP	DLT, WEB	Development ongoing, DID:WEB and DID:ETHR Capable of DID:EBSI, currently not in focus due to governance issues. Very close to ESSIF, eID
EBSI	EBSI Documentation	github.com/ebsi/ebsi	EUPL 1.2	Network EVM POA	5-6	DID:EBSI (ETHR)	✓	Solidity			DLT ETH	Is now considered an option for Gaia-X, onboarding could be done via IBSI (Italy).
IDUnion	IDUnion	github.com/IDUnion/IDUnion	APL2, CC-BY-4.0	Issuer, Verifier, DID-Method	4-5	DID:IDUNION, DID:SOVRIN	✓	Python (+), Javascript (+), Rust, Shell (+)	?		DLT Hyperledger	Potential baselayer with SpheriX and other Hyperledger Wallets
sovrin network	sovrin network	github.com/sovrin-foundation/sovrin-network	APL2	Network Hyperledger	5-7	did:indy did:sovrin	✓	Python, Rust, Javascript	most	?	DLT Hyperledger	Potential baselayer with SpheriX and other Hyperledger Wallets
Lissi Wallet	Lissi Wallet		?	Wallet	?	?	✗	?	?	?	DLT Hyperledger	likely to be excluded due to missing open-source components Can be used with IDUnion
esatus Wallet	esatus Wallet	github.com/esatus/Wallet	APL2	Wallet	?	?	✗	C#, Java (+), Rust	?	?	DLT Hyperledger	likely to be excluded due to missing open-source components Can be used with IDUnion
LACChain	LACChain	github.com/LACChain/LACChain	APL2, ?	Network, Issuer, Verifier, Kit?	7-9	DID:LACC	✓	Javascript, Shell, Go	?	?	DLT Hyperledger Besu	
ETHR DID Veramo Core	ETHR DID Veramo Core	github.com/veramo/veramo-did	APL2	Issuer, Verifier	3-5?	DID:ETHR multi-network DID	✓	Solidity, Typescript			DLT ETH WEB	Widely used and open-source. Features issuer and uni-resolver.
DIDKit	DIDKit	github.com/didkit/didkit	APL2	Issuer, Verifier, Wallet, SSI Kit?	4-5	multinetwork	✓	Rust (-), Dart (-), Javascript (+)			WEB, KEY, ETH, ...	Features uni-resolver and more components.
Alastria	Alastria	github.com/alastria/ssi-kit	APL2, MIT	Smart Contracts SSI Kit	3-4?	?	✓	Javascript, Typescript, Solidity, Shell	?		DLT ETH	
Helix	Helix		✗	Smart Contracts SSI Kit	9	?	✗	?	most	✓	DLT ETH	likely to be excluded due to missing open-source components
Talao	Talao	github.com/talao-project/talao	APL2, MIT	Mobile Wallet	3-4	?	✓	Javascript, Shell, Dart, Python			DLT Tezos, + ?	
DIF	DIF	github.com/dif-project/dif	APL2	SSI Kit?	?	DID:GITHUB, ?	✓	Typescript, Javascript, Java, Python				
Trinsic	Trinsic	github.com/trinsic-id/trinsic	APL2, MIT	SSI Kit	3-5?		✗	C#, Javascript, Rust, Powershell				
IMAX	IMAX	github.com/maximilian-koenig/imax	?	SSI Kit Smart Contracts Cardano	2-3	did:imax	✗	Haskell (-)	most	✓	DLT Cardano	likely to be excluded due to missing open-source components and very exotic specs
Sphereon	Sphereon	github.com/sphereon/sphereon-blockchain	APL2, others	SSI Kit EVM-compatible	4-5	DID:BTCT DID:WEB	✓	Typescript, Javascript, Java, Shell		✓	DLT	
Procivis	Procivis	github.com/procivis/procivis	APL2, MIT	not SSI KIT, but rather SDK/components	4-6	?	✗	Javascript, Typescript, Java, Python				
jolocom	jolocom	github.com/jolocom/jolocom	APL2	SSI KIT Mobile Wallet	3-4?	jolocom, web	✓	Typescript	?	✗		
Mattr	Mattr	github.com/mattr-project/mattr	?	Mobile Wallet SSI Kit	3-5?	web, key, ledger-based	✗	Typescript, Javascript, C#, Rust		✓		
Microsoft ION (part of DIF!)	Microsoft ION (part of DIF!)	github.com/dif-project/ion	APL2	Issuer, Verifier	4-5?	Web	✓	Javascript, Typescript, Shell			WEB, DLT BTC	
Luxwallet (w. Procivis)	Luxwallet (w. Procivis)	github.com/procivis/luxwallet	GPL3, MIT	Wallet	3-4?	DLT-based	✗	C++, C+, Javascript, Python				

