

Building with TWIN

2nd Webinar

September 24th 2025

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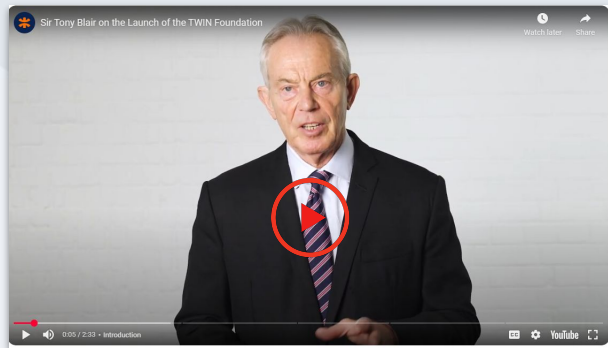


Agenda

- 1 Intro & TWIN Initiative Updates
- 2 TWIN in Depth Recap
- 3 Educational Case of Study
- 4 TWIN Hands-On
- 5 What's Next?

Intro & TWIN Updates

TWIN Foundation



Oversee the open source development, drive public partnerships and engage governments.

Learn about the initiative:

www.twin.org

Learn about the technology:

www.twindex.org

TWIN Ecosystem

Trade & Logistics Information Pipeline

Since 2020, TradeMark Africa and the IOTA Foundation have deployed TWIN technology in East Africa through TLIP, connecting Kenyan exporters, logistics firms, and government agencies. Integrated with the Kenya Revenue Authority, KenTrade, the Kenyan Single Window System, TLIP streamlines digital trade data exchange, ensuring secure and transparent access.

Powered by TWIN

Faster, Error-Free Trade

TWIN enables TLIP to accelerate cross-border goods movement and eliminate errors through touch-free document and data sharing.

Seamless Integration

Open, interoperable interfaces connect government agencies with private sector platforms for end-to-end trade digitalization.

Real-Time Access & Accuracy

Traders receive critical trade documents instantly, while authorities make informed decisions with consistent, reliable data.



Created in
partnership with



TWIN Ecosystem

A growing ecosystem of industry consortiums powered by TWIN



UK Border Trade Demonstrators 2

TWIN was trialed by UK government departments and border authorities under the Ecosystem of Trust and Border Trade Demonstrators, proving its ability to streamline data capture across various goods and enhance border efficiency.

Virtual Watch Tower

The Virtual Watch Tower is a community-driven network that connects individual monitoring hubs to enhance visibility across supply chains. It leverages TWIN's digital infrastructure to enable seamless data exchange, transparency, and collaboration in global trade.

MISSION

The EU-funded MISSION (Maritime Just in Time Optimization) project uses TWIN to optimize maritime traffic by reducing port congestion and fuel consumption. TWIN facilitates connectivity with existing systems while ensuring security and auditability of shared maritime data.

RESULD

The Responsible Supply Chains and Logistics Due Diligence (RESULD) consortium digitizes plant-based products trade from Kenya to the Port of Rotterdam, using TWIN to enable collaboration across systems and establish an end-to-end data pipeline, ensuring traceability and trust.

TWIN & GLEIF Partnership



Key points

- **GLEIF:** Global Legal Entity Identifier Foundation
- **LEIs:** Legal Entity Identifiers
- **Directory:** open data access for regulators, business and public
- **Transparency:** verify who is who
- **vLEI:** Verified LEI

The screenshot displays the TWIN platform interface for the ASDA UK organisation. The main profile page includes contact information, registration details (VLEI, EORI, Companies House CRN), and a list of documents. A 'Certificate Information' modal is open, showing details for a HACCP certificate issued to ASDA UK, verified by PolskiDrob, and valid from 24-10-2024 to 24-10-2025. The interface also shows the user 'Kate Johnson' as an administrator and a 'Viewing as Administrator' button at the bottom.

TWIN ASDA UK Organisation

ASDA UK
Grocery Retailer

Contact

- Asda.com
- contact@asda.com
- +44 800 952 0101

Registrations

- VLEI**
849380VC89104UFA35
- EORI**
GB123456789000
- Companies House CRN**
AB123456

Documents

- SOS**
BRCGS Food Safety
VERIFIED
- Bio-Farm Organisation**
EU Organic Certification
DOCUMENT PROVIDED
- SOS**
BRCGS Food Safety
DOCUMENT PROVIDED
- Ferma Droblu Prokop**
HACCP
VERIFIED

Team

- Mark Brighton**
Manager
- Bonnie Green**
Trader
- Kate Johnson**
Administrator

Certificate Information

HACCP

Issued to: ASDA UK

Auditor: PolskiDrob

Description: GFSI-recognised standard for certifying the safety for food production.

Valid from: 24-10-2024

Valid to: 24-10-2025

Kate Johnson
Admin

About

Settings

Preview your profile

Viewing as Administrator



TWIN Tech in depth (recap)

TWIN Architecture (Why)

Value Chain Ecosystems. Decentralization. Self-Sovereignty.



Transparent **rules** (governance) to participate in:

- Who are the trust anchors that can perform attestation
- Schemas, default policies, ...



A commoditized **software agent** that can expose the data / documents that want to be shared through a common **protocol**



Discovery of: Participants, the data they offer and the software agent that expose it (on the Internet)



Rights management: Policies that express which data is shared to whom and under which conditions



Authentication: Participants prove their identity and attributes without a priori knowledge among them



Verifiable data, as data is not in a central place, but directly controlled by each participant



Evolution not revolution → We want you to reuse your existing maturity level 2 assets and classic ones that were adopted years ago

Key Definitions

1

TWIN Ecosystem

A value / supply chain ecosystem composed of: the governance (rules) and infrastructure (software + hardware).

2

Participant

An actor that participates in a TWIN ecosystem → Identified by a DID. Roles: Operator, Provider, Consumer → Of Services.

3

Trust Anchor

Parties properly accredited to be trustworthy anchors to digitally sign statements or claims about an object.

4

Compliance Credential

A Verifiable Credential that attests that a Participant or Service is compliant with the rules defined by a TWIN Ecosystem.

5

TWIN Node

Software (Agent) that enables Participants to interact within a TWIN ecosystem.

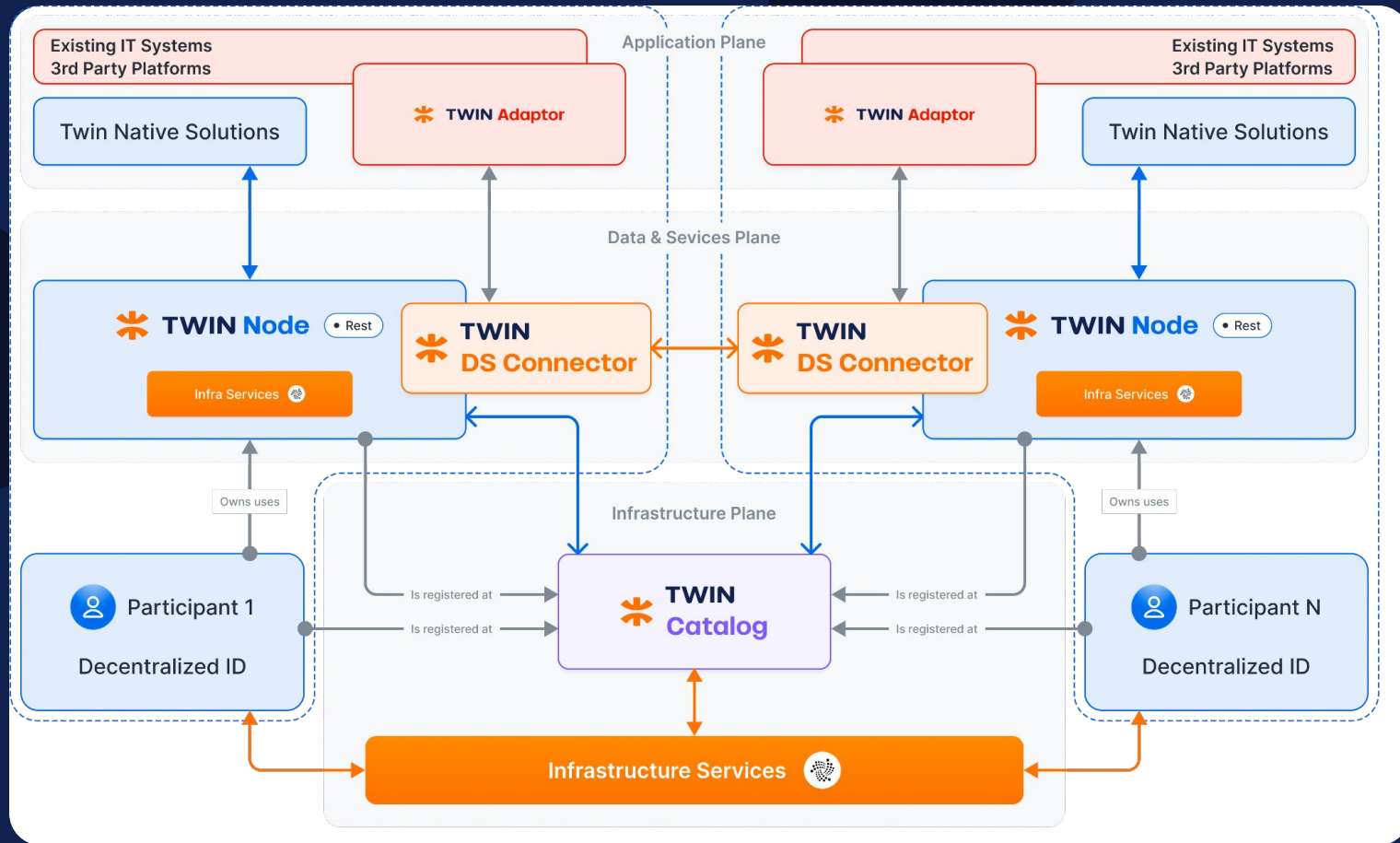
- DLT Node (IOTA, IPFS) \subseteq TWIN Node
- TWIN DS Connector \subseteq TWIN Node