Comparison:

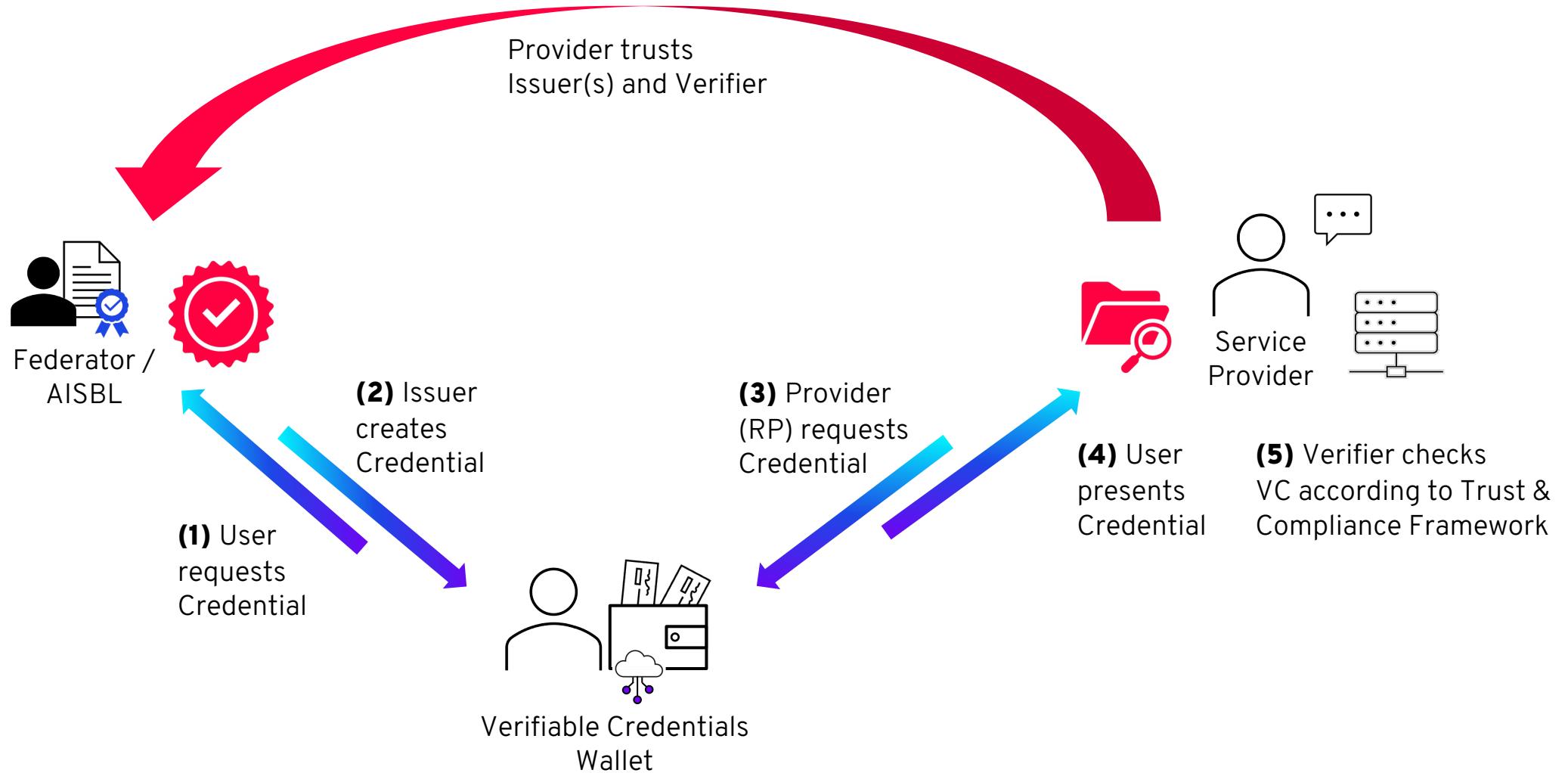
https://miro.com/app/board/o9J_ItahjnY=/