6

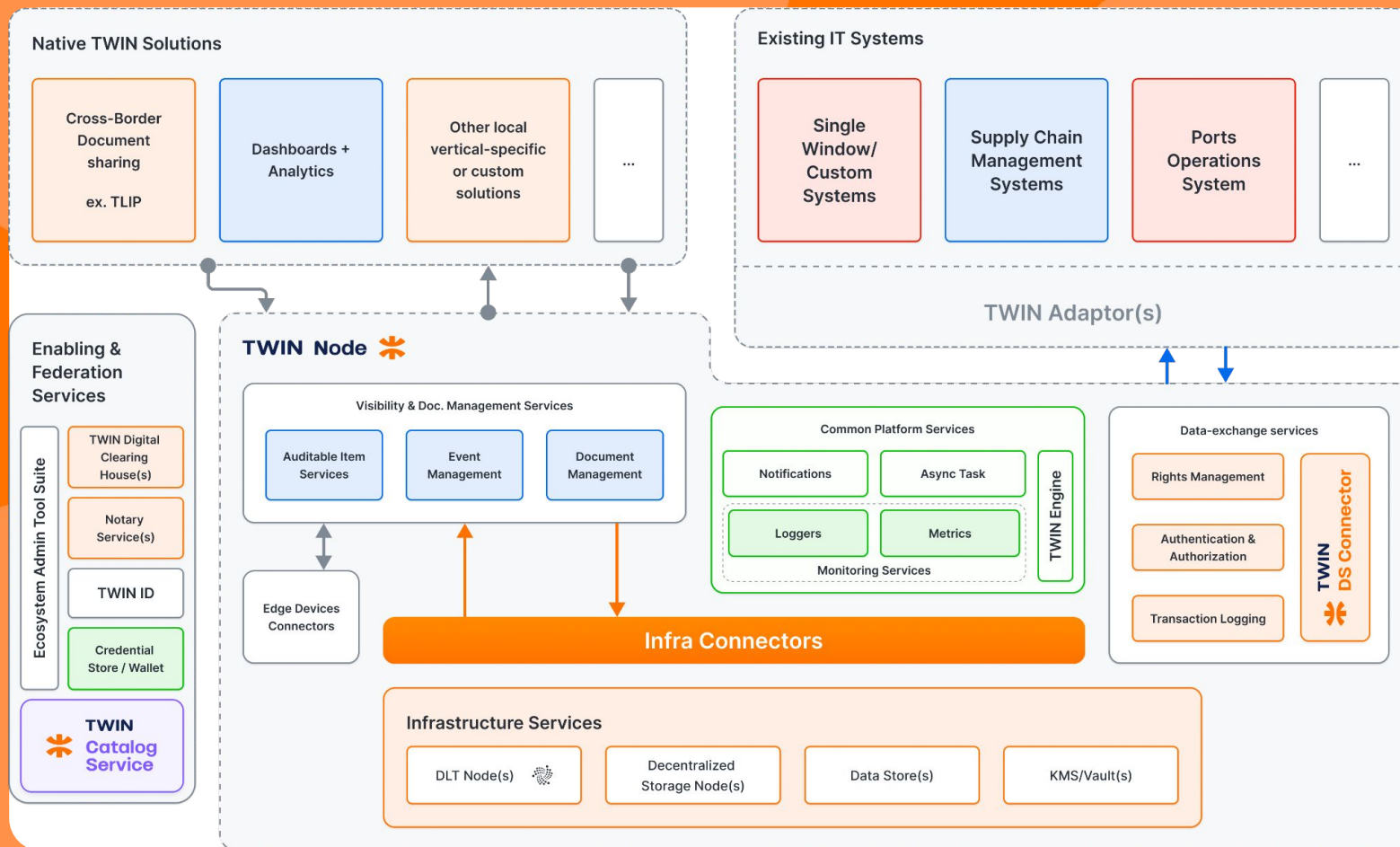
TWIN Data App

Self-contained, self-descriptive software package that can be distributed and deployed to extend the functionality of a TWIN Node.

High Level Architecture



Anatomy of a TWIN Node



Key Services and Frameworks

1

Decentralized Trust Framework

Attests participants' and Service attributes and enabling **seamless onboarding** and interaction without a priori knowledge.

2

Federation Services

Enable the clearance, publication and **discovery of participants** and the **services** they publish, allowing for federated decentralized interactions.

3

Visibility Services

Encompass **auditable** (through DLT connectors) **object representations** as a digital twin through its properties, relationships, business events (GS1 EPCIS 2.0) and related resources (e.g., associated documents or external data resources).

4

Document Management Services

Facilitate **document storage** (multi-version), document **resolution**, document **traceability** and **authenticity**, data extraction and document transformation, including multiple representation as per different industry standards (W3C VC, eInvoice, eBill of Lading, etc.).

5

Data Exchange Services

Facilitate data (or document) exchange among the different ecosystem participants. The main enabler on the "TWIN Node" side is the "**TWIN Dataspace Connector**" which publishes REST endpoints that allow participants to publish and subscribe to "**supply/value chain activity**" information.

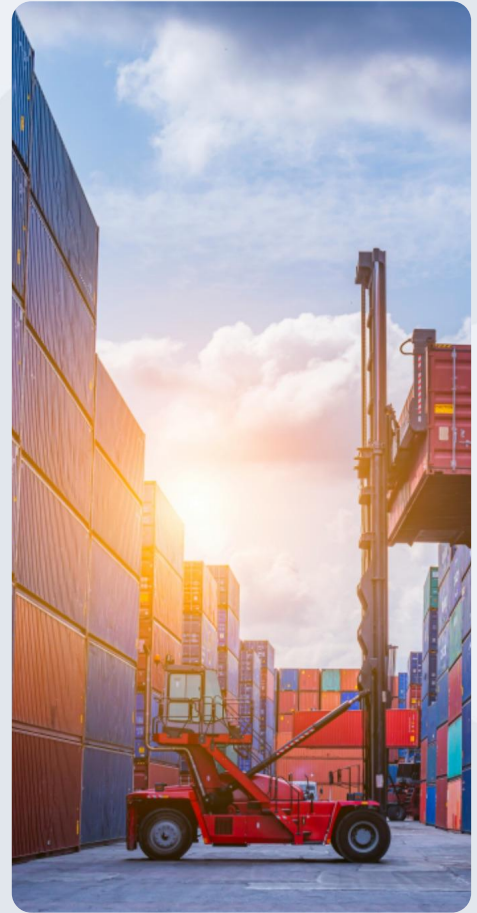
These services are **application-agnostic**, based on open standards (notably Linked Data Vocabularies from schema.org, GS1, and UN/CEFACT) and REST APIs.