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Triangle of Trust



Guided Deployment of Trust Components

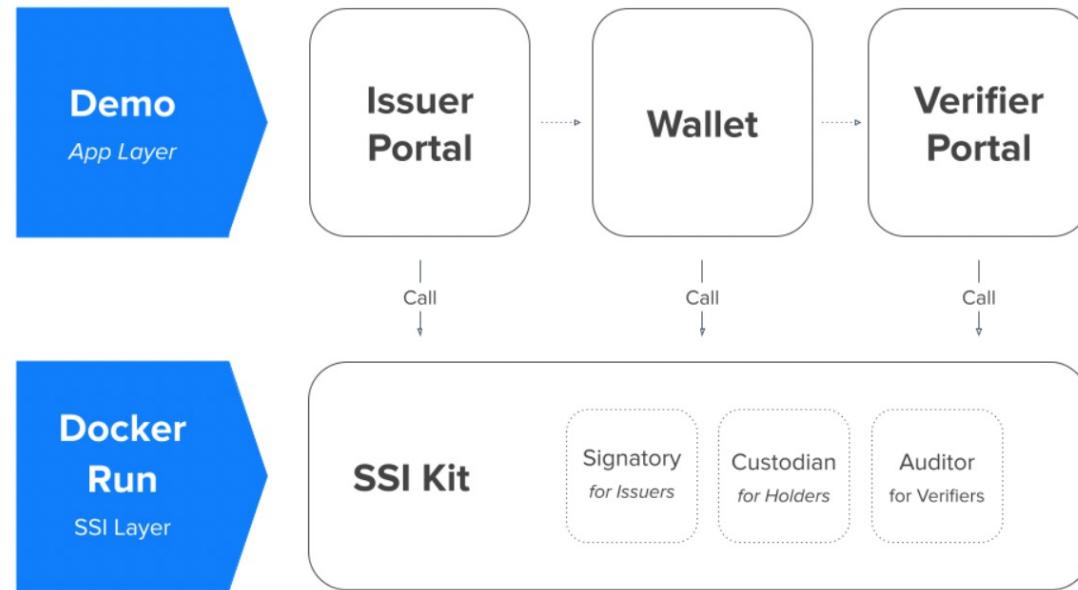


Walt.id SSI KIT

```

59  --
60  kind: Deployment
61  apiVersion: apps/v1
62  metadata:
63    name: gaiax-portal-backend
64  spec:
65    replicas: 1
66    selector:
67      matchLabels:
68        app: gaiax-portal-backend
69    template:
70      labels:
71        app: gaiax-portal-backend
72      annotations:
73        deployment/id: "_DEFAULT_DEPLOYMENT_"
74    spec:
75      containers:
76        - name: gaiax-portal-backend
77          image: waltid/gaiax-portal-backend:_VERSION_TAG_
78          volumeMounts:
79            - name: wallet-config
80              mountPath: "/waltid/wallet/config"
81              readOnly: true
82            - mountPath: "/waltid/wallet/data/"
83              name: wallet-data
84          env:
85            - name: WALLET_DATA_ROOT
86              value: "/waltid/wallet"
87            - name: WALTID_WALLET_BACKEND_BIND_ADDRESS
88              value: "0.0.0.0"
89            - name: WALTID_WALLET_AUTH_SECRET
90              value: "0b218176-d8f3-4a58-83db-fd328def3c0f"
91        ports:
92          - containerPort: 8080
93            name: http-api
94
95  apiVersion: v1
96  kind: ConfigMap
97  metadata:
98    name: wallet-config
99  data:
100   issuerConfig.json: |
101     {
102       "issuerUrl": "https://issuer.walt.id",
103       "issuerApUrl": "https://issuer.walt.id/issuer-api",
104       "issuerClientName": "Walt.id Issuer Portal",
105       "wallets": [
106         "walt.id",
107         "walt.id",
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1258         "walt.id",
1259         "walt.id",
1260         "walt.id"
1261     }
1262
1263   verifierConfig.json: |
1264     {
1265       "verifierUrl": "https://gaiax-portal.walt.id",
1266       "verifierApUrl": "https://gaiax-portal.walt.id/verify"
1267       "wallets": [
1
```

Custom Configs: <https://gitlab.com/gaiax-x/lab/compliance/ssi-backends/waltid-ssi-backend/-/blob/master/k8s/deployment-gaiax.yaml>