The background features a dark navy blue central area with a white, four-pointed star-like shape. The points of the star extend into four larger, rounded triangular shapes: two are blue (top-left and top-right) and two are orange (bottom-left and bottom-right).

TWIN Key Use Cases

What Are the Key Use Cases for TWIN?

- **Document and data exchange** in international trade, e.g., providing advance information throughout a consignment journey, including digital trade certificates to pre-clear consignments, minimising the frequency of manual document and physical inspections, and facilitating **trade finance** instruments.
- **Environmental and sustainability compliance**, declarations, and assessments can be supported with traceable evidence – particularly in cases such as critical raw materials or capturing deforestation surveillance monitoring data – facilitating the issuance and exchange of **Digital Product Passports**.
- **Supply chain visibility and optimization**, by increasing transparency and enabling data exchange and data verifiability through the use of Data Spaces and immutable ledger entries.
- ...



TWIN as the Substrate of EU DPP Systems (I)

DPP Challenge	CEN/CENELEC Standard	TWIN Asset	Comment
Unique identification	prEN 18219	Auditable Item Graph <i>(complemented with a Digital Link resolver)</i>	AIG manages the digital twin associated to each product uniquely identified. A TWIN-based DPP solution needs to also deploy a DL resolver
Data Carriers	prEN 18220	Edge Device Connectors	To bridge the physical world with TWIN
access rights management, information system security, and business confidentiality	prEN 18239	Rights Management components.	Through W3C ODRL policies businesses can keep confidentiality in a flexible and extensible manner.
System interoperability	prEN 18223	Linked Data native support	TWIN facilitates semantic interoperability and compliance with sector-specific regulations

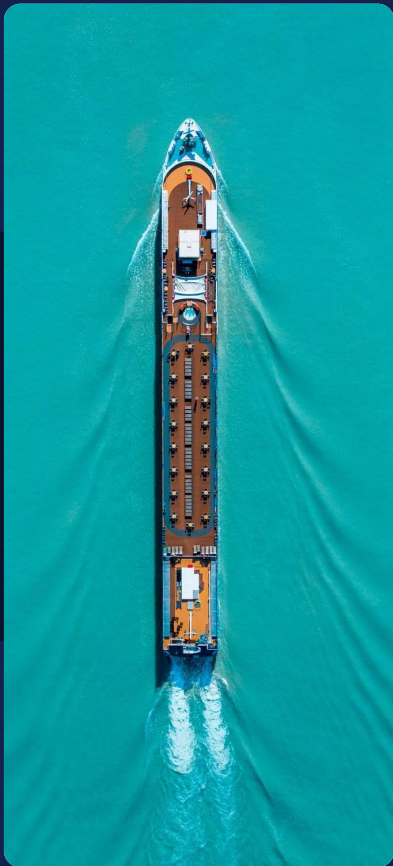
TWIN as the Substrate of DPP Systems (II)

DPP Challenge	CEN/CENELEC Standard	TWIN Asset	Comment
Data exchange protocols	prEN 18216	Data Space Connector. OID4VP for authn.	DPP actors can exchange data through a RESTful API using JSON-LD. Common authentication mechanisms based on OID4VP and IOTA.
data storage, archiving, and data persistence	prEN 18221	AIG, Document Management components Data store / object store connectors	Maximum flexibility supporting multiple models on-premise and public cloud. Extensibility. TWIN to support DPP backup services.
Data authentication, reliability and integrity	prEN 18246	Data integrity proofs based on IOTA. IOTA Identity. W3C VCs.	W3C Digital Identity standards + unique features of IOTA concerning immutability, traceability and auditability
APIs for the product passport lifecycle management and searchability	prEN 18222	TWIN Data Apps TWIN Engine	A TWIN Data App can be used to implement the DPP API on top of the AIG and document management components



Architecture Zoom-In: Data Exchange

Key Definitions - Data Exchange



1

TWIN Catalogue

A Federation Service that realizes a catalogue of compliant Participants and the resources they offer to ecosystems.

2

Data Resource

A collection of data of interest to ecosystem participants and available for access or download in one or more representations (or aggregations). It might be the subject of ODRL Policies.

3

Service Offering

A representation of a set of Data Resources which a Provider aggregates and exposes through an API endpoint. It might be the subject of ODRL Policies.

4

DS Connector

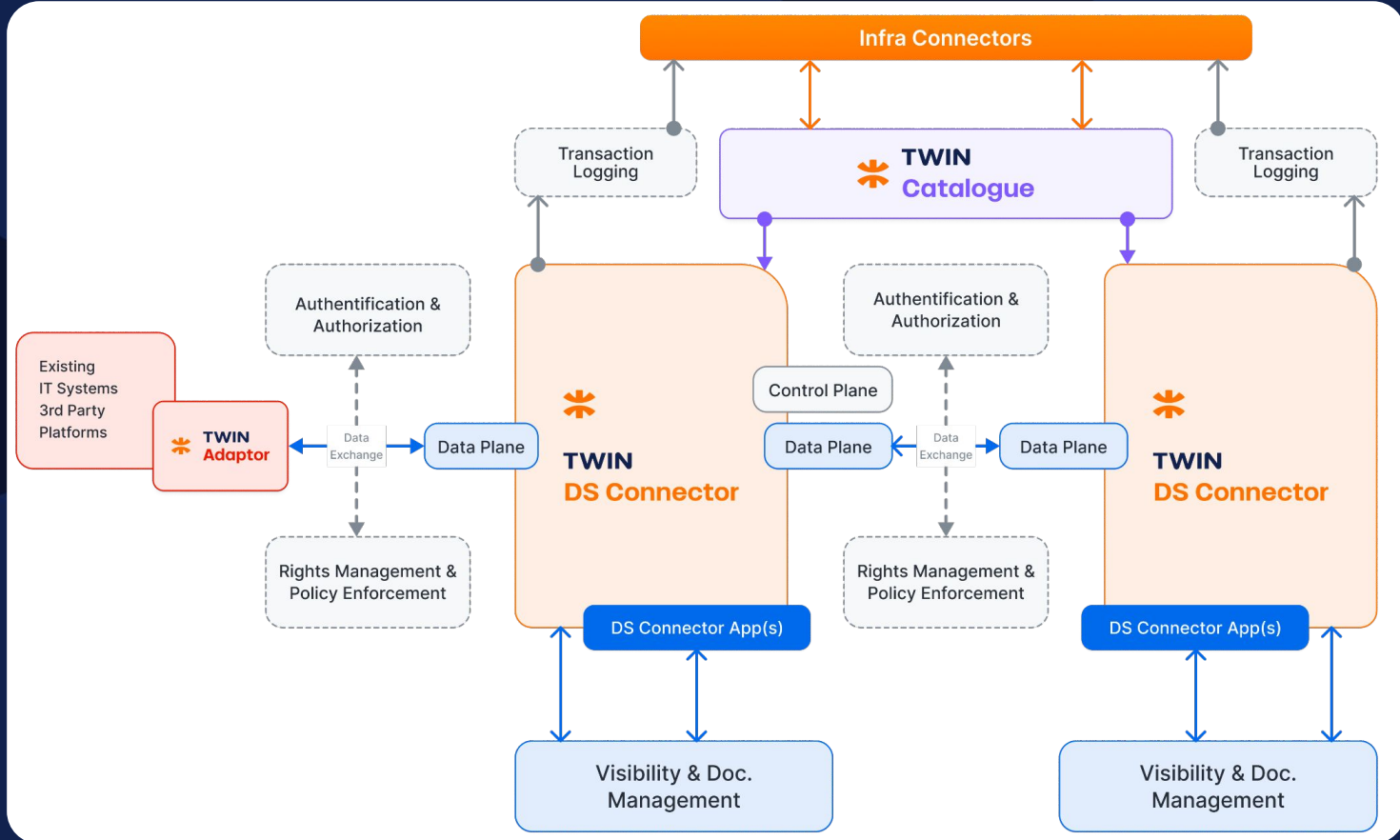
The technical core component of the Data Exchange Services of a TWIN Node. A TWIN Data Space Connector can be extended with one or more *TWIN Data Apps*, named **TWIN DS Connector Apps**.

5

ODRL Policy

A set of rules that define uses and re-uses of data that are conformant with existing regulations or to the constraints assigned by a Data Provider.

Data Exchange Architecture



TWIN Catalogue API Overview

POST **/federated-catalogue/participant-credentials** Present a Compliance Credential

POST **/federated-catalogue/service-offering-credentials** Present a Service Offering Credential

POST **/federated-catalogue/data-resource-credentials** Present a Data Resource Credential

POST **/federated-catalogue/data-space-connector-credentials** Present a Data Space Connector Credential

GET **/federated-catalogue/participants** Get a list of the participant entries

GET **/federated-catalogue/participants/{id}** Get a participant

GET **/federated-catalogue/service-offerings** Get a list of the service entries

GET **/federated-catalogue/service-offerings/{id}** Get a Service Offering entry

GET **/federated-catalogue/data-resources** Get a list of the data resource entries

GET **/federated-catalogue/data-resources/{id}** Get a Data Resource entry

GET **/federated-catalogue/data-space-connectors** Get a list of the Data Space connectors entries

GET **/federated-catalogue/data-space-connectors/{id}** Get a Data Space Connector entry

TWIN DS Connector API Overview

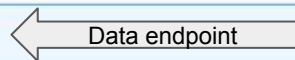
W3C Activity Stream + WebSocket for async

POST `/data-space-connector/notify` Notify of a new Activity

GET `/data-space-connector/activity-logs/{id}` Get a Activity Log Entry

*

GET `/data-space-connector/data` Data Endpoint



POST `/data-space-connector/subscriptions` Create a new Subscription

Development not started yet

*Data endpoint still in early stage. RFC under discussion

** IDSA protocol (negotiation) will be under scope in future releases

The background features a dark navy blue central area with four large, rounded triangular shapes pointing towards the center from the corners. The top-left and top-right shapes are blue, while the bottom-left and bottom-right shapes are orange. The text is centered in the dark blue area.

Educational Case of Study

3-Way Document Sharing

Educational Case Study: 3-Way Document Sharing



Chicken Exporter



Request Inspection

Issue Vet. Certificate



Veterinary Inspectorate

Share Data / Docs



Freight Forwarder

Present Vet. Certificate



Educational Case Study: 3-Way Document Sharing

- **Trade Lane:** Chicken meat supply chain. Poland → UK (simplification, EU transit not considered, etc.)
- **Regulation:** Export Consignments involving chicken must have a Veterinary Certificate issued by the exporting country authority, GIW in Poland.
- **Participants**
 - Biz - *Chicken meat exporter* from Poland
 - Gov - *Poland Veterinary Agency* (GIW)
 - Biz - *International Freight Forwarder*
 - Gov - *UK Food Standards Agency* (FSA)
- **Interactions**
 - **G2B** → GIW issues a veterinary certificate concerning a consignment sold by the chicken exporter
 - **B2B** → The *Chicken Exporter* shares consignment data and documents (incl. Vet Cert.) with the Freight Forwarder
 - **B2G** → The *Freight Forwarder* shares consignment data and Vet. Cert. with the *UK FSA*, that needs to check for compliance.

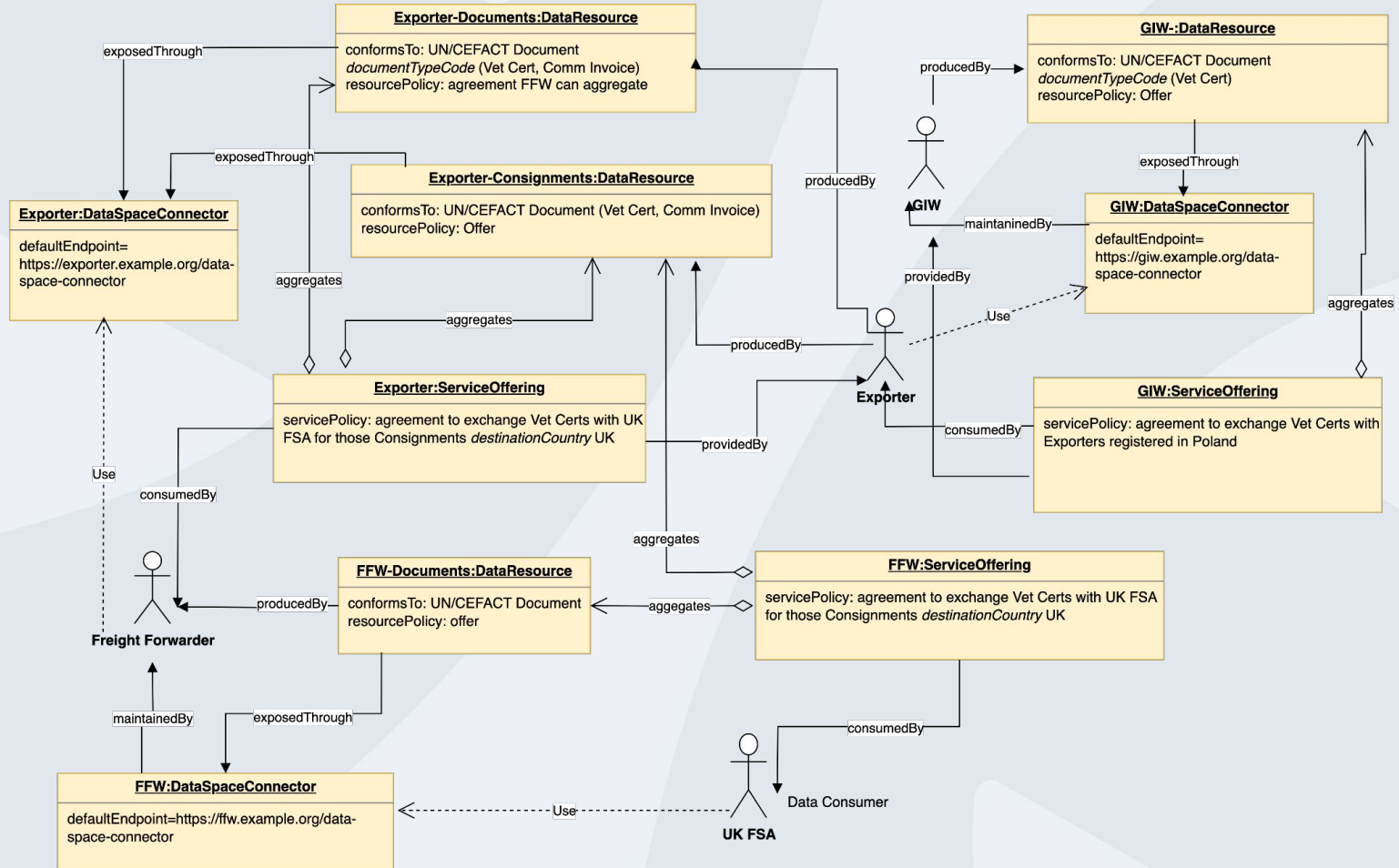


TWIN Modelling

Participant	Type	Data Resources	Service Offerings	Permissions
GIW	Gov (PL)	GIW-DR-1 Veterinary Certificate (UN/CEFACT Document)	Query by Cert. Id Aggregates: GIW-DR-1	Exporters registered in Poland
Chicken Exporter	Biz (PL)	CE-DR-1 Documents (<i>Commercial Invoice, Vet. Cert.</i>) CE-DR-2 <i>Consignments</i> (UN/CEFACT)	Query by <i>globalId</i> Aggregates: CE-DR-1, CE-DR-2	Freight Forwarder (customer-service provider agreement)
Freight Forwarder	Biz (UK hq)	FFW-DR-1 Documents (<i>docs shared by customers + other trade docs directly managed</i>)	Query by <i>globalId</i> Aggregates: FFW-DR-1, CE-DR-2	UK FSA Consignments <i>destinationCountry</i> UK, Vet. Cert. Documents
UK FSA	Gov (UK)	N/A in our case study	N/A in our case study	N/A

Note: Assumption is that all participants have been cleared and onboarded using Trust Service Providers / Trust Anchors

TWIN Modelling - UML View



JSON-LD Representation .- Examples (I)

Participant - Exporter

```
{
  "@context": [
    "https://w3id.org/gaia-x/development",
    {
      "isicV4": "https://schema.org/isicV4"
    }
  ],
  "type": "LegalPerson",
  "registrationNumber": {
    "type": "EORI",
    "eori": "PL527288386100000"
  },
  "legalAddress": {
    "type": "Address",
    "countryCode": "PL"
  },
  "legalName": "Kurczak Food",
  "isicV4": "1010"
}
```