Documentation Wallet: <https://doc.walt.id/v/web-wallet/getting-started/quick-start>

Documentation SSI Kit: <https://docs.walt.id/ssikit/>

GitHub Repos: <https://github.com/walt-id>

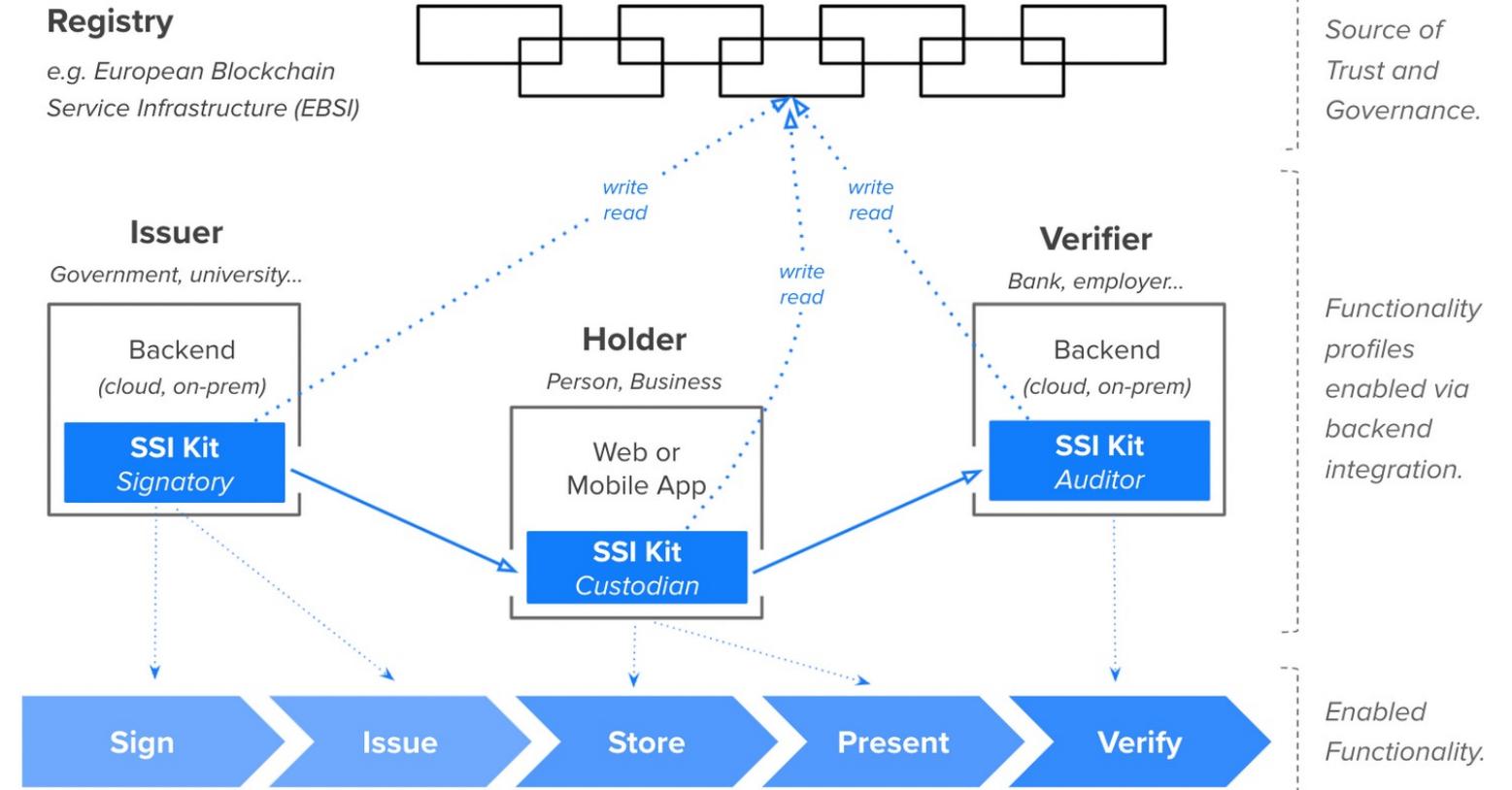
SSI backend: <https://github.com/walt-id/waltid-wallet-backend>