Company's public legal Info

Data Space Connector - FFW

```
{
  "@context": [
    "https://w3id.org/gaia-x/development",
    "https://schema.twindev.org/federated-catalogue/types.jsonld"
  ],
  "id": "https://my-ds-connectors.example.org/ds-connector-ffw",
  "type": [
    "DataSpaceConnector",
    "DataExchangeComponent"
  ],
  "identity": "did:iota:testnet:0x10acb6ed80e914c074aa46fbc4b2ce94d74c860958d930f83df13f1027533fe",
  "defaultEndpoint": {
    "endpointURL": "http://localhost:22222/data-space-connector"
  },
  "subscriptionActivityEndpoint": {
    "endpointURL": "/subscriptions"
  },
  "pushActivityEndpoint": {
    "endpointURL": "/notify"
  },
  "pullDataEndpoint": {
    "endpointURL": "/data"
  },
  "offeredResource": {
    "https://twin.example.org/data-resources/exporter-consignments-817a9d": {
      "type": "DataResource",
      "name": "Consignments Resource"
    },
    "https://twin.example.org/data-resources/ffw-docs-2f246": {
      "type": "DataResource",
      "name": "Documents Resource"
    }
  },
  "maintainer": "did:iota:testnet:0xac534b750ac453d573a55954760af140f87358c7be9a18000a831c452c32f246"
}
```

endpoint information

JSON-LD Representation .- Examples (II)

Data Resource - GIW (Vet Cert.)

```
{
  "@context": [
    "https://w3id.org/gaia-x/development",
    {
      "conformsTo": "http://purl.org/dc/terms/conformsTo"
    }
  ],
  "id": "https://twin.example.org/data-resources/vet-cert-doc-6ce567",
  "type": "DataResource",
  "producedBy": {
    "id": "did:iota:testnet:0xfcf55894cab90504af7eaf38087add5f77791a89bd3ebbe76d9c2b1a6ce567",
    "type": "LegalPerson"
  },
  "exposedThrough": "https://my-ds-connectors.example.org/giw-ds-connector",
  "copyrightOwnedBy": {
    "id": "did:iota:testnet:0xfcf55894cab90504af7eaf38087add5f77791a89bd3ebbe76d9c2b1a6ce567",
    "type": "LegalPerson"
  },
  "license": "http://licenses.example.org/phyto-doc",
  "conformsTo": {
    "@context": "https://www.w3.org/ns/credentials/v2",
    "type": "JsonSchema",
    "jsonSchema": {
      "type": "object",
      "properties": {
        "type": {
          "type": {
            "type": "string",
            "const": "Document"
          }
        },
        "documentTypeCode": {
          "type": "string",
          "const": "unece:DocumentCodeList#853"
        }
      },
      "issuerParty": {
        "type": "string",
        "const": "did:iota:testnet:0xfcf55894cab90504af7eaf38087add5f77791a89bd3ebbe76d9c2b1a6ce567"
      }
    }
  },
  "resourcePolicy": {
    "@context": [
      "http://www.w3.org/ns/odrl.jsonld"
    ],
    "@type": "Offer",
    "uid": "http://example.com/policy-data-resource-giw:1010",
    "assigner": "did:iota:testnet:0xfcf55894cab90504af7eaf38087add5f77791a89bd3ebbe76d9c2b1a6ce567",
    "permission": [
      {
        "target": "https://twin.example.org/data-resources/vet-cert-doc-6ce567",
        "action": "aggregate"
      }
    ]
  },
  "name": "Veterinary Certificate Documents Data Resource"
}
```

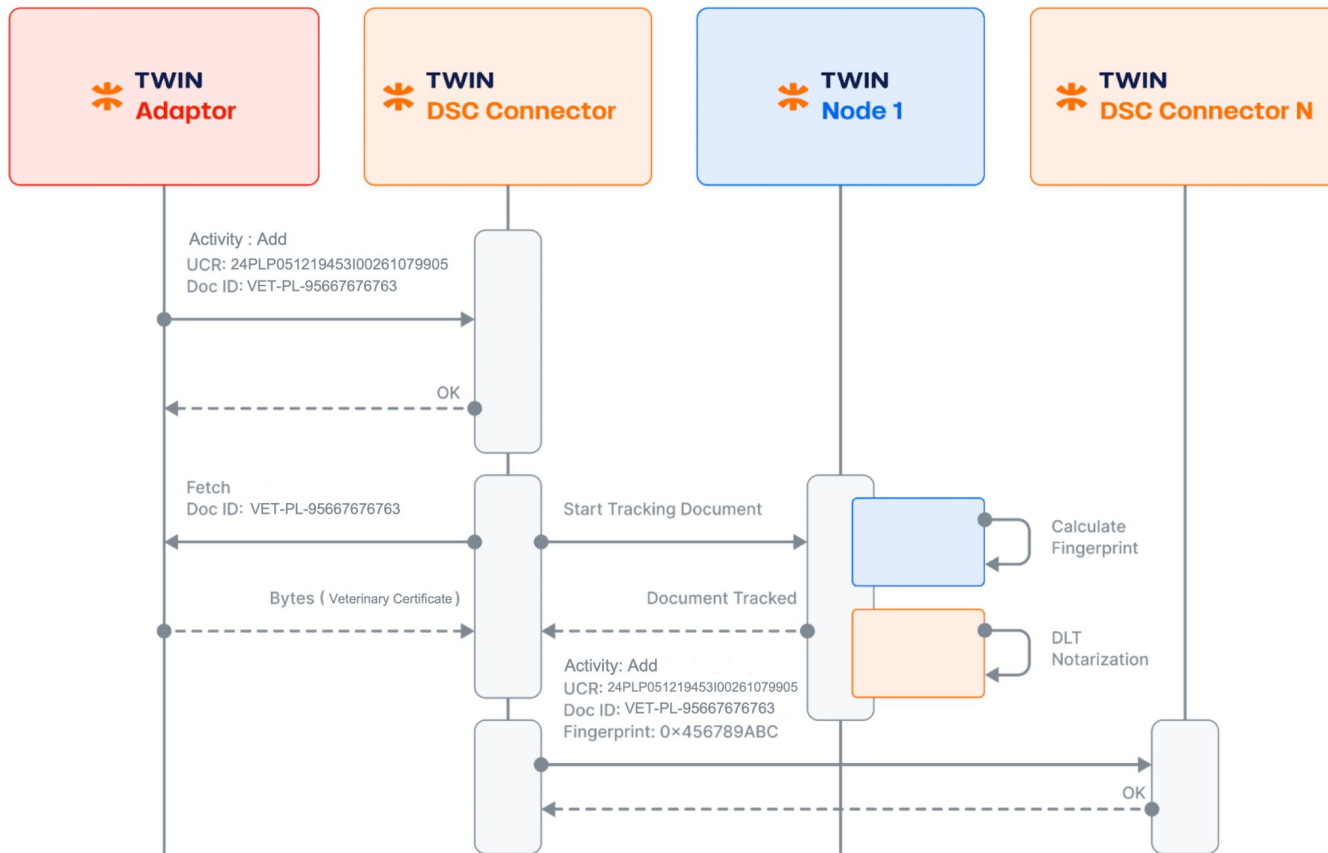
Data Resource Metadata

Service Offering - FFW → UK FSA

```
{
  "@context": "https://w3id.org/gaia-x/development",
  "aggregationOfResources": [
    "https://twin.example.org/data-resources/ffw-docs-2f246",
    "https://twin.example.org/data-resources/exporter-consignments-817a9d"
  ],
  "description": "Allows to retrieve Consignment and Documents Data",
  "id": "https://twin.example.org/service-offerings/ffw-query-service",
  "name": "Query Service Offering for Freight Forwarder",
  "providedBy": {
    "id": "did:iota:testnet:0xac534b750ac453d573a55954760af140f87358c7be9a18000a831c452c32f246",
    "type": "LegalPerson"
  },
  "servicePolicy": [
    {
      "@context": [
        "http://www.w3.org/ns/odrl.jsonld",
        {
          "jsonPathSelector": "twin:jsonPathSelector",
          "twin": "https://w3id.org/twin/odrl/"
        }
      ],
      "@type": "Agreement",
      "assignee": "did:iota:testnet:0x83e99fd9b8804966fd474da212aa93a5769f39f2150714a3c6701d20b5353975",
      "assigner": "did:iota:testnet:0xac534b750ac453d573a55954760af140f87358c7be9a18000a831c452c32f246",
      "description": "Allow the UK FSA to query this service",
      "permission": [
        {
          "action": "read",
          "constraint": {
            "leftOperand": {
              "@id": "https://w3id.org/twin/odrl/propertyValue",
              "jsonPathSelector": ".destinationCountry"
            },
            "operator": "eq",
            "rightOperand": "GB"
          },
          "target": {
            "type": [
              "Asset",
              "https://vocabulary.uncefact.org/Consignment"
            ]
          }
        },
        {
          "action": "read",
          "constraint": {
            "leftOperand": {
              "@id": "https://w3id.org/twin/odrl/propertyValue",
              "jsonPathSelector": ".documentTypeCode"
            },
            "operator": "eq",
            "rightOperand": "unece:DocumentCodeList#853"
          },
          "target": {
            "type": [
              "Asset",
              "https://vocabulary.uncefact.org/Document"
            ]
          }
        }
      ],
      "uid": "http://example.com/policy0-ffw-offering:1010"
    }
  ],
  "type": "ServiceOffering"
}
```

ODRL Policy

Data Space Protocol Interactions



TWIN DS Connector – W3C Activity Stream

POST /data-space-connector/notify

```
{
  "@context": [
    "https://www.w3.org/ns/activitystreams",
    "https://vocabulary.uncefact.org/unece-context-D23B.jsonld"
  ],
  "generator": "did:iota:testnet:0x1ee831611a9fe9877c82e05075d9670c4970b4fd0904c208082ee50e45817a9d",
  "id": "https://twin.example.org/act7",
  "type": "Add",
  "actor": {
    "id": "did:iota:testnet:0x1ee831611a9fe9877c82e05075d9670c4970b4fd0904c208082ee50e45817a9d",
    "type": "LegalEntity"
  },
  "object": {
    "type": "Document",
    "documentTypeCode": "unece:DocumentCodeList#853",
    "identifier": "VET-PL-9566767676",
    "identificationType": "GIW-Veterinary-Certificate",
    "issueDateTime": "2024-09-22T10:10:10Z",
    "issuerParty": {
      "id": "did:iota:testnet:0xfcfa55894cab90504af7eaf38087add5f77791a89bd3ebbe76d9c2b1a6ce567"
    }
  },
  "target": {
    "globalId": "24PLP051219453I00261079905",
    "type": "Consignment"
  },
  "updated": "2025-09-22T12:13:25Z"
}
```

The Exporter notifies the FFW that a Vet. Cert. is available for a Consignment

The background features a dark navy blue central diamond shape. This diamond is formed by the negative space between four larger, rounded triangular shapes that point towards the center. The top two triangles are a vibrant blue, and the bottom two are a bright orange. The overall composition is symmetrical and modern.

TWIN Hands-On

TWIN - The Codebase - The Packages

Base Layer

- Fundamentals (Is, Guards, i18n)
- Cryptography
- Tools (TypeScript to Schema, TypeScript To OpenAPI)
- Standards (Schema.org, DID, ODRL, GS1, UN/CEFACT)
- Data (JSON-LD)
- API Core

Components, Connectors

- Logging, Telemetry, Background Tasks, Event Bus
- Entity Storage (MySQL, Mongo, Scylla, AWS, Azure, GCP)
- Blob Storage (IPFS, AWS, Azure, GCP)
- Messaging (AWS)
- Vault (Hashicorp)

DLT Connectors

- Wallet / Gas Station
- Identity
- NFT
- Verifiable Storage

Building Blocks

- Auditable Item Graph
- Auditable Item Streams
- Document Management
- Attestation
- Immutable Proof
- Rights Management
- Data Processing (Extraction, Conversion)
- Federated Catalogue
- Future: Identity Management
- Future: Supply Chain

Engine

- Engine Core
- Engine REST Server

Node

- TWIN Node

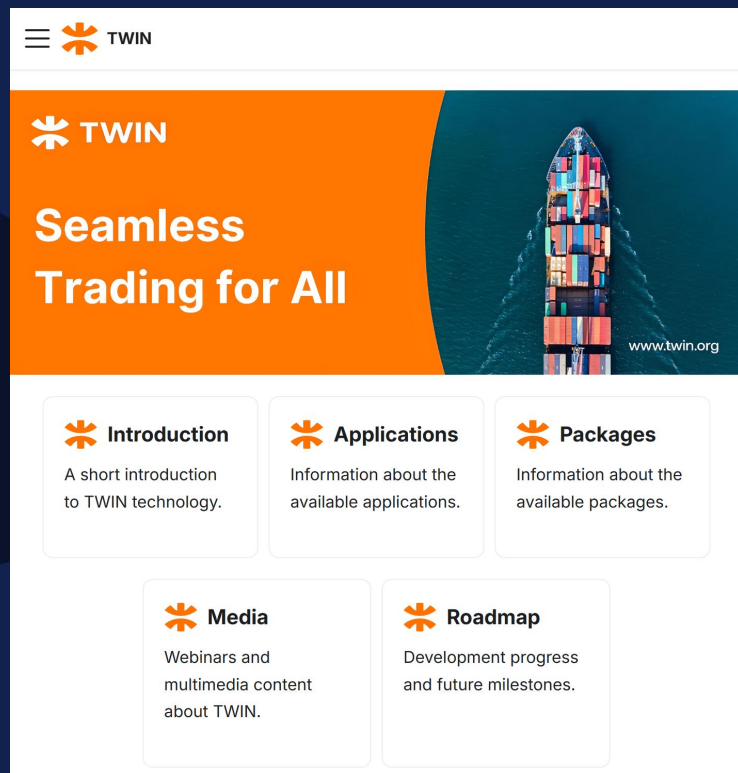
UI

- React UI Components
- Svelte UI Components
- Identity Components (Future)