Walt.id SSI KIT

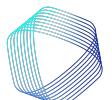


The core services are in the scope of:

- ▷ **Key Management** generation, import/export
- ▷ **Decentralized Identifier (DID)** operations (register, update, deactivate)
- ▷ **Verifiable Credential (VC)** operations (issue, present, verify)



Documentation: <https://docs.walt.id/ssikit/ssikit-concept.html#what-is-the-ssi-kit>



Onboarding Portal



Gaia-X Lab 0.8.3

Onboarding Portal

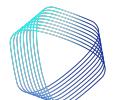
This web app demonstrates how SSI could be used to issue Gaia-X participation credentials in a way that is cryptographically secure, privacy-respecting, and machine-verifiable.

REGISTER CREDENTIAL

VERIFY CREDENTIAL



Demonstrator: <https://onboarding-portal.lab.gaia-x.eu/>
Repositories: <https://gaia-x.atlassian.net/browse/LAB>

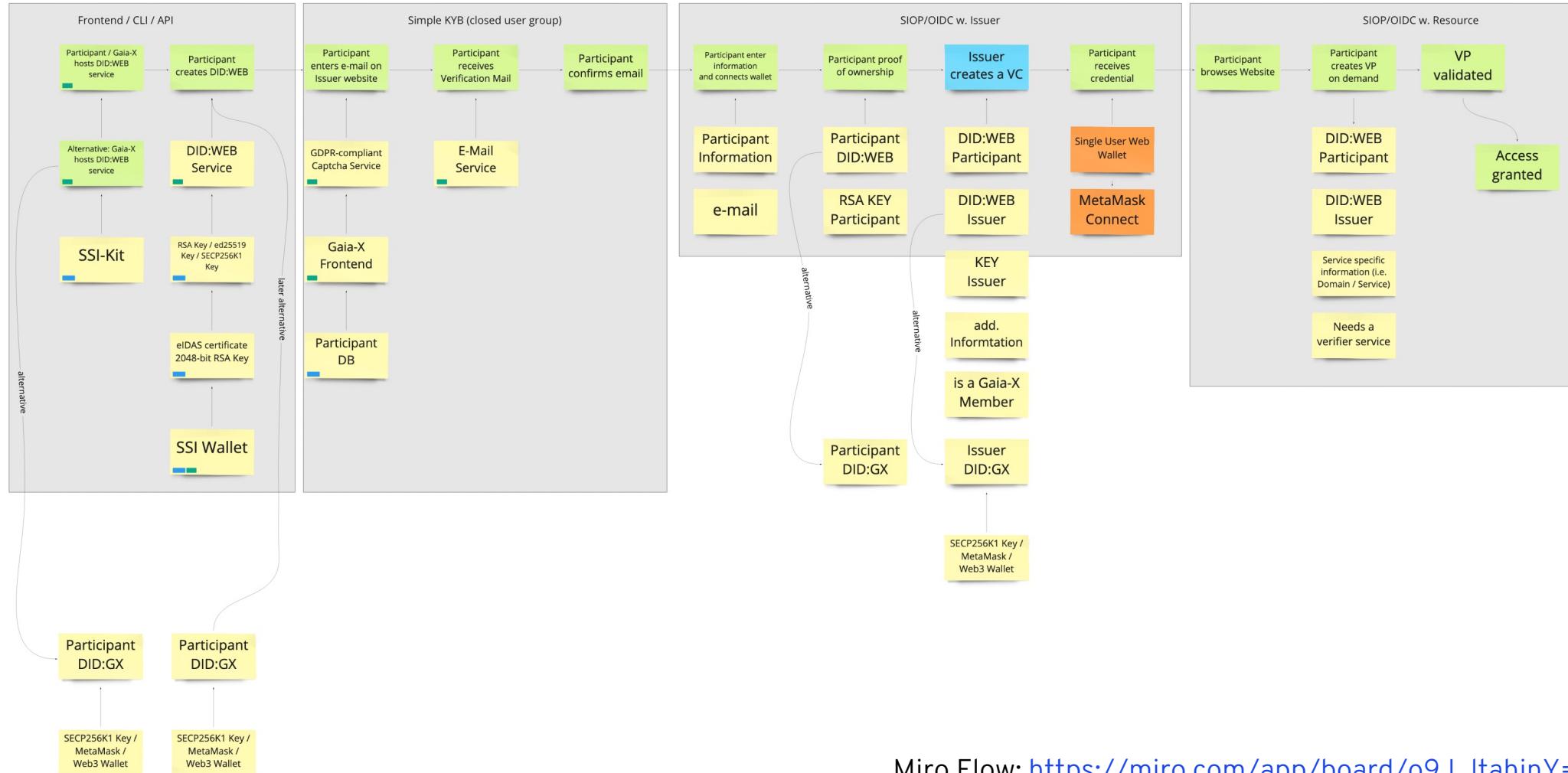


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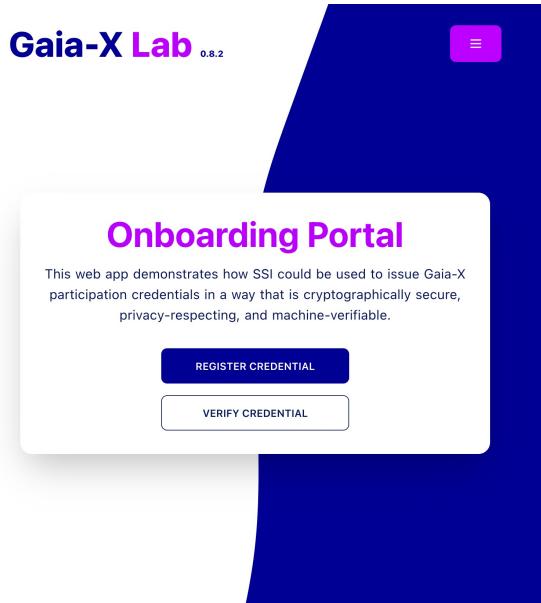
Guided Deployment of Trust Components

Onboarding Portal Flow

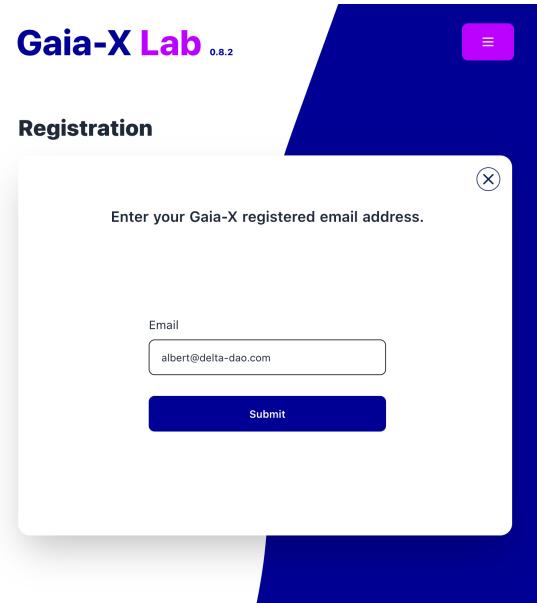


Miro Flow: https://miro.com/app/board/o9J_ItahjnY=/

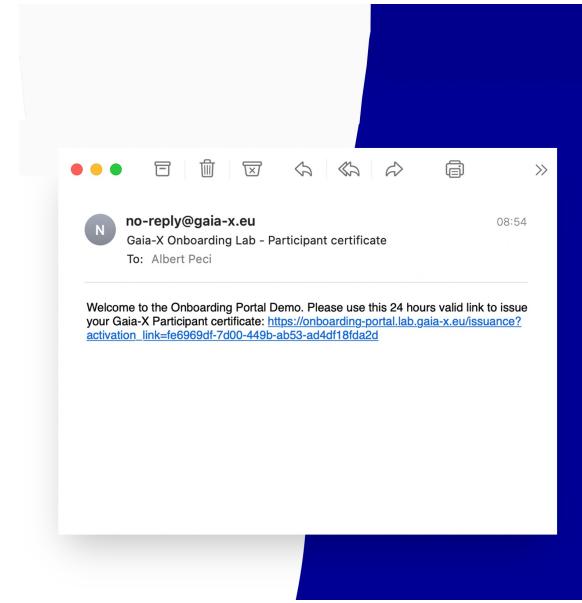
Onboarding Portal Demo 1/3



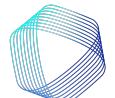
1. Visit the [Gaia-X Lab](#) Onboarding Portal and select Register Credential. This will start the onboarding flow.



2. Type your email that you also used to register on GitLab. If your email is not registered, you will not get an email and cannot issue a Participant Credential. Click on Submit.



3. Check your emails. You will receive a registration link that is valid for 24 hours. Click on the link to initiate the issuance of your credential.

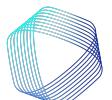


Onboarding Portal Demo 2/3

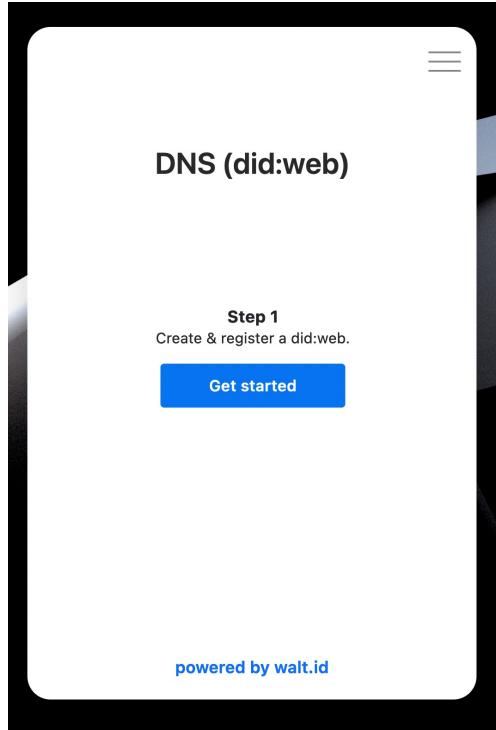


The image contains five mobile device screenshots illustrating the onboarding process. 1. The first screenshot shows the login screen with fields for Email and Password, a blue 'Login' button, and an orange 'MetaMask' button. It also includes links for 'Sign up' and 'Forgot password?' and small flags for Germany and France. 2. The second screenshot shows the 'My credentials' page with a search bar and a blue '+ Request Credential' button at the bottom. 3. The third screenshot displays a dark blue modal menu with options: 'Credentials', 'Connections', 'Settings' (which is underlined), and 'Logout'. 4. The fourth screenshot shows the 'Settings' page with sections for 'Account', 'Data', and 'Ecosystems'. Under 'Ecosystems', there are three options: 'EBSI/ESSIF' (selected), 'DNS' (disabled), and 'Key' (disabled). 5. The fifth screenshot shows the 'Ecosystems' selection page with three 'Add' buttons for 'EBSI/ESSIF', 'DNS', and 'Key'. The 'DNS' button is highlighted with a blue border, and a 'Selected' badge is shown next to 'EBSI/ESSIF'. A 'Select Ecosystem' button is at the bottom.

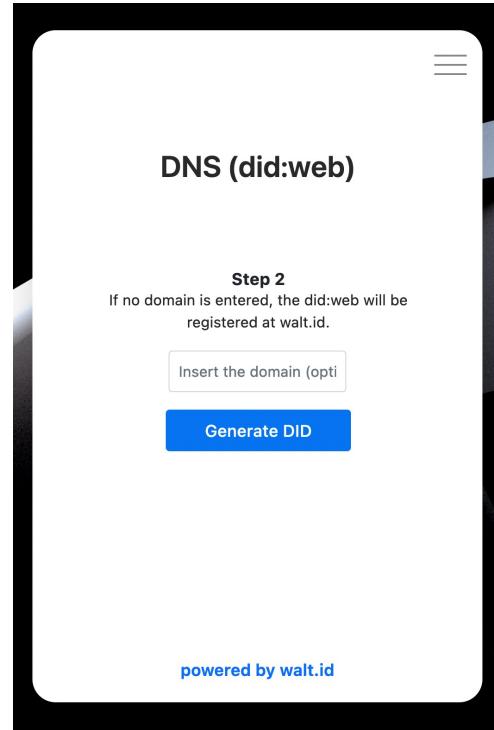
1. Visit the [Gaia-X Lab Wallet](#) and type a new email and password combination that you can remember.
2. If you used a new account, an empty credential page will be shown. Click on the hamburger menu in the top right corner.
3. The menu opens. Select Settings to setup your account.
4. There are different aspects that you can manage in your wallet. We are interested in the ecosystem setting for now.
5. We want to use did:web, so we click on Add for the DNS option.