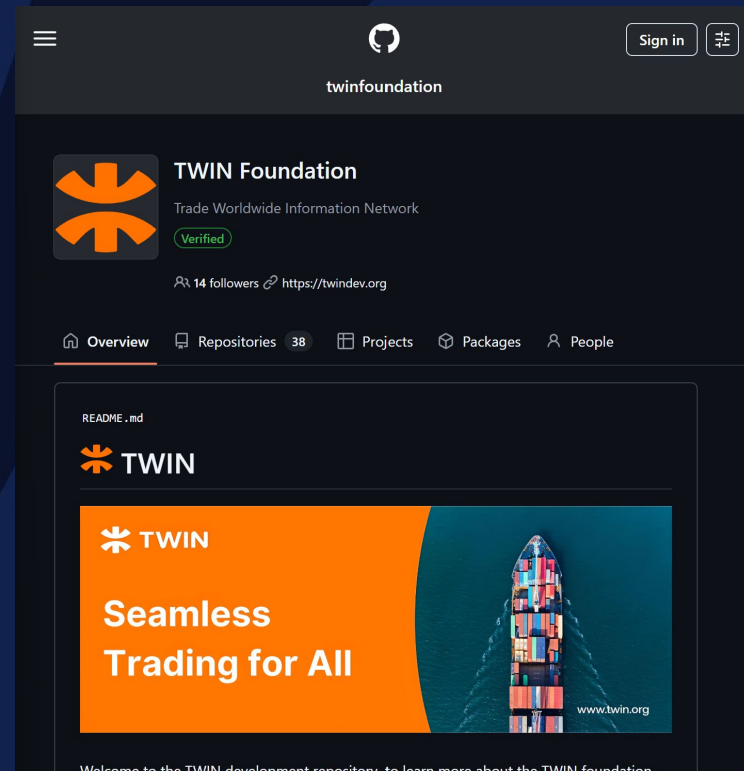
Applications

- Playground
- TWIN Identity
- TWIN UK
- TLIP

TWIN - Open Source Resources



<https://twindev.org/>



<https://github.com/twinfoundation>

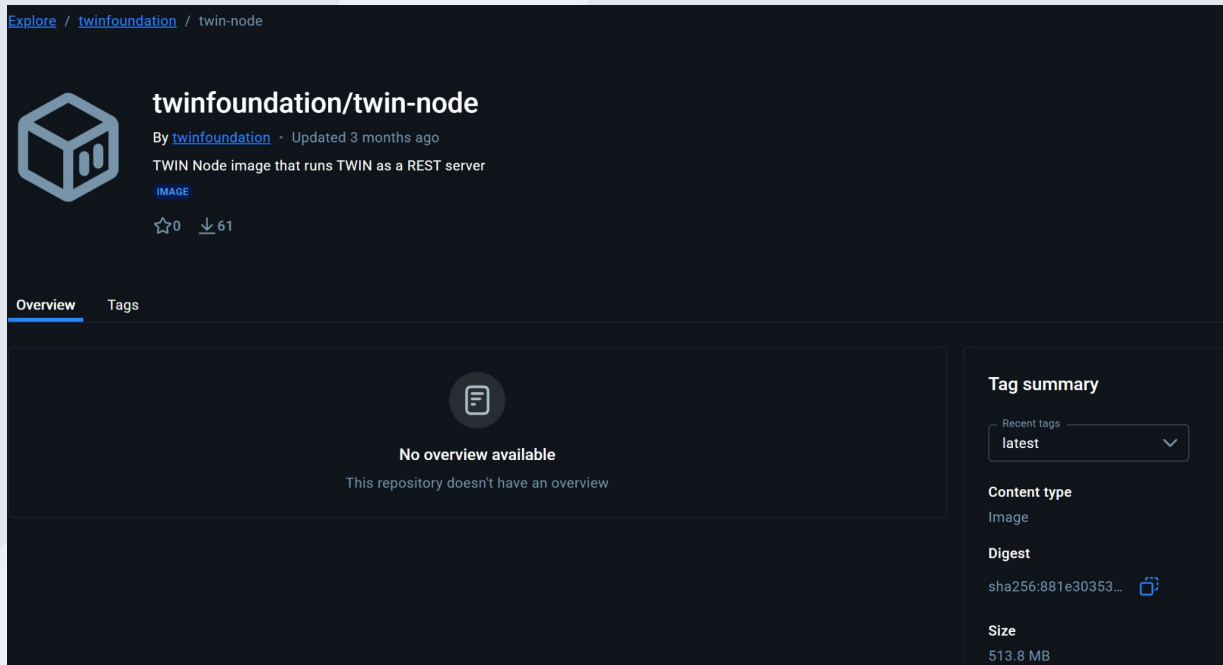
TWIN Node Local Deployment

Steps:

1

Find the TWIN Node in Dockerhub

<https://hub.docker.com/r/twinfoundation/twin-node>



The screenshot shows the Docker Hub page for the repository `twinfoundation/twin-node`. The page has a dark theme. At the top, there's a breadcrumb trail: `Explore / twinfoundation / twin-node`. Below this is the repository icon (a blue cube) and the name `twinfoundation/twin-node`. It says "By [twinfoundation](#) · Updated 3 months ago". The description is "TWIN Node image that runs TWIN as a REST server". There's a link to the "IMAGE" and statistics showing 0 stars and 61 downloads. Below the repository name are tabs for "Overview" (selected) and "Tags". The main content area shows a message: "No overview available" with a subtext "This repository doesn't have an overview". On the right side, there's a "Tag summary" section with a "Recent tags" dropdown set to "latest". Below that, it shows "Content type" as "Image", "Digest" as `sha256:881e30353...` with a copy icon, and "Size" as "513.8 MB".

TWIN Node Local Deployment

Steps:

1

Find the TWIN Node in Dockerhub

<https://hub.docker.com/r/twinfoundation/twin-node>

2

Check and edit the configuration variables

- Download sample .env
- Adapt as needed

Code

Blame

Raw



```
1  #----- TWIN Node Config -----#
2
3  # Web Server
4
5  TWIN_NODE_PORT=3000
6  TWIN_NODE_HOST="0.0.0.0"
7  # TWIN_NODE_CORS_ORIGINS=*
8  # TWIN_NODE_HTTP_METHODS=
9  # TWIN_NODE_HTTP_ALLOWED_HEADERS=
10 # TWIN_NODE_HTTP_EXPOSED_HEADERS=
11
12 # Global
13
14 ## Set DEBUG to true to enable additional information in the logs
15 TWIN_NODE_DEBUG=true
16
17 ## The features to enable on the node
18 ## node-identity: generates an identity for the node if not provided in config.
19 ## node-user: generates a user for the node if not provided in config.
20 ## node-wallet: generates a wallet for the node if a faucet is available.
21 TWIN_NODE_FEATURES="node-identity,node-user,node-wallet"
22
23 # Default Node Identity Details
24
25 # Identity for TWIN Node
26 # TWIN_NODE_IDENTITY=""
```

TWIN Node Local Deployment

Steps:

1 Find the TWIN Node in Dockerhub

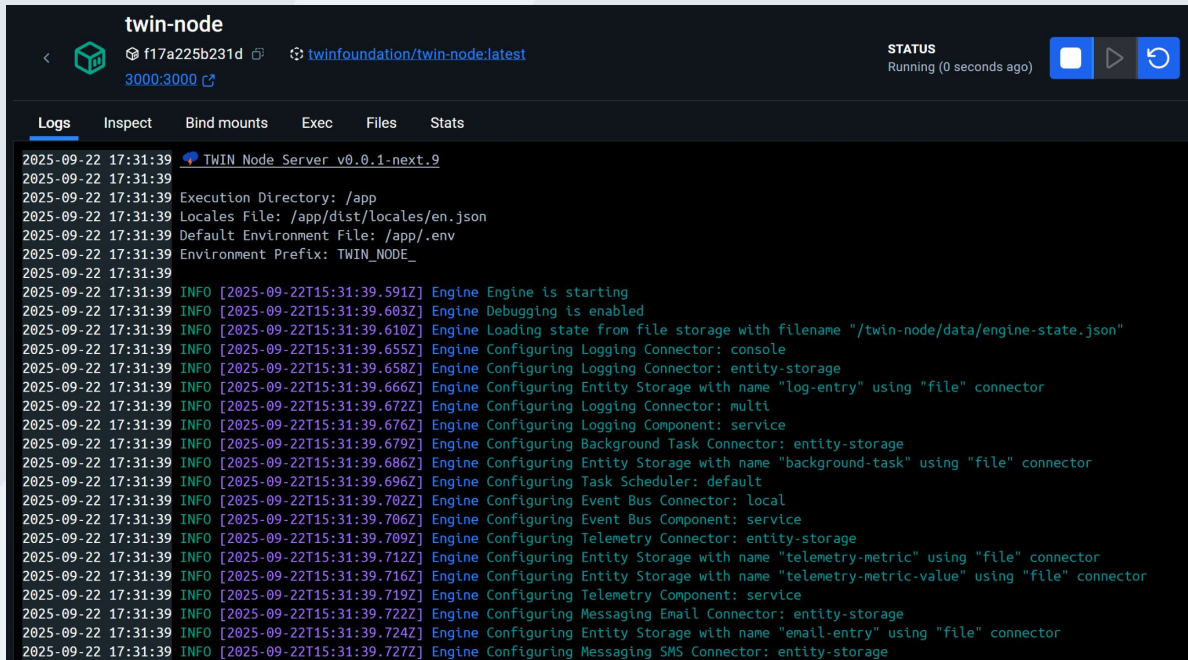
<https://hub.docker.com/r/twinfoundation/twin-node>

2 Check and edit the configuration variables

- Download sample .env
- Adapt as needed

3 Run the docker image

```
docker run -d --name twin-node --env-file .env  
-p 3000:3000 twinfoundation/twin-node:latest
```



```
twin-node  
f17a225b231d twinfoundation/twin-node:latest  
3000:3000  
STATUS  
Running (0 seconds ago)  
Logs Inspect Bind mounts Exec Files Stats  
2025-09-22 17:31:39 TWIN Node Server v0.0.1-next.9  
2025-09-22 17:31:39 Execution Directory: /app  
2025-09-22 17:31:39 Locales File: /app/dist/locales/en.json  
2025-09-22 17:31:39 Default Environment File: /app/.env  
2025-09-22 17:31:39 Environment Prefix: TWIN_NODE_  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.591Z] Engine Engine is starting  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.603Z] Engine Debugging is enabled  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.610Z] Engine Loading state from file storage with filename "/twin-node/data/engine-state.json"  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.655Z] Engine Configuring Logging Connector: console  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.658Z] Engine Configuring Logging Connector: entity-storage  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.666Z] Engine Configuring Entity Storage with name "log-entry" using "file" connector  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.672Z] Engine Configuring Logging Connector: multi  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.676Z] Engine Configuring Logging Component: service  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.679Z] Engine Configuring Background Task Connector: entity-storage  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.686Z] Engine Configuring Entity Storage with name "background-task" using "file" connector  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.696Z] Engine Configuring Task Scheduler: default  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.702Z] Engine Configuring Event Bus Connector: local  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.706Z] Engine Configuring Event Bus Component: service  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.709Z] Engine Configuring Telemetry Connector: entity-storage  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.712Z] Engine Configuring Entity Storage with name "telemetry-metric" using "file" connector  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.716Z] Engine Configuring Entity Storage with name "telemetry-metric-value" using "file" connector  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.719Z] Engine Configuring Telemetry Component: service  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.722Z] Engine Configuring Messaging Email Connector: entity-storage  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.724Z] Engine Configuring Entity Storage with name "email-entry" using "file" connector  
2025-09-22 17:31:39 INFO [2025-09-22T15:31:39.727Z] Engine Configuring Messaging SMS Connector: entity-storage
```