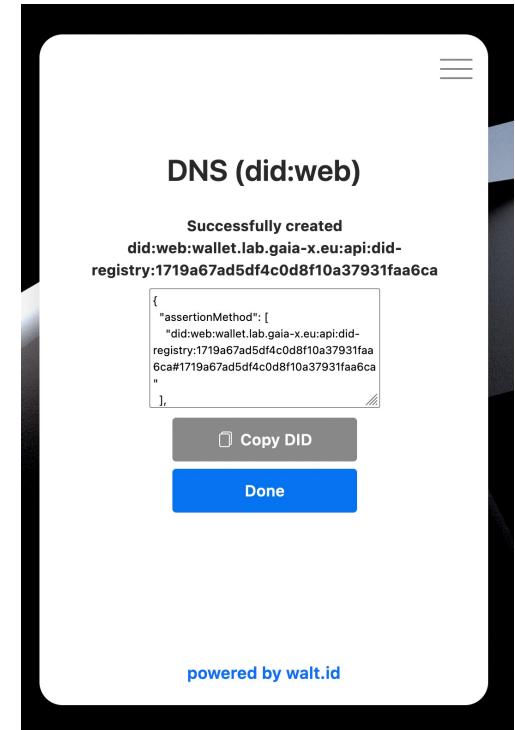
Onboarding Portal Demo 3/3



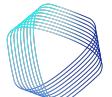
1. The Setup Wizard begins. Click on Get Started and follow the steps.



2. You can now enter a domain that you control. If you do not enter a domain a default domain of the demonstrator will be used. Click on Generated DID.



3. Your did:web was successfully created. You can now copy the DID to inspect it in detail, use it somewhere else or just close the window.



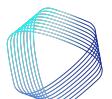
Repositories and documentation

Repositories

- Demonstration Portal: <https://gitlab.com/gaia-x/lab/compliance/gx-issuer-portal>
- Demonstration Verifiable Credential Issuer: <https://gitlab.com/gaia-x/lab/compliance/ssi-backends>
- Demonstration Verifiable Credential Verifier: <https://gitlab.com/gaia-x/lab/compliance/ssi-backends>
- Demonstration Cloud Wallet: <https://gitlab.com/gaia-x/lab/compliance/ssi-backends>
- SSI backend: <https://github.com/walt-id/waltid-wallet-backend>
- Demonstration Verifiable Credential Library: <https://github.com/walt-id/waltid-ssikit-vclib/tree/master/src/main/kotlin/id/walt/vclib/credentials/gaiax>

Documentation

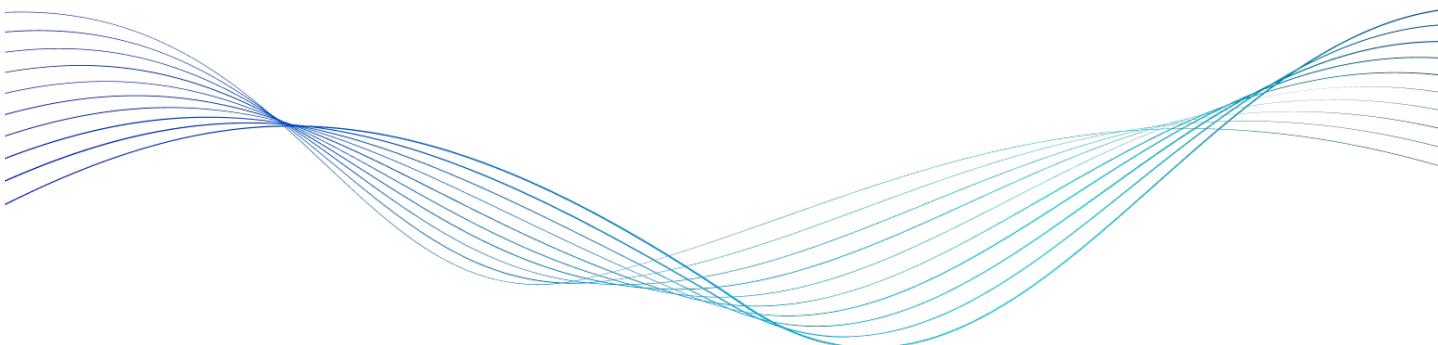
- Gaia-X Trust Framework: <https://gaia-x.gitlab.io/policy-rules-committee/trust-framework/>
- Documentation Wallet: <https://doc.walt.id/v/web-wallet/getting-started/quick-start>
- Walt.id SSI KIT Documentation: <https://docs.walt.id/ssikit/>





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