TWIN Node Local Deployment

Steps:

1 Find the TWIN Node in Dockerhub

<https://hub.docker.com/r/twinfoundation/twin-node>

2 Check and edit the configuration variables

- Download sample .env
- Adapt as needed

3 Run the docker image

```
docker run -d --name twin-node --env-file .env  
-p 3000:3000 twinfoundation/twin-node:latest
```

4 Verify running endpoints

TWIN Node Server

1.0.0OAS 3.1

REST API for TWIN - API Server.

[Apache 2.0 License](#)

Servers

https://node-api.twindev.org

Authorize

Info

Information endpoints for the REST server.

GET

/info

Get the information for the server

▼

GET

/health

Get the health for the server

▼


GET

/spec


Get the OpenAPI specification for the endpoints


▼


TWIN Playground


 **Playground**


NA


 Dashboard


 Blobs


 Documents


 **Attestations**


 NFT

 Immutable Proof

 Verifiable Storage










 Auditable Item Graphs



 Auditable Item Streams

 Logging

Attestations

Create Attestation


DESCRIPTION	DATE CREATED	CURRENT OWNER	ACTIONS
Attestation of Test Desc	7/1/2025, 11:01:26 AM	did:iota:testnet:0xc6e75a94e8a870205e98ffb291041ce0eaa83b0555d2ad081c471c3c50495ff	  
Attestation of file	6/27/2025, 2:04:27 PM	did:iota:testnet:0xc6e75a94e8a870205e98ffb291041ce0eaa83b0555d2ad081c471c3c50495ff	  
Attestation of Sample Document	6/27/2025, 3:23:45 PM	did:iota:testnet:0xc6e75a94e8a870205e98ffb291041ce0eaa83b0555d2ad081c471c3c50495ff	  

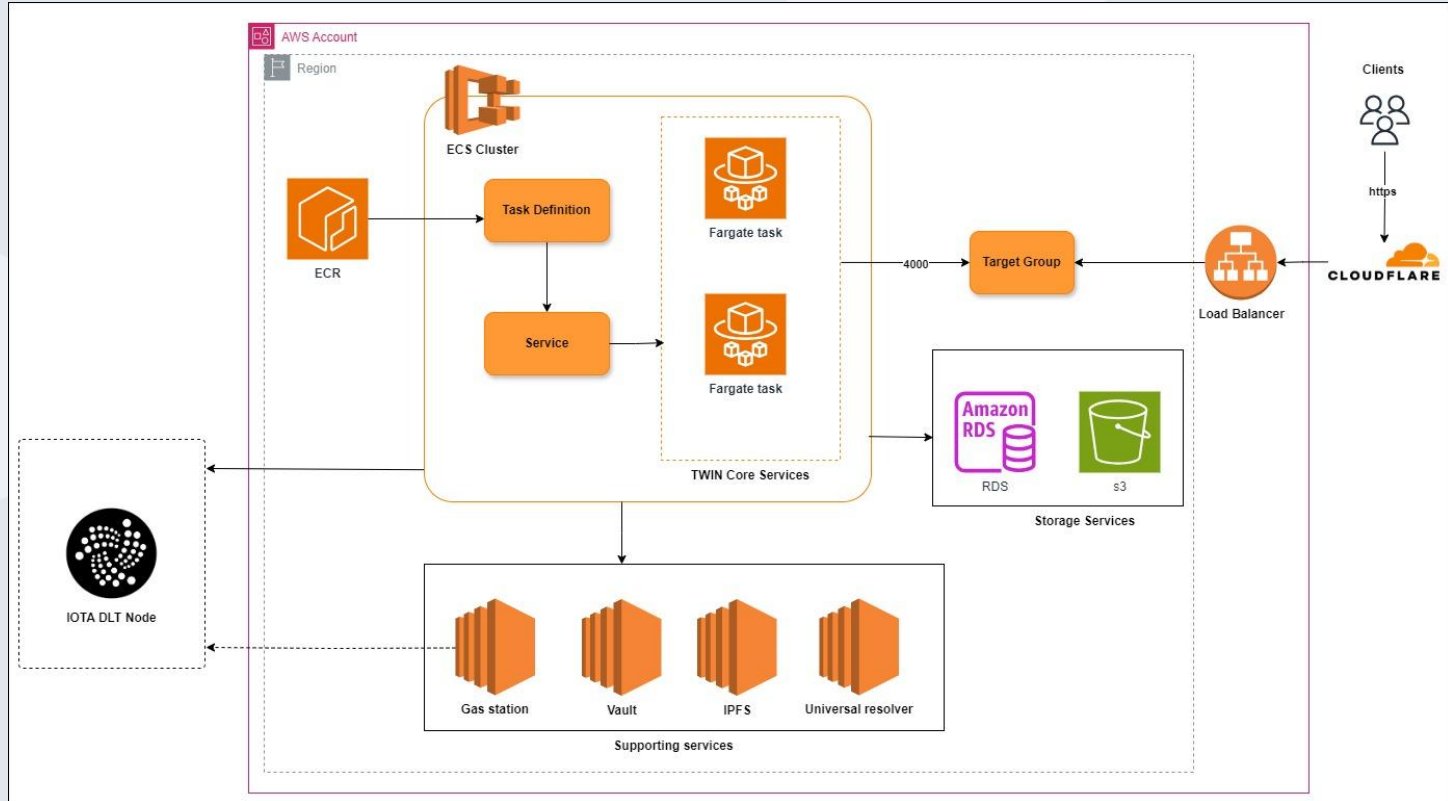
API: Playground Node v0.0.2-next-0

Language

English

Color theme 

TWIN Node AWS Deployment (RDS and S3)



The background features a dark navy blue central diamond shape. This diamond is formed by the negative space between four larger, rounded triangular shapes that point towards its corners. The top-left and top-right triangles are a vibrant blue, while the bottom-left and bottom-right triangles are a bright orange. The overall composition is symmetrical and modern.

What's Ahead?

What's Ahead?

- Release **1.0 version of the RA White paper** at the end of the 2025
- **Scientific paper** to gain peer reviews of our TWIN Architecture
- Creation of a tangible **TWIN Community**:
 - a truly **open source development model** with target end of Q4-2025
 - develop **tutorials and blueprints** → Contributions welcome!!!
- **Continuous refinement** with main development focus on:
 - Rights Management, Data Space Connector (query and subscribe interfaces)
 - Decentralization of the TWIN Catalogue, Onboarding : Clearing House, Registries, etc.
- TWIN ID **organizational identity tool** to facilitate onboarding processes
- Next Webinar:
 - **Mid January 2026** → Building with TWIN (Webinar 3)
 - Potential topics for next Webinars: *TWIN ID, Tokenization (MLETR), Deep Dive DPP Case Studies, ...*

Thank you!

For questions, reach us at
info@twin.org

The background features a dark navy blue central diamond shape. This diamond is formed by the negative space between four larger, rounded triangular shapes that point towards the center. The top two triangles are a vibrant blue, and the bottom two are a bright orange. The overall composition is symmetrical and modern.

Homework Materials

You Can Have a Look At

- <https://github.com/gtscio/twin-webinar2-demo> → The **dataset** of the educational case of study “3-way document sharing” and a blueprint “Data Space Connector App”
- <https://youtu.be/EWvEPuEX5Ng> → **Screencast**: 3-way document sharing implementation sketch
- <https://github.com/twinfoundation> → The TWIN codebase
- <https://twindev.org> → The TWIN reference development documentation
- <https://schema.twindev.org> → Schemas
- <https://playground.twindev.org> → The TWIN Playground
- <https://hub.docker.com/u/twinfoundation> → Docker Hub